

SUBJECT: ORDINANCE 1884, SERIES 2024 – AN ORDINANCE ADOPTING THE CITY OF LOUISVILLE FIRE HARDENING CODE FOR STRUCTURES – 2ND READING (advertised *Daily Camera* 10/20/24)

DATE: NOVEMBER 4, 2024

PRESENTED BY: ROB ZUCCARO, AICP, COMMUNITY DEVELOPMENT DIRECTOR
CHAD ROOT, CHIEF BUILDING OFFICIAL

SUMMARY:

Staff is presenting an ordinance to create minimum city-wide fire hardening construction standards. The new regulations would apply to all residential and commercial structures, including new structures, additions to existing structures, and replacement of building materials when regulated by the building code. The code would address the following building systems to require fire resistant materials and construction techniques:

- Roof coverings
- Siding and eave materials
- Deck surface materials
- Fencing materials (within 5-feet of the home)
- Vent coverings
- Solar panel screens
- Gutter materials and guards

Exceptions may be granted by the Building Official on a case-by-case basis for historic homes. Automatic exceptions would include structures with sprinkler systems and setbacks of 35 ft. or greater, and temporary structures.

BACKGROUND/DISCUSSION:

At the July 30, 2024 City Council Meeting, Council reviewed Wildland Urban Interface (WUI) and structure hardening codes and directed staff to draft a city-wide home hardening code for consideration. The July 30, 2024 staff memo is linked below and includes a more in-depth discussion of code options and analysis, including potential costs and consideration for implementing different aspects of the code and potential impacts on housing affordability.

LINK: [July 30, 2024 City Council Memorandum](#)

This code was also initiated based on the request of the Louisville Fire Protection District. A letter from the District outlining their request is included as Attachment No. 2.

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BUILDING CODE BOARD OF APPEALS:

The Building Code Board of Appeals (BCBOA) has reviewed the draft code and recommends approval (see Attachment Nos. 3 and 4 for minutes).

PUBLIC COMMENTS:

See Attachment No. 5 for public comments.

FISCAL IMPACT:

Implementation of the Home Hardening Code will take additional staff time and city resources, but will also include offsetting revenues from the building permit fees and constructure use tax collected with the building permits.

STAFF RECOMMENDATION:

Staff recommends approval of Ordinance 1884, Series 2024 created a city-side fire hardening building code.

ATTACHMENTS:

1. Ordinance No. 1884, Series 2024
2. Letter from the Louisville Fire District
3. August 28, 2024 BCBOA Minutes
4. September 25, 2024 BCBOA Minutes
5. Public Comments

STRATEGIC PLAN IMPACT:

☐	 Financial Stewardship & Asset Management	☐	 Reliable Core Services
☐	 Vibrant Economic Climate	☐	 Quality Programs & Amenities
☒	 Engaged Community	☐	 Healthy Workforce
☐	 Supportive Technology	☐	 Collaborative Regional Partner

**ORDINANCE NO. 1884
SERIES 2024**

**AN ORDINANCE ADOPTING THE CITY OF LOUISVILLE FIRE HARDENING CODE
FOR STRUCTURES**

WHEREAS, the City Council desires to adopt the Louisville Fire Hardening Code for Structures in order to reduce threats from wildfires and to mitigate structure fires from spreading to adjacent residential and commercial structures; and

WHEREAS, it is deemed to be in the interest of the public health, safety and general welfare for the residence of Louisville to adopt such code; and

WHEREAS, the City Council, after proper notice as required by law, has held a public hearing on this ordinance providing for the adoption of said codes.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO:

Section 1. Title 15 of the Louisville Municipal Code is hereby amended by the addition of a new Chapter 15.70 to read as follows:

Chapter 15.70

Fire Hardening Code for Structures

Sec. 15.70.010. - Applicability

This Chapter provides minimum City-wide building and construction standards for residential and commercial structures in order to decrease threats from wildfires and the spread of fire between structures. The requirements set forth in this Chapter shall apply to all new construction, additions, and replacement of building materials, except as set forth in Section 15.70.030

Sec. 15.70.020. – Construction Standards.

