NOTICE AND AGENDA
AMENDED

BUILDING AND FIRE CODE OF APPEALS
WEDNESDAY
APRIL 22, 2026

COUNCIL CHAMBERS
211 WEST ASPEN AVENUE
1:00 P.M.

To participate in the meeting virtually use the following link:

Join the Meeting Online

Written comments may be submitted to amy.tressler@flagstaffaz.gov. All comments submitted via email will be considered written comments and will be documented into the record as such.

1. CALL TO ORDER

NOTICE OF OPTION TO RECESS INTO EXECUTIVE SESSION

Pursuant to A.R.S. §38-431.02, notice is hereby given to the members of the Building and Fire Code of Appeals and to the general public that, at this meeting, the Board may vote to go into executive session, which will not be open to the public, for legal advice and discussion with the City's attorneys for legal advice on any item listed on the following agenda, pursuant to A.R.S. §38-431.03(A)(3).

2. ROLL CALL

NOTE: One or more Commissioners may be in attendance through other technological means.

JACOB CONGER	MARK SHIERY
MARK HAUGHWOUT	DAVID MERRELL
SCOTT FRANZ	PATRICK STASKEY

3. APPROVAL OF PRIOR MEETING MINUTES

Approval of the minutes from the regular meeting on September 15, 2025. Agenda - View Meetings (All)

4. OPEN CALL TO THE PUBLIC

At this time, any member of the public may address the Board on any subject within their jurisdiction that is not scheduled before the Board on that day. Due to Open Meeting Laws, the Board cannot discuss or act on items presented during this portion of the agenda. To address the Board on an item that is on the agenda, please wait for the Chair to call for Public Comment at the time the item is heard.

5. **ACTION ITEMS**

A. Discussion, review, and recommendation for approval of the draft 2024 Building Code Amendments (including the International Building Code, International Existing Building Code, International Residential Code, International Mechanical Code, International Plumbing Code, International Fuel Gas Code, International Energy Conservation Code, International Swimming Pool & Spa Code and 2023 National Electric Code) for the purpose of moving forward with public outreach and stakeholder engagement.

Attachments will be uploaded and provided prior to the meeting.

Staff Recommended Action
Provide a recommendation to move forward with the draft 2024 Building Code Amendments for public outreach and stakeholder engagement, with the intent of informing future adoption.

B. Discussion, review, and recommendation of the draft 2024 International Fire Code Amendments and 2024 International Wildland-Urban Interface Code Amendments for the purpose of moving forward with public outreach and stakeholder engagement.

Staff Recommended Action
Provide a recommendation to move forward with the draft 2024 International Fire Code Amendments and 2024 International Wildland-Urban Interface Code Amendments for public outreach and stakeholder engagement, with the intent of informing future adoption.

6. **INFORMATIONAL ITEMS TO/FROM BOARD MEMBERS AND STAFF, FUTURE AGENDA ITEM REQUESTS**

7. **ADJOURNMENT**

In compliance with the Americans with Disabilities Act, if you need assistance to participate in this meeting, please contact Amy Tressler at amy.tressler@flagstaffaz.gov. Notification at least 48 hours in advance will enable the City to make reasonable arrangements.

CERTIFICATE OF POSTING OF NOTICE

The undersigned hereby certifies that a copy of the foregoing notice was duly posted at Flagstaff City Hall on _____, at _____ a.m./p.m. in accordance with the statement filed by the City Council with the City Clerk. This notice has been posted on the City's website and can be downloaded at www.flagstaff.az.gov.

Dated this _____ day of _____, 2026.

_____
Stephen Ball for Amy Tressler, Staff Liaison

Building and Fire Code of Appeals 3.

From: Nancy Corbin-Fuller, Administrative Specialist

DATE: 04/22/2026

SUBJECT: **APPROVAL OF PRIOR MEETING MINUTES**

Approval of the minutes from the regular meeting on September 15, 2025. Agenda - View Meetings (All)

STAFF RECOMMENDED ACTION:

Executive Summary:

Attachments

Building & Fire Code of Appeals-9.15.25_Minutes

Return

MINUTES

BUILDING AND FIRE CODE OF APPEALS
MONDAY
SEPTEMBER 15, 2025

COUNCIL CONFERENCE ROOM
211 WEST ASPEN AVENUE
2:00 P.M.

1. **CALL TO ORDER**

NOTICE OF OPTION TO RECESS INTO EXECUTIVE SESSION

Pursuant to A.R.S. §38-431.02, notice is hereby given to the members of the Building and Fire Code of Appeals and to the general public that, at this meeting, the Board may vote to go into executive session, which will not be open to the public, legal advice and discussion with the City's attorneys for legal advice on any item listed on the following agenda, pursuant A.R.S. §38-431.03(A)(3).

The meeting was called to order at 2:00 p.m.

2. **ROLL CALL**

NOTE: One or more Commissioners may be in attendance through other technological means.

JACOB CONGER (Present)	VACANT
KENNETH KRENKE (Present)	VACANT
DAVID MERRELL (Present)	VACANT
MITCHELL WALZER (Present)	

Staff present: Building Official Amy Tressler, Senior Sustainability Planner Genevieve Pearthree, Housing and Transportat Coordinator Jamie Larson, Wildland Fire Captain Neil Chapman, Zoning Code Manager Tiffany Antol, and Deputy City Cle Georganna Staskey

3. **OPEN CALL TO THE PUBLIC**

At this time, any member of the public may address the Board on any subject within their jurisdiction that is not scheduled before the Board on that day. Due to Open Meeting Laws, the Board cannot discuss or act on items presented during this portion of the agenda. To address the Board on an item that is on the agenda, please wait for the Chair to call for Public Comment at the time the item is heard.

None.

4. **Member Introductions**

Ms. Pearthree introduced the board and purpose. This board does not meet often and there are new members. Board members, City staff, and Shums Coda staff (who working with the City to support the Building and Fire Code update) introduced themselves and background.

5. **ACTION ITEMS**

A. **Discussion and possible vote on selecting a Chair and Vice Chair**

Board members spoke of the history of who has held the position and who might best fit it currently.

Moved by Mitchell Walzer, **seconded by** Kenneth Krenke to appoint Jacob Conger as Chair

Vote: 4 - 0 - Unanimously

Board members discussed the history of Vice Chair and who currently is able to fill the role.

Moved by Kenneth Krenke, **seconded by** Mitchell Walzer to appoint David Merrell as Vice Chair.

Vote: 4 - 0 - Unanimously

6. **DISCUSSION ITEMS**

A. **Building and Fire Code of Appeals Process and Timeline**

Ms. Pearthree provided background information and the timeline. The Building and Fire Code of Appeals process is underway, with amendments being drafted soon. The first Board of Appeals meeting is held on September 15, 2025. Staff will visit several City Commissions in October to present options for advancing code amendments. Three open houses (two in-person, one virtual) are planned, with a possible fourth Board meeting if major changes occur. A Council work session is scheduled for early December, followed by a first read of the amendment for potential code adoption in January 2026, and the code, if adopted, will take effect in February 2026.

B. **Review and Discuss Key Code Changes 2018-2024**

Ms. Tressler reviewed the Key Code Changes documentation that was provided to Commissioners and asked if there were any questions on the material. The Board reviewed key 2018–2024 code changes. Vice Chair Merrell discussed updates to snow loads, including site-specific snow loads, shifting from "roof snow loads" to "ultimate snow loads," and potential impacts on construction costs, particularly for engineered structures. He also expressed concerns about the potential for increased construction costs associated with the special review of metal buildings. Chair Conger highlighted new requirements for building commissioning and energy efficiency testing. Ms. Pearthree discussed a future presentation to City Council to seek direction on four potential energy code update options that City staff could explore as part of the larger Building and Fire Code update process, given Flagstaff's adopted climate goals and the large number of appendices in the 2024 International Energy Conservation Code (IECC). The Board discussed EV (electric vehicle) chargers, solar-ready provisions, and net-zero-ready construction. Board members indicated a desire to balance energy efficiency improvements, including potential utility cost savings, with impacts on housing construction costs, and expressed concerns about code changes raising construction costs. Mr. Walzer inquired whether the City is coordinating with the County. Ms. Tressler responded that there is coordination, although alignment is difficult due to differences in size, climate zones, and resources. Mr. Chapman discussed potential updates to the City's Wildland Urban Interface (WUI) code, including staff's review and analysis of requiring a wildfire buffer, and weighing higher construction costs against potential benefits to insurance premiums. Ms. Tressler indicated that staff still need to conduct a legal review of the new codes. Ms. Pearthree discussed the City's upcoming ADU model plans library and how site-specific snow loads may impact the feasibility of model plans. Vice Chair Merrell requested clarification on how code changes will affect remodels.

7. **Finalize date for next meeting**

Discussion on availability for the next meeting, October 2nd appears to be available. Staff is going to work on confirming this for the Commission.

8. **INFORMATIONAL ITEMS TO/FROM BOARD MEMBERS AND STAFF, FUTURE AGENDA ITEM REQUESTS**

None.

9. **ADJOURNMENT**

The meeting was adjourned at 3:19 p.m.

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Building and Fire Code of Appeals **5. A.**

Meeting Date: 04/22/2026

Co-Submitter: Amy Tressler, Building Safety & Code Compliance/ Building Official

From: Stephen Ball, Management Analyst

REQUEST:

Discussion, review, and recommendation for approval of the draft 2024 Building Code Amendments (including the International Building Code, International Existing Building Code, International Residential Code, International Mechanical Code, International Plumbing Code, International Fuel Gas Code, International Energy Conservation Code, International Swimming Pool & Spa Code and 2023 National Electric Code) for the purpose of moving forward with public outreach and stakeholder engagement.

Attachments will be uploaded and provided prior to the meeting.

STAFF RECOMMENDED ACTION:

Staff Recommended Action

Provide a recommendation to move forward with the draft 2024 Building Code Amendments for public outreach and stakeholder engagement, with the intent of informing future adoption.

VARIANCE CRITERIA AND ANALYSIS:

Attachments

2026 AMENDMENTS TO FLAGSTAFF CITY CODE TITLE 4 BUILDING REGULATIONS (Draft)
Appendix CG EV Charging Amendments - Option A
Appendix CG EV Charging Amendments - Option B
Appendix CG EV Charging Amendments - Option C
Appendix RE & NE EV Charging Amendments - Option A
Appendix RE & NE EV Charging Amendments - Option B.1
Appendix RE & NE EV Charging Amendments - Option B.2
Appendix RE & NE EV Charging Amendments - Option C
C405.15 Renewable Energy Systems

FLAGSTAFF CITY CODE,
TITLE 4, BUILDING REGULATIONS

TITLE 4
BUILDING REGULATIONS

CHAPTERS:

4-01 ADMINISTRATIVE ENACTMENTS

4-02 2024 INTERNATIONAL BUILDING CODE (IBC) AMENDMENTS

4-03 2024 INTERNATIONAL RESIDENTIAL CODE (IRC) AMENDMENTS

4-04 2024 INTERNATIONAL EXISTING BUILDING CODE (IEBC) AMENDMENTS

4-05 2024 INTERNATIONAL MECHANICAL CODE (IMC) AMENDMENTS

4-06 2024 INTERNATIONAL PLUMBING CODE (IPC) AMENDMENTS

4-07 2024 INTERNATIONAL FUEL GAS CODE (IFGC) AMENDMENTS

4-08 2024 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) AMENDMENTS

4-10 2024 INTERNATIONAL SWIMMING POOL AND SPA CODE (ISPSC) AMENDMENTS
4-11 NATIONAL ELECTRICAL CODE (NEC), 2023 EDITION, AMENDMENTS

FLAGSTAFF CITY CODE,
TITLE 4, BUILDING REGULATIONS

CHAPTER 4-01
ADMINISTRATIVE ENACTMENTS

SECTIONS:

4-01-001-0001 DEFINITIONS
4-01-001-0002 ADOPTION OF MODEL CODES
4-01-001-0003 SAVING CLAUSE
4-01-001-0004 VIOLATION AND PENALTIES

4-01-001-0001 DEFINITIONS

As used in all of the adopted model codes referenced herein, as amended, the following terms shall have the meaning herein prescribed:

A. Wherever the word "Municipality" or "[Name of Jurisdiction]" is used, it shall mean the City of Flagstaff.

B. Wherever the term "Department of Building Safety" is used, it shall mean "Planning & Development Services Division."

C. Wherever the term "Corporation Counsel" is used in this Chapter, it shall mean the Attorney for the City of Flagstaff.

D. Wherever the term "Administrative Authority" is used in conjunction with publicly provided utilities (natural gas, electricity, internet and broadband service, telephone, and cable television), it shall mean the current contract company providing the respective service. Wherever the term "Administrative Authority" is used in conjunction with publicly provided utilities or permits (water, sewer, storm water management and/or building permits), it shall mean the City of Flagstaff.

4-01-001-0002 ADOPTION OF MODEL CODES

There are hereby adopted by the City Council of the City of Flagstaff for the purposes of establishing rules and regulations for the construction, alteration, removal, demolition, equipment, use and occupancy, maintenance of buildings and structures, including permits and penalties, those certain model codes known and referred to with particularity as:

2024 International Building Code (IBC)*

2024 International Residential Code (IRC)*

2024 International Existing Building Code (IEBC)*

2024 International Mechanical Code (IMC)*

2024 International Plumbing Code (IPC)*

2024 International Fuel Gas Code (IFGC)*

2024 International Energy Conservation Code (IECC)*

2024 International Swimming Pool and Spa Code (ISPSC)*

National Electrical Code (NEC), 2023 Edition**

ICC A117.1-2017, Accessible and Usable Building and Facilities*

1997 Uniform Housing Code***

1997 Uniform Administrative Code***

1997 Uniform Code for the Abatement of Dangerous Buildings***

***Published by International Code Council (ICC)**
****Published by National Fire Protection Association (NFPA)**
*****Published by International Conference of Building Officials (ICBO)**

One (1) electronic copy of each model code, and any amendments to said codes, are on file in the office of the City Clerk of the City of Flagstaff, and the same is made part hereof by this reference as if fully and completely herein set forth. The provisions of the aforestated Codes shall be controlling for construction within the corporate limits of the City of Flagstaff.

4-01-001-0003 SAVING CLAUSE

Nothing in this Chapter or in the 2024 International Codes, 2023 National Electrical Code, ICC A117.1-2017, and Uniform Codes hereby adopted shall be construed to affect any suit or proceeding now pending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinances replaced hereby. Nor shall any right or remedy of any character be lost, impaired, or affected by this Chapter.

4-01-001-0004 VIOLATION AND PENALTIES

A. Violations. It shall be unlawful for any person, firm or corporation to erect, construct, enlarge, alter, repair, move, improve, remove, convert, demolish, equip, use or maintain any building or permit the same to be done in violation of the model codes adopted in section 4-01-001-0002 above, as amended.

B. Penalties. Any person, firm, or corporation violating any provision of this Code shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punishable by a fine and/or imprisonment set forth by Flagstaff City Code, Title I, Chapter 1-04 General Penalty. Each separate day or any portion thereof, during which any violation of this Code occurs or continues, shall be deemed to constitute a separate offense.

CHAPTER 4-02
2024 INTERNATIONAL BUILDING CODE

4-02-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS

The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Building Code adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 SCOPE AND ADMINISTRATION
Section 101 General
Amend 2024 IBC 101.2.1, Appendices, by adding:
The following Appendices are hereby adopted as part of the IBC:

APPENDIX C – Group U – Agricultural Buildings
APPENDIX I – Patio Covers
APPENDIX J – Grading
APPENDIX N – Replicable Buildings

Section 103 Department of Building Safety
Amend 2024 IBC 103.1, Creation of enforcement agency, by deleting and replacing with:
The City of Flagstaff Building Safety & Code Compliance Section is appointed as the enforcement agency for purposes of this code, and the official in charge thereof shall be known as the Building Official. The function of the Section shall be the implementation, administration, and enforcement of the provisions of this code.

Section 104 Duties and Powers of Building Official
Amend 2024 IBC 104.7, Official records, by deleting and replacing with:
The Building Official shall keep official records as required by Sections 104.7.1 through 104.7.5. Such official records shall be retained for not less than 5 years or for as long as the building or structure to which such records relate remains in existence, unless otherwise provided by other regulations.

Section 105 Permits
Amend 2024 IBC 105.1, Required, by adding:
Approved portable equipment used in conjunction with special events in public locations (parks, parking lots, publicly owned land, et cetera) of 25 kW or greater shall have an Over the Counter Permit issued and a licensed electrical contractor for installation or setup. The Building Inspector must be given immediate notice when an installation is ready for either rough or final inspection.

Amend 2024 IBC 105.1.1 Annual permit, by deleting and replacing with:
Instead of an individual permit for each alteration to an already approved electrical, gas, mechanical or plumbing installation, the Building Official is authorized to issue an annual permit upon application therefor to any person, firm or corporation regularly employing one or more qualified tradespersons in the building, structure or on the premises owned or operated by the applicant for the permit.

Amend 2024 IBC 105.1.2, Annual permit records, by deleting and replacing with:
The person to whom an annual permit is issued shall keep a detailed record of alterations made under such annual permit. The Building Official shall have access to such records at all times, or such records shall be filed with the Building Official as designated.

Amend 2024 IBC 105.1.3 by adding subsections 105.1.3 through 105.1.7:
105.1.3 Application and fees. Application for an annual permit shall be filed with the Building Official, along with the application fee set forth in the City Fee Schedule.
105.1.4 Renewal application and fee. Annual permits expire on December 31. Application to renew an annual permit shall be filed with the Building Official by December 15, along with the renewal application fee set forth in the City Fee Schedule.
105.1.5 Denial of application. If the application or renewal is denied, the fee shall be refunded. The applicant may appeal the denial to the Building and Fire Code Board of Appeals within 10 calendar days after notice of the denial.
105.1.6 Suspension and revocation. The Building Official may suspend or revoke an annual permit upon violation of this code, including failure to apply for permits and inspections when required. Written notice of suspension or revocation shall be sent to the permit holder at least 10 calendar days before suspension or revocation. Appeal may be made to the Building and Fire Code Board of Appeals within 10 calendar days after notice of suspension or revocation. There is no fee refund if an annual permit is suspended or revoked.
105.1.7 Inspections. The Building Official, or their designee, may inspect all work and reject work or request corrections for any work in violation of this code.
105.1.7.1 Record exceptions. Work reports are not required for**:**
1. Installing machines, equipment, and processes related to production or testing.
2. Moving cases, counters, and partitions not over 5 feet 9 inches tall.

Amend 2024 IBC 105.4 Validity of permit, by adding:
A permit shall not be valid until a copy of the issued permit is signed and returned to the Building Safety & Code Compliance Section.

Amend 2024 IBC 105.5, Expiration, by deleting, replacing and adding sub sections 105.5.1 through 105.5.3:
Commercial Building Permits issued for new construction, remodels, additions, and alterations shall expire 24 months (730 days) from the date of issuance, unless extended as provided herein.
105.5.1: A permit shall become invalid if the work authorized by such permit is not commenced within 180 days from the date of issuance, or if the work is suspended or abandoned for a period of 180 days after commencement.
105.5.2: Only one extension not to exceed 365 days, may be granted by the Building Official upon written request and payment of a fee equal to one-half of the original building permit fee (excluding plan review fees).
Permits that exceed 1095 days (3 years) from the date of issuance, including extensions, and have not received final inspection approval shall expire. A new permit shall be required to complete the work, and all applicable fees shall be paid.
105.5.3: Over the counter permits (plumbing, mechanical, electrical, and re-roofing) shall expire if the work authorized by the permit is not commenced within 180 days from the date of issuance, or if the work is suspended or abandoned for a period of 180 days. Such permits shall not remain valid for more than 180 days from the date of issuance unless an extension is approved by the Building Official.

Section 107 Submittal Documents
Amend 2024 IBC 107.1, General, by adding:
Where required by Arizona Revised Statutes, construction documents for new construction, additions, alterations, or repairs to commercial occupancies within the City of Flagstaff shall be prepared by an Arizona-registered design professional (i.e. architect and engineers) in good standing when:

1. The total square footage of any building exceeds 3,000 square feet, or
2. The total occupancy of the building exceeds twenty (20) persons, or
3. Any structural member required for the project exceeds twenty (20) feet in length

The Arizona Registered Design Professional of Record shall affix their seal to all construction documents. Construction documents not prepared by the Registered Design Professional of Record shall be identified as such; and the design professional's seal shall be affixed to all sheets in the construction document set to indicate that the project was prepared under the responsible control and coordination of the Registered Design Professional of Record.

Construction documents for retaining walls subject to surcharge loads from adjacent structural elements or other unbalanced loading that exceeds four (4) feet in height, shall be prepared by an Arizona Registered Design Professional.

Construction documents for electrical service equipment rated at 600 amperes or greater shall be prepared by an Arizona Registered Design Professional.

Section 109 Fees
Amend 2024 IBC 109.2, Schedule of permit fees, by adding:
The current schedule of permit fees is on file in the Office of Building Safety and available on the City of Flagstaff website (www.flagstaff.az.gov).

Amend 2024 IBC 109.4, Work commencing before permit issuance, by adding:
Any person who commences any work to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to an investigation fee of $94.00 or twice the permit fee, whichever is greater.

Amend 2024 IBC 109.5, Related fees, by adding:
Re-inspection fees may be assessed for each inspection or re-inspection when the portion of work for which the inspection was scheduled is not complete or when corrections from a previous inspection are not made. Other events which may require the imposition of a re-inspection fee are:

1. Failure to have the inspection record on the job site when the inspector arrives.
2. The approved plans are not on the job site at the time of inspection.
3. Failure to provide access to the job site or area to be reviewed by the inspector.

Appeals for such fees are made to the Building Official. A $94.00 re-inspection fee shall be paid through the Building Permit Portal before a re-inspection may be scheduled, after the inspector has issued notice that such fee will be assessed.

Amend 2024 IBC 109.6, Refunds, by adding:
A refund of up to 80 percent of the building permit fee, excluding plan review fees, may be authorized by the Building Official, provided that no work has commenced and no inspections have been performed. Plan review fees shall not be refundable.

The Building Official is authorized to determine the amount of any refund based on the extent of administrative processing and work completed. No refund shall be issued for any required deposit once administrative routing or plan review has commenced.

Section 111 Certificate of Occupancy
Amend 2024 IBC 111.3, Temporary occupancy, to read as follows:
The Building Official is authorized to issue a Temporary Certificate of Occupancy (TCO) for residential construction, including detached one- and two-family dwellings, where the structure is safe for occupancy and no substantial hazard to life, health, or safety exists.

A Temporary Certificate of Occupancy shall only be issued when:

1. All required life-safety systems are complete and operational, including but not limited to means of egress, smoke and carbon monoxide alarms, required guards and handrails, and all utilities.
2. Any remaining work is limited to non-life-safety items, including but not limited to exterior flatwork, landscaping, or unfinished accessory spaces such as basements or bonus rooms, which shall be documented as "not inspected."
3. A bond or other financial assurance is provided when required by the Building Official for incomplete exterior improvements, including driveway approaches, where weather or other conditions prevent completion.
4. The Temporary Certificate of Occupancy shall be valid for a period not to exceed 60 days, unless extended by the Building Official for good cause.
5. Failure to complete the remaining work prior to expiration of the Temporary Certificate of Occupancy may result in revocation of occupancy approval and enforcement action.

Occupancy of a structure prior to the issuance of a Certificate of Occupancy or Temporary Certificate of Occupancy is prohibited and may result in enforcement action, including issuance of a "No Occupancy" notice.

Section 113: Means of Appeals
Amend 2024 IBC 113.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

CHAPTER 10 MEANS OF EGRESS
Section 1015 Guards
Amend 2024 IBC 1015.3, Height, by deleting and replacing with:
For occupancies in Groups R-2 and R-3, within the interior conditioned space of individual dwelling units, required guards shall not be less than 36 inches (914 mm) in height measured vertically above the adjacent walking surface.

CHAPTER 14 EXTERIOR WALLS
Section 1404 Installation of Wall Coverings
Amend 2024 IBC 1404.3, Vapor retarders, by deleting the following:
The requirement for Class I or Class II vapor retarders on the interior side of frame walls in Climate Zones 5, 6, 7, 8, and Marine 4. The use of vapor retarders shall be permitted but not required.

CHAPTER 15 ROOF ASSEMBLIES AND ROOFTOP STRUCTURES
Section 1502 Roof Drainage
Amend 2024 IBC 1502.3, Scuppers, by deleting and replacing with:
Where *scuppers* are used for secondary (emergency overflow) roof drainage, the quantity, size, location and inlet elevation of the *scuppers* shall be sized to prevent the depth of ponding water from exceeding that for which the roof was designed as determined by Section 1611.1. *Scuppers* shall not have an opening dimension of less than 4 inches (102 mm). The flow through the primary system shall not be considered when locating and sizing *scuppers*.

Section 1505 Fire Classification
Amend 2024 IBC 1505.4, Class C roof assemblies, by deleting in its entirety.

Amend 2024 IBC 1505.5, Nonclassified roofing, by deleting in its entirety.

Section 1506 Materials
Amend 2024 IBC 1506.3, Product identification, by adding:
All roofing materials used must be a class "A" or "B" material and rolled roofing is to be of a self-adhering polymer bitumen type material.

Section 1507 Requirements for Roof Coverings
Amend 2024 IBC 1507.8, Wood shingles, by deleting in its entirety.

Amend 2024 IBC 1507.9, Wood shakes, by deleting in its entirety.

CHAPTER 16 STRUCTURAL DESIGN
Section 1607 Live Loads
Amend 2024 IBC Table 1607.1, Minimum Uniformly Distributed Live Loads and Minimum Concentrated Live Loads, by revising the following values:
Habitable attics and sleeping areas: 40 psf

Section 1608 Snow Loads
Amend 2024 IBC 1608.2, Ground snow loads, by deleting and replacing with:
The ground snow load shall be 70 psf.

Section 1612 Flood Loads
Amend 2024 IBC 1612.3, Establishment of flood hazard areas, as follows:
Replace "[INSERT DATE OF ISSUANCE]" with "09-03-2010".

APPENDIX J GRADING
Section J104 Permit Application and Submittals
Amend Appendix J by adding Section J104.5, Stormwater requirements, as follows:

1. Contractor shall submit to the Arizona Department of Environmental Quality a Notice of Intent (NOI) and a Notice of Termination (NOT) pursuant to the requirements of ARS Title 49, Chapter 2, Article 3.1. A copy of the submitted NOI and the NOT shall be provided to the City of Flagstaff Stormwater Section. The NOI shall be submitted prior to issuance of any City of Flagstaff grading, building, or offsite permits. The NOT shall be submitted prior to final acceptance of off-site improvements and the Certificate of Occupancy.

2. An Erosion Control Plan (ECP) shall be submitted to the City of Flagstaff Stormwater Section for review and approval as required by the City of Flagstaff Stormwater Manager. The ECP shall be prepared in accordance with the Arizona Department of Transportation (ADOT) Best Management Practices (BMP) Manual (or other BMPs as may be approved by the City of Flagstaff Stormwater Manager). Submittal shall be made concurrent with its respective permit application(s) and/or attached to the Civil Construction Document Plan Set submittal. Review timeframes shall be the same as the permit or civil reviews. City of Flagstaff permits that require an ECP will not be issued without review and approval by the City of Flagstaff Stormwater Section.

3. The ECP BMPs shall be set in place by the contractor, and the work inspected and approved by the City of Flagstaff Stormwater Section prior to commencement of grading activities. The contractor shall contact the City of Flagstaff Stormwater Section for this pre-grading inspection.

4. During construction, the ECP BMPs shall remain in place, and shall be maintained until project completion as witnessed by a Final Grading Certification and the filing of a NOT. Failure to maintain ECP BMPs may result in a Stop Work Order. Permits will not be closed or finalized unless the site has been inspected and approved for final stabilization by the City of Flagstaff Stormwater Section. The contractor shall contact the City of Flagstaff Stormwater Section for this closure inspection.

5. In accordance with the provisions of this section, the City of Flagstaff may withhold permits, occupancy or enforce by other remedy in order to ensure compliance.

CHAPTER 4-03

2024 INTERNATIONAL RESIDENTIAL CODE

4-03-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Residential Code adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 SCOPE AND ADMINISTRATION
Section R102 Applicability
Amend 2024 IRC R102.5, Appendices, by adding:
The following Appendices are hereby adopted as part of the IRC:
APPENDIX BA – Manufactured Homes Used as Dwellings
APPENDIX BE – Radon Control Methods
APPENDIX BB – Tiny houses
APPENDIX BI – Light straw clay construction
APPENDIX BJ – Strawbale construction
APPENDIX NB – Solar-ready provisions – detached one- and two-family dwellings and townhouses
APPENDIX NK – Electric-Ready residential building provisions
APPENDIX BU – Grading

Section R103 Code Compliance Agency
Amend 2024 IRC R103.1, Creation of agency, by deleting and replacing with:
The City of Flagstaff Building Safety & Code Compliance Section is appointed as the regulating office and the official in charge thereof shall be known as the Building Official.

Section R104 Duties and Powers of the Building Official
Amend 2024 IRC R104.7, Official records, by deleting and replacing with:
The Building Official shall keep comprehensive records of applications, permits issued, certificates issued, inspections made, reports rendered, and of notices of orders issued. All such records shall be open to public inspection at the stated office hours but shall not be removed from the office of the Building Official. All records requests must be filed through the City Clerk's office for processing.

Section R105 Permits
Amend 2024 IRC R105.1, Required, by adding:
All manufactured housing (housing classified as modular, factory built or manufactured house) installed within the City of Flagstaff will be designed to meet Arizona Department of Housing, Office of Manufactured Housing standards. The City of Flagstaff enforces a 70 pound per square foot (psf) ground snow load for site-built construction. Arizona Department of Housing standards for snow winter areas in Arizona is not consistent with local conditions and owners should be aware of the differences.

For "used" manufactured housing or "resale"/relocated manufactured housing being brought into the City of Flagstaff, the following applies: As per direction from the Arizona Department of Housing, Office of Manufactured Housing, Arizona Revised Statutes Title 41, requires that all manufactured housing units be certified to meet the minimum standards of the United States Department of Housing and Urban Development and are to be designed in accordance with consistent Arizona Department of Housing standards for manufactured homes and

related industries. An applicant requesting an installation permit and inspection will be required to provide proof to the Building Official of the current State certification or re-certification of the unit.

Amend 2024 IRC R105.5, Expiration, deleting and adding subsections 105.5.1 through 105.5.5:
Section R105.5 Expiration.
R105.5.1: Every residential building permit issued shall become invalid unless the work authorized by such permit is completed and a Certificate of Occupancy is issued within two (2) years from the date of permit issuance.
105.5.1: A permit shall become invalid if the work authorized by such permit is not commenced within 180 days from the date of issuance, or if the work is suspended or abandoned for a period of 180 days after commencement.
105.5.2: The Building Official is authorized to grant, upon written request submitted prior to permit expiration, one (1) extension of time not to exceed three hundred sixty-five (365) days, provided that:

1. The request includes documentation demonstrating justifiable cause, including but not limited to financial hardship, weather delays, or material delivery issues; and
2. Payment of a fee equal to one-half (½) of the original building permit fee, excluding plan review fees, is received.

105.5.3: Under no circumstances shall a permit remain valid for more than three (3) years from the date of issuance.
105.5.4: Failure to obtain a Certificate of Occupancy within the maximum time allowed shall result in the permit expiring. In such cases, the Building Official may record a notice with the Coconino County Recorder's Office identifying the property as having incomplete construction or lacking a final inspection or Certificate of Occupancy.
105.5.5: All residential Over the Counter Permits for plumbing, mechanical, electrical, and re-roofing shall be valid for a maximum period of 180 days.

Section R106 Construction Documents
Amend 2024 IRC R106.1, Submittal documents, by adding:
Residential, single family detached, structures are exempt from the requirements for a Registered Design Professional under Arizona Revised Statutes unless circumstances dictate the necessity for professional design submittal. Duplexes and triplex units which do not exceed 3,000 square feet, two stories or a total occupant load of twenty (20), may also be designed by a non-registrant as long as the units have only one owner.

Sub-assemblies, such as commercially manufactured roof trusses or floor beams that indicate all imposed loading may be submitted without the seal of an Arizona Registered Design Professional. If a Registered Design Professional has sealed the construction documents, the Registered Design Professional shall state they have reviewed and approved of the design either on the construction documents or by providing a written letter stating as such, signed, sealed, and dated.

Construction documents for retaining walls subject to surcharge loads from adjacent structural elements or other unbalanced loading that exceeds four (4) feet in height, shall be prepared by an Arizona Registered Design Professional.

Amend 2024 IRC R106.1 Submittal documents, by adding subsection R106.1.5, Model plans:
R106.1.5 Model plans. An applicant may submit a model plan, which is a residential construction plan used two or more times. If approved, only modifications not shown on the model plan must be submitted for review. All modifications shall be clearly identified by clouded symbols, deltas, or other appropriate

means. The review fee for modifications only will be hourly in accordance with the City Fee Schedule. If, in Building Official's judgement, the modifications are excessive or inadequately defined, the full plan review fee will be charged.

Section R108 Fees
Amend 2024 IRC R108.2, Schedule of permit fees, by adding:
The current schedule of permit fees is on file in the Office of Building Safety and available on the City of Flagstaff website (www.flagstaff.az.gov).

Amend 2024 IRC 108.4, Related fees, by adding:
Re-inspection fees may be assessed for each inspection or re-inspection when the portion of work for which the inspection was scheduled is not complete or when corrections from a previous inspection are not made. Other events which may require the imposition of a re-inspection fee are:

4. Failure to have the inspection record on the job site when the inspector arrives.
5. The approved plans are not on the job site at the time of inspection.
6. Failure to provide access to the job site or area to be reviewed by the inspector.

Appeals for such fees are made to the Building Official. A $94.00 re-inspection fee shall be paid through the Building Permit Portal before a re-inspection may be scheduled, after the inspector has issued notice that such fee will be assessed.

Amend 2024 IRC R108.5, Refunds, by adding:
A refund of up to 80 percent of the building permit fee, excluding plan review fees, may be authorized by the Building Official, provided that no work has commenced and no inspections have been performed. Plan review fees shall not be refundable.

The Building Official is authorized to determine the amount of any refund based on the extent of administrative processing and work completed. No refund shall be issued for any required deposit once administrative routing or plan review has commenced.

Amend 2024 IRC R108.6, Work commencing before permit issuance, by adding:
Any person who commences any work on a building, structure, electrical, gas, mechanical, or plumbing system before obtaining the necessary permits shall be subject to an investigation fee of $94.00 or twice the permit fee, whichever is greater.

Amend 2024 IRC R109, Inspections, by adding:
109.1.1.2: **Damp-proofing and waterproofing:** Damp-proofing and waterproofing and foundation drainage as required in Chapter 4 shall be inspected prior to covering.
109.1.1.3: **Utility service provisions**: Underground utility service provisions for water, building sewer, and electricity shall be inspected prior to covering.
109.1.4.1: **Roofing underlayment:** Roofing underlayment shall be inspected prior to installation of roof covering materials as required in Chapter 9 of this code.
109.1.4.2: **Weather resistive barrier and window flashing:** Weather resistive barrier and window flashing shall be inspected prior to installation of exterior wall coverings as required in Chapter 7 of this code.

109.1.4.3: **Energy efficiency inspections:** Inspections shall be made to determine compliance with Chapter 13 and shall include, but not be limited to, inspections for: envelope insulation R- and U-values, fenestration U-value, duct system R-value, and HVAC and water-heating equipment efficiency.

Section R112 Means of Appeals
Amend 2024 IRC 112.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

CHAPTER 2 DEFINITIONS
Section R202 Definitions
Amend 2024 IRC Section R202 by adding:
ACCESSORY DWELLING UNIT**.** Accessory dwelling units (ADU) are defined by the Flagstaff City Code, Title 10 - Flagstaff Zoning Code.

ACCESSORY ENERGY SYSTEM. An accessory energy system will include wind turbines, PV solar, thermal solar, geothermal, biomass and other technologies that provide heating, cooling or electrical energy. The systems will be subject to a building permit and limited by zoning ordinances for visual, design, height and setback requirements.

CHAPTER 3 BUILDING PLANNING
Section R301 Design Criteria
Amend 2024 IRC Table R301.2(1), Climatic and Geographic Design Criteria, as follows:
Ground snow load: 70 psf
Wind design – Speed (mph): 115mph (Vult) Exposure B
Wind design - Topographic Effects: NO
Wind design – Special wind region: NO
Wind design – Windborne debris zone: NO
Seismic design category: C
Subject to damage from – Weathering: Moderate
Subject to damage from – Frost line depth: 30 inches
Subject to damage from - Termite: Slight to moderate
Winter design temperature: 4 degrees F
Ice barrier underlayment required: YES
Flood hazards: a)12-16-1975, b)01-19-1983, c)09-03-2010*
Mean annual temperature: 45 degrees F

Residential heating and cooling equipment sizing using Manual J is optional per 2024 IRC M1401.3. When opting to use ACCA Manual J for HVAC system design, the criteria shall be from ACCA Manual J, Table 1A for Arizona, Flagstaff AP.

*The flood hazard dates reflect the current National Flood Insurance Program and the date of the currently effective "FIRM" Map (used by the City of Flagstaff). These maps are updated by the issuing agency and adopted by Storm Water Management without notice.

Amend 2024 IRC Table R301.5, Minimum Uniformly Distributed Live Loads, by revising the following values:
Residential - Habitable attics and sleeping areas: 40 psf

Section R302 Fire-Resistant Construction
Amend 2024 IRC R302.13, Fire protection of floors, by adding the following to Exceptions:
6. Floor assemblies located directly over crawl spaces with fuel-fired or electric-powered heating appliances where the maximum distance from crawl space floor to finish floor above does not exceed four (4) feet at any point.

Section R309 Automatic Fire Sprinkler Systems
Amend 2024 IRC R309.2, One- and two-family dwellings automatic fire sprinkler systems, by deleting and replacing with:
An automatic residential fire sprinkler system may be installed in one- and two-family dwellings. Arizona Revised Statutes prohibits jurisdictions from adopting any ordinance that mandates fire sprinklers in newly constructed one- and two-family dwellings.

Section R317 Garages and Carports
Amend 2024 IRC R317.5, Fire sprinklers, by deleting in its entirety.

Section R325 Light, Ventilation and Heating
Amend 2024 IRC R325.3, Mechanical ventilation, by deleting and replacing with:
Where the air infiltration rate of a *dwelling unit* is 5 air changes per hour or less where tested with a blower door at a pressure of 0.2 inch wg (50 Pa) in accordance with Section N1102.4.1.2, the *dwelling unit* may be provided with whole-house mechanical ventilation in accordance with Section M1505.4.

CHAPTER 4 FOUNDATIONS
Section R401 General
Amend 2024 IRC R401.4.1, Geotechnical evaluation, by deleting and replacing with:
Construction in all new residential subdivisions require a geotechnical evaluation with foundation design recommendations. In established areas of the City of Flagstaff, “in-fill” lots or vacant lots in subdivisions established prior to 1996, the designer may use a load-bearing pressure of 1500 pounds per square foot (psf) in lieu of a geotechnical evaluation. Upon site excavation of foundation, where the Building Official determines that in-place soils with an allowable bearing capacity of less than 1500 pounds per square foot (psf) are likely to be present at the site, then allowable bearing capacity shall be determined by a geotechnical evaluation at the expense of the permit applicant.