- A. *Class A Roof Coverings* tested with ASTM E108 or UL 790 are required on all new structures, additions and replacement roofs where the replaced roof is 50% or greater. Examples of a Class A roof coverings include metal, membrane, asphalt, tile, clay, concrete, stone and slate shingles.
- B. *Fire Resistant Siding and Eaves* are required on all new structures, additions and where 50% or more of the siding or eave is replaced. Siding and eaves shall be fire and ignition resistant with a maximum flame spread rating of 25 or less. Heavy timber and log construction is also acceptable.
- C. *Fire and Ignition Resistant Deck Surface, Steps and Guardrails* are required on all new decks and all replacement decks, steps and guardrails. The deck surface,

step surface and guardrails shall be fire and Ignition resistant with a maximum flame spread rating of 25. For decks six feet or lower to the ground, the surface below the deck shall be gravel placed over a sheet of 6 mil plastic or concrete slab to prevent vegetation growth under the deck.

- D. *Fire and Ignition Resistant Fencing within 5 feet of a structure.* New construction and all replacement fences within 5 feet of the structure must be fire and ignition resistant with a maximum flame spread index of 25.
- E. *Roof/Attic Vents, Crawlspace Vents and Solar Panels Screens* - New structures and all replacement vents shall have the following:
 - 1. 1/8-inch metal mesh for attic vents, roof vents, eave vents and foundation vents. Mechanical and plumbing vents do not need to be screened.
 - 2. If solar panels on the roof are screened with metal mesh then the screen must be removable to clean out debris from under panels.
- F. *Metal Gutters with Gutter Guards* - New structures and replacement Gutters shall be made of metal and shall have an approved ignition resistant means to prevent accumulation of debris in gutter.

Sec. 15.70.030 Exemptions.

Exemptions from the requirements of this Chapter 15.70 are as follows:

- A. *Historic Home Exemption.* Historic homes and buildings may be exempted by the Building Official from roofing or siding requirements, or both, of this Chapter if the Building Official finds there is no practical means to meet the intent of the Chapter while maintaining historic features.
- B. *Single Family Homes.* Homes that are fully sprinklered with a min of a NPFA13-R system and are greater than 35 feet from any property line are exempt from the requirements of this Chapter.
- C. *Commercial Structures* that are fully sprinklered and are in compliance with NFPA-13 and are located greater than 35 feet from the property line are exempt from the requirements of this Chapter..
- D. *Temporary Structures.* Permitted Temporary structures, such as tents and membrane structures, are exempt for a period of time not to exceed a 180 days.
- E. The building official may approve alternative methods demonstrating class A or a flame spread of 25 or less in lieu of the requirements of this Chapter.

Section 2. If any article, section, paragraph, sentence, clause, or phrase of this ordinance is held to be unconstitutional or invalid for any reason, such decision shall not affect the validity or constitutionality of the remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance and each part or parts hereof irrespective of the fact that any one part or parts be declared unconstitutional or invalid.

Section 3. The repeal or modification of any provision of any prior ordinance by this ordinance shall not release, extinguish, alter, modify, or change in whole or in part any penalty, forfeiture or liability, either civil or criminal, which shall have been incurred under such provision, and each provision shall be treated and held as still remaining in force for the purpose of sustaining any judgment, decree, or order which can or may be rendered, entered, or made in such actions, suits, proceedings, or prosecutions.

Section 4. All other ordinances or portions thereof inconsistent or conflicting with this ordinance or any portion hereof are hereby repealed to the extent of such inconsistency or conflict.

**INTRODUCED, READ, PASSED ON FIRST READING, AND ORDERED
PUBLISHED** this 15th day of October, 2024.

Christopher M. Leh, Mayor

ATTEST:

Genny Kline, Interim City Clerk

APPROVED AS TO FORM:

Kelly, P.C., City Attorney

PASSED AND ADOPTED ON SECOND AND FINAL READING, this _____ day of _____, 2024.