Section R403 Footings
Amend 2024 IRC R403.1, General, by adding:
All footings located less than eighteen (18) inches below existing grade to be air entrained, 3,500 psi concrete (severe weather), and pinned to rock at intervals specified for foundation wall vertical reinforcements or as specified by the Arizona Registered Design Professional of Record.

CHAPTER 5 FLOORS
Section R502 Wood Floor Framing
Amend 2024 IRC R502.3, Allowable joist spans, by adding:
The Western Lumber Span Tables for Floor and Ceiling Joists and Roof Rafters is adopted as a secondary reference to Tables R502.3.1(1) and R502.3.1(2)

Amend 2024 IRC R502.3.1, Sleeping areas and attic joists, by deleting and replacing with:
Table R502.3.1(1) shall be used to determine the maximum allowable span of floor joists that support sleeping areas and *attics* that are accessed by means of a fixed stairway in accordance with Section R311.7 provided that the design live load does not exceed 40 pounds per square foot (1.44 kPa) and the design dead load does not exceed 20 pounds per square foot (0.96 kPa). The allowable span of ceiling joists that support attics used for limited storage or no storage shall be determined in accordance with Section R802.5.

Section R507 Exterior Decks
Amend 2024 IRC R507.5, Deck beams, by adding:
The Western Lumber Span Tables for Floor and Ceiling Joists and Roof Rafters is adopted as a secondary reference to Tables R507.5.

Amend 2024 IRC R507.6, Deck joists, by adding:
The Western Lumber Span Tables for Floor and Ceiling Joists and Roof Rafters is adopted as a secondary reference to Table R507.6.

Amend 2024 IRC R507.9.2, Lateral connection, by adding:
Exception: Attached first floor decks that do not exceed 30 inches above grade at any point.

CHAPTER 7 WALL COVERING
Section R702 Interior Covering
Amend 2024 IRC R702.7, Vapor retarders, by deleting the following:
The requirement for Class I or Class II vapor retarders on the interior side of frame walls in Climate Zones 5, 6, 7, 8, and Marine 4. The use of vapor retarders shall be permitted but not required.

CHAPTER 8 ROOF-CEILING CONSTRUCTION
Section R802 Wood Roof Framing
Amend 2024 IRC R802.4.1, Rafter size, by adding:
The Western Lumber Span Tables for Floor and Ceiling Joists and Roof Rafters is adopted as a secondary reference to Tables R802.4.1(1) through R802.4.1(8).

CHAPTER 9 ROOF ASSEMBLIES
Section R904 Materials
Amend 2024 IRC R904.3, Material specifications and physical characteristics, by adding:
All roofing materials used shall be Class “A” or “B” and rolled roofing shall be a Class A or B material and shall be a self-adhering, polymer modified bitumen material.

Section R905 Requirements for Roof Coverings
Amend 2024 IRC R905.7, Wood shingles, by deleting in its entirety.

Amend 2024 IRC R905.8, Wood shakes, by deleting in its entirety.

CHAPTER 11 ENERGY EFFICIENCY
Section N1102 Building Thermal Envelope
Amend 2024 IRC N1102.1.2, Insulation and fenestration criteria, by revising/adding the following to Table N1102.1.2 as follows:
Climate Zone 5, Wood frame wall R-value, shall be 15 high density in existing 2x4 framed walls in remodel work only.
Footnote b, add Exception: Windows used for the installation of glazing for an approved passive solar design.

Amend 2024 IRC N1103.7, Equipment sizing and efficiency rating (Mandatory), by adding:
Furnaces installed in new construction shall be 95% condensing type furnaces.
Exception: For replacement furnaces, installation of a 95% condensing type furnaces is voluntary.

Section N1104 Electric Power, Lighting and Renewable Energy Systems
Amend 2024 IRC N1104, Lighting Controls, by deleting in its entirety.

CHAPTER 20 BOILERS AND WATER HEATERS
Section M2005 Water Heaters
Amend 2024 IRC M2005.1, General, by adding:
Water heaters shall be capable of being removed without first removing a permanent portion of the building structure or any other appliance.

CHAPTER 24 FUEL GAS
Amend 2024 IRC, section G2415.3, by adding: Piping shall not be installed to a structure that is not attached to a permanent foundation

Section G2415.12 Minimum Burial Depth
Amend 2024 IFGC 404.12, Minimum burial depth, by deleting and replacing with:
Underground piping systems shall be installed a minimum depth of 18 inches below grade, except as provided for in Section G2415.12.1.

Section G2445 Unvented Room Heaters
Amend 2024 IRC Section G2445, Unvented Room Heaters, by deleting in its entirety.

CHAPTER 26 GENERAL PLUMBING REQUIREMENTS
Section P2601 General
Amend 2024 IRC Section P2601.4, Prohibited Locations, by adding new section:
Water and waste plumbing systems shall not be installed to a structure that is not attached to a permanent foundation.

Section P2602 Individual Water Supply and Sewage Disposal
Amend 2024 IRC P2602.1, General, by adding:

Building sanitary drainage piping and systems that connect to private sewage disposal systems shall be approved by Coconino County Environmental Quality prior to installation.

SECTION P2603 STRUCTURAL AND PIPING PROTECTION
Amend 2024 IRC P2603.5.1, Sewer depth, by deleting and replacing with:
Building sewers that connect to private sewage disposal systems shall be approved by Coconino County Environmental Quality. *Building sewers* that connect to the City of Flagstaff's sewage disposal system shall be not less than twelve (12) inches below grade.

CHAPTER 29 WATER SUPPLY AND DISTRIBUTION
Section P2903 Water Supply System
Amend 2024 IRC Table P2903.2, Maximum Flow Rates and Consumption for Plumbing Fixtures and Fixture Fittings, by revising and adding as follows:

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY
Lavatory faucet	1.5 gpm at 60 psi and WaterSense labeled
Showerhead[a]	1.8 gpm at 80 psi and WaterSense labeled
Sink faucet	2.2 gpm at 60 psi and WaterSense labeled
Water closet	1.28 gallons per flushing cycle and WaterSense labeled and has a Maximum Performance (MaP) rating score of at least 600 grams per flush

Dual-flush water closets: The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is the average flush volume of two reduced flushes and one full flush. Flush volumes shall be tested in accordance with ASME A112.19.2/CSA B45.1 and ASME A112.19.14.

CHAPTER 31 VENTS
Section P3103 Vent Terminals
Amend 2024 IRC P3103.1.1, Roof termination, as follows:
Replace “6” with “twelve (12)” and delete “or 6 inches (mm) above the anticipated snow accumulation, whichever is greater”.

CHAPTER 39 POWER AND LIGHTING DISTRIBUTION
Section E3901 Receptacle Outlets
Amend 2024 IRC E3901.4.2, Island and peninsular countertops and work surfaces, by deleting and replacing with:
At least one receptacle outlet shall be installed at each island countertop space with a long dimension of 24 inches (610 mm) or greater and a short dimension of 12 inches (305 mm) or greater. [210.52(C)(2)]. Not less than one receptacle outlet shall be installed at each peninsular countertop long dimension space having a long dimension of 24 inches (610 mm) or greater and a short dimension of 12 inches (305 mm) or greater. A peninsular countertop is measured from the connected perpendicular wall. [210.52(C)(3)].

Amend 2024 IRC E3901.9, Basement, garages and accessory buildings, by adding:
Electric Vehicle (EV) Charging Infrastructure.
In addition to the receptacle outlets required by this section, garages or carports associated with new one- and two-family dwellings and townhouses shall be provided with **not less than one 240-volt, 50-ampere individual branch circuit** for the purpose of electric vehicle charging. The branch circuit shall terminate in a receptacle outlet or be installed to accommodate hardwired electric vehicle supply equipment (EVSE). The circuit shall be clearly identified at the service panelboard and reserved for future electric vehicle charging use. Installation of EVSE shall comply with the currently adopted National Electrical Code.

Exception: Additions, alterations, or repairs to existing one- and two-family dwellings and townhouses shall not be required to comply with this section.

Amend 2024 IRC E3902.5, Basement receptacles, by deleting in its entirety:

APPENDIX BE – RADON CONTROL METHODS
Section BE101 General
Amend Section BE101.1, General, by deleting and replacing with the following:
Radon-resistant construction in accordance with this appendix shall be required for all new construction within the jurisdiction. The provisions of this appendix are hereby adopted and shall apply to all buildings constructed under the 2024 International Residential Code.

APPENDIX NB – SOLAR-READY PROVISIONS – DETACHED ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES
Section NB101.1(RB101.1)
Amend Section NB101.1 (RB101.1), General, by deleting and replacing with the following:
Solar-ready construction in accordance with this appendix shall be required for all new construction of one- and two-family dwellings and townhouses within the jurisdiction. The provisions of this appendix are hereby adopted and shall apply to all buildings constructed under the 2024 International Residential Code.

APPENDIX NK – ELECTRIC READY RESIDENTIAL PROVISIONS
Section NK101
Amend Section NK101 (RK101), General, by deleting and replacing with the following:
Electric readiness in accordance with this appendix shall be required for all new construction of one- and two-family dwellings and townhouses within the jurisdiction. The provisions of this appendix are hereby adopted and shall apply to all buildings constructed under the 2024 International Residential Code.

APPENDIX BU - GRADING
Section BU101 Permit Application and Submittals
Add Appendix BU by adding Section BU101, Stormwater requirements, as follows:
1. Contractor shall submit to the Arizona Department of Environmental Quality a Notice of Intent (NOI) and a Notice of Termination (NOT) pursuant to the requirements of ARS Title 49, Chapter 2, Article 3.1. A copy of the submitted NOI and the NOT shall be provided to the City of Flagstaff Stormwater Section. The NOI shall be submitted prior to issuance of any City of Flagstaff grading, building, or offsite permits.

The NOT shall be submitted prior to final acceptance of off-site improvements and the Certificate of Occupancy.

2. An Erosion Control Plan (ECP) shall be submitted to the City of Flagstaff Stormwater Section for review and approval as required by the City of Flagstaff Stormwater Manager. The ECP shall be prepared in accordance with the Arizona Department of Transportation (ADOT) Best Management Practices (BMP) Manual (or other BMPs as may be approved by the City of Flagstaff Stormwater Manager). Submittal shall be made concurrent with its respective permit application(s) and/or attached to the Civil Construction Document Plan Set submittal. Review timeframes shall be the same as the permit or civil reviews. City of Flagstaff permits that require an ECP will not be issued without review and approval by the City of Flagstaff Stormwater Section.

3. The ECP BMPs shall be set in place by the contractor, and the work inspected and approved by the City of Flagstaff Stormwater Section prior to commencement of grading activities. The contractor shall contact the City of Flagstaff Stormwater Section for this pre-grading inspection.

4. During construction, the ECP BMPs shall remain in place, and shall be maintained until project completion as witnessed by a Final Grading Certification and the filing of a NOT. Failure to maintain ECP BMPs may result in a Stop Work Order. Permits will not be closed or finalized unless the site has been inspected and approved for final stabilization by the City of Flagstaff Stormwater Section. The contractor shall contact the City of Flagstaff Stormwater Section for this closure inspection.

5. In accordance with the provisions of this section, the City of Flagstaff may withhold permits, occupancy or enforce by other remedy in order to ensure compliance.

CHAPTER 4-04

2024 INTERNATIONAL EXISTING BUILDING CODE

4-04-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Existing Building Code adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 SCOPE AND ADMINISTRATION
Section 105 Permits
Amend 2024 IEBC 105.1, Required, by adding:
Refer to the 2024 Amendments to Flagstaff City Code, Title 4, Building Regulations to the 2024 International Building Code (IBC) and 2024 International Residential Code (IRC) for building permit requirements.

Amend 2024 IEBC 105.5, Expiration, by deleting and replacing with:
Refer to the 2024 Amendments to Flagstaff City Code, Title 4, Building Regulations to the 2024 International Building Code (IBC) and 2024 International Residential Code (IRC) for the duration of building permits.

Section 112 Means of Appeals
Amend 2024 IEBC 112.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

Amend 2024 IEBC Sections 112.2 through 112.4, by deleting in their entirety.

CHAPTER 3 PROVISIONS FOR ALL COMPLIANCE METHODS
Section 301 Administration
Amend 2024 IEBC 301, Compliance with accessibility, by deleting and replacing with:
305.1: Accessibility requirements for existing buildings shall comply with the 2017 edition of ICC A117.1.

CHAPTER 4 REPAIRS
Section 408 Plumbing
Amend 2024 IEBC 408.2, Water closet replacement, by deleting and replacing with:
The maximum water consumption flow rates and quantities for all replaced water closets shall be 1.28 gallons (4.84 liters) per flushing cycle or lower.

Dual-flush water closets: The effective flush volume for dual-flush toilets shall not exceed 1.28 gallons (4.84 liters). The effective flush volume is the average flush volume of two reduced flushes and one full flush. Flush volumes shall be tested in accordance with ASME A112.19.2/CSA B45.1 and ASME A112.19.14.

CHAPTER 12 HISTORIC BUILDINGS

Section 1201 General

Amend 2024 IEBC 1201.2, Report, by adding subsection 1201.2.1, Heritage Preservation Commission:

1201.2.1, Heritage Preservation Commission. Any exterior changes to a structure over 50 years old at the time of application shall be reviewed by the Heritage Preservation Officer and Current Planning Section, Planning & Development Services Division, prior to issuing a building permit. The project may be referred to the City's Inter-Division Staff (IDS) committee and/or the Heritage Preservation Commission for review. Heritage Preservation review will be conducted pursuant to Flagstaff Zoning Code Division 10-30.30: Heritage Preservation.

CHAPTER 4-05
2024 INTERNATIONAL MECHANICAL CODE

4-05-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Mechanical Code (IMC) adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 SCOPE AND ADMINISTRATION
Section 108 Fees
Amend 2024 IMC 108.6, Fee refunds, by deleting and replacing with:
Refunds shall be in accordance with 2024 IBC 109.6, as adopted and amended by the City of Flagstaff.

Section 112 Means of Appeal
Amend 2024 IMC 112.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

Amend 2024 IMC Sections 112.2 through 113.1, by deleting in their entirety.

Section 114 Violations
Amend 2024 IMC 114.4, Violation penalties, by deleting and replacing with:
Violation penalties shall be in accordance with 2024 IBC 114.4 as adopted and amended by the City of Flagstaff.

Amend 2024 IMC 115, Stop work orders, by deleting and replacing with:
Stop work orders shall be in accordance with 2024 IBC Section 115, as adopted and amended by the City of Flagstaff.

CHAPTER 3 GENERAL REGULATIONS
Section 304 Installation
Amend 2024 IMC 304.2, Conflicts, by deleting and replacing with:
Where conflicts occur between the provisions of this code and the conditions of the listing or the manufacturer's installation instructions, the listing and manufacturer's installation instructions shall govern.

CHAPTER 4 Ventilation
Section 408 Cannabis Related Occupancies
Amend 2024 IMC 408.1, General, by adding:
Any building used to cultivate, produce, infuse, or dispense cannabis shall be designed such that there shall be no emission of dust, fumes, vapors, or odors into the environment from the premises. A ventilation system shall be designed to prevent the distribution of odors to other occupied parts of the building or adjacent properties. Design of the odor control system shall be based on accepted engineering practices. All equipment and filter media shall be listed and labeled for the application. Exhaust systems used in odor control systems shall meet the requirements of Section 501. 408.1.1 Exhaust outlets. The termination point for exhaust outlets shall be in 65 accordance with Section 501.3. Exhaust from

cultivation and production facilities shall be in accordance with Section 501.3.1(2) and for dispensaries in accordance with Section 501.3.1(3).

CHAPTER 5 Exhaust Systems
Section 511, Subslab Soil Exhaust Systems
Amend 2024 IMC 511.1, General, by deleting and replacing with:
Subslab soil exhaust systems shall be required for all new construction within the jurisdiction where buildings are constructed in contact with the ground. Where a subslab soil exhaust system is provided, the system shall comply with the requirements of this section.

CHAPTER 9 SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENT
Section 903 Factory-Built Fireplaces
Amend 2024 IMC 903.3, Unvented gas log heaters, by deleting and replacing with:
An unvented gas log heater shall not be installed at any time unless first approved by the local gas utility company. A signed and dated letter of such approval shall be submitted to the Building Official before a permit can be issued.

CHAPTER 10 BOILERS, WATER HEATERS AND PRESSURE VESSELS
Section 1002 Water Heaters
Amend 2024 IMC 1002.1, General, by revising the second sentence to read:
Water heaters shall be capable of being removed without first removing a permanent portion of the building structure or any other appliance.

CHAPTER 4-06
2024 INTERNATIONAL PLUMBING CODE

4-06-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Plumbing Code (IPC) adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 SCOPE AND ADMINISTRATION
Section 108 Fees
Amend 2024 IPC 108.2, Schedule of permit fees, by deleting and replacing with:
The fees for all plumbing work shall be in accordance with 2024 IBC 109.2, as adopted and amended by the City of Flagstaff.

Amend 2024 IPC 108.6, Fee refunds, by deleting and replacing with:
Refunds shall be in accordance with 2024 IBC 109.6, as adopted and amended by the City of Flagstaff.

Section 112 Means of Appeal
Amend 2024 IPC 112.1, Application for appeal, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

Amend 2024 IPC Sections 112.2 through 113.1, by deleting in their entirety.

CHAPTER 3 GENERAL REGULATIONS
Section 301 General
Amend 2024 IPC, 301.6, Prohibited locations, by adding:
Water and waste plumbing systems shall not be installed to a structure that is not attached to a permanent foundation.

Amend 2024 IPC 301.7, Conflicts, by deleting and replacing with:
Where conflicts between this Code and the conditions of the listing or the manufacturer's installation instructions occur, the listing or manufacturer's installation requirements shall apply.

Section 305 Protection of Pipes and Plumbing System Components
Amend 2024 IPC 305.4, Freezing, by revising the last sentence to read:
Exterior water supply piping shall be installed not less than thirty (30) inches below grade.

Amend 2024 IPC 305.4.1, Sewer depth, by deleting and replacing with:
Building sewers that connect to private sewage disposal systems shall be approved by Coconino County Environmental Quality prior to installation. Building sewers that connect to City-provided sewer shall be a minimum of twelve (12) inches below grade.

Section 312 Tests and Inspections
Amend 2024 IPC 312.1, Required tests, by replacing the fourth sentence with:
All plumbing system piping shall be tested with either water or air.

Amend 2024 IPC 312.3, Drainage and vent air test, by deleting the first sentence.

Amend 2024 IPC 312.4, Drainage and vent final test, by deleting in its entirety.

Amend 2024 IPC 312.7, Gravity and sewer test, by deleting in its entirety.

CHAPTER 6 WATER SUPPLY AND DISTRIBUTION
Section 604 Design of Building Water Distribution System
Amend 2024 IPC Table 604.4, Maximum flow rates and consumption for plumbing fixtures and fixture fittings, by revising the following values:

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY[b]
Lavatory faucet, private	1.5 gpm at 60 psi and WaterSense labeled
Lavatory faucet, public (metering)	0.25 gallon per metering cycle and WaterSense labeled
Lavatory faucet, public (other than metering)	0.5 gpm at 60 psi and WaterSense labeled
Showerhead[a, c]	1.8 gpm at 80 psi and WaterSense labeled
Sink faucet	2.2 gpm at 60 psi and WaterSense labeled
Urinal	0.125 gallons (1 pint) per flushing cycle and WaterSense labeled
Water closet	1.28 gallons per flushing cycle and WaterSense labeled and has a Maximum Performance (MaP) rating score of at least 600 grams per flush

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a. A hand-held shower spray is a shower head.
b. Consumption tolerances shall be determined from referenced standards.
c. Shower heads shall comply with all requirements for high-efficiency showerheads in ASME A112.18.1-2020/CSA B125.1.

Dual-flush water closets: The effective flush volume for dual-flush toilets shall not exceed 1.28 gallons (4.84 liters). The effective flush volume is the average flush volume of two reduced flushes and one full flush. Flush volumes shall be tested in accordance with ASME A112.19.2/CSA B45.1 and ASME A112.19.14.

CHAPTER 7 SANITARY DRAINAGE
Section 703 Building Sewer
Amend 2024 IPC 703, Building sewer, by adding section 703.7, Building sewer locating means:
703.7 Building Sewer Locating Means. All non-metallic building sewer piping shall be installed with a plastic covered No. 12 AWG Type UF 600V tracer wire taped to the top of the piping with a minimum 10 mil tape. The building sewer tracer wire shall be green in color.

CHAPTER 9 VENTS
Section 903 Vent Terminals
Amend 2024 IPC 903.1.1, Roof termination, as follows:
Replace "[NUMBER OF INCHES]" with "twelve (12)".

CHAPTER 4-07
2024 INTERNATIONAL FUEL GAS CODE

4-07-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Fuel Gas Code (IFGC) adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 SCOPE AND APPLICATION
Section 108 Fees
Amend 2024 IFGC 108.6, Refunds, by deleting and replacing with:
Refunds shall be in accordance with 2024 IBC 109.6, as adopted and amended by the City of Flagstaff.

Section 112 Means of Appeals
Amend 2024 IFGC 112.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

Amend 2024 IFGC Sections 112.2 through 112.4, by deleting in their entirety.

CHAPTER 3 GENERAL REGULATIONS
Section 303 Appliance Location
Amend 2024 IFGC 303.3, Prohibited locations, by deleting numbers 3 and 4.

CHAPTER 4 GAS PIPING INSTALLATIONS
Section 403 Piping Materials
Amend 2024 IFGC 403.3.3, Copper and copper alloy, by deleting and replacing with:
Copper and brass, threaded copper, brass, and aluminum piping shall
not be used for gas piping installations within the City of Flagstaff.

Section 404 Piping System Installation
Amend 2024 IFGC 404.3, Prohibited locations, by adding:
Piping shall not be installed to a structure that is not attached to a permanent foundation.

Amend 2024 IFGC 404.12, Minimum burial depth, by deleting and replacing with:
Underground piping systems shall be installed a minimum depth of 18 inches below grade, except as provided for in Section 404.12.1.

CHAPTER 6 SPECIFIC APPLIANCES
Section 621 Unvented Room Heaters
Amend 2024 IFGC Section 621, Unvented Room Heaters, by deleting in its entirety.

CHAPTER 4-08
2024 INTERNATIONAL ENERGY CONSERVATION CODE

4-08-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Energy Conservation Code (IECC) adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

COMMERCIAL PROVISIONS
CHAPTER 1 SCOPE AND ADMINISTRATION
Section C101 Scope and General Requirements
Amend 2024 IECC, by replacing Section C101.2.1, Appendices:
Provisions in the appendices shall not apply unless specifically adopted. The following Appendices are hereby adopted and mandatory as part of the IECC:

APPENDIX CB – Solar Energy Zone – Commercial
APPENDIX CG – Electric Vehicle Charging Infrastructure
APPENDIX CH – Electric – Ready Commercial Building Provisions
APPENDIX CI – Demand Responsive Controls

Section C109 Board of Appeals
Amend 2024 IECC C109.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

Amend 2024 IECC C109.3, Qualifications, by deleting in its entirety.

CHAPTER 2 Definitions
Section C202 General Definitions
Amend 2024 IECC C202, General definitions, by replacing the following definition with:
RESIDENTIAL BUILDING. For this code, includes detached one- and two-family dwellings and townhouses as well as Group R-2, R-3, and R-4 buildings three stories or less in height above grade plane or concrete podium, and without interior conditioned common entry/exit corridors. Where the building includes accessory common uses and/or commercial spaces, those portions of the building shall comply with the applicable commercial provisions of the IECC.

CHAPTER 4 Commercial Energy Efficiency
Section C405.12 Automatic Receptacle Control
Amend 2024 IECC C405.12 & 405.12.1, Automatic Receptacle Control, by deleting in its entirety.

CHAPTER 4 Commercial Energy Efficiency
Section C405.15 Renewable Energy
Review options to reduce these requirements and/or limit their applicability.

Appendix CG: Electric Vehicle Charging Infrastructure
Amend 2024 IECC Appendix CG by deleting and replacing with:
Every newly permitted multi-family dwelling, commercial, and industrial structure shall provide parking space with "EV-ready outlets" per Table 429.1 and shall be identified on the construction documents. Construction documents shall indicate the location of the proposed EV-ready outlet(s). At least one EV-ready outlet shall be located in common use areas and available for use by all occupants.

An EV-ready outlet is "ready-to-go" with the addition of a plug-in electric vehicle (PEV) charging station. An EV-ready outlet consists of 208/240V, 50 ampere panel capacity, conduit, wiring, receptacle, and overcurrent protection device. The end point of the system must be near the planned location of the future EV charging station. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Table 429.1

Parking Spaces Provided	EV-ready Parking Spaces Required
1-19	None
20-50	One (1)
51-100	Two (2)
100+	Three (3)

APPENDIX CG – ELECTRIC VEHICLE CHARGING INFRASTRUCTURE
Review alternatives and move forward with board recommendation. Alternatives are attached in email labeled CG.

APPENDIX CI: DEMAND RESPONSIVE CONTROLS
Amend 2024 IECC Appendix CI by deleting Section CI103 & CI103.1 in its entirety:

RESIDENTIAL PROVISIONS
CHAPTER 1 SCOPE AND ADMINISTRATION
Section R101 Scope and General Requirements
Amend 2024 IECC, by adding Section R101.2.1, Appendices.
Provisions in the appendices shall not apply unless specifically adopted. The following Appendices are hereby adopted as part of the IECC:

APPENDIX RB– SOLAR-READY PROVISIONS – DETACHED ONE- AND TWO – FAMILY DWELLINGS AND TOWNHOUSES
APPENDIX RE – ELECTRIC VEHICLE CHARGING INFRASTRUCTURE
APPENDIX RK – ELECTRIC READY RESIDENTIAL CONSTRUCTION
APPENDIX RL – RENEWABLE ENERGY INFRASTRUCTURE

Section R109 Board of Appeals
Amend 2024 IECC R109.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

Amend 2024 IECC R109.3, Qualifications, by deleting in its entirety.

CHAPTER 2 DEFINITIONS
Section R202 General Definitions
Amend 2024 IECC R202, General definitions, by replacing the following definition with:
RESIDENTIAL BUILDING. For this code, includes detached one- and two-family dwellings and townhouses as well as Group R-2, R-3, and R-4 buildings three stories or less in height above grade plane or concrete podium, and without interior conditioned common entry/exit corridors. Where the building includes accessory common uses and/or commercial spaces, those portions of the building shall comply with the applicable commercial provisions of the IECC.

CHAPTER 4 RESIDENTIAL ENERGY EFFICIENCY
Section R402 Building Thermal Envelope
Amend 2024 IECC R402.1.2, Insulation and fenestration criteria, by adding the following to Table R402.1.2 as follows:
Climate Zone 5, Wood frame wall R-value: 15 high density in existing 2x4 framed walls in remodel work only.
Footnote b, Exception: Windows used for the installation of glazing for approved passive solar design.

Section R404 Electrical Power, Lighting and Renewable Energy Systems
Amend 2024 IECC R403.7, Equipment sizing and efficiency rating (Mandatory), by adding:
Furnaces installed in new construction shall be 95% condensing-type furnaces.
Exception: For replacement furnaces, installation of a 95% condensing-type furnaces is voluntary.

Amend 2024 IRC R404, Lighting Controls, by deleting in its entirety.

APPENDIX RB – SOLAR-READY PROVISIONS – DETACHED ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES
Section RB101.1
Amend Section RB101.1, General, by deleting and replacing with the following:
Solar-ready construction in accordance with this appendix shall be required for all new construction of one- and two-family dwellings and townhouses within the jurisdiction. The provisions of this appendix are hereby adopted and shall apply to all buildings constructed under the 2024 International Residential Code.

APPENDIX RE – ELECTRIC VEHICLE CHARGING INFRASTRUCTURE
Review alternatives and move forward with board recommendation. Alternatives are attached in email labeled RE.

APPENDIX RK – ELECTRIC READY RESIDENTIAL CONSTRUCTION
Section RK101
Amend Section RK101, General, by deleting and replacing with the following:
Electric readiness in accordance with this appendix shall be required for all new construction of one- and two-family dwellings and townhouses within the jurisdiction. The provisions of this appendix are hereby adopted and shall apply to all buildings constructed under the 2024 International Residential Code.

APPENDIX RL – RENEWABLE ENERGY INFRASTRUCTURE
Section RL101
Amend Section RL101.1.1, One- and two-family dwellings and townhouses, by deleting and replacing with the following:
The provisions of this appendix shall not apply to one- and two-family dwellings or townhouses. This appendix shall apply to all other residential occupancies regulated by the International Building Code.

CHAPTER 4-10
2024 INTERNATIONAL SWIMMING POOL AND SPA CODE

4-10-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the 2024 International Swimming Pool and Spa Code (ISPSC) adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 SCOPE AND ADMINISTRATION
Section 112 Means of Appeals
Amend 2024 ISPSC 112.1, General, by deleting and replacing with:
In order to hear and decide appeals of orders, decisions or determinations made by the Building Official relative to the application and interpretation of this code, there shall be and is hereby created a Building and Fire Code Board of Appeals per Flagstaff City Code, Title 2, Boards and Commissions.

Amend 2024 ISPSC Sections 112.2 through 112.4, by deleting in their entirety.

CHAPTER 2 DEFINITIONS
Section 202 Definitions
Amend 2024 ISPSC Section 202, Definitions, by adding:
RESIDENTIAL SWIMMING POOL (RESIDENTIAL POOL). A pool intended for use that is accessory to a residential setting and available only to the household and its guests including any structure intended for swimming or recreational bathing that contains water over eighteen (18) inches in depth. This includes in-ground, above ground, and on-ground swimming pools, hot tubs, spas, and fixed in place wading pools. Other pools shall be considered to be public pools for purposes of this code.

CHAPTER 3 GENERAL COMPLIANCE
Section 305 Barrier Requirements
Amend 2024 ISPSC 305.2.1, Barrier height and clearances, by revising as follows:
1. The top of the barrier shall be not less than sixty (60) inches above grade where measured on the side of the barrier that faces away from the pool or spa. Such height shall exist around the entire perimeter of the barrier and for a distance of three (3) feet measured horizontally from the outside of the required barrier.

CHAPTER 4-11
NATIONAL ELECTRICAL CODE

4-11-001-0001 AMENDMENTS, ADDITIONS, AND DELETIONS
The following provisions shall have the effect of either amending, adding to, or deleting from the National Electrical Code (NEC), 2023 Edition, adopted in Flagstaff City Code, Title 4, Building Regulations, Chapter 4-01, Administrative Enactments, Section 4-01-001-0002, Adoption of Model Codes.

CHAPTER 1 GENERAL
Article 110 General Requirements for Electrical Installations
Part I General
Amend 2023 NEC Article 110.2, Approval:, by deleting and replacing with:
All electrical conductors, components, material, and equipment shall be listed and labeled.

Amend 2023 NEC Article 110.5, Conductors:, by deleting and replacing with:
Conductors used to carry current shall be copper. Aluminum or copper-clad aluminum conductors shall be permitted only for feeders and service-entrance conductors, where installed in accordance with this Code. Aluminum and copper-clad aluminum conductors shall not be used for branch-circuit wiring. Where conductor material is not specifically identified, the conductor sizes and requirements of this Code shall be based on copper conductors.

Amend 2023 NEC Article 110.7, Wiring Integrity, by deleting and replacing with:
All equipment rated at 1000 amperes or more shall be tested for insulation breakdown, mechanical integrity, and workmanship prior to the equipment being energized. A certified high potential voltage test (hi-pot) shall be performed and a certificate issued to the Building Official. This test shall be performed in the presence of a Building Inspector and conducted by a testing firm approved by the Building Official.

Said test shall be performed for a period of one (1) minute, the application of a 60 hertz alternating potential of 1000 volts plus twice the rated phase to phase voltage of the equipment.

This test shall be performed between all phases to ground, phase to phase, and neutral if isolated.

CHAPTER 2 WIRING AND PROTECTION
Article 210 Branch Circuits Not Over 1000 Volts ac, 1500 Volts dc, Nominal
Part I General
Amend 2023 NEC Article 210.5, Identification for Branch Circuits, by adding:
(D) Color Code. Where 15, 20, or 30 ampere branch circuits requiring a neutral are installed in raceways or cable assemblies, the conductor of branch circuits connected to the same system shall conform to the following color code:

Volts	Phase	System	Phase A	Phase B	Phase C	Neutral
120/208		3	Wye Black	Red	Blue	White
120/240		3	Delta Black	Orange Blue	White	
277/480		3	Wye Brown	Orange Yellow	Gray	

Article 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel,
Amend 2023 NEC Article 210.8(A)(5) by deleting in its entirety.

Article 210.52 (C)(2)and(3) Receptacle Outlets
Amend 2023 NEC Article 210.52, Island and peninsular countertops and work surfaces, by deleting and replacing with:
At least one receptacle outlet shall be installed at each island countertop space with a long dimension of 24 inches (610 mm) or greater and a short dimension of 12 inches (305 mm) or greater. [210.52(C)(2)]. Not less than one receptacle outlet shall be installed at each peninsular countertop long dimension space having a long dimension of 24 inches (610 mm) or greater and a short dimension of 12 inches (305 mm) or greater. A peninsular countertop is measured from the connected perpendicular wall. [210.52(C)(3)].

Article 250 Grounding and Bonding
Part II System Grounding
Amend 2023 NEC Article 250.30, Grounding Separately Derived Alternating-Current Systems, (A) Grounded Systems, (2) Supply-Side Bonding Jumper, by adding:
(3) All new building construction shall have a one-piece concrete-encased electrode and electrode conductor (Ufer ground), a minimum twenty (20) feet length in the footing, sized from the following table:

0-200 ampere service: 1 piece #4 copper (electrode and electrode conductor)

201-400 ampere service: 1 piece 1/0 copper (electrode and electrode conductor)

401-800 ampere service: 1 piece 2/0 copper (electrode and electrode conductor)

Larger than 800 ampere service: 1 piece 3/0 copper (electrode and electrode conductor)

Where the Ufer has been lost, damaged, or cannot be located, a ground ring or modification of the same consisting of thirty (30) feet of #2 bare copper wire, buried a minimum of thirty (30) inches deep in a trench, or a plate electrode per Article 250.53 (H) shall be required in lieu of a concrete-encased electrode.

Appendix CG: Electric Vehicle Charging Infrastructure

Option A

PROPOSED AMENDMENTS

Appendix CG Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix CG is adopted as mandatory.**

Section CG101 Electric Vehicle Power Transfer

CG101.1 Definitions. No changes

CG101.2 Electric vehicle power transfer infrastructure.

CG101.2.1 Quantity.

The number of required electric vehicle (EV) spaces, *EV capable spaces* and *EV ready spaces* shall be determined in accordance with this section and Table CG101.2.1 based on the total number of *automobile parking spaces* and shall be rounded up to the nearest whole number. For Group R-2 buildings, the Table CG101.2.1 requirements shall be based on the total number of *dwelling units* or the total number of *automobile parking spaces*, whichever is less.

1. Where more than one parking facility is provided on a *building site*, the number of required *automobile parking spaces* required to have EV power transfer infrastructure shall be calculated separately for each parking facility.
2. Where one shared parking facility serves multiple building occupancies, the required number of spaces shall be determined proportionally based on the floor area of each building occupancy.
~~3. Installed electric vehicle supply equipment installed spaces (*EVSE spaces*) that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV ready spaces* and *EV capable spaces*.~~
~~4. Installed *EV ready spaces* that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV capable spaces*.~~
~~5.~~ 3. Where the number of *EV ready spaces* allocated for R-2 occupancies is equal to the number of *dwelling units* or to the number of *automobile parking spaces* allocated to R-2 occupancies, whichever is less, requirements for *EVSE spaces* for R-2 occupancies shall not apply.
~~6.~~ 4. Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new automobile spaces do not serve specific occupancies, the values for Group S-2 parking garage in Table CG101.2.1 shall be used.
5. All attached garages with direct connection to a *dwelling unit* shall be required to have one *EV ready space* or *EVSE space*.

~~**Exception:** Parking facilities serving occupancies other than R2 with fewer than 10 *automobile parking spaces*.~~

TABLE CG101.2.1 REQUIRED EV POWER TRANSFER INFRASTRUCTURE

~~OCCUPANCY~~	~~EVSE SPACES~~	~~EV READY SPACES~~	~~EV CAPABLE SPACES~~
~~Group A~~	~~10%~~	~~0%~~	~~10%~~
~~Group B~~	~~15%~~	~~0%~~	~~30%~~
~~Group E~~	~~15%~~	~~0%~~	~~30%~~
~~Group F~~	~~2%~~	~~0%~~	~~5%~~
~~Group H~~	~~1%~~	~~0%~~	~~0%~~
~~Group I~~	~~15%~~	~~0%~~	~~30%~~
~~Group M~~	~~15%~~	~~0%~~	~~30%~~
~~Group R-1~~	~~20%~~	~~5%~~	~~75%~~
~~Group R-2~~	~~20%~~	~~5%~~	~~75%~~
~~Groups~~	~~2%~~	~~0%~~	~~5%~~
~~Group S exclusive of parking garages~~	~~1%~~	~~0%~~	~~0%~~
~~Group S-2 parking garages~~	~~15%~~	~~0%~~	~~30%~~

Number of parking spaces	**Number of required EV capable, EV ready, or EVSE spaces**
1-19	0
20-50	1
51-100	2
100+	3

CG101.2.2 EV capable spaces.

Each *EV capable space* used to meet the requirements of Section CG101.2.1 shall comply with all of the following:

1. A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the *EV capable space* and electrical distribution equipment.

2. Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with Section CG101.2.5.
3. The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated overcurrent protection device space and electrical capacity to supply a calculated load in accordance with Section CG101.2.5.
4. The enclosure or outlet and the electrical distribution equipment directory shall be marked: "For electric vehicle supply equipment (EVSE)."

CG101.2.3 EV ready spaces. No changes

CG101.2.4 EVSE spaces.

An installed EVSE with multiple output connections shall be permitted to serve multiple *EVSE spaces*. Each EVSE installed to meet the requirements of Section CG101.2.1, serving either a single *EVSE space* or multiple *EVSE spaces*, shall comply with all of the following:

1. Have a minimum system and circuit capacity in accordance with Section CG101.2.5.
2. Have a nameplate rating not less than ~~6.2~~ 8.3 kW.
3. Be located within 3 feet (914 mm) of each *EVSE space* it serves.
4. Be installed in accordance with Section CG101.2.6.

CG101.2.5 System and circuit capacity. No changes

CG101.2.5.1 System capacity. No changes

CG101.2.5.2 Circuit capacity. No changes

CG101.2.5.3 System and circuit capacity management. No changes

CG101.2.5.3.1 System capacity management. No changes

CG101.2.5.3.2 Circuit capacity management. No changes

CG101.2.6 EVSE installation. No changes

RE101.2.7 Construction documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

Section CG102 Referenced Standards No changes

CG102.1 General. No changes

AMENDMENT JUSTIFICATION

- This set of amendments proposes to adopt this appendix for EV charging requirements with minimal changes to the original appendix text.

Appendix CG: Electric Vehicle Charging Infrastructure

Option B

BACKGROUND INFORMATION

- **Primary code section:** 2024 Commercial IECC Appendix CG: Electric Vehicle Charging Infrastructure
- **Other section(s) where amendments may be needed to implement the primary code section:**
  - C101.2.1 Appendices
  - C105.2 Information on construction documents
  - C401.2: Application
- **Related code section(s)/dependencies:**
  - 2024 Residential IECC Appendix RE: Electric Vehicle Charging Infrastructure
  - 2024 IRC Appendix NE: Electric Vehicle Charging Infrastructure

APPENDIX SUMMARY

- Requires new construction to provide a minimum number of EV capable, EV ready, and EVSE (EV Supply Equipment) spaces, depending on occupancy type.
- Provides specific standards for EV capable, EV ready, and EVSE spaces.
- Parking facilities with fewer than 15 *automobile parking spaces* serving occupancies other than R2 are exempt from the standards in Appendix CG.

PROPOSED AMENDMENTS

Appendix CG Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix CG is adopted as mandatory.**

Section CG101 Electric Vehicle Power Transfer

CG101.1 Definitions.

AUTOMOBILE PARKING SPACE. No changes

ELECTRIC VEHICLE (EV). No changes

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No changes

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No changes

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). No changes

Equipment for plug-in power transfer, including ungrounded, grounded and equipment grounding conductors; electric vehicle connectors; attached plugs; any personal protection system; and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy

between the premises wiring and the electric vehicle. There are three types of EVSE, categorized by voltage and charging speed: Level 1, Level 2, and Direct Current Fast Charging (DCFC).

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No changes

CG101.2 Electric vehicle power transfer infrastructure.

CG101.2.1 Quantity.

The number of required electric vehicle (EV) spaces, *EV capable spaces* and *EV ready spaces* shall be determined in accordance with this section and Table CG101.2.1 based on the total number of *automobile parking spaces* and shall be rounded up to the nearest whole number. For Group R-2 buildings, the Table CG101.2.1 requirements shall be based on the total number of *dwelling units* or the total number of *automobile parking spaces*, whichever is less.

1. Where more than one parking facility is provided on a *building site*, the number of required *automobile parking spaces* required to have EV power transfer infrastructure shall be calculated separately for each parking facility.
2. Where one shared parking facility serves multiple building occupancies, the required number of spaces shall be determined proportionally based on the floor area of each building occupancy.
3. Installed Level 2 electric vehicle supply equipment installed spaces (*EVSE spaces*) that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV ready spaces* and *EV capable spaces* on a one-to-one ratio.
4. Installed *EV ready spaces* that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV capable spaces* on a one-to-one ratio.
5. Where the number of *EV ready spaces* allocated for R-2 occupancies is equal to the number of *dwelling units* or to the number of *automobile parking spaces* allocated to R-2 occupancies, whichever is less, requirements for *EVSE spaces* for R-2 occupancies shall not apply.
6. Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new automobile spaces do not serve specific occupancies, the values for Group S-2 parking garage in Table CG101.2.1 shall be used.
7. For buildings that install DCFC EVSE spaces, each DCFC EVSE space shall be permitted to substitute up to 10 required EV capable, EV ready, or Level 2 EVSE spaces.
8. Group R-2 occupancies shall be permitted to install three Level 1 EVSE spaces for every required Level 2 EVSE space or EV ready space, but cannot exceed 50 percent of the required Level 2 EVSE spaces or EV ready spaces.
9. All attached garages with direct connection to a *dwelling unit* will be required to have one *EV ready or EVSE space*.

Exception: Parking facilities serving occupancies other than R2 with fewer than ~~10~~ 15 *automobile parking spaces*.

TABLE **CG101.2.1 REQUIRED EV POWER TRANSFER INFRASTRUCTURE**

OCCUPANCY	LEVEL 2 EVSE SPACES	EV READY SPACES	EV CAPABLE SPACES
Group A	~~10%~~ 5%	0%	10%
Group B	~~15%~~ 5%	~~0%~~ 5%	~~30%~~ 10%
Group E	~~15%~~ 5%	~~0%~~ 5%	~~30%~~ 10%
Group F	2%	0%	5%
Group H	1%	0%	0%
Group I	~~15%~~ 5%	0%	~~30%~~ 10%
Group M	~~15%~~ 5%	0%	~~30%~~ 10%
Group R-1	~~20%~~ 5%	~~5%~~ 10%	~~75%~~ 15%
Group R-2	~~20%~~ 5%	~~5%~~ 10%	~~75%~~ 15%
Groups R-3 and R-4	~~2%~~ 0%	~~0%~~ 2%	5%
Group S exclusive of parking garages	1%	0%	0%
Group S-2 parking garages	15%	0%	30%

CG101.2.2 EV capable spaces.

Each *EV capable space* used to meet the requirements of Section CG101.2.1 shall comply with all of the following:

1. A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the *EV capable space* and electrical distribution equipment.
2. Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with Section CG101.2.5.
3. The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated overcurrent protection device space and electrical capacity to supply a calculated load in accordance with Section CG101.2.5.
4. The enclosure or outlet and the electrical distribution equipment directory shall be marked: “For electric vehicle supply equipment (EVSE).”

CG101.2.3 EV ready spaces. No changes

CG101.2.4 EVSE spaces.

CG101.2.4.1 Level 2 EVSE Spaces

An installed Level 2 EVSE with multiple output connections shall be permitted to serve multiple *EVSE spaces*. Each Level 2 EVSE installed to meet the requirements of Section CG101.2.1, serving either a single *EVSE space* or multiple *EVSE spaces*, shall comply with all of the following:

1. Have a minimum system and circuit capacity in accordance with Section CG101.2.5.
2. Have a nameplate rating not less than ~~6.2~~ **8.3** kW.
3. Be located within 3 feet (914 mm) of each *EVSE space* it serves.
4. Be installed in accordance with Section CG101.2.6.

CG101.2.4.1 Level 1 EVSE Spaces.

Each Level 1 *EVSE space* shall comply with all the following:

1. The receptacle shall be located within 3 feet (914 mm) of each Level 1 EVSE space it serves.
2. Have a minimum circuit capacity of 1.8 kVA (15A 120V).
3. The electrical panel, electrical distribution equipment directory, and all receptacles or enclosures shall be marked "Level 1 Electric vehicle supply equipment (EVSE)."

CG101.2.5 System and circuit capacity. No changes

CG101.2.5.1 System capacity. No changes

CG101.2.5.2 Circuit capacity. No changes

CG101.2.5.3 System and circuit capacity management. No changes

CG101.2.5.3.1 System capacity management. No changes

CG101.2.5.3.2 Circuit capacity management. No changes

CG101.2.6 EVSE installation. No changes

RE101.2.7 Construction documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

Section CG102 Referenced Standards No changes

CG102.1 General. No changes

APPENDIX BENEFITS

- The lack of access to EV charging is one of the top barriers to EV adoption.
- For those living in multifamily unit dwellings, the additional cost to install conduit between the electrical panel and their parking space, and the logistical challenges of securing HOA approval, coordinating the EV charger billing with the building owner, and persuading an owner to make a long-term investment on a rental property, are all significant obstacles to EV ownership. Many existing multifamily residents must rely on workplace or public charging outside the home, so it's important that EV infrastructure requirements be included in both residential and commercial building codes.
- Studies have shown that employees with access to workplace charging are six times more likely than the average worker to drive an EV.
- For more business benefits of commercial EV charging, refer to the Commercial EV Charger Guide at https://solartechonline.com/blog/commercial-ev-charger-guide/

COST IMPACTS

- **Costs:**
  - EV capable space: approximately $300
  - EV ready space: $600 - $3,300, depending on power sharing, distance from electrical panel to charging receptacle, and other factors. Source: 2022 study by EPA, US Green Building Council, ChargePoint, and ICF available at https://www.energystar.gov/sites/default/files/2024-08/Cracking_the_Code_to_EV_Readiness_in_New_Buildings.pdf (cost estimates are adjusted for inflation from July 2022 – February 2026). **Retrofit costs are estimated at more than $5,500 per space.**
  - Total installed costs per EVSE space:
    - **Level 2: $3,000 – $12,000 per charger,** depending on EV charger selected. Cost estimates include the charger, electrical infrastructure, and labor. However, chargers can serve multiple spaces, and **costs can be reduced by up to 75% through power sharing (see below).** Sources:
      - https://www.greenlancer.com/post/guide-commercial-electric-vehicle-charging-stations
      - https://smartchargeamerica.com/electric-car-chargers/commercial/chargepoint-ct4021-gw1-gateway-unit/?srsltid=AfmBOooh2J2aL65VK6YrAnKnlKqe7SU1SLxz2a_24WeffBayvonv1pwx (this charger has two ports)
    - **DC Fast Chargers (Level 3):** Depending on power (50-350 kW), site prep, and local labor/electrical work, total cost can be $80,000 to $250,000+ for a single DC fast charger site. Costs can **be reduced by up to 75% through power sharing (see below)**
- **Cost savings from power sharing:**
  - Power sharing can reduce the costs per space of installing EV infrastructure by allowing more vehicles to use a charger at the same time, thereby reducing the number of chargers that need to be installed and reducing the cost per space of installing an EC charger.
  - The figure below compares the cost per parking space of installing EV charging with power sharing versus without power sharing. The most expensive scenario is listed as "Without Energy

Management" and results in a cost of $2,500 per parking space. The least expensive option, "4-Way Sharing on 40A Circuit," shows how power sharing reduces costs per parking space by roughly 75%.

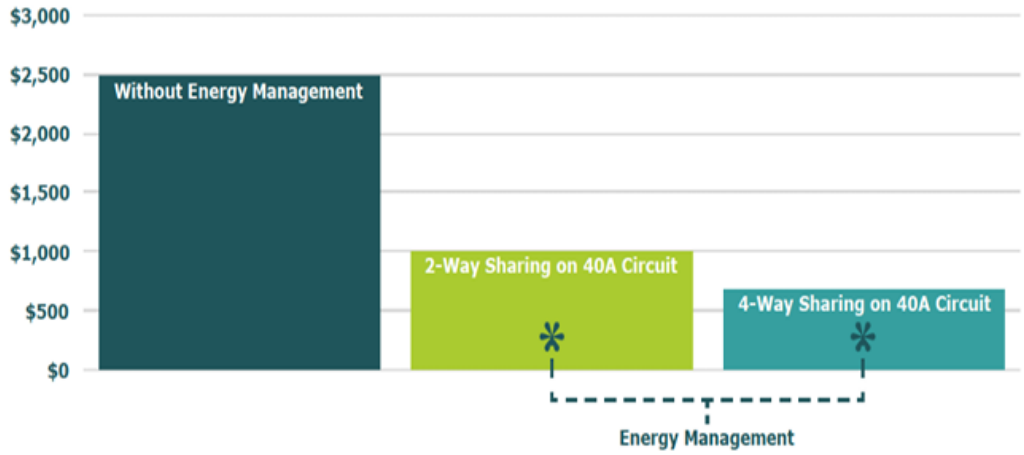


Figure 5. Estimated cost per parking space to provide 100% EV-Ready parking in a new 6-story multifamily building. *Source*: McEwen 2021.

- **Savings**
  - **Avoiding costly future retrofits:** This appendix can save residents and building owners and managers hundreds to thousands of dollars by avoiding costly future retrofits in garages and parking spaces. Installing EV charging infrastructure in new buildings is **75% less expensive than retrofitting** an existing building (Papke Waters 2019).

    The following cost estimates from the City of Denver show significant cost savings by installing EV spaces during construction vs. as a retrofit.

EV Infrastructure Requirement	During New Construction	During Retrofit	Savings
EV-Capable (panel capacity + raceway)	$300 per space	$2,500 per space	$2,200 per spa
EV-Ready (full circuit)	$1,300 per space	$6,300 per space	$5,000 per spa

Building owners may also **recover costs by charging a fee to use the EV charging stations.**

RELEVANT ENERGY CODE UPDATE OPTION(S)

☐ Option 1 ☒ Option 2 ☒ Option 3 ☒ Option 4

IS THIS IN FLAGSTAFF'S CURRENT CODE?

☐ Yes ☒ Yes, but new requirements are stronger ☐ No

AMENDMENT JUSTIFICATION

- The proposed amendments soften EV infrastructure requirements for commercial developments while still enabling the adoption of EVs in the community.

RELATED REQUIREMENTS IN FLAGSTAFF'S CURRENT CODE

2018 IECC

CHAPTER 39 POWER AND LIGHTING DISTRIBUTION

Section E3901 Receptacle Outlets

Amend 2018 IRC E3901.9, Basements, garages and accessory buildings, by adding:

At least one required garage receptacle shall be a 208/240-volt individual branch circuit for purposes of electric vehicle (EV) charging. The service panel or subpanel circuit directory shall provide a 50-ampere minimum dedicated branch circuit and a branch circuit overcurrent device. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Exception: Additions and alterations to existing one- or two-family dwellings and townhouses constructed per the IRC are exempt from the EV charging requirement.

CHAPTER 4 SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

Amend 2018 IBC by adding Section 429, Electric vehicle (EV) charging.

Amend 2018 IBC by adding 429.1, General:

429.1 General. Every newly permitted multi-family dwelling, commercial, and industrial structure shall provide parking space with "EV-ready outlets" per Table 429.1 and shall be identified on the construction documents. Construction documents shall indicate the location of the proposed EV-ready outlet(s). At least one EV-ready outlet shall be located in common use areas and available for use by all occupants.

An EV-ready outlet is "ready-to-go" with the addition of a plug-in electric vehicle (PEV) charging station. An EV-ready outlet consists of 208/240V, 50 ampere panel capacity, conduit, wiring, receptacle, and overcurrent protection device. The end point of the system must be near the planned location of the future EV charging station. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Table 429.1

Parking Spaces Provided EV-ready Parking Spaces Required

1-19 None
20-50 One (1)
51-100 Two (2)

100+ Three (3)

OTHER CITIES AND STATES THAT HAVE ADOPTED THIS AMENDMENT OR SIMILAR AMENDMENTS

Denver residential EV charging requirements: Residential Electric Vehicle (EV) Requirements - City and County of Denver

If you're building a new home with a garage or carport or adding a new garage or carport to an existing home, the DEC (Denver Energy Code) requires that at least one EV-ready space be provided per dwelling unit. This means:

- A 240-volt, 40-amp branch circuit must be installed.
- The electrical panel must have a dedicated space for a two-pole circuit breaker, labeled "EV Ready."
- An outlet, receptacle, or EV charging connection must be installed at the EV-ready parking space.

These requirements apply to:

- Single-family homes
- Duplexes
- Townhouses

Note:

Denver's Commercial EV charging requirements: Commercial Electric Vehicle (EV) Requirements - City and County of Denver

Includes all residential occupancies other than single-family, duplexes, and townhouses.

2025 DEC Table C405.13.1 Required EV Charging Infrastructure

- **EV Capable Space –** Parking space provided with electrical infrastructure for future EVSE, such as conduit. No electrical service or panel capacity is required.
- **Electrical Vehicle Charging Station –** Vehicle spaces served by an electrical vehicle charging system (i.e., EVSE Installed space or DCFC EVSE Installed space).

Occupancy Served	EVSE Installed Spaces	EV Capable Spaces
Occupancy Groups R-1 and R-2	15%	45%
All Other Occupancy Groups	10%	20%

Colorado Model Energy Code: Final MLECC Amendment Package with Code Insights.docx

Table C410.5.2.1 EV Power Transfer Infrastructure Requirements

Building Type/Space Type	Level 2 EVSE Installed Spaces	Level 2 EV Ready Spaces	Level 2 EV Capable Spaces	Level 2 EV Capable Light Spaces
Commercial buildings, except for Group R-2 occupancies, with 15 or fewer parking spaces	0	2 spaces 20% of spaces (not fewer than 2)	0	0
Commercial buildings, except for Group R-2 occupancies, with greater than 15 parking spaces	2% of spaces	8% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with 10 or fewer parking spaces	0	15% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with greater than 10 parking spaces	5% of spaces	15% of spaces	10% of spaces	30% of spaces

COMMUNITY FEEDBACK ON THIS CODE SECTION
• **Source:** • **Date:** • **Comments:** • **Source:** • **Date:** • **Comments:** • **Source:** • **Date:** • **Comments:**

Appendix CG: Electric Vehicle Charging Infrastructure

Option C

PROPOSED AMENDMENTS

Appendix CG Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix CG is adopted as mandatory.**

Section CG101 Electric Vehicle Power Transfer

CG101.1 Definitions. No changes

CG101.2 Electric vehicle power transfer infrastructure.

CG101.2.1 Quantity.

The number of required electric vehicle (EV) spaces, *EV capable spaces* and *EV ready spaces* shall be determined in accordance with this section and Table CG101.2.1 based on the total number of *automobile parking spaces* and shall be rounded up to the nearest whole number. For Group R-2 buildings, the Table CG101.2.1 requirements shall be based on the total number of *dwelling units* or the total number of *automobile parking spaces*, whichever is less.

1. Where more than one parking facility is provided on a *building site*, the number of required *automobile parking spaces* required to have EV power transfer infrastructure shall be calculated separately for each parking facility.
2. Where one shared parking facility serves multiple building occupancies, the required number of spaces shall be determined proportionally based on the floor area of each building occupancy.
3. Installed electric vehicle supply equipment installed spaces (*EVSE spaces*) that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV ready spaces* and *EV capable spaces* on a one-to-one ratio.
4. Installed *EV ready spaces* that exceed the minimum requirements of this section may be used to meet the minimum requirements for *EV capable spaces* on a one-to-one ratio.
5. Where the number of *EV ready spaces* allocated for R-2 occupancies is equal to the number of *dwelling units* or to the number of *automobile parking spaces* allocated to R-2 occupancies, whichever is less, requirements for *EVSE spaces* for R-2 occupancies shall not apply.
6. Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new automobile spaces do not serve specific occupancies, the values for Group S-2 parking garage in Table CG101.2.1 shall be used.

Exception: Parking facilities serving occupancies other than R2 with fewer than 10 *automobile parking spaces*.

TABLE CG101.2.1 REQUIRED EV POWER TRANSFER INFRASTRUCTURE

OCCUPANCY	EVSE SPACES	EV READY SPACES	EV CAPABLE SPACES
Group A	**10%**	**0%**	**10%**
Group B	**15%**	**0%**	**30%**
Group E	**15%**	**0%**	**30%**
Group F	**2%**	**0%**	**5%**
Group H	**1%**	**0%**	**0%**
Group I	**15%**	**0%**	**30%**
Group M	**15%**	**0%**	**30%**
Group R-1	**20%**	**5%**	**75%**
Group R-2	**20%**	**5%**	**75%**
Groups	**2%**	**0%**	**5%**
Group S exclusive of parking garages	**1%**	**0%**	**0%**
Group S-2 parking garages	**15%**	**0%**	**30%**

CG101.2.2 EV capable spaces.

Each *EV capable space* used to meet the requirements of Section CG101.2.1 shall comply with all of the following:

1. A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the *EV capable space* and electrical distribution equipment.
2. Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with Section CG101.2.5.
3. The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated overcurrent protection device space and electrical capacity to supply a calculated load in accordance with Section CG101.2.5.
4. The enclosure or outlet and the electrical distribution equipment directory shall be marked: “For electric vehicle supply equipment (EVSE).”

CG101.2.3 EV ready spaces. No changes

CG101.2.4 EVSE spaces.

An installed EVSE with multiple output connections shall be permitted to serve multiple *EVSE spaces*. Each EVSE installed to meet the requirements of Section CG101.2.1, serving either a single *EVSE space* or multiple *EVSE spaces*, shall comply with all of the following:

1. Have a minimum system and circuit capacity in accordance with Section CG101.2.5.
2. Have a nameplate rating not less than ~~6.2~~ 8.3 kW.
3. Be located within 3 feet (914 mm) of each *EVSE space* it serves.
4. Be installed in accordance with Section CG101.2.6.

CG101.2.5 System and circuit capacity. No changes

CG101.2.5.1 System capacity. No changes

CG101.2.5.2 Circuit capacity. No changes

CG101.2.5.3 System and circuit capacity management. No changes

CG101.2.5.3.1 System capacity management. No changes

CG101.2.5.3.2 Circuit capacity management. No changes

CG101.2.6 EVSE installation. No changes

RE101.2.7 Construction documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

Section CG102 Referenced Standards No changes

CG102.1 General. No changes

AMENDMENT JUSTIFICATION

- This set of amendments proposes to adopt this appendix for EV charging requirements with minimal changes to the original appendix text.

Appendix RE: Electric Vehicle Charging Infrastructure
Option A

BACKGROUND INFORMATION

- **Primary code section:**
  - 2024 IECC Appendix RE: Electric Vehicle Charging Infrastructure
  - IRC Appendix NE (RE): Electric Vehicle Charging Infrastructure
- **Other section(s) where amendments may be needed to implement the primary code section:**
  - Residential IECC Chapter [RE] 1 Scope and Administration: R101.2.1 Appendices (in another document)
  - Residential IECC Chapter [RE] 4 Residential Energy Efficiency: R401.2 Application.
- **Related code section(s)/dependencies:**
  - Commercial IECC Appendix CG Electric Vehicle Charging Infrastructure

RELEVANT ENERGY CODE UPDATE OPTION(S)

☐ Option 1 ☒ Option 2 ☐ Option 3 ☐ Option 4

IS THIS IN FLAGSTAFF'S CURRENT CODE?

☐ Yes ☒ Yes, but new requirements are stronger ☐ No

PROPOSED AMENDMENTS

Appendix RE: Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix RE is adopted as mandatory.**

Section RE101 Electric Vehicle Power Transfer

RE101.1 Definitions.
AUTOMOBILE PARKING SPACE. No change

ELECTRIC VEHICLE (EV). No change

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No change

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No change.

RE101.2 Electric vehicle power transfer infrastructure. No change

RE101.2 Electric vehicle power transfer infrastructure.

New residential *automobile parking spaces* for residential *buildings* shall be provided with *electric vehicle power* transfer infrastructure in accordance with Sections RE101.2.1 through RE101.2.5.

RE101.2.1 Quantity.

RE101.2.1.1 One- and Two-Family Dwellings and Townhouses

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*. ~~R-2 occupancies or allocated parking for R-2 occupancies in mixed-use *buildings* shall be provided with an *EV capable space*, *EV ready space* or *EVSE* space for 40 percent of the *dwelling units* or *automobile parking spaces*, whichever is less.~~

Exceptions:

~~1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.~~

~~2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.~~

1. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

RE101.2.1.2 Other Residential Occupancies

R-2 occupancies or allocated parking for R-2 occupancies in mixed-use *buildings* shall meet the requirements in Table RE101.2.1.2(1) for *EV capable, EV ready, and EVSE* spaces. At least one *EV capable, EV ready, or EVSE space* shall be located in common-use areas and available for use by all occupants. All attached garages with direct connection to a *dwelling unit* shall be required to have one *EV ready space* or *EVSE space*.

Table RE101.2.1.2(1) EV Infrastructure Requirements for Other Residential Occupancies

Number of parking spaces	**Number of required EV capable, EV ready, or EVSE spaces**
1-19	0

20-50	1
51-100	2
100+	3

RE101.2.2: EV capable spaces. No change

RE101.2.3: EV ready spaces. No change

RE101.2.4 EVSE spaces.

An installed *EVSE* with multiple output connections shall be permitted to serve multiple *EVSE spaces*. Each *EVSE* serving either a single *EVSE space* or multiple *EVSE spaces* shall comply with the following:

1. Be served by an electrical distribution system in accordance with Section RE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per *EVSE space* served. Where an *EVSE* serves three or more *EVSE spaces* and is controlled by an energy management system in accordance with Section RE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per *EVSE space* served.
3. Be located within 6 feet (1828 mm) of each *EVSE space* it serves.
4. Be installed in accordance with NFPA 70 and be *listed* and *labeled* in accordance with UL 2202 or UL 2594.

RE101.2.5 Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each *EV capable space*, *EV ready space* and *EVSE space* used to comply with Section RE101.2.1 shall comply with one of the following:

1. Sized for a calculated *EV* charging load of not less than ~~6.2 kVA~~ **8.3 kVA** per *EVSE*, *EV ready* or *EV capable space*. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.

2. The capacity of the electrical distribution system and each branch circuit serving multiple *EVSE spaces*, *EV ready spaces* or *EV capable spaces* designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated *EV* charging load of not less than 2.1 kVA per space. Where an energy management system is used to control *EV* charging loads for the purposes of this section, it shall not be configured to turn off electrical power to *EVSE* or *EV ready spaces* used to comply with Section RE101.2.1.

RE101.2.6 Construction Documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

Section RE102 Referenced Standards No change.

RE102.1 General. No change.

See Table RE102.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.

TABLE RE102.1 REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
UL 2202—2009	***Electric Vehicle (EV) Charging System Equipment*— with revisions through February 2018**	RE101.2.4
UL 2594—2016	***Standard for Electric Vehicle Supply Equipment***	RE101.2.4

IRC Appendix NE: (RE) Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix NE (RE) is adopted as mandatory.**

Section NE101: (RE101) Electric Vehicle Power Transfer

NE 101.1: (RE101.1) Definitions.
AUTOMOBILE PARKING SPACE. No change

ELECTRIC VEHICLE (EV). No change

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No change

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No change.

NE 101.2: (RE101.2) Electric vehicle power transfer infrastructure.

New residential automobile parking spaces for residential buildings shall be provided with electric vehicle power transfer infrastructure in accordance with Sections NE101.2.1 through NE101.2.5.

NE 101.2.1: (RE101.2.1) Quantity.

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*.

Exceptions:

~~1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.~~

~~2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.~~

1. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

NE 101.2.2: (RE101.2.2) EV capable spaces. No changes

NE 101.2.3: (RE101.2.3) EV ready spaces. No changes

NE 101.2.4: (RE101.2.4) EVSE spaces.

An installed EVSE with multiple output connections shall be permitted to serve multiple EVSE spaces. Each EVSE serving either a single EVSE space or multiple EVSE spaces shall comply with the following:

1. Be served by an electrical distribution system in accordance with Section NE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per EVSE space served. Where an EVSE serves three or more EVSE spaces and is controlled by an energy management system in accordance with Section NE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per EVSE space served.
3. Be located within 6 feet (1828 mm) of each EVSE space it serves.
4. Be installed in accordance with NFPA 70 and be listed and labeled in accordance with UL 2202 or UL 2594.

NE 101.2.5: (RE101.2.5) Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each EV capable space, EV ready space and EVSE space used to comply with Section NE101.2.1 shall comply with one the following:

1. Sized for a calculated EV charging load of not less than ~~6.2~~**8.3** kVA per EVSE, EV ready or EV capable space. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.
2. The capacity of the electrical distribution system and each branch circuit serving multiple EVSE spaces, EV ready spaces or EV capable spaces designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated EV charging load of not less than 2.1 kVA per space. Where an energy management system is used to control EV

charging loads for the purposes of this section, it shall not be configured to turn off electrical power to EVSE or EV ready spaces used to comply with Section NE101.2.1.

NE 101.2.6: (RE101.2.6) Construction Documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

AMENDMENTS JUSTIFICATION

This amendment adjusts the standards to match what is in Flagstaff's current code.

1. Clarify that Appendix RE is adopted as mandatory.
2. One and two-family dwellings and townhomes:
    a. Remove EV capable spaces as an option to comply with the EV charging quantity standards. This amendment ensures the minimum standards in this appendix are not weaker than Flagstaff's current code, which requires an EV-ready space at minimum.
    b. Remove the standard exceptions from this appendix (related to electrical distribution capacity and utility side costs exceeding $450 per dwelling unit) from one- and two-family dwellings and townhomes. Additional EV charging infrastructure requirements are minimal in these units and electricity demand for EV charging is distributed across these units (so peak demand is likely to be low). These units are unlikely to have infrastructure requirements or electricity demand that would necessitate these exceptions.
3. Add an exception to match Flagstaff's current code, saying that additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. Clarify that this exception does not apply to new garages.
4. Increase infrastructure requirements for Level 2 EVSE spaces from 6.2 kVA (or 30A at 208/240V) to 8.3kVA (or 40A at 208/240V). The standard Level 2 charger in modern markets requires a minimum of 40-amps and 208/240 volts. This is a reduction compared to 50-amp requirement in current Flagstaff code. Sizing lower than 40-amps reduces EV drivers' ability to select/use a suitable charger.
5. Add a requirement for construction documents to show the location of EV capable, EV ready, and EVSE spaces, along with associated infrastructure.

RELEVANT STANDARDS IN FLAGSTAFF'S CURRENT CODE

2018 IECC

CHAPTER 39 POWER AND LIGHTING DISTRIBUTION

Section E3901 Receptacle Outlets

Amend 2018 IRC E3901.9, Basements, garages and accessory buildings, by adding:

At least one required garage receptacle shall be a 208/240-volt individual branch circuit for purposes of electric vehicle (EV) charging. The service panel or subpanel circuit directory shall provide a 50-ampere minimum dedicated branch circuit and a branch circuit overcurrent device. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Exception: Additions and alterations to existing one- or two-family dwellings and townhouses constructed per the IRC are exempt from the EV charging requirement.

CHAPTER 4 SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

Amend 2018 IBC by adding Section 429, Electric vehicle (EV) charging.

Amend 2018 IBC by adding 429.1, General:

429.1 General. Every newly permitted multi-family dwelling, commercial, and industrial structure shall provide parking space with "EV-ready outlets" per Table 429.1 and shall be identified on the construction documents. Construction documents shall indicate the location of the proposed EV-ready outlet(s). At least one EV-ready outlet shall be located in common use areas and available for use by all occupants.

An EV-ready outlet is "ready-to-go" with the addition of a plug-in electric vehicle (PEV) charging station. An EV-ready outlet consists of 208/240V, 50 ampere panel capacity, conduit, wiring, receptacle, and overcurrent protection device. The end point of the system must be near the planned location of the future EV charging station. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Table 429.1

Parking Spaces Provided EV-ready Parking Spaces Required

1-19 None
20-50 One (1)
51-100 Two (2)
100+ Three (3)

Appendix RE: Electric Vehicle Charging Infrastructure
Option B.1

BACKGROUND INFORMATION

- **Primary code section:**
  - 2024 IECC Appendix RE: Electric Vehicle Charging Infrastructure
  - IRC Appendix NE (RE): Electric Vehicle Charging Infrastructure
- **Other section(s) where amendments may be needed to implement the primary code section:**
  - Residential IECC Chapter [RE] 1 Scope and Administration: R101.2.1 Appendices (in another document)
  - Residential IECC Chapter [RE] 4 Residential Energy Efficiency: R401.2 Application.
- **Related code section(s)/dependencies:**
  - Commercial IECC Appendix CG Electric Vehicle Charging Infrastructure

PROPOSED AMENDMENTS

Appendix RE: Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix RE is adopted as mandatory.**

Section RE101 Electric Vehicle Power Transfer

RE101.1 Definitions.
AUTOMOBILE PARKING SPACE. No change

ELECTRIC VEHICLE (EV). No change

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No change

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).
Equipment for plug-in power transfer, including ungrounded, grounded and equipment grounding conductors; electric vehicle connectors; attached plugs; any personal protection system; and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*. There are three types of EVSE, categorized by voltage and charging speed: Level 1, Level 2, and Direct Current Fast Charging (DCFC).

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No change.

RE101.2 Electric vehicle power transfer infrastructure.

New residential *automobile parking spaces* for residential *buildings* shall be provided with *electric vehicle power* transfer infrastructure in accordance with Sections RE101.2.1 through RE101.2.5.

RE101.2.1 Quantity.

RE101.2.1.1 One- and Two- Family Dwellings and Townhouses

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*. Two-family dwellings without a designated attached or detached garage shall be permitted to provide one EV ready or EVSE space for use by both dwelling units. It shall be located in a common-use area and be accessible to all occupants. ~~R-2 occupancies or allocated parking for R-2 occupancies in mixed-use *buildings* shall be provided with an *EV capable space*, *EV ready space* or *EVSE* space for 40 percent of the *dwelling units* or *automobile parking spaces*, whichever is less.~~

Exceptions:

~~1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.~~

~~2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.~~

1. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

RE101.2.1.2 Other Residential Occupancies

R-2 occupancies, allocated parking for R-2 occupancies in mixed-use *buildings,* R-3 occupancies (excluding one- and two-family dwellings and townhomes), and R-4 occupancies shall meet the requirements in Table RE101.2.1.2(1) for *EV capable*, *EV ready,* or *EVSE* spaces. At least one E*V capable, EV ready* or *EVSE space* shall be located in a common-use area and be available for use by all occupants.

When the calculation of required E*V capable* and *EVSE spaces* results in a decimal number, a decimal of 0.5 or more is adjusted to the next higher whole number, and a decimal of less than 0.5 is adjusted to the next lower whole number.

Table RE101.2.1.2(1) EV Infrastructure Requirements for Other Residential Occupancies

Building Type	Level 2 EVSE installed spaces	EV capable spaces
Group R-2 occupancies three stories or less in height above grade plane with 15 or fewer parking spaces	20% of spaces shall be either Level 2 EVSE or EV capable (not fewer than 1 space).	
Group R-2 occupancies less than three stories in height above grade plane with more than 15 parking spaces	5%	15%
Group R-2 occupancies taller than three stories in height above grade plane	5%	25%
Group R-3 and R-4 occupancies three stories or less in height above grade plane with more than 15 parking spaces	0	7%

Exceptions:

1. R-3 and R-4 occupancies where fewer than 15 parking spaces are provided.
2. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.
3. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.

RE101.2.1.3 Attached garages. All attached garages with direct connection to a *dwelling unit* shall be required to have one *EV ready space* or *EVSE space*.

RE101.2.1.4 Parking Space Type Substitutions. Group R-2, R-3, and R-4 occupancies shall be permitted to substitute EV parking spaces required in Table 101.2.1.2(1) according to the standards below.

RE101.2.1.4.1 DC Fast Charging. For *Group R*-2, R-3, R-4 *buildings* that install DCFC EVSE spaces, each DCFC EVSE space shall be permitted to substitute up to 10 required EV capable or Level 2 EVSE spaces in Table RE101.2.1.2(1).

RE101.2.1.4.2 Level 1 EV Charging. For *Group R-2 buildings* that install Level 1 EVSE spaces in accordance with section RE101.2.5, three Level 1 EVSE spaces shall be permitted to substitute

every Level 2 EVSE space, but cannot exceed 50 percent of the required Level 2 EVSE spaces in Table RE101.2.1.2(1).

RE101.2.1.4.3 Excess Level 2 EVSE Spaces. *Level 2 EVSE spaces* installed in accordance with section RE101.2.4 that exceed the minimum requirements in Table RE101.2.1.2(1) are permitted to be used to meet the minimum requirements for *EV capable spaces* on a one-to-one ratio.

RE101.2.2: EV capable spaces. No changes

RE101.2.3: EV ready spaces. No changes

RE101.2.4 EVSE spaces.

RE101.2.4.1 Level 2 EVSE spaces

An installed **Level 2** *EVSE* with multiple output connections shall be permitted to serve multiple **Level 2** *EVSE spaces*. Each **Level 2** *EVSE* serving either a single **Level 2** *EVSE space* or multiple **Level 2** *EVSE spaces* shall comply with **all of** the following:

1. Be served by an electrical distribution system in accordance with Section RE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per *EVSE space* served. Where an *EVSE* serves three or more *EVSE spaces* and is controlled by an energy management system in accordance with Section RE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per *EVSE space* served.
3. Be located within 6 feet (1828 mm) of each *EVSE space* it serves.
4. Be installed in accordance with NFPA 70 and be *listed* and *labeled* in accordance with UL 2202 or UL 2594.

RE101.2.4.2 Level 1 EVSE Spaces.
Each Level 1 *EVSE space* shall comply with all the following:

1. The receptacle shall be located within 6 feet (1828 mm) of each Level 1 EVSE space it serves.
2. Have a minimum circuit capacity of 1.8 kVA (15A 120V).
3. The electrical panel, electrical distribution equipment directory, and all receptacles or enclosures shall be marked “Level 1 Electric vehicle supply equipment (EVSE).”

RE101.2.5 Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each *EV capable space*, *EV ready space* and *EVSE space* used to comply with Section RE101.2.1 shall comply with one of the following:

1. Sized for a calculated *EV* charging load of not less than ~~6.2~~**8.3** kVA per *EVSE*, *EV ready* or *EV capable space*. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.

2. The capacity of the electrical distribution system and each branch circuit serving multiple *EVSE spaces*, *EV ready spaces* or *EV capable spaces* designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated *EV* charging load of not less than 2.1 kVA per space. Where an energy management system is used to

control *EV* charging loads for the purposes of this section, it shall not be configured to turn off electrical power to *EVSE* or *EV ready spaces* used to comply with Section RE101.2.1.

RE101.2.6 Construction Documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

Section RE102 Referenced Standards No change.

RE102.1 General. No change.

See Table RE102.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.

TABLE RE102.1 REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
UL 2202—2009	***Electric Vehicle (EV) Charging System Equipment*— with revisions through February 2018**	RE101.2.4
UL 2594—2016	***Standard for Electric Vehicle Supply Equipment***	RE101.2.4

IRC Appendix NE: (RE) Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix NE (RE) is adopted as mandatory.**

Section NE101: (RE101) Electric Vehicle Power Transfer

NE 101.1: (RE101.1) Definitions.
AUTOMOBILE PARKING SPACE. No change

ELECTRIC VEHICLE (EV). No change

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No change

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).
Equipment for plug-in power transfer, including ungrounded, grounded and equipment grounding conductors; electric vehicle connectors; attached plugs; any personal protection system; and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*. There are three types of EVSE, categorized by voltage and charging speed: Level 1, Level 2, and Direct Current Fast Charging (DCFC).

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No change.

NE 101.2: (RE101.2) Electric vehicle power transfer infrastructure.

New residential automobile parking spaces for residential buildings shall be provided with electric vehicle power transfer infrastructure in accordance with Sections NE101.2.1 through NE101.2.5.

NE 101.2.1: (RE101.2.1) Quantity.

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*. Two-family dwellings without a designated attached or detached garage shall be permitted to provide one EV ready or EVSE space for use by both dwelling units. It shall be located in a common-use area and be accessible to all occupants.

Exceptions:

~~1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.~~

~~2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.~~

1. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

NE 101.2.2: (RE101.2.2) EV capable spaces. No changes

NE 101.2.3: (RE101.2.3) EV ready spaces. No changes

NE 101.2.4: (RE101.2.4) EVSE spaces.

An installed EVSE with multiple output connections shall be permitted to serve multiple EVSE spaces. Each EVSE serving either a single EVSE space or multiple EVSE spaces shall comply with the following:

1. Be served by an electrical distribution system in accordance with Section NE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per EVSE space served. Where an EVSE serves three or more EVSE spaces and is controlled by an energy management system in accordance with Section NE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per EVSE space served.
3. Be located within 6 feet (1828 mm) of each EVSE space it serves.
4. Be installed in accordance with NFPA 70 and be listed and labeled in accordance with UL 2202 or UL 2594.

NE 101.2.5: (RE101.2.5) Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each EV capable space, EV ready space and EVSE space used to comply with Section NE101.2.1 shall comply with one the following:

1. Sized for a calculated EV charging load of not less than ~~6.2~~**8.3** kVA per EVSE, EV ready or EV capable space. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.
2. The capacity of the electrical distribution system and each branch circuit serving multiple EVSE spaces, EV ready spaces or EV capable spaces designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated EV charging load of not less than 2.1 kVA per space. Where an energy management system is used to control EV charging loads for the purposes of this section, it shall not be configured to turn off electrical power to EVSE or EV ready spaces used to comply with Section NE101.2.1.