Christopher M. Leh, Mayor

ATTEST:

Genny Kline, Interim City Clerk



LOUISVILLE FIRE
PROTECTION DISTRICT

"OUR FAMILY SERVING YOUR FAMILY"

895 VIA APPIA WAY LOUISVILLE, CO 80027
HEADQUARTERS: 303.666.6595 | FAX: 303.666.7659
LOUISVILLEFIRE.COM

June 12, 2024

City Council
City of Louisville

Dear Mr. Mayor and City Council,

I believe the City will be reviewing and adopting new building codes this fall. The Louisville Fire Protection District would like to suggest adopting an amendment to help the Fire District protect homes. The amendment would have the following items for home hardening;

- Class A roof
- Double or triple-pane windows
- Fire resistance siding
- Fire resistance decking
- Fire resistance fencing within 5 ft of the home
- Small screen over attic vents

These items would be required only if it was new construction or if the above item is being replaced.

Hardening homes in the City will help the District protect homes from exposure to a next-door structure fire or another wildland fire. I would happily answer any of your questions or concerns and look forward to conversations as we get closer to the new codes.

In Fire Safety



John Willson
Fire Chief

Building Code Board of Appeals

Meeting Minutes

August 28, 2024
City Hall, Council Chambers
749 Main Street
2:00pm

Call to Order – Chairperson Christian Dino called the meeting to order at 2:02pm.

Roll Call was taken and the following members were present:

Board Members Present:

Matt Berry
Christian Dino
Mason Gatto
Peter Geise

Board Members Absent:

Steve Knapp

Staff Members Present:

Rob Zuccaro, Director of Community Development
Chad Root, Chief Building Official
Jenny Lane, Senior Permit Technician

Approval of Agenda –

The agenda was approved by all members present.

Approval of Meeting Minutes from 5/16/24

Dino requested changes to the meeting minutes:

Add to meeting minutes that the Board would like to make clear that they approved these changes with the intent that they are **“replacing code in lieu of”, not just “adding on” to existing code, otherwise there would have been more comments**

He also stated that the Board would like to have the document that was worked on in meeting added as part of the meeting minutes.

Minutes approved by all members with changes forthcoming.

Public Comments on Items Not on the Agenda

None.

Discussion of Home Hardening Code

Zuccaro stated that City Council requested the BCBOA discuss the development or adoption of a WUI code and/or City-wide Home Hardening Code. The suggestion is to implement this with the 2024 upgrade codes. Residents suggested it be implemented earlier since there are homes under construction now. Based on feedback from this meeting, staff will work on code language and bring back to the Board again.

Root and Board discussion of proposed code:

Fire dept letter regarding Home Hardening should be included with this document.

General consensus is that the suggestions are cost-effective and not too strict.

Roof:

- Only applies to full replacement or new construction.
- Must use Class A shingles
- Just shingles/covering material only; NOT a full class A assembly.
- No Shake/wood shingles
- Solar panels: require mesh screen between solar panel and roof to keep organic material from accumulating. 1/8" for screen size screens provide barrier to items getting inside property. 1/8" might be too small to allow air flow for certain equipment. Maybe only eave vents? Not roof vents.
- Would not require closed attic; this option would limit insulation in attic to spray foam since blown in insulation is designed to allow for vented attic space. Would limit what consumer can use and spray foam is more expensive.
- Vented screens; if no closed cell foam or closed roof system, screens need to be vented

Windows:

- Only full replacement or new construction (still allow vinyl windows)

Siding:

- Full replacement or new construction; if one side, ok to replace like for like
- Potentially require replacement if more than 50% will be replaced.

Decks:

- Full replacement or new construction.
- Decking surface only, not deck framing. Top section finished material is easy to maintain, will be too difficult to maintain underneath material. (per Fire Marshal, Jennifer Henderson)
- Suggestion: require screening under a certain height.

Fences:

- Fire resistant fencing within 5 feet of house required
- No cedar fencing within 5 feet of house
- Per **Zuccaro**: State wildfire code board is working on a draft; no state code is in place yet
- City of Louisville has law that allows fire-resistant fencing regardless of neighborhood fence

Gutters:

- Metal gutters and/or gutter guards required

Defensible Space:

- Urban defensible space should not be in Home Hardening Code
- Majority of these requirements should be part of future WUI code adoption
- Potentially have small requirements for new construction since we would have time to review and require specific landscaping:
 - o No mulch or landscaping within 24" of house
- City-wide within 5 feet of home but too complex; potentially require as part of city-wide WUI code in the future that no landscaping within five feet of the house

Additions:

- What would be the threshold for requiring a new material?
- Decking and Siding will be the most difficult to require new material if it doesn't match the old. Is there a percentage or should be full replacement?