NE 101.2.6: (RE101.2.6) Construction Documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

APPENDIX SUMMARY

Quantity of EV spaces required:

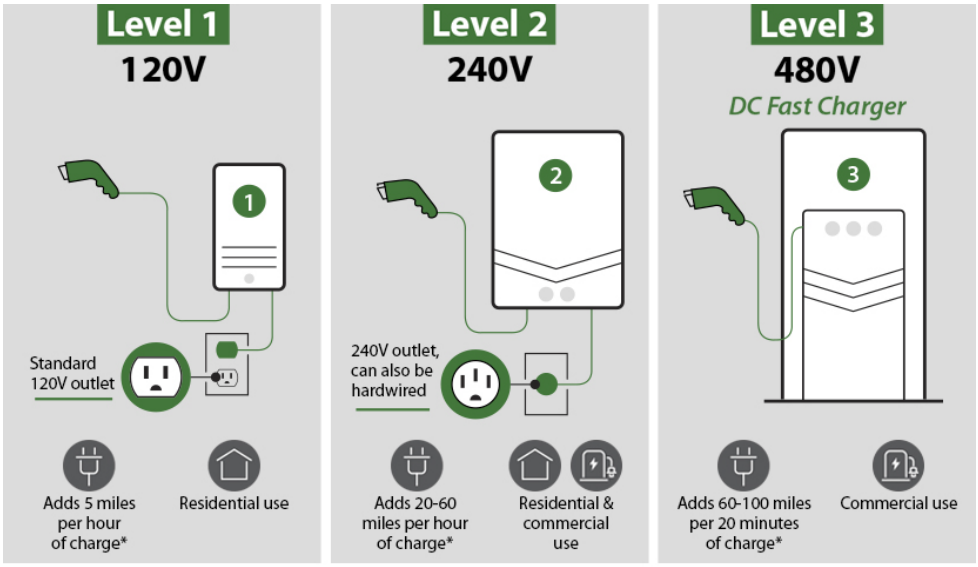
- One- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit:* Provide one EV ready or EV supply equipment (EVSE) space per dwelling unit.
- Allows duplexes without designated garages to install one EV space for use by all occupants.
- Other residential occupancies: meet minimum requirements for each space type. Allows for energy management systems to share power among multiple EV spaces to reduce costs.
- Provides opportunities for substitutions and relief from the number of required spaces by providing EV infrastructure that exceeds minimum requirements.

- Provides exceptions to these standards for multifamily development where:
    - The local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date.
    - Substantiation is *approved* that meeting the requirements of this appendix will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.

Types of EV spaces:

- EV capable spaces: have distribution for future electrical charging infrastructure, including raceways and reserved circuit space in the panel.
    - In garages: These spaces have electrical infrastructure in the wall to support a 240-volt outlet, but the outlet is not actually installed. The wall would need to be opened up to install a 240-volt outlet and the resident would need to purchase a level 2 charger to support EV charging. Residents can purchase the level 2 charger separately, after the home is constructed (they do not need to be purchased or installed by the homebuilder).
    - In parking spaces: These spaces have electrical infrastructure such as, but not limited to, raceways, cables, electrical capacity, a panelboard or other electrical distribution equipment space necessary for the future installation of an *EV charger*.
- EV ready: spaces have electrical distribution near the parking space. These spaces need only the charger itself (level 2) to be added to be used for charging
    - In garages: A 240-volt outlet and associated infrastructure are installed. The resident would only need to use a Level 2 portable charger or purchase a Level 2 charging unit to support EV charging. The 240-volt outlet provides conveniences for residents beyond EV charging because it allows residents to use an air compressor, welding tools, a dryer, and high-power other tools and appliances without having to install another 240v outlet (often a costly retrofit).
    - In parking spaces: These spaces have a branch circuit and an outlet, junction box or receptacle installed. The building owner would need to install an EV charger to support EV charging.
- EVSE spaces: have electric vehicle charging infrastructure fully installed. These spaces are ready for immediate use for EV charging
    - In garages: These spaces fully support EV charging because they already have an installed 240-volt outlet and a level 2 charger.
    - In parking spaces: These spaces fully support EV charging because they already have an installed EV charger.

- There are three levels of EV chargers installed in EVSE spaces—the higher the level, the faster the charging speed.
    - **A Level 1 charger** uses a 120v outlet (standard plug). This is the slowest charger type (it takes 40-50 hours to fully charge a 60 kWh battery). It is best suited for people who drive fewer than 40 miles per day and can leave their cars charging overnight.
    - **A Level 2 charger** uses a 240v outlet and typically takes 6-10 hours to fully charge a 60 kWh battery. It is best suited for people who drive more miles every day or who need their cars to charge faster.
    - **A Level 3 charger** (also known as a Direct Current Fast Charger) is the fastest of the three charging types. These chargers are typically found only in retail commercial spaces (e.g., malls, retail centers) and along high-traffic routes (interstates and highways).



** Estimated. Actual charge times may vary.*

Source: https://www.cenhud.com/en/my-energy/electric-vehicles/how-to-charge/.

- EV chargers may **share power** using energy management systems to reduce infrastructure costs. For instance, a 50-amp branch circuit could be shared across two or three EV chargers. When only one EV is charging, the vehicle receives the full power from the circuit, but if two or more EVs are charging simultaneously, they will share the power. This approach allows developers to install a smaller, less expensive electrical panel. Having too many EV chargers on a single circuit can result in insufficient charging capacity or lengthy charging sessions. As such, it is best practice to set a minimum power-sharing level so that all drivers receive a reasonable level of EV charging.

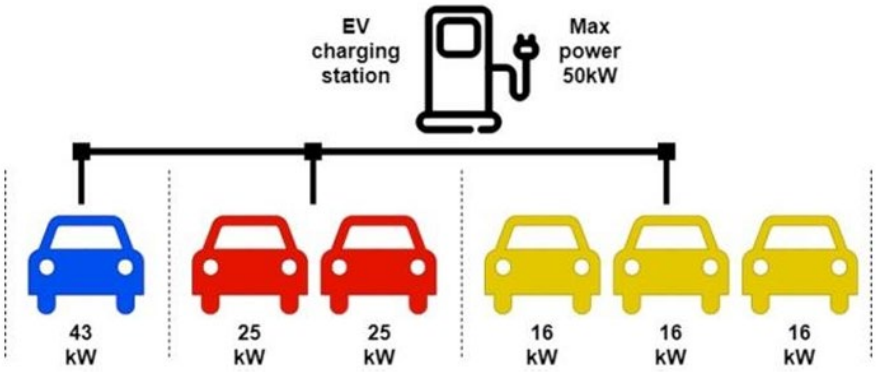


Figure 4. Illustration of power sharing among vehicles. *Source*: Power Electronics News, December 11, 2020

APPENDIX BENEFITS

- This appendix can save residents and building owners thousands in avoided costly retrofits (it is often very costly and complicated to retrofit existing buildings and parking spaces with EV infrastructure. Therefore, this appendix provides requirements for new construction to provide readiness provisions for electric vehicles now and in the future.
- Among EV owners, 90% of charging occurs at home. Charging at home is the cheapest way to charge.
- This appendix supports EV adoption by allowing residents to charge at home, whether they live in a single-family home or a multifamily apartment complex (currently, residents in multifamily developments have less access to EV chargers than residents in single-family homes; adopting this appendix can help close that gap).

COST IMPACTS

- **Costs:**
  - Garages: The National Association of Homebuilders (NAHB) estimates that this appendix adds the following construction costs to single-family homes (calibrated for higher costs in Flagstaff):
    - EV capable space: $300
    - EV ready space: $650
    - EVSE space: $1,050
  - Parking lots:
    - EV capable space: approximately $300
    - EV ready space: $600 - $3,300, depending on power sharing, distance from electrical panel to charging receptacle, and other factors. Source: 2022 study by EPA, US Green Building Council, ChargePoint, and ICF available at https://www.energystar.gov/sites/default/files/2024-08/Cracking_the_Code_to_EV_Readiness_in_New_Buildings.pdf (cost estimates are adjusted for inflation from July 2022 – February 2026). **Retrofit costs are estimated at more than $5,500 per space.**
    - Total installed costs per EVSE space:

- **Level 2: $3,000 – $12,000 per charger,** depending on EV charger selected. Cost estimates include the charger, electrical infrastructure, and labor. However, chargers can serve multiple spaces, and **costs can be reduced by up to 75% through power sharing (see below).** Sources:
    - https://www.greenlancer.com/post/guide-commercial-electric-vehicle-charging-stations
    - https://smartchargeamerica.com/electric-car-chargers/commercial/chargepoint-ct4021-gw1-gateway-unit/?srsltid=AfmBOooh2J2aL65VK6YrAnKnlKqe7SU1SLxz2a_24WeffBayvonv1pwx (this charger has two ports)
- **DC Fast Chargers (Level 3):** Depending on power (50-350 kW), site prep, and local labor/electrical work, total cost can be $80,000 to $250,000+ for a single DC fast charger site. Costs can **be reduced by up to 75% through power sharing (see below)**

- **Cost savings from power sharing:**
    - Power sharing can reduce the costs per space of installing EV infrastructure by allowing more vehicles to use a charger at the same time, thereby reducing the number of chargers that need to be installed and reducing the cost per space of installing an EC charger.
    - The figure below compares the cost per parking space of installing EV charging with power sharing versus without power sharing. The most expensive scenario is listed as "Without Energy Management" and results in a cost of $2,500 per parking space. The least expensive option, "4-Way Sharing on 40A Circuit," shows how power sharing reduces costs per parking space by roughly 75%.

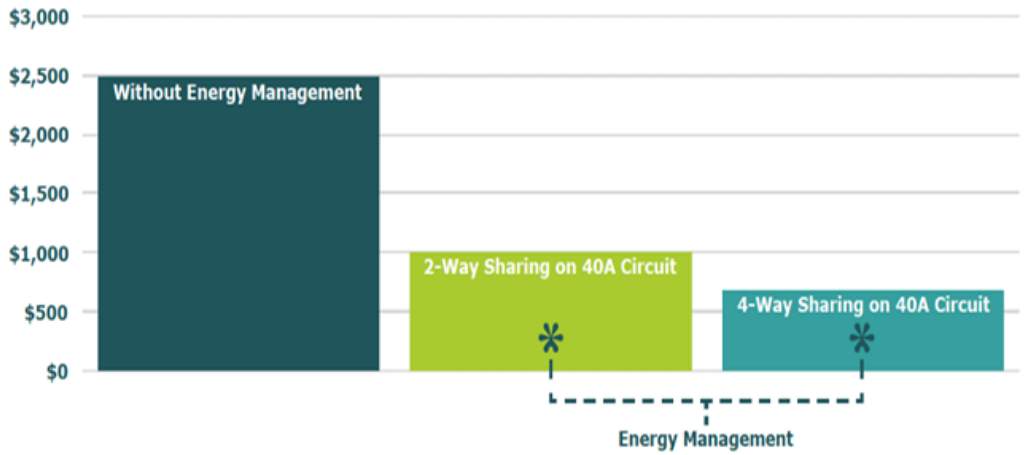


Figure 5. Estimated cost per parking space to provide 100% EV-Ready parking in a new 6-story multifamily building. *Source*: McEwen 2021.

- **Savings**

- **Avoiding costly future retrofits:** This appendix can save residents and building owners and managers hundreds to thousands of dollars by avoiding costly future retrofits in garages and parking spaces. Installing EV charging infrastructure in new buildings is **75% less expensive than retrofitting** an existing building (Papke Waters 2019).

  The following cost estimates from the City of Denver show significant cost savings by installing EV spaces during construction vs. as a retrofit.

EV Infrastructure Requirement	During New Construction	During Retrofit	Savings
EV-Capable (panel capacity + raceway)	$300 per space	$2,500 per space	$2,200 per spac
EV-Ready (full circuit)	$1,300 per space	$6,300 per space	$5,000 per spac

- Building owners may also **recover costs by charging a fee to use the EV charging stations.**

RELEVANT ENERGY CODE UPDATE OPTION(S)

☐ Option 1 ☒ Option 2 ☒ Option 3 ☒ Option 4

IS THIS IN FLAGSTAFF'S CURRENT CODE?

☐ Yes ☒ Yes, but new requirements are stronger ☐ No

AMENDMENTS JUSTIFICATION

1. Clarify that Appendix RE is adopted as mandatory.
2. Clarify that EVSE includes Level 1, Level 2, and DCFC types of chargers in definition of EVSE.
3. Create two subsections for minimum required EV charging infrastructure (one and two-family dwellings and townhomes, and other residential occupancies) to clarify which standards apply to which developments.
4. One and two-family dwellings and townhomes:
   a. Remove EV capable spaces as an option to comply with the EV charging quantity standards. This amendment ensures the minimum standards in this appendix are not weaker than Flagstaff's current code, which requires an EV-ready space at minimum.
   b. Remove the standard exceptions from this appendix (related to electrical distribution capacity and utility side costs exceeding $450 per dwelling unit) from one- and two-family dwellings and townhomes. Additional EV charging infrastructure requirements are minimal in these units and electricity demand for EV charging is distributed across these units (so peak demand is likely to be low). These units are unlikely to have infrastructure requirements or electricity demand that would necessitate these exceptions.
   c. Add an exception to match Flagstaff's current code, saying that additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. Clarify that this exception does not apply to new garages.
5. Other residential occupancies

a. General standards
    i. Clarify that R-3 and R-4 occupancies (other than one and two-family dwellings and townhomes) are subject to the standards in the "other residential occupancies section."
    ii. Add requirement that at least one EV capable, EV ready, or EVSE space shall be located in common-use areas and available for use by all occupants. This matches Flagstaff's current code.
    iii. Clarify EV calculations: When the calculation of required EV capable, EV ready, and EVSE spaces results in a decimal number, a decimal of 0.5 or more is adjusted to the next higher whole number, and a decimal less than 0.5 is adjusted to the next lower whole number.

b. Quantity requirements
    i. Other residential occupancies typically subject to the residential energy code
        1. Break out quantity requirements by building occupancy, height, and number of spaces to better tailor EV requirements to each development type into the following categories:
            a. Group R-3 and R-4 occupancies three stores or less in height above grade plane with more than 15 parking spaces
            b. Group R-2 occupancies less than three stories in height above grade plane with 15 or fewer parking spaces
            c. Group R-2 occupancies less than three stories in height above grade plane with more than 15 parking spaces
        2. Instead of requiring 40% of spaces to EV capable, EV ready, or EVSE, reduce the total number of spaces but institute minimum requirements for EVSE, EV ready, and EV capable spaces that vary according to the development type. All space types are reduced (requirements range from 7% - 30% of spaces).
    ii. Add standards for R-2 occupancies taller than three stories in height above grade plane.
        1. These developments are typically subject to the Commercial IECC. However, if City Council adopts an amendment allowing them to opt into the Residential IECC, then they will be subject to the residential EV charging standards.
        2. The proposed standards match what is proposed in the Commercial EV charging appendix CG for R-2 occupancies (50% of total spaces, down from the 100% proposed in the standard Appendix CG language).
    iii. Add exceptions allowing the following building types to be exempt from the EV charging standards
        1. R-3 and R-4 developments with fewer than 15 parking spaces (this matches the commercial EV charging appendix)

2. R-2 occupancies with fewer than 5 spaces to ensure these requirements don't overly burden smaller missing middle housing projects.

iv. Clarify standards to calculate the minimum required EV charging infrastructure requirements for developments with multiple parking lots.

v. Clarify that developments with attached garages with a direct connect to a dwelling unit are required to provide an EV ready space.

vi. Allow space type substitutions to provide flexibility and make it easier for developments to meet EV charging requirements.

6. Increase infrastructure requirements for Level 2 EVSE spaces from 6.2 kVA (or 30A at 208/240V) to 8.3kVA (or 40A at 208/240V). The standard Level 2 charger in modern markets requires a minimum of 40-amps and 208/240 volts. This is a reduction compared to 50-amp requirement in current Flagstaff code. Sizing lower than 40-amps reduces EV drivers' ability to select/use a suitable charger.
7. Add infrastructure specifications for Level 1 EVSE spaces.
8. Add a requirement for construction documents to show the location of EV capable, EV ready, and EVSE spaces, along with associated infrastructure.

RELEVANT STANDARDS IN FLAGSTAFF'S CURRENT CODE

2018 IECC

CHAPTER 39 POWER AND LIGHTING DISTRIBUTION

Section E3901 Receptacle Outlets

Amend 2018 IRC E3901.9, Basements, garages and accessory buildings, by adding:

At least one required garage receptacle shall be a 208/240-volt individual branch circuit for purposes of electric vehicle (EV) charging. The service panel or subpanel circuit directory shall provide a 50-ampere minimum dedicated branch circuit and a branch circuit overcurrent device. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Exception: Additions and alterations to existing one- or two-family dwellings and townhouses constructed per the IRC are exempt from the EV charging requirement.

CHAPTER 4 SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

Amend 2018 IBC by adding Section 429, Electric vehicle (EV) charging.

Amend 2018 IBC by adding 429.1, General:

429.1 General. Every newly permitted multi-family dwelling, commercial, and industrial structure shall provide parking space with "EV-ready outlets" per Table 429.1 and shall be identified on the construction documents. Construction documents shall indicate the location of the proposed EV-ready outlet(s). At least one EV-ready outlet shall be located in common use areas and available for use by all occupants.

An EV-ready outlet is "ready-to-go" with the addition of a plug-in electric vehicle (PEV) charging station. An EV-ready outlet consists of 208/240V, 50 ampere panel capacity, conduit, wiring, receptacle, and overcurrent protection device. The end point of the system must be near the planned location of the future EV charging station. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Table 429.1

Parking Spaces Provided EV-ready Parking Spaces Required

1-19 None
20-50 One (1)
51-100 Two (2)
100+ Three (3)

OTHER CITIES' CODES

Denver residential EV charging requirements: Residential Electric Vehicle (EV) Requirements - City and County of Denver

If you're building a new home with a garage or carport or adding a new garage or carport to an existing home, the DEC (Denver Energy Code) requires that at least one EV-ready space be provided per dwelling unit. This means:

- A 240-volt, 40-amp branch circuit must be installed.
- The electrical panel must have a dedicated space for a two-pole circuit breaker, labeled "EV Ready."
- An outlet, receptacle, or EV charging connection must be installed at the EV-ready parking space.

These requirements apply to:

- Single-family homes
- Duplexes
- Townhouses

Note: R-3 or R-4 occupancy buildings three stories or less must comply with the commercial EV charging requirements found in Section C405.13 of the Denver Energy Code.

Colorado Energy Code

Final MLECC Amendment Package with Code Insights.docx – page 155

Table C410.5.2.1 EV Power Transfer Infrastructure Requirements

Building Type/Space Type	**Level 2 EVSE Installed Spaces**	**Level 2 EV Ready Spaces**	**Level 2 EV Capable Spaces**	**Level 2 EV Capable Light Spaces**
Commercial buildings, except for Group R-2 occupancies, with 15 or fewer parking spaces	0	2 spaces 20% of spaces (not fewer than 2)	0	0
Commercial buildings, except for Group R-2 occupancies, with greater than 15 parking spaces	2% of spaces	8% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with 10 or fewer parking spaces	0	15% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with greater than 10 parking spaces	**5% of spaces**	**15% of spaces**	**10% of spaces**	**30% of spaces**

City of Tucson: attachment-b_ev-charging-ordinance-no.-11953.pdf

Tucson allows the minimum required parking to be reduced by providing EVSE spaces. It also has a minimum number of EV capable, EV ready, and EVSE spaces that must be provided with new development. Multifamily residential, for example, is required to provide 10% EV ready spaces and 20% EV capable spaces.

Other helpful resources:

- **ICC Electric Vehicles and Building Codes: A Strategy for Greenhouse Gas Reductions**
  - From 2021 but still helpful

COMMUNITY FEEDBACK

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

ADDITIONAL INFORMATION

Residential Group Occupancies

- Residential Group R-1 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily transient in nature, including:
  - Boarding houses (transient) with more than 10 occupants
  - Congregate living facilities (transient) with more than 10 occupants
  - Hotels (transient)
  - Motels (transient)
  - Lodging houses with more than five guestrooms

- Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:
  - Apartment houses
  - Congregate living facilities (nontransient) with more than 16 occupants
    - Boarding houses (nontransient)
    - Convents
    - Dormitories
    - Emergency services living quarters
    - Fraternities and sororities
    - Monasteries

  - Hotels (nontransient) with more than five guestrooms
  - Live/work units
  - Motels (nontransient) with more than five guestrooms
  - Vacation timeshare properties

- Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:
  - Buildings that do not contain more than two dwelling units
  - Care facilities that provide accommodations for five or fewer persons receiving care
  - Congregate living facilities (nontransient) with 16 or fewer occupants
    - Boarding houses (nontransient)
    - Convents
    - Dormitories
    - Emergency services living quarters
    - Fraternities and sororities
    - Monasteries
  - Congregate living facilities (transient) with 10 or fewer occupants
    - Boarding houses (transient)
  - Lodging houses with five or fewer guestrooms
  - Hotels (nontransient) with five or fewer guestrooms
  - Motels (nontransient) with five or fewer guestrooms

- Residential Group R-4 occupancy shall include *buildings*, *structures* or portions thereof for more than five but not more than 16 *persons*, excluding staff, who reside on a *24-hour basis* in a supervised residential environment and receive *custodial care*. *Buildings* of Group R-4 shall be classified as one of the occupancy conditions specified in Section 310.5.1 or 310.5.2. This group shall include, but not be limited to, the following:
  - Alcohol and drug centers
  - Assisted living *facilities*
  - Congregate care *facilities*
  - *Group homes*
  - Halfway houses
  - Residential board and care *facilities*
  - Social rehabilitation *facilities*

  Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.

Appendix RE: Electric Vehicle Charging Infrastructure
Option B

BACKGROUND INFORMATION

- **Primary code section:**
  - 2024 IECC Appendix RE: Electric Vehicle Charging Infrastructure
  - IRC Appendix NE (RE): Electric Vehicle Charging Infrastructure
- **Other section(s) where amendments may be needed to implement the primary code section:**
  - Residential IECC Chapter [RE] 1 Scope and Administration: R101.2.1 Appendices (in another document)
  - Residential IECC Chapter [RE] 4 Residential Energy Efficiency: R401.2 Application.
- **Related code section(s)/dependencies:**
  - Commercial IECC Appendix CG Electric Vehicle Charging Infrastructure

PROPOSED AMENDMENTS

Appendix RE: Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix RE is adopted as mandatory.**

Section RE101 Electric Vehicle Power Transfer

RE101.1 Definitions.
AUTOMOBILE PARKING SPACE. No change

ELECTRIC VEHICLE (EV). No change

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No change

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).
Equipment for plug-in power transfer, including ungrounded, grounded and equipment grounding conductors; electric vehicle connectors; attached plugs; any personal protection system; and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*. There are three types of EVSE, categorized by voltage and charging speed: Level 1, Level 2, and Direct Current Fast Charging (DCFC).

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No change.

RE101.2 Electric vehicle power transfer infrastructure.

New residential *automobile parking spaces* for residential *buildings* shall be provided with *electric vehicle power* transfer infrastructure in accordance with Sections RE101.2.1 through RE101.2.5.

RE101.2.1 Quantity.

RE101.2.1.1 One- and Two- Family Dwellings and Townhouses

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*. Two-family dwellings without a designated attached or detached garage shall be permitted to provide one EV ready or EVSE space for use by both dwelling units. It shall be located in a common-use area and be accessible to all occupants. ~~R-2 occupancies or allocated parking for R-2 occupancies in mixed-use *buildings* shall be provided with an *EV capable space*, *EV ready space* or *EVSE* space for 40 percent of the *dwelling units* or *automobile parking spaces*, whichever is less.~~

Exceptions:

~~1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.~~

~~2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.~~

1. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

RE101.2.1.2 Other Residential Occupancies

R-2 occupancies, allocated parking for R-2 occupancies in mixed-use *buildings,* R-3 occupancies (excluding one- and two-family dwellings and townhomes), and R-4 occupancies shall meet the requirements in Table RE101.2.1.2(1) for *EV capable*, *EV ready,* or *EVSE* spaces. At least one E*V capable, EV ready* or *EVSE space* shall be located in a common-use area and be available for use by all occupants.

When the calculation of required E*V capable, EV ready,* and *EVSE spaces* results in a decimal number, a decimal of 0.5 or more is adjusted to the next higher whole number, and a decimal of less than 0.5 is adjusted to the next lower whole number.

Table RE101.2.1.2(1) EV Infrastructure Requirements for Other Residential Occupancies

Building Type	Level 2 EVSE installed spaces	EV ready spaces	EV capable spaces
Group R-2 occupancies three stories or less in height above grade plane with 15 or fewer parking spaces	20% of spaces shall be either Level 2 EVSE, EV ready, or EV capable (not fewer than 1 space).		
Group R-2 occupancies less than three stories in height above grade plane with more than 15 parking spaces	5%	5%	10%
Group R-2 occupancies taller than three stories in height above grade plane	5%	10%	15%
Group R-3 and R-4 occupancies three stories or less in height above grade plane with more than 15 parking spaces	0	2%	5%

Exceptions:

1. R-3 and R-4 occupancies where fewer than 15 parking spaces are provided.
2. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.
3. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.

RE101.2.1.3 Attached garages. All attached garages with direct connection to a *dwelling unit* shall be required to have one *EV ready space* or *EVSE space*.

RE101.2.1.4 Parking Space Type Substitutions. Group R-2, R-3, and R-4 occupancies shall be permitted to substitute EV parking spaces required in Table 101.2.1.2(1) according to the standards below.

RE101.2.1.4.1 DC Fast Charging. For *Group R*-2, R-3, R-4 *buildings* that install DCFC EVSE spaces, each DCFC EVSE space shall be permitted to substitute up to 10 required EV capable, EV ready, or Level 2 EVSE spaces in Table RE101.2.1.2(1).

RE101.2.1.4.2 Level 1 EV Charging. For *Group R-2 buildings* that install Level 1 EVSE spaces in accordance with section RE101.2.5, three Level 1 EVSE spaces shall be permitted to substitute

every Level 2 EVSE space or EV ready space, but cannot exceed 50 percent of the required Level 2 EVSE spaces or EV ready spaces in Table RE101.2.1.2(1).

RE101.2.1.4.3 Excess Level 2 EVSE Spaces. *Level 2 EVSE spaces* installed in accordance with section RE101.2.4 that exceed the minimum requirements in Table RE101.2.1.2(1) are permitted to be used to meet the minimum requirements for *EV ready spaces* and *EV capable spaces* on a one-to-one ratio.

RE101.2.1.4.4 Excess EV Ready Spaces. *EV ready spaces* installed in accordance with section RE101.2.3 that exceed the minimum requirements in Table RE101.2.1.2(1) are permitted to be used to meet minimum requirements for *EV capable spaces* on a one-to-one ratio.

RE101.2.2: EV capable spaces. No changes

RE101.2.3: EV ready spaces. No changes

RE101.2.4 EVSE spaces.

RE101.2.4.1 Level 2 EVSE spaces

An installed **Level 2** *EVSE* with multiple output connections shall be permitted to serve multiple **Level 2** *EVSE spaces*. Each **Level 2** *EVSE* serving either a single **Level 2** *EVSE space* or multiple **Level 2** *EVSE spaces* shall comply with **all of** the following:

1. Be served by an electrical distribution system in accordance with Section RE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per *EVSE space* served. Where an *EVSE* serves three or more *EVSE spaces* and is controlled by an energy management system in accordance with Section RE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per *EVSE space* served.
3. Be located within 6 feet (1828 mm) of each *EVSE space* it serves.
4. Be installed in accordance with NFPA 70 and be *listed* and *labeled* in accordance with UL 2202 or UL 2594.

RE101.2.4.2 Level 1 EVSE Spaces.
Each Level 1 *EVSE space* shall comply with all the following:

1. The receptacle shall be located within 6 feet (1828 mm) of each Level 1 EVSE space it serves.
2. Have a minimum circuit capacity of 1.8 kVA (15A 120V).
3. The electrical panel, electrical distribution equipment directory, and all receptacles or enclosures shall be marked “Level 1 Electric vehicle supply equipment (EVSE).”

RE101.2.5 Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each *EV capable space*, *EV ready space* and *EVSE space* used to comply with Section RE101.2.1 shall comply with one of the following:

1. Sized for a calculated *EV* charging load of not less than ~~6.2~~**8.3** kVA per *EVSE*, *EV ready* or *EV capable space*. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.

2. The capacity of the electrical distribution system and each branch circuit serving multiple *EVSE spaces*, *EV ready spaces* or *EV capable spaces* designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated *EV* charging load of not less than 2.1 kVA per space. Where an energy management system is used to control *EV* charging loads for the purposes of this section, it shall not be configured to turn off electrical power to *EVSE* or *EV ready spaces* used to comply with Section RE101.2.1.

RE101.2.6 Construction Documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

Section RE102 Referenced Standards No change.

RE102.1 General. No change.

See Table RE102.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.

TABLE RE102.1 REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
UL 2202—2009	***Electric Vehicle (EV) Charging System Equipment*— with revisions through February 2018**	RE101.2.4
UL 2594—2016	***Standard for Electric Vehicle Supply Equipment***	RE101.2.4

IRC Appendix NE: (RE) Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix NE (RE) is adopted as mandatory.**

Section NE101: (RE101) Electric Vehicle Power Transfer

NE 101.1: (RE101.1) Definitions.
AUTOMOBILE PARKING SPACE. No change

ELECTRIC VEHICLE (EV). No change

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No change

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).
Equipment for plug-in power transfer, including ungrounded, grounded and equipment grounding conductors; electric vehicle connectors; attached plugs; any personal protection system; and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*. There are three types of EVSE, categorized by voltage and charging speed: Level 1, Level 2, and Direct Current Fast Charging (DCFC).

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No change.

NE 101.2: (RE101.2) Electric vehicle power transfer infrastructure.

New residential automobile parking spaces for residential buildings shall be provided with electric vehicle power transfer infrastructure in accordance with Sections NE101.2.1 through NE101.2.5.

NE 101.2.1: (RE101.2.1) Quantity.

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*. Two-family dwellings without a designated attached or detached garage shall be permitted to provide one EV ready or EVSE space for use by both dwelling units. It shall be located in a common-use area and be accessible to all occupants.

Exceptions:

~~1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.~~

~~2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.~~

1. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

NE 101.2.2: (RE101.2.2) EV capable spaces. No changes

NE 101.2.3: (RE101.2.3) EV ready spaces. No changes

NE 101.2.4: (RE101.2.4) EVSE spaces.

An installed EVSE with multiple output connections shall be permitted to serve multiple EVSE spaces. Each EVSE serving either a single EVSE space or multiple EVSE spaces shall comply with the following:

1. Be served by an electrical distribution system in accordance with Section NE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per EVSE space served. Where an EVSE serves three or more EVSE spaces and is controlled by an energy management system in accordance with Section NE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per EVSE space served.
3. Be located within 6 feet (1828 mm) of each EVSE space it serves.
4. Be installed in accordance with NFPA 70 and be listed and labeled in accordance with UL 2202 or UL 2594.

NE 101.2.5: (RE101.2.5) Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each EV capable space, EV ready space and EVSE space used to comply with Section NE101.2.1 shall comply with one the following:

1. Sized for a calculated EV charging load of not less than ~~6.2~~**8.3** kVA per EVSE, EV ready or EV capable space. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.
2. The capacity of the electrical distribution system and each branch circuit serving multiple EVSE spaces, EV ready spaces or EV capable spaces designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated EV charging load of not less than 2.1 kVA per space. Where an energy management system is used to control EV charging loads for the purposes of this section, it shall not be configured to turn off electrical power to EVSE or EV ready spaces used to comply with Section NE101.2.1.

NE 101.2.6: (RE101.2.6) Construction Documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

APPENDIX SUMMARY

Quantity of EV spaces required:

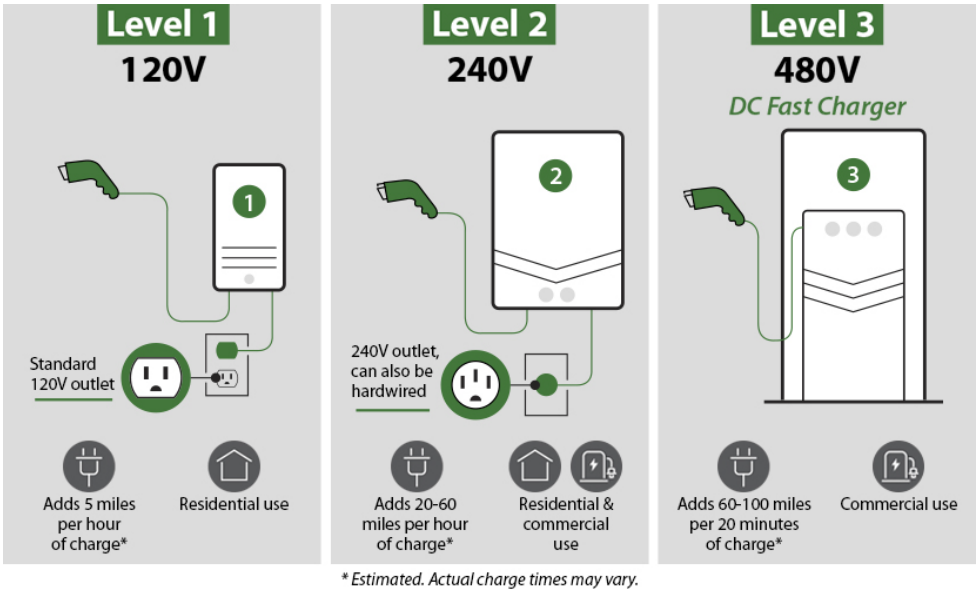
- One- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit:* Provide one EV ready or EV supply equipment (EVSE) space per dwelling unit.
- Allows duplexes without designated garages to install one EV space for use by all occupants.
- Other residential occupancies: meet minimum requirements for each space type. Allows for energy management systems to share power among multiple EV spaces to reduce costs.
- Provides opportunities for substitutions and relief from the number of required spaces by providing EV infrastructure that exceeds minimum requirements.
- Provides exceptions to these standards for multifamily development where:
    - The local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date.
    - Substantiation is *approved* that meeting the requirements of this appendix will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.

Types of EV spaces:

- EV capable spaces: have distribution for future electrical charging infrastructure, including raceways and reserved circuit space in the panel.
    - In garages: These spaces have electrical infrastructure in the wall to support a 240-volt outlet, but the outlet is not actually installed. The wall would need to be opened up to install a 240-volt outlet and the resident would need to purchase a level 2 charger to support EV charging. Residents can purchase the level 2 charger separately, after the home is constructed (they do not need to be purchased or installed by the homebuilder).
    - In parking spaces: These spaces have electrical infrastructure such as, but not limited to, raceways, cables, electrical capacity, a panelboard or other electrical distribution equipment space necessary for the future installation of an *EV charger*.
- EV ready: spaces have electrical distribution near the parking space. These spaces need only the charger itself (level 2) to be added to be used for charging
    - In garages: A 240-volt outlet and associated infrastructure are installed. The resident would only need to use a Level 2 portable charger or purchase a Level 2 charging unit to support EV charging. The 240-volt outlet provides conveniences for residents beyond EV charging because it allows residents to use an air compressor, welding tools, a dryer, and high-power other tools and appliances without having to install another 240v outlet (often a costly retrofit).
    - In parking spaces: These spaces have a branch circuit and an outlet, junction box or receptacle installed. The building owner would need to install an EV charger to support EV charging.
- EVSE spaces: have electric vehicle charging infrastructure fully installed. These spaces are ready for immediate use for EV charging
    - In garages: These spaces fully support EV charging because they already have an installed 240-volt outlet and a level 2 charger.

- In parking spaces: These spaces fully support EV charging because they already have an installed EV charger.

- There are three levels of EV chargers installed in EVSE spaces—the higher the level, the faster the charging speed.
  - **A Level 1 charger** uses a 120v outlet (standard plug). This is the slowest charger type (it takes 40-50 hours to fully charge a 60 kWh battery). It is best suited for people who drive fewer than 40 miles per day and can leave their cars charging overnight.
  - **A Level 2 charger** uses a 240v outlet and typically takes 6-10 hours to fully charge a 60 kWh battery. It is best suited for people who drive more miles every day or who need their cars to charge faster.
  - **A Level 3 charger** (also known as a Direct Current Fast Charger) is the fastest of the three charging types. These chargers are typically found only in retail commercial spaces (e.g., malls, retail centers) and along high-traffic routes (interstates and highways).



Source: https://www.cenhud.com/en/my-energy/electric-vehicles/how-to-charge/.

- EV chargers may **share power** using energy management systems to reduce infrastructure costs. For instance, a 50-amp branch circuit could be shared across two or three EV chargers. When only one EV

is charging, the vehicle receives the full power from the circuit, but if two or more EVs are charging simultaneously, they will share the power. This approach allows developers to install a smaller, less expensive electrical panel. Having too many EV chargers on a single circuit can result in insufficient charging capacity or lengthy charging sessions. As such, it is best practice to set a minimum power-sharing level so that all drivers receive a reasonable level of EV charging.

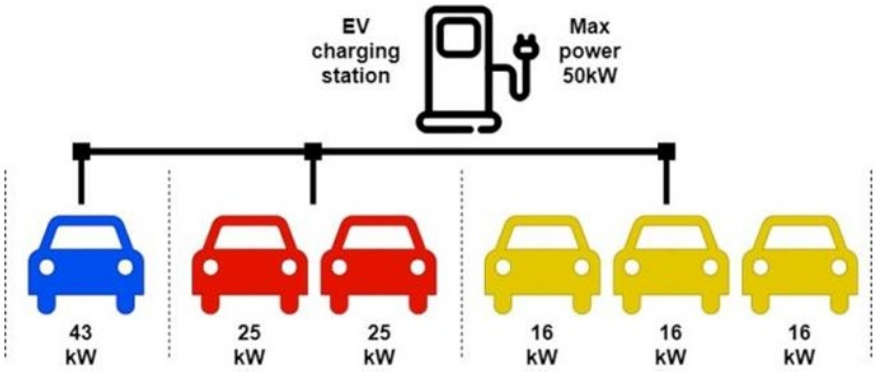


Figure 4. Illustration of power sharing among vehicles. *Source*: Power Electronics News, December 11, 2020

APPENDIX BENEFITS

- This appendix can save residents and building owners thousands in avoided costly retrofits (it is often very costly and complicated to retrofit existing buildings and parking spaces with EV infrastructure. Therefore, this appendix provides requirements for new construction to provide readiness provisions for electric vehicles now and in the future.
- Among EV owners, 90% of charging occurs at home. Charging at home is the cheapest way to charge.
- This appendix supports EV adoption by allowing residents to charge at home, whether they live in a single-family home or a multifamily apartment complex (currently, residents in multifamily developments have less access to EV chargers than residents in single-family homes; adopting this appendix can help close that gap).

COST IMPACTS

- **Costs:**
  - Garages: The National Association of Homebuilders (NAHB) estimates that this appendix adds the following construction costs to single-family homes (calibrated for higher costs in Flagstaff):
    - EV capable space: $300
    - EV ready space: $650
    - EVSE space: $1,050
  - Parking lots:
    - EV capable space: approximately $300
    - EV ready space: $600 - $3,300, depending on power sharing, distance from electrical panel to charging receptacle, and other factors. Source: 2022 study by EPA, US Green

Building Council, ChargePoint, and ICF available at https://www.energystar.gov/sites/default/files/2024-08/Cracking_the_Code_to_EV_Readiness_in_New_Buildings.pdf (cost estimates are adjusted for inflation from July 2022 – February 2026). **Retrofit costs are estimated at more than $5,500 per space.**

- Total installed costs per EVSE space:
  - **Level 2: $3,000 – $12,000 per charger,** depending on EV charger selected. Cost estimates include the charger, electrical infrastructure, and labor. However, chargers can serve multiple spaces, and **costs can be reduced by up to 75% through power sharing (see below).** Sources:
    - https://www.greenlancer.com/post/guide-commercial-electric-vehicle-charging-stations
    - https://smartchargeamerica.com/electric-car-chargers/commercial/chargepoint-ct4021-gw1-gateway-unit/?srsltid=AfmBOooh2J2aL65VK6YrAnKnlKqe7SU1SLxz2a_24WeffBayvonv1pwx (this charger has two ports)
  - **DC Fast Chargers (Level 3):** Depending on power (50-350 kW), site prep, and local labor/electrical work, total cost can be $80,000 to $250,000+ for a single DC fast charger site. Costs can **be reduced by up to 75% through power sharing (see below)**

- **Cost savings from power sharing:**
  - Power sharing can reduce the costs per space of installing EV infrastructure by allowing more vehicles to use a charger at the same time, thereby reducing the number of chargers that need to be installed and reducing the cost per space of installing an EC charger.
  - The figure below compares the cost per parking space of installing EV charging with power sharing versus without power sharing. The most expensive scenario is listed as "Without Energy Management" and results in a cost of $2,500 per parking space. The least expensive option, "4-Way Sharing on 40A Circuit," shows how power sharing

reduces costs per parking space by roughly 75%.

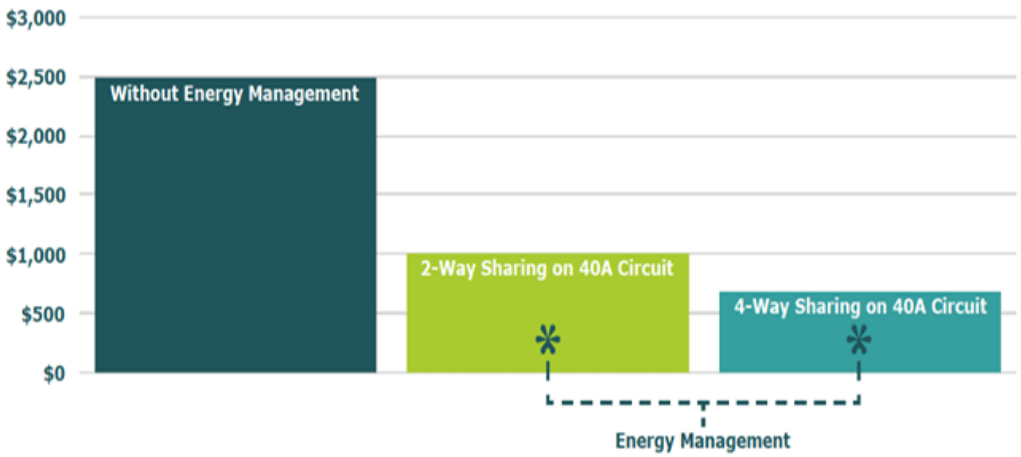


Figure 5. Estimated cost per parking space to provide 100% EV-Ready parking in a new 6-story multifamily building. *Source*: McEwen 2021.

- **Savings**
  - **Avoiding costly future retrofits:** This appendix can save residents and building owners and managers hundreds to thousands of dollars by avoiding costly future retrofits in garages and parking spaces. Installing EV charging infrastructure in new buildings is **75% less expensive than retrofitting** an existing building (Papke Waters 2019).

    The following cost estimates from the City of Denver show significant cost savings by installing EV spaces during construction vs. as a retrofit.

EV Infrastructure Requirement	During New Construction	During Retrofit	Savings
EV-Capable (panel capacity + raceway)	$300 per space	$2,500 per space	$2,200 per spa
EV-Ready (full circuit)	$1,300 per space	$6,300 per space	$5,000 per spa

  - Building owners may also **recover costs by charging a fee to use the EV charging stations.**

RELEVANT ENERGY CODE UPDATE OPTION(S)

☐ Option 1 ☒ Option 2 ☒ Option 3 ☒ Option 4

IS THIS IN FLAGSTAFF'S CURRENT CODE?

☐ Yes ☒ Yes, but new requirements are stronger ☐ No

AMENDMENTS JUSTIFICATION

1. Clarify that Appendix RE is adopted as mandatory.
2. Clarify that EVSE includes Level 1, Level 2, and DCFC types of chargers in definition of EVSE.

3. Create two subsections for minimum required EV charging infrastructure (one and two-family dwellings and townhomes, and other residential occupancies) to clarify which standards apply to which developments.
4. One and two-family dwellings and townhomes:
    a. Remove EV capable spaces as an option to comply with the EV charging quantity standards. This amendment ensures the minimum standards in this appendix are not weaker than Flagstaff's current code, which requires an EV-ready space at minimum.
    b. Remove the standard exceptions from this appendix (related to electrical distribution capacity and utility side costs exceeding $450 per dwelling unit) from one- and two-family dwellings and townhomes. Additional EV charging infrastructure requirements are minimal in these units and electricity demand for EV charging is distributed across these units (so peak demand is likely to be low). These units are unlikely to have infrastructure requirements or electricity demand that would necessitate these exceptions.
    c. Add an exception to match Flagstaff's current code, saying that additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. Clarify that this exception does not apply to new garages.
5. Other residential occupancies
    a. General standards
        i. Clarify that R-3 and R-4 occupancies (other than one and two-family dwellings and townhomes) are subject to the standards in the "other residential occupancies section."
        ii. Add requirement that at least one EV capable, EV ready, or EVSE space shall be located in common-use areas and available for use by all occupants. This matches Flagstaff's current code.
        iii. Clarify EV calculations: When the calculation of required EV capable, EV ready, and EVSE spaces results in a decimal number, a decimal of 0.5 or more is adjusted to the next higher whole number, and a decimal less than 0.5 is adjusted to the next lower whole number.
    b. Quantity requirements
        i. Other residential occupancies typically subject to the residential energy code
            1. Break out quantity requirements by building occupancy, height, and number of spaces to better tailor EV requirements to each development type into the following categories:
                a. Group R-3 and R-4 occupancies three stores or less in height above grade plane with more than 15 parking spaces
                b. Group R-2 occupancies less than three stories in height above grade plane with 15 or fewer parking spaces
                c. Group R-2 occupancies less than three stories in height above grade plane with more than 15 parking spaces

2. Instead of requiring 40% of spaces to EV capable, EV ready, or EVSE, reduce the total number of spaces but institute minimum requirements for EVSE, EV ready, and EV capable spaces that vary according to the development type. All space types are reduced (requirements range from 7% - 30% of spaces).

ii. Add standards for R-2 occupancies taller than three stories in height above grade plane.

1. These developments are typically subject to the Commercial IECC. However, if City Council adopts an amendment allowing them to opt into the Residential IECC, then they will be subject to the residential EV charging standards.

2. The proposed standards match what is proposed in the Commercial EV charging appendix CG for R-2 occupancies (50% of total spaces, down from the 100% proposed in the standard Appendix CG language).

iii. Add exceptions allowing the following building types to be exempt from the EV charging standards

1. R-3 and R-4 developments with fewer than 15 parking spaces (this matches the commercial EV charging appendix)

2. R-2 occupancies with fewer than 5 spaces to ensure these requirements don't overly burden smaller missing middle housing projects.

iv. Clarify standards to calculate the minimum required EV charging infrastructure requirements for developments with multiple parking lots.

v. Clarify that developments with attached garages with a direct connect to a dwelling unit are required to provide an EV ready space.

vi. Allow space type substitutions to provide flexibility and make it easier for developments to meet EV charging requirements.

6. Increase infrastructure requirements for Level 2 EVSE spaces from 6.2 kVA (or 30A at 208/240V) to 8.3kVA (or 40A at 208/240V). The standard Level 2 charger in modern markets requires a minimum of 40-amps and 208/240 volts. This is a reduction compared to 50-amp requirement in current Flagstaff code. Sizing lower than 40-amps reduces EV drivers' ability to select/use a suitable charger.
7. Add infrastructure specifications for Level 1 EVSE spaces.
8. Add a requirement for construction documents to show the location of EV capable, EV ready, and EVSE spaces, along with associated infrastructure.

RELEVANT STANDARDS IN FLAGSTAFF'S CURRENT CODE

2018 IECC

CHAPTER 39 POWER AND LIGHTING DISTRIBUTION

Section E3901 Receptacle Outlets

Amend 2018 IRC E3901.9, Basements, garages and accessory buildings, by adding:

At least one required garage receptacle shall be a 208/240-volt individual branch circuit for purposes of electric vehicle (EV) charging. The service panel or subpanel circuit directory shall provide a 50-ampere minimum dedicated branch circuit and a branch circuit overcurrent device. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Exception: Additions and alterations to existing one- or two-family dwellings and townhouses constructed per the IRC are exempt from the EV charging requirement.

CHAPTER 4 SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

Amend 2018 IBC by adding Section 429, Electric vehicle (EV) charging.

Amend 2018 IBC by adding 429.1, General:

429.1 General. Every newly permitted multi-family dwelling, commercial, and industrial structure shall provide parking space with "EV-ready outlets" per Table 429.1 and shall be identified on the construction documents. Construction documents shall indicate the location of the proposed EV-ready outlet(s). At least one EV-ready outlet shall be located in common use areas and available for use by all occupants.

An EV-ready outlet is "ready-to-go" with the addition of a plug-in electric vehicle (PEV) charging station. An EV-ready outlet consists of 208/240V, 50 ampere panel capacity, conduit, wiring, receptacle, and overcurrent protection device. The end point of the system must be near the planned location of the future EV charging station. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Table 429.1

Parking Spaces Provided EV-ready Parking Spaces Required

1-19 None
20-50 One (1)
51-100 Two (2)
100+ Three (3)

OTHER CITIES' CODES

Denver residential EV charging requirements: Residential Electric Vehicle (EV) Requirements - City and County of Denver

If you're building a new home with a garage or carport or adding a new garage or carport to an existing home, the DEC (Denver Energy Code) requires that at least one EV-ready space be provided per dwelling unit. This means:

- A 240-volt, 40-amp branch circuit must be installed.
- The electrical panel must have a dedicated space for a two-pole circuit breaker, labeled "EV Ready."

- An outlet, receptacle, or EV charging connection must be installed at the EV-ready parking space.

These requirements apply to:

- Single-family homes
- Duplexes
- Townhouses

Note: R-3 or R-4 occupancy buildings three stories or less must comply with the commercial EV charging requirements found in Section C405.13 of the Denver Energy Code.

Colorado Energy Code

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Table C410.5.2.1 EV Power Transfer Infrastructure Requirements

Building Type/Space Type	**Level 2 EVSE Installed Spaces**	**Level 2 EV Ready Spaces**	**Level 2 EV Capable Spaces**	**Level 2 EV Capable Light Spaces**
Commercial buildings, except for Group R-2 occupancies, with 15 or fewer parking spaces	0	2 spaces 20% of spaces (not fewer than 2)	0	0
Commercial buildings, except for Group R-2 occupancies, with greater than 15 parking spaces	2% of spaces	8% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with 10 or fewer parking spaces	0	15% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with greater than 10 parking spaces	**5% of spaces**	**15% of spaces**	**10% of spaces**	**30% of spaces**

City of Tucson: attachment-b_ev-charging-ordinance-no.-11953.pdf

Tucson allows the minimum required parking to be reduced by providing EVSE spaces. It also has a minimum number of EV capable, EV ready, and EVSE spaces that must be provided with new development. Multifamily residential, for example, is required to provide 10% EV ready spaces and 20% EV capable spaces.

Other helpful resources:

- **ICC Electric Vehicles and Building Codes: A Strategy for Greenhouse Gas Reductions**
  - From 2021 but still helpful

COMMUNITY FEEDBACK

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

ADDITIONAL INFORMATION

Residential Group Occupancies

- Residential Group R-1 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily transient in nature, including:
  - Boarding houses (transient) with more than 10 occupants
  - Congregate living facilities (transient) with more than 10 occupants
  - Hotels (transient)
  - Motels (transient)
  - Lodging houses with more than five guestrooms

- Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:
    - Apartment houses
    - Congregate living facilities (nontransient) with more than 16 occupants
        - Boarding houses (nontransient)
        - Convents
        - Dormitories
        - Emergency services living quarters
        - Fraternities and sororities
        - Monasteries
    - Hotels (nontransient) with more than five guestrooms
    - Live/work units
    - Motels (nontransient) with more than five guestrooms
    - Vacation timeshare properties

- Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:
    - Buildings that do not contain more than two dwelling units
    - Care facilities that provide accommodations for five or fewer persons receiving care
    - Congregate living facilities (nontransient) with 16 or fewer occupants
        - Boarding houses (nontransient)
        - Convents
        - Dormitories
        - Emergency services living quarters
        - Fraternities and sororities
        - Monasteries
    - Congregate living facilities (transient) with 10 or fewer occupants
        - Boarding houses (transient)
    - Lodging houses with five or fewer guestrooms
    - Hotels (nontransient) with five or fewer guestrooms
    - Motels (nontransient) with five or fewer guestrooms

- Residential Group R-4 occupancy shall include *buildings*, *structures* or portions thereof for more than five but not more than 16 *persons*, excluding staff, who reside on a *24-hour basis* in a supervised residential environment and receive *custodial care*. *Buildings* of Group R-4 shall be classified as one of the occupancy conditions specified in Section 310.5.1 or 310.5.2. This group shall include, but not be limited to, the following:
    - Alcohol and drug centers
    - Assisted living *facilities*
    - Congregate care *facilities*
    - *Group homes*
    - Halfway houses
    - Residential board and care *facilities*
    - Social rehabilitation *facilities*

  Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.

Appendix RE: Electric Vehicle Charging Infrastructure
Option C

PROPOSED AMENDMENTS

Appendix RE: Electric Vehicle Charging Infrastructure

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix RE is adopted as mandatory.**

Section RE101 Electric Vehicle Power Transfer

RE101.1 Definitions.
AUTOMOBILE PARKING SPACE.
A space within a *building* or private or public parking lot, exclusive of driveways, ramps, columns, office and work areas, for the parking of an automobile.

ELECTRIC VEHICLE (EV).
An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles and electric motorcycles, primarily powered by an electric motor that draws current from a building electrical service, *electric vehicle supply equipment* (EVSE), a rechargeable storage battery, a fuel cell, a photovoltaic array or another source of electric current.

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE).
A designated *automobile parking space* that is provided with electrical infrastructure such as, but not limited to, raceways, cables, electrical capacity, a panelboard or other electrical distribution equipment space necessary for the future installation of an *EVSE*.
ELECTRIC VEHICLE READY SPACE (EV READY SPACE).
An *automobile parking space* that is provided with a branch circuit and an outlet, junction box or receptacle that will support an installed *EVSE*.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE).
Equipment for plug-in power transfer, including ungrounded, grounded and equipment grounding conductors; electric vehicle connectors; attached plugs; any personal protection system; and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*.

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE).
An *automobile parking space* that is provided with a dedicated *EVSE* connection.

RE101.2 Electric vehicle power transfer infrastructure.

New residential *automobile parking spaces* for residential *buildings* shall be provided with *electric vehicle power* transfer infrastructure in accordance with Sections RE101.2.1 through RE101.2.5.

RE101.2.1 Quantity.

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*. R-2 occupancies or allocated parking for R-2 occupancies in mixed-use *buildings* shall be provided with an *EV capable space*, *EV ready space* or *EVSE* space for 40 percent of the *dwelling units* or *automobile parking spaces*, whichever is less.

Exceptions:

1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity. This exception is not applicable to one- and two-family dwellings and townhomes.

2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*. This exception is not applicable to one- and two-family dwellings and townhomes.

3. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

RE101.2.2: EV capable spaces.

Each *EV capable space* used to meet the requirements of Section RE101.2.1 shall comply with all of the following:

1. A continuous raceway or cable assembly shall be installed between a suitable panelboard or other on-site electrical distribution equipment and an enclosure or outlet located within 6 feet (1828 mm) of the *EV capable space*.
2. The installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with Section RE101.2.5.
3. The electrical distribution equipment to which the raceway or cable assembly connects shall have sufficient dedicated space and spare electrical capacity for a two-pole circuit breaker or set of fuses.
4. The electrical enclosure or outlet and the electrical distribution equipment directory shall be marked: “For future electric vehicle supply equipment (EVSE).”

RE101.2.3: EV ready spaces.

Each branch circuit serving *EV ready spaces* shall comply with all of the following:

1. Termination at an outlet or enclosure, located within 6 feet (1828 mm) of each *EV ready space* it serves and marked “For electric vehicle supply equipment (EVSE).”

2. Service by an electrical distribution system and circuit capacity in accordance with Section RE101.2.5.
3. Designation on the panelboard or other electrical distribution equipment directory as "For electric vehicle supply equipment (EVSE)."

RE101.2.4 EVSE spaces.

An installed *EVSE* with multiple output connections shall be permitted to serve multiple *EVSE spaces*. Each *EVSE* serving either a single *EVSE space* or multiple *EVSE spaces* shall comply with the following:

1. Be served by an electrical distribution system in accordance with Section RE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per *EVSE space* served. Where an *EVSE* serves three or more *EVSE spaces* and is controlled by an energy management system in accordance with Section RE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per *EVSE space* served.
3. Be located within 6 feet (1828 mm) of each *EVSE space* it serves.
4. Be installed in accordance with NFPA 70 and be *listed* and *labeled* in accordance with UL 2202 or UL 2594.

RE101.2.5 Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each *EV capable space*, *EV ready space* and *EVSE space* used to comply with Section RE101.2.1 shall comply with one of the following:

1. Sized for a calculated *EV* charging load of not less than ~~6.2~~ **8.3** kVA per *EVSE*, *EV ready* or *EV capable space*. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.

2. The capacity of the electrical distribution system and each branch circuit serving multiple *EVSE spaces*, *EV ready spaces* or *EV capable spaces* designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated *EV* charging load of not less than 2.1 kVA per space. Where an energy management system is used to control *EV* charging loads for the purposes of this section, it shall not be configured to turn off electrical power to *EVSE* or *EV ready spaces* used to comply with Section RE101.2.1.

RE101.2.6 Construction documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

Section RE102 Referenced Standards No change.

RE102.1 General. No change.

See Table RE102.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.

TABLE RE102.1 REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
UL 2202—2009	***Electric Vehicle (EV) Charging System Equipment*— with revisions through February 2018**	RE101.2.4
UL 2594—2016	***Standard for Electric Vehicle Supply Equipment***	RE101.2.4

IRC Appendix NE: (RE) Electric Vehicle Charging Infrastructure

This is the same amendment as the IRC Appendix NE (RE) Option A. There is not an equivalent option C amendment in the IRC Appendix NE.

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance. **Appendix NE (RE) is adopted as mandatory.**

Section NE101: (RE101) Electric Vehicle Power Transfer

NE 101.1: (RE101.1) Definitions.
AUTOMOBILE PARKING SPACE. No change

ELECTRIC VEHICLE (EV). No change

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). No change

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). No change

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE SPACE). No change.

NE 101.2: (RE101.2) Electric vehicle power transfer infrastructure.

New residential automobile parking spaces for residential buildings shall be provided with electric vehicle power transfer infrastructure in accordance with Sections NE101.2.1 through NE101.2.5.

NE 101.2.1: (RE101.2.1) Quantity.

New one- and two-family dwellings and townhouses with a designated attached or detached garage or other on-site private parking provided adjacent to the *dwelling unit* shall be provided with one ~~*EV capable,*~~ *EV ready or EVSE space* per *dwelling unit*.

Exceptions:

~~1. Where the local electric distribution entity certifies in writing that it is not able to provide 100 percent of the necessary distribution capacity within 2 years after the estimated certificate of occupancy date, the required *EV* charging infrastructure shall be reduced based on the available existing electric distribution capacity.~~

~~2. Where substantiation is *approved* that meeting the requirements of Section RE101.2.5 will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the builder or developer by more than $450 per *dwelling unit*.~~

1. Additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. This exception does not apply to new detached and attached garages.

NE 101.2.2: (RE101.2.2) EV capable spaces. No changes

NE 101.2.3: (RE101.2.3) EV ready spaces. No changes

NE 101.2.4: (RE101.2.4) EVSE spaces.

An installed EVSE with multiple output connections shall be permitted to serve multiple EVSE spaces. Each EVSE serving either a single EVSE space or multiple EVSE spaces shall comply with the following:

1. Be served by an electrical distribution system in accordance with Section NE101.2.5.
2. Have a nameplate charging capacity of not less than ~~6.2~~**8.3** kVA (or ~~30~~**40**A at 208/240V) per EVSE space served. Where an EVSE serves three or more EVSE spaces and is controlled by an energy management system in accordance with Section NE101.2.5, the nameplate charging capacity shall be not less than 2.1 kVA per EVSE space served.
3. Be located within 6 feet (1828 mm) of each EVSE space it serves.
4. Be installed in accordance with NFPA 70 and be listed and labeled in accordance with UL 2202 or UL 2594.

NE 101.2.5: (RE101.2.5) Electrical distribution system capacity.

The branch circuits and electrical distribution system serving each EV capable space, EV ready space and EVSE space used to comply with Section NE101.2.1 shall comply with one the following:

1. Sized for a calculated EV charging load of not less than ~~6.2~~**8.3** kVA per EVSE, EV ready or EV capable space. Where a circuit is shared or managed, it shall be in accordance with NFPA 70.
2. The capacity of the electrical distribution system and each branch circuit serving multiple EVSE spaces, EV ready spaces or EV capable spaces designed to be controlled by an energy management system in accordance with NFPA 70 shall be sized for a calculated EV charging load of not less than 2.1 kVA per space. Where an energy management system is used to control EV charging loads for the purposes of this section, it shall not be configured to turn off electrical power to EVSE or EV ready spaces used to comply with Section NE101.2.1.

NE 101.2.6: (RE101.2.6) Construction Documents

Construction documents shall designate all *EVSE spaces, EV ready spaces,* and *EV capable spaces,* and indicate the locations of raceway and/or conduit and termination points serving them. The circuits or spaces reserved for *EVSE spaces, EV ready spaces,* and *EV capable spaces* shall be clearly identified in the panel or subpanel directory. The raceway and/or conduit for *EV ready spaces and EV capable spaces* shall be clearly identified at both the panel or subpanel and the termination point at the parking space.

AMENDMENTS JUSTIFICATION

1. Clarify that Appendix RE is adopted as mandatory.
2. One and two-family dwellings and townhomes:
    a. Remove EV capable spaces as an option to comply with the EV charging quantity standards. This amendment ensures the minimum standards in this appendix are not weaker than Flagstaff's current code, which requires an EV-ready space at minimum.
    b. Remove the standard exceptions from this appendix (related to electrical distribution capacity and utility side costs exceeding $450 per dwelling unit) from one- and two-family dwellings and townhomes. Additional EV charging infrastructure requirements are minimal in these units and electricity demand for EV charging is distributed across these units (so peak demand is likely to be low). These units are unlikely to have infrastructure requirements or electricity demand that would necessitate these exceptions.
3. Add an exception to match Flagstaff's current code, saying that additions and alterations to existing one- and two-family dwellings and townhouses constructed per the International Residential Code (IRC) are exempt from the standards in this appendix. Clarify that this exception does not apply to new garages.
4. Increase infrastructure requirements for Level 2 EVSE spaces from 6.2 kVA (or 30A at 208/240V) to 8.3kVA (or 40A at 208/240V). The standard Level 2 charger in modern markets requires a minimum of 40-amps and 208/240 volts. This is a reduction compared to 50-amp requirement in current Flagstaff code. Sizing lower than 40-amps reduces EV drivers' ability to select/use a suitable charger.
5. Add a requirement for construction documents to show the location of EV capable, EV ready, and EVSE spaces, along with associated infrastructure.

RELEVANT STANDARDS IN FLAGSTAFF'S CURRENT CODE

2018 IECC

CHAPTER 39 POWER AND LIGHTING DISTRIBUTION

Section E3901 Receptacle Outlets

Amend 2018 IRC E3901.9, Basements, garages and accessory buildings, by adding:

At least one required garage receptacle shall be a 208/240-volt individual branch circuit for purposes of electric vehicle (EV) charging. The service panel or subpanel circuit directory shall provide a 50-ampere minimum dedicated branch circuit and a branch circuit overcurrent device. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Exception: Additions and alterations to existing one- or two-family dwellings and townhouses constructed per the IRC are exempt from the EV charging requirement.

CHAPTER 4 SPECIAL DETAILED REQUIREMENTS BASED ON OCCUPANCY AND USE

Amend 2018 IBC by adding Section 429, Electric vehicle (EV) charging.

Amend 2018 IBC by adding 429.1, General:

429.1 General. Every newly permitted multi-family dwelling, commercial, and industrial structure shall provide parking space with "EV-ready outlets" per Table 429.1 and shall be identified on the construction documents. Construction documents shall indicate the location of the proposed EV-ready outlet(s). At least one EV-ready outlet shall be located in common use areas and available for use by all occupants.

An EV-ready outlet is "ready-to-go" with the addition of a plug-in electric vehicle (PEV) charging station. An EV-ready outlet consists of 208/240V, 50 ampere panel capacity, conduit, wiring, receptacle, and overcurrent protection device. The end point of the system must be near the planned location of the future EV charging station. Electric vehicle supply equipment shall be installed in accordance with 2017 NFPA 70/NEC.

Table 429.1

Parking Spaces Provided EV-ready Parking Spaces Required

1-19 None
20-50 One (1)
51-100 Two (2)
100+ Three (3)

OTHER CITIES' CODES

Denver residential EV charging requirements: **Residential Electric Vehicle (EV) Requirements - City and County of Denver**

If you're building a new home with a garage or carport or adding a new garage or carport to an existing home, the DEC (Denver Energy Code) requires that at least one EV-ready space be provided per dwelling unit. This means:

- A 240-volt, 40-amp branch circuit must be installed.
- The electrical panel must have a dedicated space for a two-pole circuit breaker, labeled "EV Ready."
- An outlet, receptacle, or EV charging connection must be installed at the EV-ready parking space.

These requirements apply to:

- Single-family homes
- Duplexes
- Townhouses

Note: R-3 or R-4 occupancy buildings three stories or less must comply with the commercial EV charging requirements found in Section C405.13 of the Denver Energy Code.

Colorado Energy Code

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Table C410.5.2.1 EV Power Transfer Infrastructure Requirements

Building Type/Space Type	**Level 2 EVSE Installed Spaces**	**Level 2 EV Ready Spaces**	**Level 2 EV Capable Spaces**	**Level 2 EV Capable Light Spaces**
Commercial buildings, except for Group R-2 occupancies, with 15 or fewer parking spaces	0	2 spaces 20% of spaces (not fewer than 2)	0	0
Commercial buildings, except for Group R-2 occupancies, with greater than 15 parking spaces	2% of spaces	8% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with 10 or fewer parking spaces	0	15% of spaces	10% of spaces	10% of spaces
Group R-2 occupancies with greater than 10 parking spaces	**5% of spaces**	**15% of spaces**	**10% of spaces**	**30% of spaces**

City of Tucson: attachment-b_ev-charging-ordinance-no.-11953.pdf

Tucson allows the minimum required parking to be reduced by providing EVSE spaces. It also has a minimum number of EV capable, EV ready, and EVSE spaces that must be provided with new development.

Multifamily residential, for example, is required to provide 10% EV ready spaces and 20% EV capable spaces.

Other helpful resources:

- ICC Electric Vehicles and Building Codes: A Strategy for Greenhouse Gas Reductions
  - From 2021 but still helpful

COMMUNITY FEEDBACK

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

- **Source:**
- **Date:**
- **Comments:**
- **Changes made in response to community feedback?** ☐Yes ☐ No
- **Summary of changes:**

ADDITIONAL INFORMATION

Residential Group Occupancies

- Residential Group R-1 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily transient in nature, including:
  - Boarding houses (transient) with more than 10 occupants
  - Congregate living facilities (transient) with more than 10 occupants
  - Hotels (transient)
  - Motels (transient)
  - Lodging houses with more than five guestrooms

- Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature, including:

  - Apartment houses
  - Congregate living facilities (nontransient) with more than 16 occupants
    - Boarding houses (nontransient)
    - Convents
    - Dormitories
    - Emergency services living quarters
    - Fraternities and sororities
    - Monasteries
  - Hotels (nontransient) with more than five guestrooms
  - Live/work units
  - Motels (nontransient) with more than five guestrooms
  - Vacation timeshare properties

- Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:
  - Buildings that do not contain more than two dwelling units
  - Care facilities that provide accommodations for five or fewer persons receiving care
  - Congregate living facilities (nontransient) with 16 or fewer occupants
    - Boarding houses (nontransient)
    - Convents
    - Dormitories
    - Emergency services living quarters
    - Fraternities and sororities
    - Monasteries
  - Congregate living facilities (transient) with 10 or fewer occupants
    - Boarding houses (transient)
  - Lodging houses with five or fewer guestrooms
  - Hotels (nontransient) with five or fewer guestrooms
  - Motels (nontransient) with five or fewer guestrooms

- Residential Group R-4 occupancy shall include *buildings*, *structures* or portions thereof for more than five but not more than 16 *persons*, excluding staff, who reside on a *24-hour basis* in a supervised residential environment and receive *custodial care*. *Buildings* of Group R-4 shall be classified as one of the occupancy conditions specified in Section 310.5.1 or 310.5.2. This group shall include, but not be limited to, the following:
  - Alcohol and drug centers
  - Assisted living *facilities*
  - Congregate care *facilities*
  - *Group homes*
  - Halfway houses
  - Residential board and care *facilities*
  - Social rehabilitation *facilities*

  Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code.

Section C405.15 Renewable Energy Systems

BACKGROUND INFORMATION

- **Primary code section:**
  - C405.15 Renewable Energy Systems
- **Other section(s) where amendments are needed to implement the primary code section:**
  - C401.2.1: International Energy Conservation Code (only amend if making renewable energy requirements optional)
- **Related code section(s)/dependencies:**
  - ??

CODE SUMMARY

This section requires new b*uildings* to be provided with on-site renewable electricity generation systems with a direct current (DC) nameplate power rating of not less than 0.75 watts per square foot (8.1 W/m^2) multiplied by the sum of the gross *conditioned floor area* of all floors, not to exceed the combined gross *conditioned floor area* of the three largest floors. Buildings that can't meet these requirements due to shading, and buildings under 5,000 sq ft., are required to obtain renewable energy that is 15 times the requirements for on-site renewable energy through one or more of the following means:

1. Physical renewable energy power purchase agreement.
2. Financial renewable energy power purchase agreement.
3. Community renewable energy facility.

   Off-site renewable energy system owned by the building property owner.
4. Renewable energy investment fund.
5. Green retail tariff.

PROPOSED AMENDMENTS

Five potential adoption options are proposed.

1. **Adopt the code as-is** (no amendments)
2. Adopt the code to **keep requirements for on-site solar but delete requirements for off-site renewable energy.** Buildings would be required to meet the on-site renewable energy requirements as much as possible but would not be required to purchase off-site renewable energy if they can't meet the minimum on-site requirements.
3. Adopt the code but **make all (on- and off-site) renewable energy requirements only apply to buildings over 10,000 sq ft (or some other size).** This would greatly reduce the number of buildings required to provide renewable energy (for example, there were approximately 23 new non-residential buildings constructed in Flagstaff since 2018 that were more than 10,000 sq. ft.).
4. Adopt the code but **make on-site renewable energy requirements only apply to buildings over 10,000 sq ft (or some other size) and delete all requirements for off-site renewable energy.** This would greatly reduce the number of buildings required to provide on-site renewable energy

(for example, there were approximately 23 new non-residential buildings constructed in Flagstaff since 2018 that were more than 10,000 sq. ft.).

5. **Adopt the code as-is but make all renewable energy requirements optional.**

Option 1: No amendments (adopt as-is)

Option 2: Adopt the code to keep requirements for on-site solar but delete requirements for off-site renewable energy.

C405.15 Renewable energy systems. No change

C405.15.1 On-site renewable energy systems. No change

~~**C405.15.2 Off-site renewable energy.**~~

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

~~**Equation 4-11**~~

~~TREoff=(RENoff×0.75W/ft2×FLRA-IREon)×15~~

~~where:~~

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

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

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

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

~~TABLE **C405.15.2 ANNUAL OFF-SITE RENEWABLE ENERGY REQUIREMENTS**~~

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

~~**C405.15.2.1 Off-site procurement.**~~

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

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

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

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

C405.15.2.2 Off-site contract.

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

C405.15.3 Renewable energy certificate (REC) documentation.

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

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

C405.15.4 Renewable energy certificate purchase.

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

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

C405.16 Inverters. No change

Option 3: Adopt the code but make all (on- and off-site) renewable energy requirements only apply to buildings over 10,000 sq ft (or some other size)

Key:
- ~~Deletion~~
- **Addition**
- Explanatory text (not a proposed amendment)

C405.15 Renewable energy systems.

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

Exception: buildings 10,000 square feet or less are not required to comply with these sections.

C405.15.1 On-site renewable energy systems.

Buildings **greater than 10,000 square feet** shall be provided with on-site renewable electricity generation systems with a direct current (DC) nameplate power rating of not less than 0.75 watts per square foot (8.1 W/m^2) multiplied by the sum of the gross *conditioned floor area* of all floors, not to exceed the combined gross *conditioned floor area* of the three largest floors.

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

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

C405.15.2 Off-site renewable energy. No change.

C405.15.2.1 Off-site procurement. No change.

C405.15.2.2 Off-site contract. No change.

C405.15.3 Renewable energy certificate (REC) documentation. No change.

C405.15.4 Renewable energy certificate purchase. No change.

C405.16 Inverters. No change.

Option 4: Adopt the code but make on-site renewable energy requirements only apply to buildings over 10,000 sq ft (or some other size) and delete all requirements for off-site renewable energy.

C405.15 Renewable energy systems.

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

Exception: buildings 10,000 square feet or less are not required to comply with these sections.

C405.15.1 On-site renewable energy systems.

Buildings **greater than 10,000 square feet** shall be provided with on-site renewable electricity generation systems with a direct current (DC) nameplate power rating of not less than 0.75 watts per square foot (8.1 W/m^2) multiplied by the sum of the gross *conditioned floor area* of all floors, not to exceed the combined gross *conditioned floor area* of the three largest floors.

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

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

~~4. A *building* with gross *conditioned floor area* less than 5,000 square feet (465 m^2).~~

~~**C405.15.2 Off-site renewable energy.**~~

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

~~**Equation 4-11**~~

~~TREoff=(RENoff×0.75W/ft2×FLRA-IREon)×15~~

~~where:~~

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

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

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

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

TABLE **C405.15.2 ANNUAL OFF-SITE RENEWABLE ENERGY REQUIREMENTS**

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

C405.15.2.1 Off-site procurement.

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

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

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

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

C405.15.2.2 Off-site contract.

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

C405.15.3 Renewable energy certificate (REC) documentation.

The *property owner* or owner's authorized agent shall demonstrate that where *renewable energy certificates (RECs)* or *energy attribute certificates (EACs)* are associated with on-site and off-site

~~renewable energy production required by Sections C405.15.1 and C405.15.2, all of the following criteria for RECs and EACs shall be met:~~

~~1. The RECs and EACs are retained and retired by or on behalf of the *property owner* or tenant for a period of not less than 15 years or the duration of the contract in Section C405.15.2.2, whichever is less.~~

~~2. The RECs and EACs are created within a 12-month period of the use of the REC.~~

~~3. The RECs and EACs are from a generating asset placed in service not more than 5 years before the issuance of the certificate of occupancy.~~

~~**C405.15.4 Renewable energy certificate purchase.**~~

~~A *building* that qualifies for one or more of the exceptions to Section C405.15.1, and where it can be demonstrated to the *code official* that the requirements of Section C405.15.2 cannot be met, the *building owner* shall contract the purchase of renewable electricity products before the certificate of occupancy is issued. The purchase of renewable electricity products shall comply with the Green-e Energy National Standard for renewable electricity products equivalent to five times the amount of total off-site renewable energy calculated in accordance with Equation 4-11.~~

C405.16 Inverters. No change

Option 5: make this section optional

C401.2.1 International Energy Conservation Code.

Commercial buildings shall comply with one of the following:

1. Prescriptive Compliance. The Prescriptive Compliance option requires compliance with Sections C402 through C406 and Section C408. *Dwelling units* and *sleeping units* in Group R-2 buildings shall be deemed to be in compliance with this chapter, provided that they comply with Section R406.
2. *Simulated Building Performance*. The *Simulated Building Performance* option requires compliance with Section C407.

Exceptions:

1. *Additions*, *alterations*, *repairs* and changes of occupancy to existing buildings complying with Chapter 5.

2. Compliance with the provisions of Section C405.15 is optional.

C405.15 Renewable energy systems.

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

C405.15.1 On-site renewable energy systems. No change.

C405.15.2 Off-site renewable energy. No change.

C405.15.2.1 Off-site procurement. No change.

C405.15.2.2 Off-site contract. No change.

C405.15.3 Renewable energy certificate (REC) documentation. No change.

C405.15.4 Renewable energy certificate purchase. No change.

C405.16 Inverters. No change.

CODE BENEFITS

The 2024 Commercial IECC is estimated to improve energy efficiency over Flagstaff's current code by approximately 29%. This estimate includes improvements to the building envelope in addition to renewable energy production. On- and off-site renewable energy systems support energy independence, help with grid management, and can reduce electricity bills by offsetting electricity use with solar energy production.

COST IMPACTS

- **Costs:** This code section will increase the cost of construction to account for the installation of solar panels and the purchase of off-site renewable energy, if required. Online sources indicate the price per watt for solar panels in Arizona in early 2026 ranges from $2.04 - $2.77.
- **Savings:** APS pays residents and building owners with on-site solar for each kilowatt hour that is fed back into the electrical grid. This can provide substantial savings on electricity bills, especially during the summer when solar production is high and electricity use tends to be lower in Flagstaff.

RELEVANT ENERGY CODE UPDATE OPTION(S)

☐ Option 1 ☒ Option 2 ☐ Option 3 ☐ Option 4

IS THIS IN FLAGSTAFF'S CURRENT CODE?

☐ Yes ☐ Yes, but new requirements are stronger ☒ No

AMENDMENT JUSTIFICATION

Given the upfront costs of installing renewable energy (or purchasing off-site renewable energy), several different amendments are proposed. These options are intended to lower the costs of complying with this section and/or reduce the number of buildings to which this section would apply. These options are provided so that Flagstaff continues to benefit from renewable energy while minimizing upfront construction costs.

RELATED REQUIREMENTS IN FLAGSTAFF'S CURRENT CODE

Flagstaff's current code has solar-ready requirements for commercial buildings. There are no requirements for the installation of on-site solar or for the purchase of off-site solar.