- Exceptions for historic, etc.?
- Concrete siding vs pressed board comparison?
- If addition is less than 25% not required?

Maybe percentage of 50% for all requirements – rare to have someone do less than that; if they are doing 50% then they will probably do all of it.

Fire Marshal, Jennifer Henderson: A roof or decking material are the most common catching points in a fire, so requiring fire resistant material in those areas are important. Also requiring gutter guards would help prevent embers from entering the gutters. Suggest these are always required – not part of exception. Maintenance is the biggest problem; keeping penetrations to a minimum to prevent embers from catching parts of the house on fire.

Dino: would like to adopt this version as a band aid, but to repeal it once WUI code is adopted.

Root: once adopted any new applications would have to use this new code.

Zuccaro: next BCBOA meeting; council will meet; then present back to BCBOA
Matt: IBC and IRC reference for each item on the list.

Root: Implement some of these items into the 2024 codes. For now, it needs to be an amendment to existing code. Otherwise we would be adding this as an amendment to the 2018 code, which would not make sense.

Zuccaro: staff will need to make sure that code sections do not contradict each other.

Discussion Items for Next Meeting –

Review of new proposed Home Hardening Code and update on energy code amendments.

Sept 17 – Staff will present energy code changes to City Council.

Three policy changes, should they be removed. Net zero RC and EUI and commercial heat pump requirement. Dino requested that if a code section is replaced not to renumber the code sections.

Next meeting date and time has not been determined, but should take place after the City Council meeting on Sept 17th.

Adjourn – The meeting was adjourned at 3:43pm.

Building Code Board of Appeals

Meeting Minutes

September 25, 2024
City Hall, Council Chambers
749 Main Street
2:00pm

Call to Order – Chairperson Christian Dino called the meeting to order at 2:06pm.

Roll Call was taken and the following members were present:

Board Members Present:

Matt Berry
Christian Dino
Mason Gatto
Peter Geise

Board Members Absent:

Steve Knapp

Staff Members Present:

Rob Zuccaro, Director of Community Development
Chad Root, Chief Building Official
Jenny Lane, Senior Permit Technician

Approval of Agenda –

The agenda was approved by all members present.

Approval of Meeting Minutes from 5/16/24

Changes have been added as discussed in the meeting – the additional document from the 5/16/24 meeting that includes the markups from the meeting itself. Document was provided by Christian Dino. It was requested by the Board that this document replace the other two that were initially included.

City of Louisville

Building Division 749 Main Street Louisville CO 80027
303.335.4584 (phone) www.LouisvilleCO.gov

Building Code Board of Appeals

Meeting Minutes

May 16, 2024
City Hall, Spruce Room
749 Main Street
6:30pm

Call to Order – Chairperson Christian Dino called the meeting to order at 6:45pm.

Roll Call was taken and the following members were present:

Board Members Present:

Matt Berry
Christian Dino
Mason Gatto
Peter Geise

Board Members Absent:

Steve Knapp

Staff Members Present:

Jenny Lane, Permit Technician
Chad Root, Chief Building Official

Approval of Agenda –

The agenda was approved by all members present.

Public Comments on Items Not on the Agenda –

None

Discussion of changes to the proposed 2021 IECC ordinance

The Board discussed changes to the proposed 2021 IECC ordinance.

Top discussion items:

- a. Intention of new proposed IECC ordinance is to replace all prior IECC amendments.
- b. Appendix PT (Performance Target): the one we are proposing came from the City of Boulder since Denver's was too extensive and the Code Consultants proposed using Boulder's PT program.