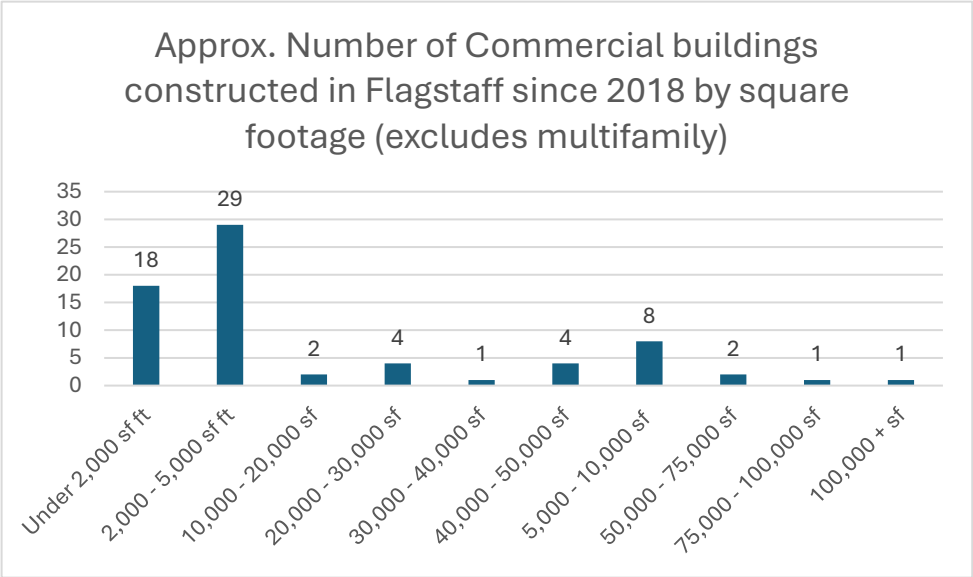
OTHER CITIES AND STATES THAT HAVE ADOPTED THIS AMENDMENT OR SIMILAR AMENDMENTS

Phoenix, Tucson, Glendale, Avondale, Mesa, and Chandler deleted this section. Outside of AZ, Southern Nevada and Northern Nevada also edited this out. The Colorado Model Energy Code doesn't require it because the doesn't require it because the Colorado Public Utilities Commission has requirements for the utilities to provide clean renewable energy, so the Colorado Energy Office opinion is if the grid is clean, then they don't need to require onsite clean energy.

Fort Collins kept this section in their code adoption.

ADDITIONAL INFORMATION

The chart below indicates that approximately 70 non-residential commercial buildings have been built in Flagstaff since 2018. Approximately 67% of these buildings are under 10,000 square feet. This information could help identify a threshold below which buildings don't have to comply with part or all of this section



COMMUNITY FEEDBACK ON THIS CODE SECTION
• **Source:** • **Date:** • **Comments:** • **Source:** • **Date:** • **Comments:** • **Source:** • **Date:** • **Comments:**

Building and Fire Code of Appeals **5. B.**

Meeting Date: 04/22/2026

From: Stephen Ball, Management Analyst

REQUEST:

Discussion, review, and recommendation of the draft 2024 International Fire Code Amendments and 2024 International Wildland-Urban Interface Code Amendments for the purpose of moving forward with public outreach and stakeholder engagement.

STAFF RECOMMENDED ACTION:

Staff Recommended Action

Provide a recommendation to move forward with the draft 2024 International Fire Code Amendments and 2024 International Wildland-Urban Interface Code Amendments for public outreach and stakeholder engagement, with the intent of informing future adoption.

VARIANCE CRITERIA AND ANALYSIS:

Attachments

Presentation
2024 IWUI Section 1 draft 2.13.2026
2024 IWUI Section 2 draft 2.13.2026
2024 IWUI Section 3 draft 2.13.2026
2024 IWUI Section 4 draft 2.13.2026
2024 IWUI Section 5 draft 2.13.2026
2024 IWUI Section 6 draft 2.13.2026
2024 IWUI Section 7 draft 2.13.2026
2024 IWUIC Appendices B-I 2.13.2026
2024 IWUIC Appendix A draft 2.13.2026
2024 IFC proposed amendments

2024 International Wildland Urban Interface Code Update

Neil Chapman | Wildland Fire Captain

Neil.chapman@flagstaffaz.gov | 928-606-9840

Intent

- Adopt the 2024 International Wildland Urban Interface Code
- Draft amendments based on local wildfire risk and heat transfer
  1. Embers
  2. Radiant Heat
  3. Direct Flame
- Simplify Construction Requirements
- Align with City of Flagstaff Zoning Code and Forest Management Plan
- Align with Insurance Institute for Business and Home Safety’s Wildfire Prepared Home Plus Standard

Significant Updates

- Chapter 5 Construction Regulations:
  - Deconflict three construction standards to just one standard
    - Eliminate uncertainty with fire hazard severity and defensible space calculations
  - Move from ignition resistant to non-combustible construction
    - Non-combustible siding and decks
    - Class A roof assembly
    - Enclosed eaves
    - Dual tempered pane glass
    - Non-combustible gutters, downspouts, covers
    - Zone zero (vegetation and fences)

Wildfire-Resistant Construction Cost Estimates

- The proposed WUI code updates are estimated to add about **$5,000** to the construction costs (approx. 0.6% of the average sales price for a new single-family home) compared to the 2006 WUI Code ignition resistant construction class 1 and 2.
- Cost increases are due to new requirements:
  - Windows
  - Enclosed eaves
  - Siding (*Many Flagstaff builders already use non-combustible materials)*
- Non-combustible deck costs can be mitigated with alternate construction methods

PART 1—GENERAL PROVISIONS

SECTION 101—SCOPE AND GENERAL REQUIREMENTS

[A] 101.1 Title. These regulations shall be known as the *Wildland-Urban Interface Code* of **[NAME OF JURISDICTION]**, hereinafter referred to as "this code."

[A] 101.2 Scope. The provisions of this code shall apply to the construction, alteration, movement, repair, maintenance and use of any building, structure or premises within the *wildland-urban interface areas* in this jurisdiction.

Buildings or conditions in existence at the time of the adoption of this code are allowed to have their use or occupancy continued, if such condition, use or occupancy was legal at the time of the adoption of this code, provided that such continued use does not constitute a distinct danger to life or property.

Buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code for new buildings or structures.

When determining which conditions constitute a distinct danger to life or property, the Code Official may be guided by industry standards, individual site conditions, hazard ratings, risk assessments, basal area calculations, and/or tree densities determined to be effective in identifying and mitigating fire danger and/or protecting property.

In coordination with the Community Development Department, the provisions of this code shall be applied to all future developments to make properties Fire Adapted prior to the application of resource protection standards found in the Land Development Code.

[A] 101.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted.

[A] 101.3 Purpose. The purpose of this code is to establish minimum regulations for the safeguarding of life and for property protection.

Regulations in this code are intended to mitigate the risk to life and structures from intrusion of fire from wildland fire exposures and fire exposures from adjacent structures and to mitigate structure fires from spreading to wildland fuels. The extent of this regulation is intended to be tiered commensurate with the relative level of hazard present.

The unrestricted use of property in wildland-urban interface areas is a potential threat to life and property from fire, economic, and resulting environmental impacts. Safeguards to

prevent the occurrence of fires and to provide adequate fire protection facilities to control the spread of fire in *wildland-urban interface areas* shall be in accordance with this code.

This code shall supplement the jurisdiction's building and fire codes, if such codes have been adopted, to provide for special regulations to mitigate the fire- and life-safety hazards of the *wildland-urban interface areas*.

[A] 101.4 Retroactivity. The provisions of the code shall apply to conditions arising after the adoption thereof, conditions not legally in existence at the adoption of this code and conditions that, in the opinion of the *code official*, constitute a distinct hazard to life or property.

Exception: Provisions of this code that specifically apply to existing conditions are retroactive.

[A] 101.5 Additions or alterations. Additions or alterations shall be permitted to be made to any building or structure without requiring the existing building or structure to comply with all of the requirements of this code, provided that the addition or alteration conforms to that required for a new building or structure.

Exception: Provisions of this code that specifically apply to existing conditions are retroactive. Additions or alterations shall not be made to an existing building or structure that will cause the existing building or structure to be in violation of any of the provisions of this code nor shall such additions or alterations cause the existing building or structure to become unsafe. An unsafe condition shall be deemed to have been created if an addition or alteration will cause the existing building or structure to become structurally unsafe or overloaded; will not provide adequate access in compliance with the provisions of this code or will obstruct existing exits or access; will create a fire hazard; will reduce required fire resistance or will otherwise create conditions dangerous to human life.

[A] 101.6 Maintenance. Buildings, structures, landscape materials, vegetation, *defensible space* or other devices or safeguards required by this code shall be maintained in conformance to the code edition under which installed. The owner or the owner's authorized agent shall be responsible for the maintenance of buildings, structures, landscape materials and vegetation.

SECTION 102—APPLICABILITY

[A] 102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

[A] 102.2 Other laws. The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

[A] 102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

[A] 102.4 Referenced codes and standards. The codes and standards referenced in this code shall be those that are listed in Chapter 7 and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2.

[A] 102.4.1 Conflicts. Where conflicts occur between provisions of this code and the referenced standards, the provisions of this code shall govern.

[A] 102.4.2 Provisions in referenced codes and standards. Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provisions of this code, as applicable, shall take precedence over the provisions in the referenced standard.

[A] 102.5 Subjects not regulated by this code. Where applicable standards or requirements are not set forth in this code, or are contained within other laws, codes, regulations, ordinances or policies adopted by the jurisdiction, compliance with applicable standards of other nationally recognized safety standards, as *approved*, shall be deemed as prima facie evidence of compliance with the intent of this code. Nothing herein shall derogate from the authority of the code official to determine compliance with codes or standards for those activities or installations within the code official's jurisdiction or responsibility.

[A] 102.6 Matters not provided for. Requirements that are essential for the public safety of an existing or proposed activity, building or structure, or for the safety of the occupants thereof, which are not specifically provided for by this code, shall be determined by the *code official* consistent with the necessity to establish the minimum requirements to safeguard the public health, safety and general welfare.

[A] 102.7 Partial invalidity. In the event that any part or provision of this code is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

[A] 102.8 Existing conditions. The legal occupancy or use of any structure or condition existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the *International Fire Code* or the

International Property Maintenance Code, or as is deemed necessary by the *code official* for the general safety and welfare of the occupants and the public.

PART 2—ADMINISTRATION AND ENFORCEMENT

SECTION 103—CODE COMPLIANCE AGENCY

[A] 103.1 Creation of agency. The **[INSERT NAME OF DEPARTMENT]** is hereby created and the official in charge thereof shall be known as the *code official*. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.

[A] 103.2 Appointment. The *code official* shall be appointed by the chief appointing authority of the jurisdiction.

[A] 103.3 Deputies. In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the *code official* shall have the authority to appoint a deputy *code official*, other related technical officers, inspectors and other employees. Such employees shall have powers as delegated by the *code official*.

SECTION 104—DUTIES AND POWERS OF THE CODE OFFICIAL

[A] 104.1 Powers and duties of the code official. The *code official* is hereby authorized to enforce the provisions of this code.

[A] 104.2 Determination of compliance. The *code official* shall have the authority to determine compliance with this code, to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures:

1. Shall be in compliance with the intent and purpose of this code.

2. Shall not have the effect of waiving requirements specifically provided for in this code.

[A] 104.2.1 Technical assistance. To determine compliance with this code, the *code official* is authorized to require the owner, the owner's authorized agent or the person in possession or control of the building or premises to provide a technical opinion and report.

[A] 104.2.1.1 Costs. A technical opinion and report shall be provided without charge to the jurisdiction.

[A] 104.2.1.2 Preparer qualifications. The technical opinion and report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the *code official*. The *code official* is authorized to require design submittals to be prepared by, and bear the stamp of, a *registered design professional*.

[A] 104.2.1.3 Content. The technical opinion and report shall analyze the properties of the design, operation or use of the building or premises, the facilities and appurtenances situated thereon and fuel management to identify and propose necessary recommendations.

[A] 104.2.1.4 Tests. Where there is insufficient evidence of compliance with the provisions of this code, the *code official* shall have the authority to require tests as evidence of compliance. Test methods shall be as specified in this code or by other recognized

test standards. In the absence of recognized test standards, the *code official* shall approve the testing procedures. Such tests shall be performed by a party acceptable to the *code official*.

[A] 104.2.2 Alternative materials, design and methods. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*.

[A] 104.2.2.1 Approval authority. An alternative material, design or method shall be approved where the *code official* finds that the proposed alternative is satisfactory and complies with Sections 104.2.2.2 through 104.2.2.7, as applicable.

[A] 104.2.2.2 Application and disposition. Where required, a request to use an alternative material, design or method of construction shall be submitted in writing to the *code official* for approval. Where the alternative material, design or method of construction is not approved, the *code official* shall respond in writing, stating the reasons the alternative was not approved.

[A] 104.2.2.3 Compliance with code intent. An alternative material, design or method of construction shall comply with the intent of the provisions of this code.

[A] 104.2.2.4 Equivalency criteria. An alternative material, design or method of construction shall, for the purpose intended, be not less than the equivalent of that prescribed in this code with respect to all of the following, as applicable:

1. Quality.

2. Strength.

3. Effectiveness.

4. Durability.

5. Safety, other than fire safety.

6. Fire safety.

[A] 104.2.2.5 Tests. Tests conducted to demonstrate equivalency in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict performance of the end use configuration. Tests shall be performed by a party acceptable to the *code official*.

[A] 104.2.2.5.1 Fire tests. Tests conducted to demonstrate equivalent fire safety in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict fire safety performance of the end use configuration. Tests shall be performed by a party acceptable to the code official.

[A] 104.2.2.6 Reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall comply with Sections 104.2.2.6.1 and 104.2.2.6.2.

[A] 104.2.2.6.1 Evaluation reports. Evaluation reports shall be issued by an *approved agency* and use of the evaluation report shall require approval by the code official for the installation. The alternate material, design or method of construction and product evaluated shall be within the scope of the code official's recognition of the *approved agency*. Criteria used for the evaluation shall be identified within the report and, where required, provided to the code official.

[A] 104.2.2.6.2 Other reports. Reports not complying with Section 104.2.2.6.1 shall describe criteria, including but not limited to any referenced testing or analysis, used to determine compliance with code intent and justify code equivalence.

The report shall be prepared by a qualified engineer, specialist, laboratory or fire safety specialty organization acceptable to the code official. The *code official* is authorized to require design submittals to be prepared by, and bear the stamp of, a *registered design professional*.

[A] 104.2.2.7 Peer review. The *code official* is authorized to require submittal of a peer review report in conjunction with a request to use an alternative material, design or method of construction, prepared by a peer reviewer that is approved by the *code official*.

[A] 104.2.3 Modifications. Where there are practical difficulties involved in carrying out the provisions of this code, the *code official* shall have the authority to grant modifications for individual cases, provided that the *code official* shall first find that one or more special individual reasons make the strict letter of this code impractical, that the modification is in conformance with the intent and purpose of this code, and that such modification does not lessen health, life and fire safety requirements. The details of the written request and

action granting modifications shall be recorded and entered into the files of the code enforcement agency.

[A] 104.3 Applications and permits. The *code official* is authorized to receive applications, review construction documents and issue permits for construction regulated by this code, issue permits for operations regulated by this code, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.

SCOPE AND ADMINISTRATION

[A] 104.4 Right of entry. Where it is necessary to make an inspection to enforce the provisions of this code, or where the *code official* has reasonable cause to believe that there exists in a structure or on any premises a condition that is contrary to or in violation of this code that makes the structure or premises unsafe, dangerous or hazardous, the *code official* is authorized to enter the structure or premises at all reasonable times to inspect or to perform the duties imposed by this code. If such structure or premises is occupied, the *code official* shall present proper credentials to the occupant and request entry. If such structure or premises is unoccupied, the *code official* shall first make a reasonable effort to locate the owner, the owner's authorized agent or other person having charge or control of the structure or premises and request entry. If such entry is refused, then the *code official* shall have recourse to every remedy provided by law to secure entry.

[A] 104.4.1 Warrant. Where the code official has first obtained a proper inspection warrant or other remedy provided by law to secure entry, an owner, the owner's authorized agent, occupant or person having charge, care or control of the structure or premises shall not fail or neglect, after a proper request is made as herein provided, to permit entry therein by the code official for the purposes of inspection and examination pursuant to this code.

[A] 104.5 Identification. The *code official* shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

[A] 104.6 Notices and orders. The code official shall issue all necessary notices or orders to ensure compliance with this code. Notices of violations shall be in accordance with Section 110.2.

[A] 104.7 Official records. The *code official* shall keep official records as required by Sections 104.7.1 through 104.7.5. Such official records shall be retained for not less than 5 years or for as long as the structure or activity to which such records relate remains in existence, unless otherwise provided by other regulations.

[A] 104.7.1 Approvals. A record of approvals shall be maintained by the *code official* and shall be available for public inspection during business hours in accordance with applicable laws.

[A] 104.7.2 Inspections. The *code official* shall keep a record of each inspection made, including notices and orders issued, showing the findings and disposition of each.

[A] 104.7.3 Code alternatives and modifications. Application for alternative materials, design and methods of construction and equipment in accordance with Section 104.2.2; modifications in accordance with Section 104.2.3; and documentation of the final

decision of the *code official* for either shall be in writing and shall be retained in the official records.

[A] 104.7.4 Tests. The *code official* shall keep a record of tests conducted to comply with Sections 104.2.1.4 and 104.2.2.5.

[A] 104.7.5 Fees. The *code official* shall keep a record of fees collected and refunded in accordance with Section 108.

[A] 104.8 Liability. The *code official*, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction, in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered personally liable, either civilly or criminally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of an act or by reason of any act or omission in the discharge of official duties.

[A] 104.8.1 Legal defense. Any suit or criminal complaint instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code or other laws or ordinances implemented through the enforcement of this code shall be defended by legal representatives of the jurisdiction until final termination of the proceedings. The code official or any subordinate shall not be liable for costs in an action, suit or proceeding that is instituted in pursuance of the provisions of this code.

[A] 104.9 Approved materials and equipment. Materials, equipment and devices approved by the code official shall be constructed and installed in accordance with such approval.

[A] 104.9.1 Materials and equipment reuse. Materials, equipment and devices shall not be reused unless such elements are in good working order and *approved*.

[A] 104.10 Other agencies. When requested to do so by the *code official*, other officials of this jurisdiction shall assist and cooperate with the *code official* in the discharge of the duties required by this code.

SECTION 105—PERMITS

[A] 105.1 General. Where not otherwise provided in the requirements of the *International Building Code* or *International Fire Code*, permits are required in accordance with Sections 105.2 through 105.10.

[A] 105.2 Permits required. Unless otherwise exempted, buildings or structures regulated by this code shall not be erected, constructed, altered, repaired, moved, removed, converted, demolished or changed in use or occupancy unless a separate permit for each building or structure has first been obtained from the *code official*.

For buildings or structures erected for temporary uses, see Section A108.3.

Where required by the *code official*, a permit shall be obtained for the following activities, operations, practices or functions within a *wildland-urban interface area*:

1. Automobile wrecking yard.

2. Candles and open flames in assembly areas.

3. Explosives or blasting agents.

4. Fireworks.

5. Flammable or combustible liquids.

6. Hazardous materials.

7. Liquefied petroleum gases.

8. Lumberyards.

9. Motor vehicle fuel-dispensing stations.

10. Open burning.

11. Pyrotechnical special effects material.

12. Tents, canopies and temporary membrane structures.

13. Tire storage.

14. Welding and cutting operations.

[A] 105.3 Work exempt from permit. Unless otherwise provided in the requirements of the *International Building Code* or *International*

Fire Code, a permit may not be required for the following:

1. One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided that the floor area does not exceed 120 square feet (11.15 m2) and the structure is located more than 50 feet (15 240 mm) from the nearest adjacent structure.

2. Fences not over 6 feet (1829 mm) high.

Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction. The *code official* is authorized to stipulate conditions for permits. Permits shall not be issued where public safety would be at risk, as determined by the *code official*.

[A] 105.4 Permit application. To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by the code enforcement agency for that purpose. Every such application shall:

1. Identify and describe the work, activity, operation, practice or function to be covered by the permit for which application is made.

2. Describe the land on which the proposed work, activity, operation, practice or function is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building, work, activity, operation, practice or function.

3. Indicate the use or occupancy for which the proposed work, activity, operation, practice or function is intended.

4. Be accompanied by plans, diagrams, computation and specifications and other data as required in Section 106 of this code.

5. State the valuation of any new building or structure or any addition, remodeling or alteration to an existing building.

6. Be signed by the applicant or the applicant's authorized agent.

7. Give such other data and information as required by the *code official*.

[A] 105.4.1 Preliminary inspection. Before a permit is issued, the *code official* is authorized to inspect and approve the systems, equipment, buildings, devices, premises and spaces or areas to be used.

[A] 105.4.2 Time limitation of application. An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the *code official* is authorized to grant one or more extensions of time for additional periods not exceeding 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[A] 105.5 Permit approval. Before a permit is issued, the *code official*, or an authorized representative, shall review and approve permitted uses, occupancies or structures. Where laws or regulations are enforceable by other agencies or departments, a joint approval shall be obtained from agencies or departments concerned.

[A] 105.6 Permit issuance. The application, plans, specifications and other data filed by an applicant for a permit shall be reviewed by the *code official*. If the *code official* finds that the work described in an application for a permit and the plan, specifications and other data filed therewith conform to the requirements of this code, the *code official* is allowed to issue a permit to the applicant.

When the *code official* issues the permit, the *code official* shall endorse in writing or stamp the plans and specifications APPROVED.

Such *approved* plans and specifications shall not be changed, modified or altered without authorization from the *code official*, and work regulated by this code shall be done in accordance with the *approved* plans.

[A] 105.6.1 Refusal to issue a permit. Where the application or construction documents do not conform to the requirements of pertinent laws, the *code official* shall reject such application in writing, stating the reasons therefor.

[A] 105.7 Validity of permit. The issuance or granting of a permit or approval of plans, specifications and computations shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or of any other ordinance of the jurisdiction. Permits presuming to give authority to violate or conceal the provisions of this code or other ordinances of the jurisdiction shall not be valid.

[A] 105.8 Expiration. Every permit issued by the *code official* under the provisions of this code shall expire by limitation and become null and void if the building, use or work authorized by such permit is not commenced within 180 days from the date of such permit,

or if the building, use or work authorized by such permit is suspended or abandoned at any time after the work is commenced for a period of 180 days.

Any permittee holding an unexpired permit is allowed to apply for an extension of the time within which work is allowed to commence under that permit where the permittee is unable to commence work within the time required by this section for good and satisfactory reasons. The *code official* is authorized to extend the time for action by the permittee for a period not exceeding 180 days on written request by the permittee showing that circumstances beyond the control of the permittee have prevented action from being taken. Permits shall not be extended more than once.

[A] 105.9 Retention of permits. Permits shall at all times be kept on the premises designated therein and shall at all times be subject to inspection by the *code official* or other authorized representative.

[A] 105.10 Revocation of permits. Permits issued under this code can be suspended or revoked where it is determined by the *code official* that:

1. It is used by a person other than the person to whom the permit was issued.

2. It is used for a location other than that for which the permit was issued.

3. Any of the conditions or limitations set forth in the permit have been violated.

4. The permittee fails, refuses or neglects to comply with any order or notice duly served on him or her under the provisions of this code within the time provided therein.

5. There has been any false statement or misrepresentation as to material fact in the application or plans on which the permit or application was made.

6. The permit is issued in error or in violation of any other ordinance, regulations or provisions of this code. The *code official* is allowed to, in writing, suspend or revoke a permit issued under the provisions of this code whenever the permit is issued in error or on the basis of incorrect information supplied, or in violation of any ordinance or regulation or any of the provisions of this code.

SECTION 106—CONSTRUCTION DOCUMENTS

[A] 106.1 General. Plans, engineering calculations, diagrams and other data shall be submitted in not fewer than two sets, or in a digital format where allowed by the building official, with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the *code official* is

authorized to require additional documents to be prepared by a registered design professional.

Exception: Submission of plans, calculations, construction inspection requirements and other data, if it is found that the nature of the work applied for is such that reviewing of plans is not necessary to obtain compliance with this code.

[A] 106.2 Information on plans and specifications. Plans and specifications shall be drawn to scale on substantial paper or cloth and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations.

[A] 106.3 Site plan. In addition to the requirements for plans in the *International Building Code*, site plans shall include topography, width and percent of grade of access roads, landscape and vegetation details, locations of structures or building envelopes, existing or proposed overhead utilities, occupancy classification of buildings, types of ignition-resistant construction of buildings, structures and their appendages, roof classification of buildings and site water supply systems. The *code official* is authorized to waive or modify the requirement for a site plan where the application for permit is for alteration or repair or where otherwise warranted.

[A] 106.4 Vegetation management plans. Where utilized by the permit applicant pursuant to Section 502, forest stewardship plans shall be prepared and shall be submitted to the *code official* for review and approval as part of the plans required for a permit.

[A] 106.5 Fire protection plan. Where required by the *code official* pursuant to Section 405, a *fire protection plan* shall be prepared and shall be submitted to the *code official* for review and *approved* as a part of the plans required for a permit. **[A] 106.6 Other data and substantiation.** Where required by the *code official*, the plans and specifications shall include classification of fuel loading, fuel model light, medium or heavy, and substantiating data to verify classification of fire-resistive vegetation.

[A] 106.7 Vicinity plan. In addition to the requirements for site plans, plans shall include details regarding the vicinity within 300 feet (91 440 mm) of lot lines, including other structures, slope, vegetation, *fuel breaks*, water supply systems and access roads.

[A] 106.8 Retention of plans. One set of *approved* plans, specifications and computations shall be retained by the *code official* for a period of not less than 180 days from date of completion of the permitted work or as required by state or local laws; and one set of *approved* plans and specifications shall be returned to the applicant, and said set shall be kept on the site of the building, use or work at all times during which the work authorized thereby is in progress.

[A] 106.9 Examination of documents. The *code official* shall examine or cause to be examined the accompanying construction documents and shall ascertain by such examinations whether the construction indicated and described is in accordance with the requirements of this code and other pertinent laws or ordinances.

[A] 106.10 Amended construction documents. Work shall be installed in accordance with the *approved* construction documents, and changes made during construction that are not in compliance with the *approved* documents shall be resubmitted for *approval* as an amended set of construction documents.

[A] 106.11 Previous approvals. This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.

[A] 106.12 Phased approval. The *code official* is authorized to issue a permit for the construction of foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of this code. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire structure will be granted.

SECTION 107—TEMPORARY USES, EQUIPMENT AND SYSTEMS

[A] 107.1 General. The *code official* is authorized to issue a permit for temporary uses, equipment and systems. Such permits shall be limited as to time of service, but shall not be permitted for more than 180 days. The *code official* is authorized to grant extensions for demonstrated cause.

[A] 107.2 Conformance. Temporary uses, equipment and systems shall conform to the requirements of this code as necessary to ensure health, safety and general welfare.

[A] 107.3 Temporary service utilities. The *code official* is authorized to give permission to temporarily supply service utilities in accordance with Section 111.

[A] 107.4 Termination of approval. The *code official* is authorized to terminate such permit for temporary uses, equipment and systems and to order the same to be discontinued.

SECTION 108—FEES

[A] 108.1 Payment of fees. A permit shall not be valid until the fees prescribed by law have been paid. An amendment to a permit shall not be released until the additional fee, if any, has been paid

[A] 108.2 Schedule of permit fees. Where a permit is required, a fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.

[A] 108.3 Permit valuations. The applicant for a permit shall provide an estimated value of the work for which the permit is being issued at time of application. Such estimated valuations shall include the total value of work, including materials and labor, for which the permit is being issued. Where, in the opinion of the applicable governing authority, the valuation is underestimated, the permit shall be denied, unless the applicant can show detailed estimates acceptable to the applicable governing authority. The applicable governing authority shall have the authority to adjust the final valuation for permit fees.

[A] 108.4 Work commencing before permit issuance. Any person who commences any work before obtaining the necessary permits shall be subject to a fee established by the applicable governing authority, which shall be in addition to the required permit

fees.

[A] 108.5 Related fees. The payment of the fee for the construction, alteration, removal or demolition of work done in connection to or concurrently with the work or activity authorized by a permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.

[A] 108.6 Refunds. The applicable governing authority is authorized to establish a refund policy.

SECTION 109—INSPECTION AND ENFORCEMENT

[A] 109.1 Inspection. Inspections shall be in accordance with Sections 109.1.1 through 109.1.4.3.

[A] 109.1.1 General. Construction or work for which a permit is required by this code shall be subject to inspection by the *code official* and such construction or work shall remain visible and able to be accessed for inspection purposes until *approved* by the *code official*.

It shall be the duty of the permit applicant to cause the work to remain visible and able to be accessed for inspection purposes. Neither the *code official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid.

Where required by the *code official*, a survey of the lot shall be provided to verify that the mitigation features are provided and the building or structure is located in accordance with the *approved* plans.

[A] 109.1.2 Authority to inspect. The *code official* shall inspect, as often as necessary, buildings and premises, including such other hazards or appliances designated by the *code official* for the purpose of ascertaining and causing to be corrected any conditions

that could reasonably be expected to cause fire or contribute to its spread, or any violation of the purpose of this code and of any other law or standard affecting fire safety.

[A] 109.1.2.1 Approved inspection agencies. The *code official* is authorized to accept reports of *approved* inspection agencies, provided that such agencies satisfy the requirements as to qualifications and reliability.

[A] 109.1.2.2 Inspection requests. It shall be the duty of the holder of the permit or their duly authorized agent to notify the *code official* when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

[A] 109.1.2.3 Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the *code official*. The *code official*, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the *code official*.

[A] 109.1.3 Reinspections. To determine compliance with this code, the *code official* can cause a structure to be reinspected. A fee can be assessed for each inspection or reinspection where work for which inspection is called is not complete or where corrections called for are not made.

Reinspection fees can be assessed where the *approved* plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested or for deviating from plans requiring the approval of the *code official*.

To obtain a reinspection, the applicant shall pay the reinspection fee as set forth in the fee schedule adopted by the jurisdiction. Where reinspection fees have been assessed, additional inspection of the work will not be performed until the required fees have been paid.

[A] 109.1.4 Testing. Installations shall be tested as required in this code and in accordance with Sections 109.1.4.1 through 109.1.4.3. Tests shall be made by the permit holder or authorized agent and observed by the *code official*.

[A] 109.1.4.1 New, altered, extended or repaired installations. New installations and parts of existing installations that have been altered, extended, renovated or repaired, shall be tested as prescribed herein to disclose defects.

[A] 109.1.4.2 Apparatus, instruments, material and labor for tests. Apparatus, instruments, material and labor required for testing an installation or part thereof shall be furnished by the permit holder or authorized agent.

[A] 109.1.4.3 Reinspection and testing. Where any work or installation does not pass an initial test or inspection, the necessary corrections shall be made so as to achieve compliance with this code. The work or installation shall then be resubmitted to the *code official* for inspection and testing.

[A] 109.2 Enforcement. Enforcement shall be in accordance with Sections 109.2.1 and 109.2.2.

[A] 109.2.1 Authorization to issue corrective orders and notices. Where the *code official* finds any building or premises that are in violation of this code, the *code official* is authorized to issue corrective orders and notices.

[A] 109.2.2 Service of orders and notices. Orders and notices authorized or required by this code shall be given or served on the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation either by verbal notification, personal service, or delivering the same to, and leaving it with, a person of suitable age and discretion on the premises; or, if such person is not found on the premises, by affixing a copy thereof in a conspicuous place on the door to the entrance of said premises and by mailing a copy thereof to such person by registered or certified mail to the person's last known address.

Orders or notices that are given verbally shall be confirmed by service in writing as herein provided.

[A] 109.3 Compliance with orders and notices. Compliance with orders and notices shall be in accordance with Sections 109.3.1 through 109.3.8.

[A] 109.3.1 General compliance. Orders and notices issued or served as provided by this code shall be complied with by the owner, the owner's authorized agent, operator, occupant or other person responsible for the condition or violation to which the corrective order or notice pertains.

If the building or premises is not occupied, then such corrective orders or notices shall be complied with by the owner or the owner's authorized agent.

[A] 109.3.2 Compliance with tags. A building or premises shall not be used when in violation of this code as noted on a tag affixed in accordance with Section 109.3.1.

[A] 109.3.3 Removal and destruction of signs and tags. A sign or tag posted or affixed by the *code official* shall not be mutilated, destroyed or removed without authorization by the *code official*.

[A] 109.3.4 Citations. Persons operating or maintaining an occupancy, premises or vehicle subject to this code who allow a hazard to exist or fail to take immediate action to abate a hazard on such occupancy, premises or vehicle when ordered or notified to do so by the *code official* shall be guilty of a misdemeanor.

[A] 109.3.5 Unsafe conditions. Buildings, structures or premises that constitute a fire hazard or are otherwise dangerous to human life, or that in relation to existing use constitute a hazard to safety or health or public welfare, by reason of inadequate maintenance, dilapidation, obsolescence, fire hazard, disaster damage or abandonment as specified in this code or any other ordinance, are unsafe conditions. Unsafe buildings or structures shall not be used. Unsafe buildings are hereby declared to be public nuisances and shall be abated by repair, rehabilitation, demolition or removal, pursuant to applicable state and local laws and codes.

[A] 109.3.5.1 Record. The *code official* shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the nature of the unsafe condition.

[A] 109.3.5.2 Notice. Where an unsafe condition is found, the *code official* shall serve on the owner, owner's authorized agent or person in control of the building, structure or premises, a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or requires the unsafe structure to be demolished. Such notice shall require the person thus notified, or their designee, to declare to the *code official* within a stipulated time, acceptance or rejection of the terms of the order.

[A] 109.3.5.2.1 Method of service. Such notice shall be deemed properly served where a copy thereof is served by one of the following methods:

1. Delivered to the owner or the owner's authorized agent personally.

2. Sent by certified or registered mail addressed to the owner or the owner's authorized agent at the last known address with a return receipt requested.

3. Delivered in any other manner as prescribed by local law.

Where the certified or registered letter is returned showing that the letter was not delivered, a copy thereof shall be posted in a conspicuous place in or about the structure affected by such notice. Service of such notice in the foregoing manner on the owner's authorized agent or on the person responsible for the structure shall constitute service of notice on the owner.

[A] 109.3.5.3 Placarding. Upon failure of the owner, the owner's authorized agent or the person responsible to comply with the notice provisions within the time given, the *code official* shall post on the premises or on defective equipment a placard bearing the word "UNSAFE" and a statement of the penalties provided for occupying the premises, operating the equipment or removing the placard.

[A] 109.3.5.3.1 Placard removal. The *code official* shall remove the unsafe condition placard whenever the defect or defects on which the unsafe condition and placarding action were based have been eliminated. Any person who defaces or removes an unsafe condition placard without the approval of the *code official* shall be subject to the penalties provided by this code.

[A] 109.3.5.4 Abatement. The owner, the owner's authorized agent, operator or occupant of a building, structure or premises deemed unsafe by the *code official* shall abate, correct or cause to be abated or corrected such unsafe conditions either by repair, rehabilitation, demolition or other *approved* corrective action.

[A] 109.3.5.5 Summary abatement. Where conditions exist that are deemed hazardous to life and property, the *code official* is authorized to abate or correct summarily such hazardous conditions that are in violation of this code.

[A] 109.3.5.6 Evacuation. The *code official* shall be authorized to order the immediate evacuation of any occupied building, structure or premises deemed unsafe where such hazardous conditions exist that present imminent danger to the occupants.

Persons so notified shall immediately leave the structure or premises and shall not enter or reenter until authorized to do so by the *code official*.

[A] 109.3.6 Prosecution of violation. If the notice of violation is not complied with promptly, the *code official* is authorized to request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the building or structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

[A] 109.3.7 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the *approved* construction documents or directive of the *code official*, or of a permit or certificate used under provisions of this code, shall be guilty of a **[SPECIFY OFFENSE]**, punishable by a fine of not more than **[AMOUNT]** dollars or by imprisonment not exceeding **[NUMBER OF DAYS]**, or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

[A] 109.3.8 Abatement of violation. In addition to the imposition of the penalties herein described, the *code official* is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises.

SECTION 110—CERTIFICATE OF COMPLETION

[A] 110.1 General. A building, structure or premises shall not be used or occupied, and a change in the existing use or occupancy classification of a building, structure, premise or portion thereof shall not be made until the *code official* has issued a certificate of completion therefor as provided herein. The certificate of occupancy shall not be issued until the certificate of completion indicating that the project is in compliance with this code has been issued by the *code official*.

[A] 110.2 Certificate of occupancy. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other pertinent laws and ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other laws or ordinances of the jurisdiction shall not be valid.

Exceptions:

1. Certificates of occupancy are not required for work exempt from permits under Section 105.3.

2. Accessory structures.

[A] 110.3 Temporary occupancy. The *code official* is authorized to issue a temporary certificate of occupancy before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. The *code official* shall set a time period during which the temporary certificate of occupancy is valid.

[A] 110.4 Revocation. The *code official* is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code wherever the certificate is issued in error, on the basis of incorrect information supplied, or where it is determined that the building or structure, premise or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.

SECTION 111—SERVICE UTILITIES

[A] 111.1 Connection of service utilities. A person shall not make connections from a utility, source of energy, fuel, power, water system or sewer system to any building or system that is regulated by this code for which a permit is required until authorized by the *code official*.

[A] 111.2 Temporary connection. The *code official* shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel, power, water system or sewer system for the purpose of testing systems or for use under a temporary approval.

[A] 111.3 Authority to disconnect service utilities. The *code official* shall have the authority to authorize disconnection of utility service to the building, structure or system regulated by this code and the referenced codes and standards in case of emergency where necessary to eliminate an immediate hazard to life or property or where such utility connection has been made without the approval required by Sections 111.1 and 111.2. The *code official* shall notify the serving utility and, where possible, the owner or the owner's authorized agent and the occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnection, the owner, the owner's authorized agent or the occupant of the building, structure or service system shall be notified in writing as soon as practical thereafter.

SECTION 112—MEANS OF APPEALS

[A] 112.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the *code official* relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The board of appeals shall be appointed by the applicable governing authority and shall hold office at its

pleasure. The board shall adopt rules of procedure for conducting its business and shall render all decisions and findings in writing to the appellant, with a duplicate copy to the *code official*.

[A] 112.2 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equivalent or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

[A] 112.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training on matters pertaining to the provisions of this code and are not employees of the jurisdiction.

[A] 112.4 Administration. The *code official* shall take action without delay in accordance with the decision of the board.

SECTION 113—STOP WORK ORDER

[A] 113.1 Authority. Where the *code official* finds any work regulated by this code being performed in a manner contrary to the provisions of this code or in a dangerous or unsafe manner, the *code official* is authorized to issue a stop work order.

[A] 113.2 Issuance. The stop work order shall be in writing and shall be given to the owner of the property, the owner's authorized agent or the person performing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work is authorized to resume.

[A] 113.3 Emergencies. Where an emergency exists, the *code official* shall not be required to give a written notice prior to stopping the work.

[A] 113.4 Failure to comply. Any person who shall continue any work 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, shall be subject to fines established by the authority having jurisdiction.

DEFINITIONS

User notes:

About this chapter: *Codes, by their very nature, are technical documents. Every word, term and punctuation mark can add to or change the meaning*

of a technical requirement. It is necessary to maintain a consensus on the specific meaning of each term contained in the code.

Chapter 2 performs this function by stating clearly what specific terms mean for the purpose of the code.

SECTION 201—GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings

shown in this chapter.

201.2 Interchangeability. Words stated in the present tense include the future; words stated in the masculine gender include the

feminine and neuter; and the singular number includes the plural and the plural the singular.

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in other International Codes, such

terms shall have the meanings ascribed to them as in those codes.

201.4 Terms not defined. Where terms are not defined through the methods authorized by this section, such terms shall have their

ordinarily accepted meanings such as the context implies.

SECTION 202—DEFINITIONS

ACCESSORY STRUCTURE. A building or structure used to shelter or support any material, equipment, chattel or occupancy other than a habitable building.

[A] APPROVED. Acceptable to the *code official*.

[A] APPROVED AGENCY. An established and recognized organization that is regularly engaged in conducting

tests, furnishing inspection services or furnishing product evaluation or certification where such organization

has been approved by the code official.

[A] BUILDING. Any structure intended for supporting or sheltering any occupancy.

[A] BUILDING OFFICIAL. The officer or other designated authority charged with the administration and enforcement

of the *International Building Code*, or the building official's duly authorized representative.

CERTIFICATE OF COMPLETION. Written documentation that the project or work for which a permit was issued has been completed

in conformance with requirements of this code.

[A] CODE OFFICIAL. The official designated by the jurisdiction to interpret and enforce this code, or the code official's authorized

representative.

CRITICAL FIRE WEATHER. A set of weather conditions (usually a combination of low relative humidity and wind) whose effects on fire

behavior make control difficult and threaten firefighter safety.

DEFENSIBLE SPACE. An area either natural or man-made, where material capable of allowing a fire to spread unchecked has been

treated, cleared or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire suppression operations

to occur.

DRIVEWAY. A vehicular ingress and egress route that serves no more than two buildings or structures, not including accessory structures,

or more than five dwelling units.

[BG] DWELLING. A building that contains one or two dwelling units used, intended or designed to be used, rented, leased, let or hired

out to be occupied for living purposes.

[F] FIRE CHIEF. The chief officer or the chief officer's authorized representative of the fire department serving the jurisdiction.

FIRE FLOW CALCULATION AREA. The floor area, in square feet (square meters), used to determine the adequate water supply.

FIRE PROTECTION PLAN. A document prepared for a specific project or development proposed for the *wildland-urban interface area*.

It describes ways to minimize and mitigate the fire problems created by the project or development, with the purpose of reducing

impact on the community's fire protection delivery system.

FIRE WEATHER. Weather conditions favorable to the ignition and rapid spread of fire. In wildfires, this generally includes high

temperatures combined with strong winds and low humidity. See "*Critical fire weather*."

FIRE-RESISTANCE-RATED CONSTRUCTION. The use of materials and systems in the design and construction of a building or structure

to safeguard against the spread of fire within a building or structure and the spread of fire to or from buildings or structures to

the *wildland-urban interface area*.

FIRE RESISTIVE VEGETATION is those plants that bum at a relatively low intensity, slow rates of spread, and with short flame lengths. Characteristics indude:

1. Growth with little or no accumulation of dead vegetation (either on the ground or standing upright)
2. Non-resinous plants (ex: flowers or aspen trees)
3. Low volume of total vegetation (ex: grass vs. brush)
4. Plants with high live fuel moisture (large amount of water in relation to their

   dry weight)
5. Drought tolerant plants
6. Stands without ladder fuels (plants without small, fine branches and limbs or adjacent shorter plants that create a ready-avenue for fire to move upward from the ground to the top of the vegetation)
7. Plants requiring little maintenance
8. Plants with woody stems and branches that require prolonged heating to ignite

[BG] FLAME SPREAD INDEX. A comparative measure, expressed as a dimensionless number, derived from visual measurements of

the spread of flame versus time for a material tested in accordance with ASTM E84.

FOREST MANAGEMENT PLAN is a comprehensive management plan that is applied to all lands within the city boundary, as well as any parcels or areas served by an emergency response/suppression contract.

FOREST STEWARDSHIP PLAN applies to subdivisions, multi-family residential, commercial, and industrial development both inside and outside the Resource Protection Overlay. It does not apply to individual hazard tree removal or individual single family residential parcels. Specific determination of need will be made by Staff.

• When a Forest Stewardship Plan is required, it must include both narrative and descriptive maps documenting how existing forest conditions will be modified to align with the desired conditions and tree density as stated in the Forest Management Plan.

• The Forest Stewardship Plan is in addition to the Flagstaff Zoning Code standards.

• If a parcel falls within the Resource Protection Overlay, a Forest Stewardship

Plan must be reviewed and approved prior to the submittal of the Natural Resource Protection Plan that aligns with the Resource Protection Standards (10-50.90).

FUEL, HEAVY. Vegetation consisting of round wood 3 to 8 inches (76 to 203 mm) in diameter. See Fuel Models G, I, J, K and U described

in Appendix D.

FUEL, LIGHT. Vegetation consisting of herbaceous plants and round wood less than 1/4 inch (6.4 mm) in diameter. See Fuel Models A,

C, E, L, N, P, R and S described in Appendix D.

FUEL, MEDIUM. Vegetation consisting of round wood 1/4 to 3 inches (6.4 mm to 76 mm) in diameter. See Fuel Models B, D, F, H, O, Q

and T described in Appendix D.

FUEL BREAK. An area, strategically located for fighting anticipated fires, where the native vegetation has been permanently modified

or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier

fire control and to provide access for firefighting.

FUEL MODIFICATION. A method of modifying fuel load by reducing the amount of nonfire-resistive vegetation or altering the type of

vegetation to reduce the fuel load.

FUEL MOSAIC. A *fuel modification* system that provides for the creation of islands and irregular boundaries to reduce the visual and

ecological impact of *fuel modification*.

FUEL-LOADING. The oven-dry weight of fuels in a given area, usually expressed in pounds per acre (lb/a) (kg/ha). Fuel-loading may

be referenced to fuel size or time-lag categories, and may include surface fuels or total fuels.

GREEN BELT. A *fuel break* designated for a use other than fire protection.

(2006) HAZARDOUS FUELS are weeds, grass, needles, straw, brush, trees, vines, wood chips, firewood, or other vegetation - living or dead - that a) if ignited, will present a risk to life or property, or b) if left in it's current or natural state, will create an impediment to access, pose a threat to improvements, infrastructure, or public safety, or may cause a fire to ignite.

HAZARDOUS MATERIALS. As defined in the *International Fire Code*.

HEAVY TIMBER CONSTRUCTION. As described in the *International Building Code*.

IGNITION-RESISTANT BUILDING MATERIAL. A type of building material that resists ignition or sustained flaming combustion sufficiently

so as to reduce losses from wildfire exposure of burning embers and small flames.

IGNITION-RESISTANT CONSTRUCTION, CLASS 1. A schedule of additional requirements for construction in *wildland-urban interface*

areas based on extreme fire hazard.

IGNITION-RESISTANT CONSTRUCTION, CLASS 2. A schedule of additional requirements for construction in *wildland-urban interface*

areas based on high fire hazard.

IGNITION-RESISTANT CONSTRUCTION, CLASS 3. A schedule of additional requirements for construction in *wildland-urban interface*

areas based on moderate fire hazard.

LOG WALL CONSTRUCTION. A type of construction in which exterior walls are constructed of solid wood members and where the

smallest horizontal dimension of each solid wood member is not less than 6 inches (152 mm).

MULTILAYERED GLAZED PANELS. Window or door assemblies that consist of two or more independently glazed panels installed

parallel to each other, having a sealed air gap in between, within a frame designed to fill completely the window or door opening in

which the assembly is intended to be installed.

NONCOMBUSTIBLE. As applied to building construction material means a material that, in the form in which it is used, is either one

of the following:

1. Material of which no part will ignite and burn when subjected to fire. Any material conforming to ASTM E136 shall be considered

noncombustible within the meaning of this section.

2. Material having a structural base of noncombustible material as defined in Item 1 above, with a surfacing material not over

1/8 inch (3.2 mm) thick, which has a flame spread index of 50 or less. Flame spread index as used herein refers to a flame

spread index obtained according to tests conducted as specified in ASTM E84 or UL 723.

“Noncombustible” does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to

flues, heating appliances or other sources of high temperature shall refer to material conforming to Item 1. No material shall be classified

as noncombustible that is subject to increase in combustibility or flame spread index, beyond the limits herein established,

through the effects of age, moisture or other atmospheric condition.

NONCOMBUSTIBLE ROOF COVERING. A roof covering consisting of any of the following:

1. Cement shingles or sheets.

2. Exposed concrete slab roof.

3. Ferrous or copper shingles or sheets.

4. Slate shingles.

5. Clay or concrete roofing tile.

6. *Approved* roof covering of *noncombustible* material.

[A] PEER REVIEW. An independent and objective technical review conducted by an approved third party.

[A] REGISTERED DESIGN PROFESSIONAL. An architect or engineer, registered or licensed to practice professional architecture or

engineering, as defined by the statutory requirements of the professional registration laws of the state in which the project is to be

constructed.

ROOF ASSEMBLY. A system designed to provide weather protection and resistance to design loads. The system consists of a *roof*

covering and *roof deck* or a single component serving as both the *roof covering* and the *roof deck*. A roof assembly can include an

underlayment, thermal barrier, ignition barrier, insulation or a vapor retarder.

ROOF COVERING. The covering applied to the *roof deck* for weather resistance, fire classification or appearance.

ROOF COVERING SYSTEM. See "*Roof assembly*."

ROOF DECK. The flat or sloped surface not including its supporting members or vertical supports.

SLOPE. The variation of terrain from the horizontal; the number of feet (meters) rise or fall per 100 feet (30 480 mm) measured horizontally,

expressed as a percentage.

[A] STRUCTURE. That which is built or constructed.

[Z] SUBDIVISION. The division of a tract, lot or parcel of land into two or more lots, plats, sites or other divisions of land.

TREE CROWN. The primary and secondary branches growing out from the main stem, together with twigs and foliage.

UNENCLOSED ACCESSORY STRUCTURE. An accessory structure without a complete exterior wall system enclosing the area under

roof or floor above.

(2006) VEGETATION MANAGEMENT is a plan or operational activity, described below, that is undertaken by property owners at their own discretion or directed/approved by the Code Official designed or required to reduce wildfire threat, promote environmental sustainability, public welfare, and/or community well-being.

1. **Debris Disposal** - Removal of cut, dead, dying, and/or downed vegetation or other combustible materials, including flammable landscaping plants.

2. **Marking** - Designating trees or other vegetation, by location, paint, flagging, or other identification system, that are to be either removed or retained.

3. **Prescribed Fire** - The planned use of fire under specific environmental conditions to achieve forest management or community protection objectives. Used to reduce hazardous fuel levels, control unwanted vegetation, recycle nutrients, favor desired vegetation, and improve visibility and wildlife habitat.

4. **Selective Tree Thinning** - The periodic removal of individual trees or groups of trees to reduce threat of wildfire, improve individual tree vigor and forest health, or achieve other desired objectives.

WILDFIRE. An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

WILDLAND. An area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities.

WILDLAND-URBAN INTERFACE AREA. That geographical area where structures and other human development meets or intermingles

with wildland or vegetative fuels.

WILDLAND-URBAN INTERFACE AREAS

User notes:

About this chapter: *Chapter 3 provides for the fundamental aspect of applying the code—the legal declaration and establishment of wildland-urban interface areas within the adopting jurisdiction by the local legislative body. The provisions cover area analysis and declaration based on findings of fact (located in Appendix E), mapping of the area, legal recordation of the maps with the local keeper of records and the periodic review and reevaluation of the declared areas on a regular basis. If needed, revisions can be directed by the legislative body of the jurisdiction.*

SECTION 301—GENERAL

301.1 Scope. The provisions of this chapter provide methodology to establish and record *wildland-urban interface areas* based on the findings of fact: high temperatures, low relative humidity, breezy/windy conditions, low fuel moistures, weather-related ignition potential, human-related ignition potential, historical fire data, natural fire- adapted ecosystem, ember lofting and carrying potential, tree densities, crown closure, ladder fuels, surface fuels, and other fire risk factors.

301.2 Objective. The objective of this chapter is to provide simple baseline criteria for determining *wildland-urban interface areas*.

SECTION 302—WILDLAND-URBAN INTERFACE AREA DESIGNATIONS

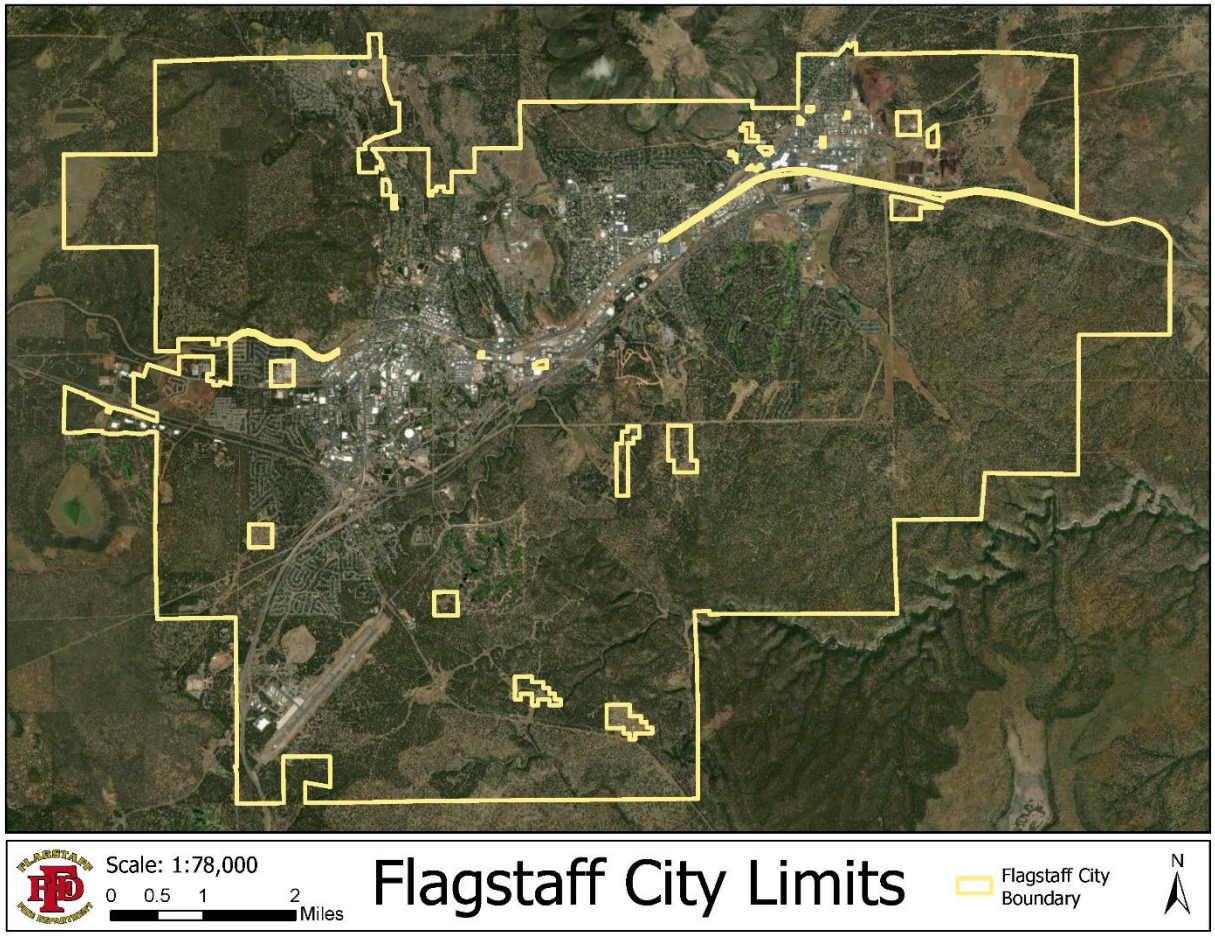
302.1 Declaration. The legislative body shall declare the *wildland-urban interface areas* within the jurisdiction. The *wildland-urban interface areas* shall be based on the findings of fact. The *wildland-urban interface area* boundary shall correspond to natural or manmade features.

302.2 Mapping. The *wildland-urban interface areas* shall be recorded on maps available for inspection by the public.

302.3 Review of wildland-urban interface areas. The *code official* shall reevaluate and recommend modification to the *wildland urban interface areas* in accordance with Section 302.1 on a 3-year basis or more frequently as deemed necessary by the legislative body.

All of Flagstaff City Limits is considered Wildland Urban Interface. This is due to fire receptive vegetation surrounding and within the City, and ember lofting and carrying potential.

Wildfire embers, often referred to as firebrands, are the primary cause of home destruction in wildfires, capable of traveling massive distances through the air to ignite new, unexpected spot fires. While they typically travel one mile or more ahead of the main fire front, extreme conditions can carry them much further. Under extreme, high-wind conditions, embers have been documented traveling 6 to 12+ miles, particularly with burning, buoyant material like bark. Recognizing this potential, we must acknowledge that every part of the City of Flagstaff is at risk due to a wildfire.



WILDLAND-URBAN INTERFACE AREA REQUIREMENTS

SECTION 401—GENERAL

401.1 Scope. *Wildland-urban interface areas* shall be provided with emergency vehicle access and water supply in accordance with this chapter.

401.2 Objective. The objective of this chapter is to establish the minimum requirements for emergency vehicle access and water supply for buildings and structures located in the *wildland-urban interface areas*.

401.3 General safety precautions. General safety precautions shall be in accordance with this chapter. See also Appendix A.

SECTION 402—APPLICABILITY

402.1 Subdivisions. Subdivisions shall comply with Sections 402.1.1 and 402.1.2.

402.1.1 Access. New subdivisions, as determined by this jurisdiction, shall be provided with fire apparatus access roads in accordance with the *International Fire Code* and access requirements in accordance with Section 403.

402.1.2 Water supply. New subdivisions as determined by this jurisdiction shall be provided with water supply in accordance with Section 404.

402.2 Individual structures. Individual structures shall comply with Sections 402.2.1 and 402.2.2.

402.2.1 Access. Individual structures hereafter constructed or relocated into or within *wildland-urban interface areas* shall be provided with fire apparatus access in accordance with the *International Fire Code* and driveways in accordance with Section 403.2. Marking of fire protection equipment shall be provided in accordance with Section 403.5 and address markers shall be provided in accordance with Section 403.6.

402.2.2 Water supply. Individual structures hereafter constructed or relocated into or within *wildland-urban interface areas* shall be provided with a conforming water supply in accordance with Section 404.

Exceptions:

1. Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m2).

2. Upon approval from Fire Code Official

402.3 Existing conditions. Existing buildings shall be provided with address markers in accordance with Section 403.6. Existing roads and fire protection equipment shall be provided with markings in accordance with Sections 403.4 and 403.5, respectively.

SECTION 403—ACCESS

403.1 Restricted access. Where emergency vehicle access is restricted because of secured access roads or *driveways* or where immediate access is necessary for lifesaving or firefighting purposes, the *code official* is authorized to require a key box to be installed in an *approved* location. The key box shall be of a type *approved* by the *code official* and shall contain keys to gain necessary access as required by the *code official*.

403.2 Driveways. *Driveways* shall be provided where any portion of an exterior wall of the first story of a building is located more than 150 feet (45 720 mm) from a fire apparatus access road.

403.2.1 Dimensions. *Driveways* shall provide a minimum unobstructed width of 12 feet (3658 mm) and a minimum unobstructed height of 13 feet 6 inches (4115 mm).

403.2.2 Length. *Driveways* in excess of 150 feet (45 720 mm) in length shall be provided with turnarounds. *Driveways* in excess of 200 feet (60 960 mm) in length and less than 20 feet (6096 mm) in width shall be provided with turnouts in addition to turnarounds.

403.2.3 Service limitations. A *driveway* shall not serve in excess of five *dwelling* units.

> **Exception:** Where such driveways meet the requirements for fire apparatus access roads in accordance with ~~Section 503 of~~ the *International Fire Code*.

403.2.4 Turnarounds. *Driveway* turnarounds shall have inside turning radii of not less than 30 feet (9144 mm) and outside turning radii of not less than 45 feet (13 716 mm). *Driveways* that connect with a road or roads at more than one point shall be considered as having a turnaround if all changes of direction meet the radii requirements for *driveway* turnarounds.

403.2.5 Turnouts. *Driveway* turnouts shall be an all-weather road surface not less than 10 feet (3048 mm) wide and 30 feet (9144 mm) long. *Driveway* turnouts shall be located as required by the *code official*.

403.2.6 Bridges. Vehicle load limits shall be posted at both entrances to bridges on *driveways* and private roads. Design loads for bridges shall be established by the *code official*.

403.3 Fire apparatus access road. Where required, fire apparatus access roads shall be all-weather roads with a minimum width of 20 feet (6096 mm) and a clear height of 13 feet

6 inches (4115 mm); shall be designed to accommodate the loads and turning radii for fire apparatus; and shall have a gradient negotiable by the specific fire apparatus normally used at that location within the jurisdiction.

Dead-end roads in excess of 150 feet (45 720 mm) in length shall be provided with turnarounds as *approved* by the *code official*.

An all-weather road surface shall be any surface material acceptable to the *code official* that would normally allow the passage of emergency service vehicles typically used to respond to that location within the jurisdiction.

403.4 Marking of roads. *Approved* signs or other *approved* notices shall be provided and maintained for access roads and *driveways* to identify such roads and prohibit the obstruction thereof.

403.4.1 Sign construction. Road identification signs and supports shall be of noncombustible materials. Signs shall have minimum 4-inch-high (102 mm) reflective letters with 1/2-inch (12.7 mm) stroke on a contrasting 6-inch-high (152 mm) sign. Road identification signage shall be mounted at a height of 7 feet (2134 mm) from the road surface to the bottom of the sign.

403.5 Marking of fire protection equipment. Fire protection equipment and fire hydrants shall be clearly identified in a manner *approved* by the *code official* to prevent obstruction.

403.6 Address markers. Buildings shall have a permanently posted address, which shall be placed at each *driveway* entrance and be visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

403.6.1 Signs along one-way roads. Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

403.6.2 Multiple addresses. Where multiple addresses are required at a single *driveway*, they shall be mounted on a single post, and additional signs shall be posted at locations where *driveways* divide.

403.6.3 Single-business sites. Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

403.7 Grade. The gradient for fire apparatus access roads and *driveways* shall not exceed the maximum *approved* by the *code official*.

SECTION 404—WATER SUPPLY

404.1 General. Where provided in order to qualify as a conforming water supply for the purpose of Table 503.1 or as required for new subdivisions in accordance with Section 402.1.2, an *approved* water source shall have an adequate water supply for the use of the fire protection service to protect buildings and structures from exterior fire sources or to suppress structure fires within the *wildland urban interface area* of the jurisdiction in accordance with this section.

Exception: Buildings containing only private garages, carports, sheds and agricultural buildings with a floor area of not more than 600 square feet (56 m2).

404.2 Water sources. The point at which a water source is available for use shall be located not more than 1,000 feet (305 m) from the building and be *approved* by the *code official*. The distance shall be measured along an unobstructed line of travel.

Water sources shall comply with the following:

1. Man-made water sources shall have a minimum usable water volume as determined by the adequate water supply needs in accordance with Section 404.5. This water source shall be equipped with an *approved* hydrant. The water level of the water source shall be maintained by rainfall, water pumped from a well, water hauled by a tanker or by seasonal high water of a stream or river. The design, construction, location, water level maintenance, access and access maintenance of man-made water sources shall be *approved* by the *code official*.

2. Natural water sources shall have a minimum annual water level or flow sufficient to meet the adequate water supply needs in accordance with Section 404.5. This water level or flow shall not be rendered unusable because of freezing. This water source shall have an *approved* draft site with an *approved* hydrant. Adequate water flow and rights for access to the water source shall be ensured in a form acceptable to the *code official*.

404.3 Draft sites. *Approved* draft sites shall be provided at natural water sources intended for use as fire protection for compliance with this code. The design, construction, location, access and access maintenance of draft sites shall be *approved* by the *code official*.

404.3.1 Access. The draft site shall have emergency vehicle access from an access road in accordance with Section 403.

404.3.2 Pumper access points. The pumper access point shall be either an emergency vehicle access area alongside a conforming access road or an *approved driveway* not longer than 150 feet (45 720 mm). Pumper access points and access *driveways* shall be designed and constructed in accordance with all codes and ordinances enforced by this jurisdiction. Pumper access points shall not require the pumper apparatus to obstruct a road or *driveway*.

404.4 Hydrants. Hydrants shall be designed and constructed in accordance with nationally recognized standards. The location and access shall be *approved* by the *code official*.

404.5 Adequate water supply. Adequate water supply shall be determined for purposes of initial attack and flame front control as follows:

1. One- and two-family dwellings. The required water supply for one- and two-family dwellings having a *fire flow calculation area* that does not exceed 3,600 square feet (334 m2) shall be 1,000 gallons per minute (63.1 L/s) for a minimum duration of 30 minutes. The required water supply for one- and two-family dwellings having a *fire flow calculation area* in excess of 3,600 square feet (334 m2) shall be 1,500 gallons per minute (95 L/s) for a minimum duration of 30 minutes.

   Exception: A reduction in required flow rate of 50 percent, as *approved* by the *code official*, is allowed where the building is provided with an *approved* automatic sprinkler system.

2. Buildings other than one- and two-family dwellings. The water supply required for buildings other than one- and two-family dwellings shall be as *approved* by the *code official* but shall be not less than 1,500 gallons per minute (95 L/s) for a duration of 2 hours.

Exception: A reduction in required flow rate of up to 75 percent, as *approved* by the *code official*, is allowed where the building is provided with an *approved* automatic sprinkler system. The resulting water supply shall not be less than 1,500 gallons per minute (94.6 L/s).

404.6 Fire department. The water supply required by this code shall only be *approved* where a fire department, rated Class 9 or better in accordance with ISO Commercial Rating Service, 1995, is available.

404.7 Obstructions. Access to water sources required by this code shall be unobstructed at all times. The *code official* shall not be deterred or hindered from gaining immediate access to water source equipment, fire protection equipment or hydrants.

404.8 Identification. Water sources, draft sites, hydrants and fire protection equipment and hydrants shall be clearly identified in a manner *approved* by the *code official* to identify location and to prevent obstruction by parking and other obstructions.

404.9 Testing and maintenance. Water sources, draft sites, hydrants and other fire protection equipment required by this code shall be subject to periodic tests as required by the *code official*. Such equipment installed under the provisions of this code shall be maintained in an operative condition at all times and shall be repaired or replaced where defective. Additions, repairs, alterations and servicing of such fire protection equipment and resources shall be in accordance with *approved* standards.

404.10 Reliability. Water supply reliability shall comply with Sections 404.10.1 through 404.10.3.

404.10.1 Objective. The objective of this section is to increase the reliability of water supplies by reducing the exposure of vegetative fuels to electrically powered systems.

404.10.2 Clearance of fuel. *Defensible space* shall be provided around water tank structures, water supply pumps and pump houses in accordance with Section 603.

404.10.3 Standby power. Standby power shall be provided to pumps, controllers and related electrical equipment so that stationary water supply facilities within the *wildland-urban interface area* that are dependent on electrical power can provide the required water supply. The standby power system shall be in accordance with Section 2702 of the *International Building Code* and Section 1203 of the *International Fire Code*. The standby power source shall be capable of providing power for not less than 2 hours.

Exceptions:

1. Where *approved* by the *code official*, a standby power supply is not required where the primary power service to the stationary water supply facility is underground.

2. A standby power supply is not required where the stationary water supply facility serves not more than one single family dwelling.

SECTION 405—FIRE PROTECTION PLAN

405.1 General. Where required by the *code official*, a *fire protection plan* shall be prepared.

405.2 Content. The plan shall be based on a site-specific wildfire risk assessment that includes considerations of location, topography, aspect, flammable vegetation, climatic conditions and fire history. The plan shall address water supply, access, building ignition

and fire-resistance factors, fire protection systems and equipment, *defensible space* and vegetation management.

405.3 Cost. The cost of *fire protection plan* preparation and review shall be the responsibility of the applicant.

405.4 Plan retention. The *fire protection plan* shall be retained by the *code official*.

Replace Chapter 5 with this document

SECTION 501—GENERAL

501.1 Scope. Buildings and structures shall be constructed in accordance with the *International Residential Code and International Building Code* and this code.

Exceptions:

1. Accessory structures not exceeding 120 square feet (11 m2) in floor area where located greater than or equal to 50 feet from buildings containing habitable spaces.

2. Agricultural buildings greater than or equal to 50 feet from buildings containing habitable spaces.

501.2 Objective. The objective of this chapter is to establish minimum standards to locate, design and construct buildings and structures or portions thereof for the protection of life and property, to resist damage from wildfires, and to mitigate building and structure fires from spreading to wildland fuels. The minimum standards set forth in this chapter vary with the critical *fire weather*, slope and fuel type to provide increased protection, above the requirements set forth in the *International Building Code*, from the various levels of hazards.

501.3 Fire-resistance-rated construction. Where this code requires 1-hour *fire-resistance-rated construction*, the fire-resistance rating of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E119 or UL 263.

Exceptions:

1. The fire-resistance rating of building elements, components or assemblies based on the prescriptive designs prescribed in Section 721 of the *International Building Code*.

2. The fire-resistance rating of building elements, components or assemblies based on the calculation procedures in accordance with Section 722 of the *International Building Code*.

SECTION 503 NON-COMBUSTIBLE CONSTRUCTION AND MATERIAL

503.1 General. Buildings and structures hereafter constructed, modified or relocated into the City of Flagstaff, shall meet the construction requirements in accordance with Section 503.2 and 504.

503.2.1 Noncombustible material. Material shall comply with the definition of *noncombustible* materials in Section 202.

SECTION 504 EXTERIOR CONSTRUCTION

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*.

Class A rated roof covering types include, but are not limited to:

- Cement shingles or sheets.
- Exposed concrete slab roof.
- Ferrous or copper shingles or sheets.
- Slate shingles.
- Clay or concrete roofing tile.

o Where provided, barrel tile or corrugated roof coverings shall include noncombustible bird stops at the eave ends to prevent the entry of embers and debris.

• Note: Given the potential service life uncertainties of both ignition-resistant treatments and applied ignition-resistant coatings, the use of wood shake, wood shingle, or any wood roof covering material regardless of test rating are not permitted.

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 shall be enclosed or protected on the exposed underside using noncombustible materials.

504.4 Gutters and downspouts. Gutters and downspouts shall be constructed of *noncombustible* (metal) material. Gutters shall be covered with a noncombustible material 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:

1. *Approved noncombustible* materials. (e.g., metal, fibercement, masonry veneer, stucco, brick, concrete).

- Where provided, all shutters (e.g., decorative and operable) shall be made of noncombustible material.
- Note: Combustible wall cover material (e.g., wood shake, wood shingle, or any other wood siding material including ignition-resistant treatments and coatings) by construction or assembly are not permitted.

3. Heavy timber or *log wall construction may be permitted for projects based on Fire Code Official approval and Community Development review.*

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 where any non-combustible gaps may occur.

504.6 Underfloor enclosure. Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5 with noncombustible corrosion-resistant mesh not to exceed 1/8-inch in diameter covering any openings.

Exception: Complete enclosure shall not be required where underfloor areas are elevated more than 4 feet above the ground. In such a case, columns and supporting walls must either be non-combustible or covered with non-combustible material.

504.7 Appendages, projections, attached patios, decks, and overhead structures (e.g., Covered Porches, Pergolas, Carports, and Gazebos). Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be constructed in accordance with one of the following methods:

1. All the components including posts, joists, railings, stairs, and walking surfaces are constructed with noncombustible.

2. Deck walking surfaces constructed with a solid (no gaps), noncombustible material such as metal or light-weight concrete; railings within 5 feet of the home constructed of a noncombustible material, including where railings attach to the home; and deck posts with a minimum of 6 vertical inches of noncombustible material at grade.

Staircases 4 feet in width or less that attach to a deck and are open underneath, shall meet one of the following requirements:

- Open risers (no solid risers)

  • shall have a minimum of 6 vertical inches of the bottom of stairs made from noncombustible material.

  • Stair treads should be a solid (no gaps), noncombustible material, such as metal or light-weight concrete.

- Closed risers

  • shall have a minimum of 6 vertical inches of the bottom of stairs made from noncombustible material.

  • Stair treads and risers should be a solid (no gaps), noncombustible material, such as metal or light-weight concrete.

    - Staircases wider than 4 feet that attach to a deck, the staircase shall be cleared underneath and enclosed with a noncombustible corrosion-resistant mesh with openings not to exceed 1/8-inch in diameter and meet the following requirements:

3: Retrofits

o Deck Walking Surfaces shall be constructed with a solid, noncombustible material (e.g., metal or lightweight concrete) with no gaps.

o Deck Railings within 5 feet of the home shall be constructed with noncombustible material, including where they attach to the home.

o Deck posts shall have a minimum of 6-inches of noncombustible material (e.g., metal flashing or fibercement board) applied vertically to the base.

o Stairs Attached to a Deck shall meet one the following requirements:

- Stairs Less than 4 Feet Wide and Open Underneath:

  o A minimum of 6-inches of noncombustible material (e.g., metal flashing or fiber-cement) shall be applied vertically at the exterior base, measured from the ground at grade.

  o Stair treads shall be a solid (no gaps) and made of noncombustible material (e.g., metal or lightweight concrete).

  o Exception: If stairs are constructed with closed risers, they shall also be solid (no gaps) and made of noncombustible material.

- Stairs Wider Than 4 Feet:

  o The area underneath shall be enclosed with noncombustible, corrosion-resistant mesh with openings not to exceed 1/8-inch in diameter.

  o A minimum of 6-inches of noncombustible material (e.g., metal flashing or fiber-cement) shall be applied vertically at the exterior base, measured from the ground at grade.

  o Stairs shall have closed risers. Stair treads and risers shall be a solid, and made of noncombustible material (e.g., metal or light-weight concrete) with no gaps.

• **Roof Covering –** Shall meet one of the following requirements:

  o A solid roof covering material with a Class A rating when tested in accordance with ASTM E108 or UL 790, or

  o Constructed of combustible slats (e.g., pergola) that cover no more than 15% of the total surface area.

• **Setback –** A detached combustible overhead structure (e.g., pergola and gazebo) on an attached deck shall be at least 10 feet from all exterior walls of the home.

  o *Exception:* An overhead structure constructed entirely of noncombustible materials is permitted with no setback requirement.

• **Posts –** exterior surface of the post must be non-combustible

• **Other –** Shall be free of any vegetation, curtains, drapes, and shade screens.

  o *Exception:* Shade screens that retract into noncombustible housing are permitted.

• **Carports and Garages –** Must have noncombustible wall covering material and the 0–5 Foot Noncombustible Zone under and around the structure.

o An open carport with exposed combustible interior wall covering (e.g., wood), shall be enclosed.

• **6-inch Vertical Noncombustible Clearance –** Shall have noncombustible covering material for of all posts, supporting walls, and stairs measured from the ground at grade.

• **Lattice and Mesh –** Must be noncombustible material (e.g., metal). Where noncombustible corrosion-resistant metal mesh is provided, the mesh shall be installed on the outside of the lattice.

• **No Storage –** Shall have nothing combustible stored underneath.

o *Exception:* An open outdoor living area under the deck shall meet the same requirements (see "Top of walking surfaces" above).

• Additionally, decks with a walking surface of 4 feet or less above the ground, shall be enclosed with the following:

o When measured from the walking surface to the ground, the underdeck area with this height or less shall be enclosed with noncombustible, corrosion-resistant mesh. The mesh openings shall not exceed 1/8-inch in diameter and shall fully enclose the outer edge of the deck from the walking surface to the ground. This enclosure is required to reduce debris accumulation and limit ember intrusion beneath the deck.

Detached Decks and Overhead Structures (e.g., Covered Porches, Pergolas, Carports, and Gazebos) Where provided, detached decks and overhead structures within 10 feet of the home shall meet the same requirements as attached decks

504.7.1 Underfloor areas. Where the attached structure is located and constructed so that the structure or any portion there of projects over a descending slope surface greater than 10 percent, the area below the structure shall have underfloor areas enclosed with exterior wall construction in accordance with Section 504.5.

504.8 Exterior glazing. ***Exterior Glass (Windows, Skylights, and Glazed Openings within Doors)***

All exterior windows, skylights, and glazed openings within doors shall comply with one of the following requirements:

• Multipaned glass with at least two tempered panes.

• Glass with a minimum of 20-minutes fire-resistance rating when tested in accordance with NFPA 257.

• Glass blocks (windows only).

• Operable skylights shall be protected by a noncombustible mesh screen where mesh openings shall not exceed 1/8-inch in diameter

- All retrofit/replacement windows must comply

504.9 Exterior doors. All exterior doors shall comply with one of the following requirements:

• Exterior doors shall be approved noncombustible construction, or solid-core wood not less than 1-¾ inches thick (44 mm). The exterior doors shall be constructed with noncombustible threshold. Windows within doors and glazed doors shall be in accordance with this standard's exterior glass requirements (see 3.1.5 Exterior Glass).

• Exterior door assembly shall have a fire-resistance rating of not less than 20-minutes when tested according to NFPA 252.

• Doors made of combustible material (e.g. non-solid core wood doors) are permissible provided a noncombustible exterior storm door is installed as the outermost door.

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 meet one of the following requirement options:

• **Performance-based Option –** Corrosion-resistant vents installed, conforming with the following ASTM E2886 test requirements for flame- and ember-resistance:

o No flaming ignition of the cotton material during the Ember Intrusion Test.

o No flaming ignition during the Integrity Test portion of the Flame Intrusion Test.

o Temperature of the unexposed side of the vent does not exceed 662°F.

o *Note:* Joints around such vents shall be sealed with sealants in accordance with vent manufacturer installation instructions to avoid ember and flame intrusion through the joints.

• **Prescriptive Option –** Vents shall be covered with a noncombustible, corrosion-resistant mesh with openings not to exceed 1/8-inch in diameter for ember-resistance.

o *Exceptions:*

o Forced air vents (e.g., dryer and central vacuum) shall have a functional louver or flap made of non-combustible material in lieu of mesh.

o Plumbing vents are excluded from this requirement.

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 dwelling units and accessory structures. All accessory structures with a footprint greater than or equal to 120 square feet shall fully comply with Section 5 Construction, unless more than 50 feet away from habitable spaces.

SECTION 507—REPLACEMENT OR REPAIR OF ROOF COVERINGS

507.1 General. The *roof covering* on buildings or structures in existence prior to the adoption of this code that are replaced or have 25 percent or more replaced in a 12-month period shall be replaced with a *roof covering* required for new construction based on the type of ignition-resistant construction specified in accordance with Section 503.