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- a. PT is adopted differently with different municipalities.
 - b. Denver has five PT (PT 103) categories: apartment/multi-family=38, hotel/motel=55, office=43, retail=39, restaurant/bar=175
 - c. Question by Board of how hard is it to meet these numbers?
 - d. Root discussed that he does not know how to meet the numbers or how the numbers were decided.
 - e. Geise pointed out that there are consultant groups that could be hired to do an evaluation for PT compliance and this is what Boulder does; Root agreed that Louisville would need to contract for this work since we do not have the staff or training to check compliance.
 - f. If Board removes the PT compliance then multi-family would need to fall under the IECC code instead of the IBC code.
 - g. Chad explained that the PT is more of an energy auditing system and that City of Boulder has a monitor and escrow that developers and owners have to put in to modify the buildings.
 - h. Board is ok having the PT table be an option, not a requirement.
- c. Discussed insulation minimums; R-3 for pipes
- d. Berry brought up that the code is being manipulated but not necessarily for the better. He proposed for the record that the changes being proposed are not necessarily blessed by the Board nor it is making any significant change or improvement.
- e. EV has been removed from the proposed changes to the 2021 IECC. Not part of energy code and was above the state requirement, so will bring it down to the state code. It was moved to the Land Use code since the charging stations are in the parking lot for commercial/multi-family buildings.
- f. Berry mentioned that structural changes with roof insulation are increasing snow load on existing buildings. SEAC has a committee studying the effect of added insulation on snow load. Berry suggested to wait until the study is complete before making changes to the insulation values.
- g. Occupancy R-2 was requested to be part of the Commercial IBC code instead by multi-family developer.
- h. Commercial buildings can have gas lines and gas appliances installed for heating water and heating spaces; but the electrical conduit must be in place as well so that a building can be all-electric. Board discussed striking the all-electric requirements since the equipment is either still not available or is too far out to order. Suggested having gas appliances as an

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option and specifying that the gas appliance would need to be at least 92% efficient.

- i. Exceptions would be fossil fuel for MAU systems or supplementary heat systems.
- j. Commercial gas: electric resistance and storage is currently not allowed. Board would like to change to allow more options.

The Board would like to make clear that they approved these changes with the intent that they are **“replacing code in lieu of”, not just “adding on” to existing code, otherwise there would have been more comments**

This is the version of the energy code changes that were discussed at the 5/16/24 meeting:

ORDINANCE NO. _____, SERIES 2024

AN ORDINANCE AMENDING CHAPTER 15.18.030 OF THE LOUISVILLE MUNICIPAL CODE CONCERNING THE 2021 INTERNATIONAL ENERGY CONSERVATION

WHEREAS, the City Council has adopted from time-to-time certain building and construction standards; and

WHEREAS, it is deemed to be in the interest of the public health, safety and general welfare to adopt by reference thereto the 2021 edition of the International Energy Conservation Code; and

WHEREAS, the City of Louisville remains committed to its adopted goals to reduce energy consumption, increase clean energy sources, and support the transition to a low-carbon community as outlined in the Sustainability Action Plan and Resolution 25, Series 2019, "A Resolution Setting Clean Energy and Carbon Reduction Goals"; and

WHEREAS, reducing building energy consumption is an effective strategy to reduce community-wide energy consumption and increase long-term cost savings for businesses; and

WHEREAS, the City Council is committed to environmental, economic and social sustainability, ensuring the International Energy Conservation Code is attainable for current and future business owners and tenants, supporting affordable housing and local businesses development.

WHEREAS, the City Council, after proper notice as required by law, has held a public hearing on this ordinance providing for the adoption of said codes; and

WHEREAS, the 2021 edition of the International Energy Conservation Code, with amendments, has been submitted to the City Council in writing and the City Council has determined that such codes should be adopted as herein set forth.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO:

Section 15.18.030 of the Louisville Municipal Code, concerning amendments and deletions to the 2021 International Energy Conservation

Code, is hereby amended as follows (deleted text in strikethrough and new text underlined):

1. **Section C101.1 Title**, is amended to insert "the City of Louisville" so the section will read:

C101.1 Title. These regulations shall be known as the Energy Conservation Code of the City of Louisville, and shall be cited as such. It is referred to herein as "this code."