FIRE PROTECTION REQUIREMENTS

User notes:

About this chapter: *Chapter 6 establishes minimum fire protection requirements to mitigate the hazards to life and property from fire in the wildland-urban interface. The chapter includes both design-oriented and prescriptive mitigation strategies to reduce the hazards of fire originating within a structure spreading to wildland and fire originating in wildland spreading to structures.*

Especially targeted for a systems-approach to fire protection are those new buildings that are deemed to be particularly hazardous under Chapter 5; these buildings are required to be sprinklered. Other hazard mitigation strategies include establishing around structures defensible space zones wherein combustible vegetation and trees are regulated and kept away from buildings and trees are located 10 feet crown-to-crown away from each other. Additional hazards that are dealt with in

Chapter 6 include spark arrestors on chimneys and regulated storage of combustible materials, firewood and LP-gas.

SECTION 601—GENERAL

601.1 Scope. The provisions of this chapter establish general requirements for new and existing buildings, structures and premises located within *wildland-urban interface areas*.

601.2 Objective. The objective of this chapter is to establish minimum requirements to mitigate the risk to life and property from wildland fire exposures, exposures from adjacent structures and to prevent structure fires spreading to wildland fuels.

SECTION 602—AUTOMATIC SPRINKLER SYSTEMS

602.1 General. Refer to ARS 9-807 for Flagstaff sprinkler requirements.

SECTION 603—DEFENSIBLE SPACE

603.1 Objective. Provisions of this section are intended to modify the fuel load in areas adjacent to structures to create a *defensible space*.

603.2 Fuel modification. Buildings or structures, shall comply with the 0-5 foot non-combustible info below, and with the City of Flagstaff Forest Management Plan, Landscaping Code, and Resource Protection Standards.

The first five feet surrounding the home and its attachments (e.g., decks, patios, overhead structures, stairs) is the **most critical area of defensible space.** This zone shall be established and maintained as noncombustible. The 0-5 Foot Noncombustible Zone is measured horizontally from the edge of the home's exterior walls and, if present, the outermost posts of a deck or overhead structure, extending outward to 5 feet. This noncombustible area also extends vertically to the sky. The 0–5 Foot Noncombustible Zone shall meet all the following requirements:

The 0–5 Foot Noncombustible Zone shall meet <u>all the following requirements</u>:

• Vegetation –

o Shall remove all vegetation (e.g., grass, artificial turf, weeds, flowers, succulents, cacti, plants, shrubs, bushes, and vegetative debris) within 5 feet to bare mineral soil.

o Shall remove all trees, limbs, branches, and vines that are within and that overhang the 0–5 Foot Noncombustible Zone.

• Groundcover –

o Shall remove all combustible groundcover materials (e.g., wood and rubber mulch and exposed weed cloth) within 5 feet to bare mineral soil.

> **• Note:** Noncombustible hardscape materials (e.g., gravel, pavers, river rocks, decomposed granite, steppingstones, and concrete) are permitted.

• Fencing and Retaining Walls –

o Shall remove combustible fencing materials (e.g., wood and vinyl), posts, gates, and retaining walls within 5 feet or replace with noncombustible material.

Refer to City of Flagstaff Forest Management Plan and Zoning Code for Tree and Shrub Spacing outside of the 0-5 foot zone.

603.2.1 Responsible party. Persons owning, leasing, controlling, operating or maintaining buildings or structures requiring *defensible spaces* are responsible for modifying or removing nonfire-resistive vegetation on the property owned, leased or controlled by said person.

603.2.2 Trees. Tree stems and canopies are allowed outside of the 0-5 foot zone, provided that they meet City of Flagstaff Forest Management Plan and Zoning Code.

Other Considerations

- Tree limbs may not extend into the vertical plane of a chimney outlet

- Tree limbs shall not touch roof coverings at any time
- Hazard trees, as determined by the Code Official, shall be removed. When determining hazard trees, the Code Official may be guided by industry standards, individual site conditions, hazard ratings, risk assessments, basal area calculations, and/or tree densities determined to be effective in identifying and mitigating fire danger and/or protecting property. Trees that are in such a position fall and endangering life or property are determined to be hazard trees.

603.2.3 Ground cover. Deadwood and litter shall be regularly removed from trees. Needles and/or duff layer shall not exceed 3 inches in depth.

SECTION 605—SPARK ARRESTORS

605.1 General. Chimneys serving fireplaces, barbecues, incinerators or decorative heating appliances in which solid or liquid fuel is used shall be provided with a spark arrestor. Spark arrestors shall be constructed of woven or welded wire screening of 12 USA standard gage wire (0.1046 inch) (2.66 mm) having openings not exceeding 1/2 inch (12.7 mm).

605.2 Net free area. The net free area of the spark arrestor shall be not less than four times the net free area of the outlet of the chimney.

SECTION 606—LIQUEFIED PETROLEUM GAS INSTALLATIONS

606.1 General. The storage of liquefied petroleum gas (LP-gas) and the installation and maintenance of pertinent equipment shall be in accordance with the *International Fire Code* or, in the absence thereof, recognized standards.

606.2 Location of containers or tanks. LP-gas containers or tanks shall be located within the *defensible space* in accordance with the *International Fire Code*.

SECTION 607—STORAGE OF FIREWOOD AND COMBUSTIBLE MATERIALS

607.1 General. Firewood and combustible material shall not be stored in unenclosed spaces beneath buildings or structures, or on decks or under eaves, canopies or other projections or overhangs. Where required by the *code official*, storage of firewood and combustible material stored in the *defensible space* shall be located not less than 20 feet (6096 mm) from structures and separated from the crown of trees by a horizontal distance of not less than 15 feet (4572 mm).

607.2 Storage for off-site use. Firewood and combustible materials not for consumption on the premises shall be stored so as to not pose a hazard. See Appendix A.

REFERENCED STANDARDS

User notes:

About this chapter: *This code contains numerous references to standards promulgated by other organizations that are used to provide requirements for materials and methods of construction. This chapter contains a comprehensive list of all standards that are referenced in this code. These standards, in essence, are part of this code to the extent of the reference to the standard.*

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard.

ASTM *ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959*

D2898—10(2017): Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing

503.2

D3909/D3909M—14(2021): Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced With Mineral Granules

504.2, 504.2.1, 505.2, 505.2.1, 506.2, 506.2.1

D6662—22: Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards

503.2

D7032—21: Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck

Boards, Stair Treads, Guards, and Handrails

503.2

E84—21a: Standard Test Method for Surface Burning Characteristics of Building Materials

202, 503.2

E108—20a: Standard Test Methods for Fire Tests of Roof Coverings

504.2, 505.2, 506.2

E119—20: Standard Test Methods for Fire Tests of Building Construction and Materials

501.3

E136—22: Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C

202

E1354—22: Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen

Consumption Calorimeter

503.2.4.3.2, 503.2.4.3.3

E2768—11(2018): Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min

Tunnel Test)

503.2

E2886/E2886M—20: Standard Test Method for Evaluating the Ability of Exterior Vents to Resist the Entry of Embers and Direct

Flame Impingement

504.10.1, 505.10.1

ICC *International Code Council, Inc., 200 Massachusetts Avenue, NW, Suite 250, Washington, DC 20001*

IBC—24: International Building CodeR

105.1, 105.3, 106.3, 202, 404.10.3, 501.1, 501.2, 501.3, 503.2, 504.3, 504.5, 504.6, 504.7, 504.11, 505.5, 505.6, 505.7, 505.11

IFC—24: International Fire CodeR

102.8, 105.1, 105.3, 202, 402.1.1, 402.2.1, 403.2.3, 404.10.3, 606.1, 606.2

IPMC—24: International Property Maintenance CodeR

102.8

REFERENCED STANDARDS

UL *UL LLC, 333 Pfingsten Road, Northbrook, IL 60062-2096*

263—2011: Fire Tests of Building Construction and Materials—with Revisions through August 2021

501.3

723—2018: Standard for Test for Surface Burning Characteristics of Building Materials

202, 503.2

790—2004: Standard Test Methods for Fire Tests of Roof Coverings—with Revisions through October 2018

504.2, 505.2, 506.2

2024 IWUI Appendices B-I

Appendix B: Do not adopt as Vegetation Management is covered in

- IWUIC Section 6 Defensible Space
- Forest Management Plan
- Landscaping Code
- Resource Protection Standards

Appendix C: Do not adopt as Fire Hazard Severity Form is not needed

Appendix D-H: Do not adopt - Informational purposes only

Appendix I: Do not adopt - Board of Appeals covered elsewhere in City code

Appendix A

SECTION A101—GENERAL

A101.1 Scope. The provisions of this appendix establish general requirements applicable to new and existing properties located within *wildland-urban interface areas*.

A101.2 Objective. The objective of this appendix is to provide necessary fire protection measures to reduce the threat of wildfire in a *wildland-urban interface area* and improve the capability of controlling such fires.

SECTION A102—VEGETATION CONTROL

A102.1 General. Vegetation control shall comply with the Zoning Code and Forest Management Plan.

A102.2 Clearance of brush or vegetative growth from roadways. The *code official* is authorized to require areas within 10 feet (3048 mm) on each side of portions of fire apparatus access roads and driveways to be cleared of nonfire-resistive vegetation growth.

Exception: Single specimens of trees, ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy, succulents or similar plants used as ground cover, provided they do not form a means of readily transmitting fire.

A102.3 Clearance of brush and vegetative growth from electrical transmission and distribution lines. Clearance of brush and vegetative growth from electrical transmission and distribution lines shall be in accordance with Sections A102.3.1 through A102.3.2.3.

Exception: Sections A102.3.1 through A102.3.2.3 do not authorize persons not having legal right of entry to enter on or damage the property of others without consent of the owner.

A102.3.1 Support clearance. Persons owning, controlling, operating or maintaining electrical transmission or distribution lines shall have an *approved* program in place that identifies poles or towers with equipment and hardware types that have a history of becoming an ignition source, and provides a combustible free space consisting of a clearing of not less than 10 feet (3048 mm) in each direction from the outer circumference of such pole or tower during such periods of time as designated by the *code official*.

Exception: Lines used exclusively as telephone, telegraph, messenger call, alarm transmission or other lines classed as communication circuits by a public utility.

A102.3.2 Electrical distribution and transmission line clearances. Clearances between vegetation and electrical lines shall be in accordance with Sections A102.3.2.1 through A102.3.2.3.

A102.3.2.1 Trimming clearance. At the time of trimming, clearances not less than those established by Table A102.3.2.1 shall be provided. The radial clearances shown are minimum clearances that shall be established, at time of trimming, between the vegetation and the energized conductors and associated live parts.

Exception: The *code official* is authorized to establish minimum clearances different than those specified by Table A102.3.2.1 when evidence substantiating such other clearances is submitted to and *approved* by the *code official*.

TABLE A102.3.2.1—MINIMUM CLEARANCES BETWEEN VEGETATION AND ELECTRICAL LINES AT TIME OF TRIMMING

LINE VOLTAGE	MINIMUM RADIAL CLEARANCE FROM CONDUCTOR (feet)
2,400–72,000	4
72,001–110,000	6
110,001–300,000	10
300,001 or more	15

For SI: 1 foot = 304.8 mm.

A102.3.2.2 Minimum clearance to be maintained. Clearances not less than those established by Table A102.3.2.2 shall be maintained during such periods of time as designated by the *code official*. The site-specific clearance achieved, at time of pruning, shall vary based on species growth rates, the utility company-specific trim cycle, the potential line sway due to wind, line sag due to electrical loading and ambient temperature and the tree's location in proximity to the high voltage lines.

Exception: The *code official* is authorized to establish minimum clearances different than those specified by Table A102.3.2.2 when evidence substantiating such other clearances is submitted to and *approved* by the *code official*.

TABLE A102.3.2.2—MINIMUM CLEARANCES BETWEEN VEGETATION AND ELECTRICAL LINES TO BE MAINTAINED

LINE VOLTAGE	MINIMUM CLEARANCE (inches)
750–35,000	6
35,001–60,000	12
60,001–115,000	19
115,001–230,000	30.5
230,001–500,000	115

For SI: 1 inch = 25.4 mm.

A102.3.2.3 Electrical power line emergencies. During emergencies, the utility shall perform the required work to the extent necessary to clear the hazard. An emergency can include situations such as trees falling into power lines or trees in violation of Table A102.3.2.2.

A102.4 Correction of condition. The *code official* is authorized to give notice to the owner of the property on which conditions regulated by Section A102 exist to correct such conditions. If the owner fails to correct such conditions, the legislative body of the jurisdiction is authorized to cause the same to be done and make the expense of such correction a lien on the property where such condition exists.

SECTION A103—ACCESS RESTRICTIONS

A103.1 Restricted entry to public lands. The *code official* is authorized to determine and publicly announce when *wildland-urban interface areas* shall be closed to entry and when such areas shall again be opened to entry. Entry on and occupation of *wildland urban interface areas*, except public roadways, inhabited areas or established trails and campsites that have not been closed during such time when the *wildland-urban interface area* is closed to entry, is prohibited.

Exceptions:

1. Residents and owners of private property within *wildland-urban interface areas* and their invitees and guests going to or being on their lands.

2. Entry, in the course of duty, by peace or police officers, and other duly authorized public officers, members of a fire department and members of the Wildland Firefighting Service.

A103.2 Trespassing on posted private property. Where the *code official* determines that a specific area within a *wildland-urban interface area* presents an exceptional and continuing fire danger because of the density of natural growth, difficulty of terrain, proximity to structures or accessibility to the public, such areas shall be restricted or closed until changed conditions warrant termination of such restriction or closure. Such areas shall be posted in accordance with Section A103.2.1.

A103.2.1 Signs. *Approved* signs prohibiting entry by unauthorized persons and referring to this code shall be placed on every closed area.

A103.2.2 Trespassing. Entering and remaining within areas closed and posted is prohibited.

Exception: Owners and occupiers of private or public property within closed and posted areas; their guests or invitees; authorized persons engaged in the operation and maintenance of necessary utilities such as electrical power, gas, telephone, water and sewer; and local, state and federal public officers and their authorized agents acting in the course of duty.

A103.3 Use of fire roads and defensible space. Motorcycles, motor scooters and motor vehicles shall not be driven or parked on, and trespassing is prohibited on, fire roads or *defensible space* beyond the point where travel is restricted by a cable, gate or sign, without the permission of the property owners. Vehicles shall not be parked in a manner that obstructs the entrance to a fire road or *defensible space*.

Exception: Public officers acting within their scope of duty.

A103.3.1 Obstructions. Radio and television aerials, guy wires thereto, and other obstructions shall not be installed or maintained on fire roads or *defensible spaces*, unless located 16 feet (4877 mm) or more above such fire road or *defensible space*.

A103.5 Tampering with locks, barricades, signs and address markers. Locks, barricades, seals, cables, signs and address markers installed within *wildland-urban interface areas*, by or under the control of the *code official*, shall not be tampered with, mutilated, destroyed or removed.

A103.5.1 Gates, doors, barriers and locks. Gates, doors, barriers and locks installed by or under the control of the *code official* shall not be unlocked.

SECTION A104—IGNITION SOURCE CONTROL

A104.1 General. Ignition sources shall be controlled in accordance with Sections A104.2 through A104.10.

A104.2 Objective. Regulations in this section are intended to provide the minimum requirements to prevent the occurrence of wildfires.

A104.3 Clearance from ignition sources. Clearance between ignition sources and grass, brush or other combustible materials shall be maintained at not less than 30 feet (9144 mm).

A104.4 Smoking. Where required by the *code official*, signs shall be posted stating NO SMOKING. Persons shall not smoke within 15 feet (4572 mm) of combustible materials or nonfire-resistive vegetation.

Smoking and use of electronic cigarettes is always prohibited in all public places within the City of Flagstaff.

Exception: Places of habitation or in the boundaries of established smoking areas or campsites as designated by the *code official*.

A104.5 Equipment and devices generating heat, sparks or open flames. Equipment and devices generating heat, sparks or open flames capable of igniting nearby combustibles may be prohibited in the wildland urban interface by the Code Official during periods of very high or greater fire danger as determined by the Coconino National Forest

Exception: Use of *approved* equipment within inhabited premises or designated campsites that are not less than 30 feet (9144 mm) from grass-, grain-, brush- or forest-covered areas.

A104.6 Fireworks. The sale or use of consumer-grade fireworks within the City of Flagstaff may be prohibited based on fire restrictions

A104.6.1 Authority to seize. The *code official* is authorized to seize, take, remove or cause to be removed fireworks in violation of this section.

A104.7 Outdoor fires. Outdoor fires in *wildland-urban interface areas* shall comply with Sections A104.7.1 through A104.7.3.

A104.7.1 No person shall build, ignite, or maintain any outdoor fire of any kind for any purpose within the City of Flagstaff, except by the authority of a written permit from the Fire Department.

Exception: Outdoor fires within inhabited premises or designated campsites where such fires are in a permanent barbecue, portable barbecue, outdoor fireplace, incinerator or grill, or any other outdoor fire appliance for such purposes, and are not less than 15 ~~30~~ feet (9144 mm) from any combustible material or nonfire-resistive vegetation.

A104.7.2 Permits. Permits shall incorporate such terms and conditions that will reasonably safeguard public safety and property.

Outdoor fires shall not be built, ignited or maintained in or on hazardous fire areas under any of the following conditions:

1. When high winds are blowing.

2. When a person 17 years old or over is not present at all times to watch and tend such fire.

3. When a public announcement is made that open burning is prohibited.

A104.7.3 Restrictions. Persons shall not use a permanent barbecue, portable barbecue, outdoor fireplace or grill for the disposal

of rubbish, trash or combustible waste material.

A104.8 Incinerators, outdoor fireplaces, permanent barbecues and grills. Incinerators, outdoor fireplaces, permanent barbecues and grills shall not be built, installed or maintained in *wildland-urban interface areas* without approval of the *code official*.

A104.8.1 Maintenance. Incinerators, outdoor fireplaces, permanent barbecues and grills shall be maintained in good repair and in a safe condition at all times. Openings in such appliances shall be provided with an *approved* spark arrestor, screen or door.

Exception: Where *approved* by the *code official*, unprotected openings in barbecues and grills necessary for proper functioning.

A104.9 Reckless behavior. The *code official* is authorized to stop any actions of a person or persons if the official determines that the action is reckless and could result in an ignition of fire or spread of fire.

A104.10 Planting vegetation under or adjacent to energized electrical lines. Vegetation that, at maturity, would grow to within 10 feet (3048 mm) of the energized conductors shall not be planted under or adjacent to energized power lines.

SECTION A105—CONTROL OF STORAGE

A105.1 General. In addition to the requirements of the *International Fire Code*, storage and use of the materials shall be in accordance with Sections A105.2 through A105.4.2.

A105.2 Hazardous materials. Hazardous materials in excess of 10 gallons (37.8 L) of liquid, 200 cubic feet (5.66 m3) of gas, or 10 pounds (4.54 kg) of solids require a permit and shall comply with nationally recognized standards for storage and use.

A105.3 Explosives. Explosives shall not be possessed, kept, stored, sold, offered for sale, given away, used, discharged, transported or disposed of within *wildland-urban interface areas*, except by permit from the *code official*.

A105.4 Combustible materials. Outside storage of combustible materials such as, but not limited to, wood, rubber tires, building materials or paper products shall comply with the other applicable sections of this code and this section.

A105.4.1 Individual piles. Individual piles shall not exceed 5,000 square feet (465 m2) of contiguous area. Piles shall not exceed 50,000 cubic feet (1416 m3) in volume or 10 feet (3048 mm) in height.

A105.4.2 Separation. A clear space of not less than 40 feet (12 192 mm) shall be provided between piles. The clear space shall not contain combustible material or nonfire-resistive vegetation.

SECTION A106—DUMPING

A106.1 Waste material. Waste material shall not be placed, deposited or dumped in *wildland-urban interface areas* or in, on or along trails, roadways or highways or against structures in *wildland-urban interface areas*.

Exception: *Approved* public and *approved* private dumping areas.

A106.2 Ashes and coals. Ashes and coals shall not be placed, deposited or dumped in or on *wildland-urban interface areas*.

Exceptions:

1. In the hearth of an established fire pit, camp stove or fireplace.

2. In a noncombustible container with a tightfitting lid, which is kept or maintained in a safe location not less than 10 feet (3048 mm) from nonfire-resistive vegetation or structures.

3. Where such ashes or coals are buried and covered with 1 foot (305 mm) of mineral earth not less than 25 feet (7620 mm) from nonfire-resistive vegetation or structures.

SECTION A107—PROTECTION OF PUMPS AND WATER STORAGE FACILITIES

A107.1 General. The reliability of the water supply shall be in accordance with Sections A107.2 through A107.5.

A107.2 Objective. The intent of this section is to increase the reliability of water storage and pumping facilities and to protect such systems against loss from intrusion by fire.

A107.3 Fuel modification area. Water storage and pumping facilities shall be clear of nonfire-resistive vegetation or growth around and adjacent to such facilities.

Persons owning, controlling, operating or maintaining water storage and pumping systems requiring this *defensible space* are responsible for clearing and removing nonfire-resistive vegetation and maintaining the *defensible space* on the property owned, leased or controlled by said person.

A107.4 Trees. Portions of trees that extend to within 30 feet (9144 mm) of combustible portions of water storage and pumping facilities shall be removed unless approved by the Code Official.

A107.5 Protection of electrical power supplies. Where electrical pumps are used to provide the required water supply, such pumps shall be connected to a standby power source to automatically maintain electrical power in the event of power loss. The standby power source shall be capable of providing power for not less than 2 hours in accordance with Chapter 27 of the *International Building Code*, Section 1203 of the *International Fire Code* and NFPA 70.

Exception: A standby power source is not required where the primary power service to pumps is underground as *approved* by the *code official*.

SECTION A108—LAND USE LIMITATIONS

A108.1 General. Temporary fairs, carnivals, public exhibitions and similar uses must comply with all other provisions of this code in addition to enhanced ingress and egress requirements.

A108.2 Objective. The increased public use of land or structures in *wildland-urban interface areas* increases the potential threat to life safety. The provisions of this section are intended to reduce that threat.

A108.3 Permits. Temporary fairs, carnivals, public exhibitions or similar uses shall not be allowed in a designated *wildland-urban interface area*, except by permit from the *code official*.

Permits shall incorporate such terms and conditions that will reasonably safeguard public safety and property.

A108.4 Access roadways. In addition to the requirements in Section 403, access roadways shall be not less than 24 feet (7315 mm) wide and posted NO PARKING. Two access roadways shall be provided to serve the permitted use area.

Where required by the *code official* to facilitate emergency operations, *approved* emergency vehicle operating areas shall be provided.

SECTION A109—REFERENCED STANDARDS

A109.1 General. See Table A109.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title and the section or sections of this appendix that reference the standard.

TABLE A109.1—REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
IBC—24	*International Building Code*	A107.5
IFC—24	*International Fire Code*	A104.6, A105.1, A107.5
NFPA 70—23	*National Electrical Code*	A107.5

5-02-001-0005 AMENDMENTS

The following provisions shall have the effect of either amending, adding to, or deleting from the International Fire Code, 2024 Edition:

CHAPTER 1, IFC, Administration

Amend Section 101.1 Title, to read:

These regulations shall be known as the Fire Code of City of Flagstaff, hereinafter referred to as "this code."

Delete and replace section 101.2.1 as follows:

[A] 101.2.1 Appendices: The following appendices are adopted and amended as part of this Code by the City of Flagstaff: B, C, D, E, F, G, H, I, J, L, and N as added and/or amended.

Appendix B Fire-Flow Requirements for Buildings
Appendix C Fire Hydrant Locations and Distribution
Appendix D Fire Apparatus Access Roads
Appendix E Hazard Categories
Appendix F Hazard Ranking
Appendix G Cryogenic Fluids – Weight and Volume Equivalents
Appendix H Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) Instructions
Appendix I Fire Protection Systems—Noncompliant Conditions
Appendix J Building Information Sign
Appendix L Requirements for Fire Fighter Air Replenishment Systems
Appendix N Indoor Trade Shows and Exhibitions

Amend Section 102.7 entitled "Reference codes and standards", by adding:

Referenced codes and standards as listed in Chapter 80, and in this document are adopted in their entirety.

Amend Section 105.5.36 Open Burning, by deleting

Exception: Recreational fires.

Add Section 105.6.26 Electronic access control systems:

Construction permits are required to install or modify an electronic access control system, as specified in Chapter 10. A separate construction permit is required to install or modify a fire alarm system that may be connected to the access control system. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

Add Section 105.6.27 Electric vehicle (EV) charging stations:

Construction permits are required to install or modify an electric vehicle charging station. Maintenance performed in accordance with this code is not considered to be a modification and does not require a permit.

Add to section 110.3 as follows: [A] 110.3 Recordkeeping:

Fire system annual maintenance inspection reports shall be submitted through the web-based third-party reporting service, The Compliance Engine.

Amend Section 113.4 entitled "Violation penalties", to read:

Persons who violate a provision of this code or fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the fire code official, or of a permit or certificate used under a provision or provisions of this code, shall be guilty of a class one misdemeanor and upon conviction shall be punishable by a fine and/or imprisonment set forth by the governing laws of the jurisdiction. Each separate day or any portion thereof, during which any violation of this Code occurs or continues, shall be deemed to constitute a separate offense.

CHAPTER 2, IFC, Definitions

Amend Section 202 entitled "Definitions; Detached Building" to read:

DETACHED BUILDING: A separate standalone structure that is separated from other buildings in accordance with the requirements of the International Building Code, greater than 200 square foot and/or within 15 feet of the existing or primary structure. This classification shall include, but not limited to the following

Casitas
Gazebos
Storage Sheds
Garages
Green Houses
Ramadas
Barns
Work Shop

Chapter 3, IFC, General requirements

Add Section 323 Electric Vehicles (EVs).

323.1 Electric Vehicle Charging Stations. Electric vehicle (EV) charging stations shall not be located inside buildings, except where approved for parking garage locations as per the National Electrical Code.

323.1.1 Charging Stations Inside Parking Garage. EV charging stations located in parking garages shall be located at grade level along the exterior perimeter walls and shall be within 150 feet of fire apparatus access roadway or shall be located on the top level of the garage with no roof above.

323.1.2 Charging Stations inside R-3 and R-4 occupancies. Approved charging stations in the private garage shall have a listed heat alarm installed in the garage and interconnected to the smoke alarms inside the dwelling.

323.2 Disconnect. Locations containing electric vehicle charging stations shall be provided with a clearly identified and readily accessible emergency disconnect installed in an approved location. The emergency disconnects for exterior electric vehicle charging stations shall be located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from the charging stations, unless otherwise approved by the fire code official.

323.2.1 Height. The height of the emergency disconnect switch shall be not less than 42 inches (1067 mm) and not more than 48 inches (1219 mm) measured

vertically, from the floor level to the activating button.
323.2.2 Emergency Disconnect Sign. Emergency disconnect devices shall be distinctly labeled as: “EMERGENCY ELECTRIC VEHICLE CHARGER DISCONNECT.” Signs shall be placed in an approved location and shall consist of all of the following:

1. White reflective background with red letters.
2. Weather-resistant durable material.
3. Lettering not less than 2 inches (51 mm) high.
4. Permanently affixed to the building or structure in an approved manner.

CHAPTER 5. IFC. Fire Service Features

Amend Section 503.2.3 Surface, to read:

Fire apparatus access roads shall be designed and maintained to support a minimum 80,000 pounds gross vehicle weight shall be surfaced as to provide all-weather driving capabilities. A maintenance agreement for private roads or other fire access may be required showing the responsibility for roadway maintenance and snow plowing.

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Amend Section 503.2.4 entitled "Fire Service Features; Fire Apparatus Access Roads; Specifications; Turning Radius", to read:

The required minimum turning radius of a fire apparatus access road shall be 35 feet inside, 55 feet outside, or 45 feet on center

Amend Section 503.2.5 Dead ends, by adding:

There shall be no parking or other obstructions in fire apparatus turnaround areas that would impair turning of apparatus. When parking or other design features are desired, the proper design must be approved. Accumulation of snow must also be accounted for to prevent winter time obstructions.

Amend Section 503.2.7 entitled "Fire Service Features; Fire Apparatus Access Roads; Specifications; Grade, to read:

The gradient for a fire apparatus access road shall not exceed 10 percent on straight sections of roadway and 5 percent side slope on turnarounds and curves

Amend Section 505.1 Address Numbers, to Read:

505.1 Address Identification. New and existing buildings shall be provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 6 inches (152.4 mm) high with a minimum stroke width of 1/2 inch (12.7 mm). Where required by the fire code official, address numbers shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road, buildings do not immediately front a street, and/or the building cannot be viewed from the public way, a monument, pole or other sign with approved 6 inch (152.4 mm) height building numerals or addresses and 4 inch (101.6 mm) height suite/apartment numerals of a color contrasting with the background of the building or other approved means shall be used to identify the structure. Buildings in multi-building complexes must be marked with 12” minimum height numbers. Approved identification shall also be provided on the rear door(s) at any location where access into the building may be difficult to determine.

Address identification shall be maintained.
Exception: R-3 Single Family occupancies shall have approved numerals of a minimum 4 inches (88.9 mm) in height and a color contrasting with the background clearly visible and legible from the street fronting the property.

Amend Section 507.2 Type of water supply, by adding:

Water supply for a major system component as described by the American Water Works Association must provide a continuous and uninterrupted supply of fire protection water through redundancy. Fire mains in excess of 1,000 feet in length or which have more than 3 hydrants affixed shall be looped to a second source of water. All fire mains hereafter constructed shall be a minimum of 8-inch diameter but in all cases shall be of sufficient size to adequately supply the required fire flow.

Add a new section as follows: 510.5.6 Emergency responder communication enhancement system (ERCES) infrastructure: New buildings or structures shall be required to install, at a

minimum, two-inch (2") Electrical Metallic Tubing (EMT) conduit (between floors where applicable) dedicated for potential ERCES use. The conduit will have a breakout box in an equipment room for cables to be pulled. Guide wire will be provided in the conduit (between each floor, where applicable) in the breakout box. Conduit and breakout boxes shall be installed in accordance with NFPA 70. The conduit and breakout box will be labeled "PUBLIC SAFETY USE ONLY!". If it is determined that after all construction is complete that ERCES equipment is required, the conduit will make installation easier and more economical to the building owner. Such ERCES infrastructure shall be provided for the following:

1. New multi-story or multi-level buildings or structures;

2. New single-story buildings or structures totaling 45,000 square feet (4180 m²) or more in size;

3. New buildings or structures containing a basement or other subterranean space totaling 250 square feet (23 m²) in size.

4. Any new building or structure that the fire code official has determined to have been constructed in a manner which may limit, or with materials likely to limit, the ability of emergency response personnel to effectively use emergency radio communication while within that building or structure.

New building or structures containing any underground parking areas will be required to provide the capability for a future rooftop antenna to be installed, if deemed necessary, in addition to the above requirements for ERCES infrastructure.

CHAPTER 9, IFC, Fire Protection Systems

Add to section 901.4 as follows:

901.4 Installation: The layout, calculation, and installation of fire protection systems shall be performed by persons knowledgeable and trained in such systems. Only qualified professionals (NICET Level III or higher) or qualified Arizona registrants shall design or

modify fire alarm systems or sprinkler systems requiring hydraulic calculation engineered to the standards outlined in Section 903.3.1.1. Contractors are required to possess a current Arizona License from the Register of Contractors to install fire protection systems. The installer shall follow all manufacturer guidelines for installation, inspection and testing. Contractors shall maintain certification when required by the manufacturer.

Add a new subsection as follows:

901.4.7.5 Minimum size: Rooms containing fire pump equipment and fire riser rooms for sprinkler systems installed in accordance with Section 903.3.1.1 shall be a minimum of four feet (121 cm) by four feet (121 cm) in size.

Add a new subsection as follows:

901.4.7.6 Room access: Pump and fire riser rooms shall have a door directly accessible from the exterior of the building.

Amend Section 903 entitled Automatic Sprinkler Systems by adding

903.2 Where Required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12. In addition to the requirements of the fire and building codes, an approved automatic monitored sprinkler system shall be installed throughout all levels of all new Group A, B, E, F, M, U and S occupancies 5,000 square feet (464m2) or greater and in all buildings over 3 stories in height regardless of the total square footage. Such systems shall be in accordance with the International Fire Code, International Building Code and installed in accordance with NFPA 13, 13D or 13R as specified by the fire code official. Notwithstanding the foregoing, an automatic monitored fire sprinkler system may be installed in any building regardless of floor area.

Amend Section 903.2.1.1 entitled "Fire Protection Systems, Automatic Sprinkler Systems; Where required; Group A-1, to read:

An automatic sprinkler system shall be provided for Group A-1 occupancies where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464m2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.
4. The fire area contains a multi theater complex.

Amend Section 903.2.1.3 entitled "Fire Protection Systems, Automatic Sprinkler Systems; Where required; Group A-3", to read:

An automatic sprinkler system shall be provided for Group A-3 occupancies where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464m2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

Amend Section 903.2.1.4 entitled "Fire Protection Systems, Automatic Sprinkler Systems;

Where required; Group A-4", to read:

An automatic sprinkler system shall be provided for Group A-4 occupancies where one of the following conditions exists:

1. The fire area exceeds 5,000 square feet (464m2).
2. The fire area has an occupant load of 300 or more.
3. The fire area is located on a floor other than a level of exit discharge serving such occupancies.

Amend Section 903.2.2 entitled Group B, by adding:

An automatic monitored sprinkler system shall be provided throughout all Group B occupancies where any of the following exist:

1. Where Group B fire area is 5,000 square feet (464m2) and greater, or
2. Fire area is located more than three stories above grade

Amend Section 903.2.3 entitled "Fire Protection Systems, Automatic Sprinkler Systems; Where required; Group E", to read:

An automatic sprinkler system shall be provided for Group E occupancies as follows:

1. Throughout all Group E fire areas greater than 5000 square feet (462m2) in area.
2. The Group E fire area is located on a floor other than a level of exit discharge serving such occupancies.

Exception: An automatic sprinkler system is not required in any area below the lowest level of exit discharge serving that area where every classroom throughout the building has at least one exterior exit door at ground level.

3. The Group E area has an occupant load of 300 or more

Amend Section 903.2.4 entitled "Fire Protection Systems, Automatic Sprinkler Systems; Where required; Group F-1", to read:

An automatic sprinkler system shall be provided throughout all buildings containing Group F-1 occupancy where one of the following conditions exists:

1. A Group F-1 fire area exceeds 5,000 square feet (464m2).
2. A Group F-1 fire area is located more than three stories above grade plan.
3. The combined area of all Group F-1 fire areas on all floors, including any mezzanines, exceeds 5,000 square feet (464m2).
4. A group F-1 occupancy is used to manufacture lithium-ion or lithium metal batteries.
5. A group F-1 occupancy is used to manufacture vehicles, energy storage, or equipment containing lithium-ion or lithium batteries where the batteries are installed during manufacturing process.

Amend Section 903.2.7 entitled "Fire Protection Systems; Automatic Sprinkler Systems; Where required; Group M", to read:

An automatic sprinkler system shall be provided throughout buildings containing Group M occupancy where one of the following conditions exists:

1. A Group M fire area exceeds 5,000 square feet (464m2).
2. A Group M fire area is located more than three stories above grade plane.
3. The combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 5,000 square feet (464m2).

Amend 903.2.8 entitled Group R, to read:

An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area.

Exception: As limited by Arizona Revised Statue

Amend Section 903.2.9 entitled "Fire Protection Systems, Automatic Sprinkler Systems; Where required; Group S-1", to read:

An automatic sprinkler system shall be provided throughout all buildings containing Group S-1 occupancy where one of the following conditions exists:

1. A Group S-1 fire area exceeds 5,000 square feet (464m2).
2. A Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 5,000 square feet.
4. A Group S-1 fire area used for the storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (464 m2).
5. A group S-1 fire area used for the storage of lithium-ion or lithium metal powered vehicles where the fire area exceeds 500 square feet.

Amend Section 903.2.9.1 entitled "Fire Protection Systems, Automatic Sprinkler Systems; Where required; Repair Garages", to read:

An automatic sprinkler system shall be provided throughout all buildings used as repair garages in accordance with Section 406.8 of the International Building Code, as shown:

1. Buildings having two or more stories above grade plane, including basements, with a fire area containing a repair garage exceeding 5,000 square feet (464m2).
2. Buildings no more than one story above grade plane, with a fire area containing a repair garage exceeding 5,000 square feet (464m2).
3. Buildings with repair garages servicing vehicles parked in basements.
4. A Group S-1 fire area used for the repair of commercial trucks or buses where the fire area exceeds 5,000 square feet (464 m2).
5. A group S-1 fire area used for the storage of lithium-ion or lithium metal powered vehicles where the fire area exceeds 500 square feet.

Amend Section 903.2.10 entitled "Fire Protection Systems, Automatic Sprinkler Systems;

Where required; Group S-2 enclosed parking garages", to read:

An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.6 of the International Building Code as follows:

1. Where the fire area of the enclosed parking garage exceeds 5,000 square feet (464m2)
2. Where the enclosed parking garage is located beneath other groups.
   Exception: Enclosed parking garages located beneath Group R-3 occupancies.
3. Where the fire area of open parking garage exceeds 48,000 square feet.

Amend Section 1103.5 Sprinkler systems, deleting section 1103.5.1;

1103.5.1 Group A-2 ~~Where alcoholic beverages are consumed in a Group A-2 occupancy having an occupant load of 300 or more, the fire area containing the Group A-2 occupancy shall be equipped with a n automatic sprinkler system in accordance with section 903.3.1.1.~~

Amend Section 3107 Outdoor Assembly Events, addition table 3107.3

Outdoor Assembly Events Table 3107.3

Occupant Load	Minimum number of Exits
1-500	2
501-1000	3
1001-1500	4
Each additional 500 Persons	36” of additional exit width for each exit

3107.3.3 Exit Width The aggregate clear width of exits shall be a minimum of 36 “width wide for each 500 persons to be accommodated

3107.3.4 Exit Signs Exits shall be identified with signs that read -EXIT – The signs shall be weather resistant with letters on a contrasting background. Lettering shall be of sufficient height and brush stroke to be visible within 100 feet. Placement of the exit signs shall be approved by the fire code official.

3107.4 - Outdoor Concerts / Crowd Management, section added

3106.4.1 Front Stage Isle/Separation Minimum 10 foot aisle space for front of stage, adequate crowd manager’s during the concert or event to maintain minimum widths. Main isle shall be a minimum of 10 feet in width.

CHAPTER 50, IFC, Hazardous Materials – General Provisions

Amend Section 5004.9 Emergency alarm to read:

An approved manual emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. The emergency alarm system shall be designed using the manual fire alarm requirements of the *National Fire Alarm Code,* NFPA 72. Emergency alarm initiating devices shall be installed outside of each interior exit or exit access door of the storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound an audible signal distinctly different than that of the fire alarm signal. Emergency alarm notification devices shall be yellow or amber in color.

APPENDIX D Fire Apparatus Access Roads

Amend Section D102 Required Access to read:

D102.1 Access and loading. Facilities, buildings or portions of buildings hereafter constructed shall be an accessible to fire department apparatus by way of an approved fire apparatus access road with an asphalt, concrete or other approved all-weather driving surface capable of supporting the imposed load of fire apparatus weighing at least 80,000 pounds.

Amend Section D107 One- or Two-family dwelling residential developments to read:

D107.1 One- or two- family dwelling residential developments. Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with two separate and approved fire apparatus access roads.

Exceptions:

1. Where there are ~~more than~~ 31 to 50 dwelling units on a single public or private fire apparatus access road and all dwelling units are equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1, 903.3.1.2, or 903.3.1.3, access from two directions shall not be required.