2. **Section C103.2 Information on construction documents**, is hereby amended to read as follows:

C103.2 Information on construction documents. Construction documents shall be drawn to scale upon suitable material. Electronic media documented are permitted to be submitted when *approved* by the *code official*. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment herein governed. Details shall include the following as applicable:

1. Energy compliance path.
2. Insulation materials and their *R*-values
3. Fenestration *U*-factor and solar heat gain coefficients (SHGCs).
4. Area-weighted *U*-factor and solar heat gain coefficient (SHGC) calculations.
5. Mechanical system design criteria.
6. Mechanical and service water heating systems and equipment types, sizes, fuel source and efficiencies.
7. Economizer description.
8. Equipment and system controls.
9. Fan motor horsepower (hp) and controls.
10. Duct sealing, duct and pipe insulation and location.
11. Lighting fixture schedule with wattage and control narrative.
12. Location and *daylight* zones on floor plans.
13. Air barrier and air sealing details, including the location of the air barrier.
14. Location of pathways for routing of raceways or cable from the solar ready zone to the electrical service panel.

3. *Section C202 General Definitions*, is hereby amended by adding, in alphabetical order, the following definitions:

All-Electric Building: A building that contains no combustion equipment for primary heating, or piping or plumbing for combustion equipment, installed within the building or building site.

Combustion Equipment: Any equipment or appliance used for space heating, service water heating, cooking, clothes drying and/or lighting that uses fuel gas or fuel oil.

Electric Vehicle (EV): A vehicle registered for on-road use, primarily powered by an electric motor that draws current from a rechargeable storage source that is charged by being plugged into an electrical current source.

Electric Vehicle Supply Equipment (EVSE): The electrical conductors and associated equipment external to the electric vehicle that provide a connection between the premises wiring and the electric vehicle to provide electric vehicle charging.

Electric Vehicle Capable Space: A designated parking space that is provided with conduit sized and rated for a minimum 40-amp, 208/240-Volt dedicated branch circuit and shall be no less than 1" in size. Conduit must be continuous from the future or existing electrical panelboard or switchboard location(s) and end at a junction box or receptacle located within close proximity of the parking space. The electrical panel serving the parking space shall have sufficient capacity and physical space for a dual-pole, 40-amp breaker. The conduit shall be sealed at the junction or outlet box that is capped off, with the conduit sealed and the cap labeled as "For future electric vehicle charging".

Electric Vehicle Ready Space: A designated parking space that is provided with a dedicated branch circuit with wiring capable of supporting a minimum 40-ampere, 208/240- Volt circuit that terminates at a receptacle, plug, junction box, or an installed electric vehicle supply equipment within close proximity of the parking space. There shall be adequate reserved space in an electrical panelboard or switchboard to meet the electric vehicle requirements.

Electric Vehicle Supply Equipment (EVSE) Installed Space: A designated parking space with dedicated electric vehicle supply equipment capable of supplying a minimum 40-amp, dedicated circuit rated at 208/240 Volt from a building electrical panelboard.

Commented [CD1]: Do these definitions need to remain there are still sections of the code that reference EV infrastructure. Ex. 405.1.3.1 &.2.

Or is this intended to be covered in the planning code vs. building code?

Emergency Power System: A source of automatic electric power of a required capacity and duration to operate required life safety, fire alarm, detection, and ventilation systems in the event of a failure of the primary power. Emergency power systems are those required for electrical loads where interruption of the primary power could result in loss of human life or serious injuries.

Energy Use Intensity (EUI): The annual building site energy use per square foot of gross floor area in units of kBTU/sq ft.

Residential Building: For this code, includes detached one- and two-family dwellings and multiple single-family dwellings (townhouses) R-3 and R-4 buildings three stories or less in height above grade plane.

Standby Power System: A source of automatic electric power of a required capacity and duration to operate required building, hazardous materials or ventilation systems in the event of a failure of the primary power. Standby power systems are those required for electrical loads where interruption of the primary power could create hazards or hamper rescue or fire-fighting operations.

Tenant Finish: The first tenant occupying a space(s) in a core and shell. Multiple tenants may be considered as a tenant finish until the entire space within the core and shell has had a tenant. Once a space within a core and shell has been occupied it becomes an existing building.

4. **C401.2. Commercial buildings shall comply with Section C401.2.1 one of the following, as applicable**

C401.2.1 Performance targets. New commercial building types included in the scope of Appendix PT shall comply with Appendix PT and/or Sections C403.2.4 and C404.10.

C401.2.2 Core and shell. Core and shell buildings shall comply with the provisions of Section C402.1.3 through C402.5. When mechanical systems are installed, core and shell buildings shall also meet the provisions in C403.2.4, C404.10, and Section C408.

C401.2.2.1 Core and shell buildings shall submit a letter of agreement to the City stating the tenant spaces included in the scope of Appendix PT shall meet the EUI target established in Table PT103 and shall include these requirements in their lease or purchase agreements.

C401.2.3 Tenant finish. Tenant finishes included in the scope of Appendix PT shall comply with Appendix PT and/or C403.2.4 and C404.10. All other

tenant finishes shall comply with the Prescriptive Compliance option, which requires compliance with Sections C401.3, C401.4, C402 through C406, and C408.

C401.2.4 Commercial building, including additions, shall comply with the Prescriptive Compliance option, which requires compliance with Sections C401.3, C401.4, C402 through C406, and C408.

Exception: Additions, alterations, Alterations, repairs, and changes of occupancy to existing buildings complying with Chapter 5.

5. *Section C401.2.1 International Energy Conservation Code*, is hereby deleted and replaced to read as follows:

C401.2.1 International Energy Conservation Code

Commercial buildings shall be built all-electric unless the fuel gas options of C403.3.2 and the additional electric infrastructure requirements of C405.14 are met. All buildings must comply with the following:

City of Louisville's Prescriptive Compliance. The Prescriptive Compliance option requires compliance with Sections C401.3, C401.4, C402 through C406, and Section C408.

Core and shell buildings shall be required to comply with the provisions of Section C402.1.3 through C402.5 of the 2021 International Energy Conservation Code.

6. *Section C401.2.2 ASHRAE 90.1*, is hereby deleted in its entirety.

7. A new *Section C401.4 Mandatory Requirements for Commercial Buildings*, is hereby added to read as follows:

C401.4 Mandatory Requirements for Commercial Buildings. Commercial buildings must comply with Table C401.4.

**Table C401.4 (Mandatory)
Requirements for Commercial Buildings**

Title	IECC Section
Air leakage	C402.5
Calculation of heating and cooling loads	C403.1.1
Data centers	C403.1.2
System Design	C403.2
Heating and cooling equipment efficiency	C403.3

Heating and cooling system controls	C403.4, except C403.4.3, C403.4.4, C403.4.5
Economizer fault detection and diagnostics	C403.5.5
Ventilation and exhaust systems	C403.7, except C403.7.4.1
Fan and fan controls	C403.8, except C403.8.6
Large diameter ceiling fans	C403.9
Refrigeration equipment performance	C403.11, except C403.11.3
Construction of HVAC system elements	C403.12
Mechanical systems located outside of the building thermal envelope	C403.13
Service water heating	C404
Electrical power and lighting systems	C405, except C405.3
Maintenance information and system commissioning	C408

8. *Table C402.1.3 Opaque Thermal Envelope Insulation Component Minimum Requirements, R-Value Method*, is hereby deleted and replaced with the following:

Table C402.1.3 (Mandatory)

Opaque Thermal Envelope Insulation Component of an Average Minimum Requirements, R-Value Method in following locations:

Roof C402.2.1	
Insulation entirely above roof deck	R-49
Metal buildings ^a	R-21 + R-11 LS
Attic and other	R-49
Walls. Above grade C402.2.2	
Mass ^d	R-21
Metal buildings	R-21 + <u>R-10ci</u>
Metal framed	R-21+ <u>R-10ci</u>
Wood framed and other	R-21
Walls, Below grade C402.2.5	
Below-grade wall ^b	R-10

Floors C402.2.3	
Mass^c	R-21
Joist/framing	R-38
Slab-on-grade floors C402.2.4	
Unheated	R-20 for 24" below
Heated^e	R-15 for 36" below + R-5 full slab

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 4.88 kg/m², 1 pound per cubic foot = 16 kg/m³.

NR = No Requirement, LS = Liner System.

a. Where using *R*-value compliance method, a thermal spacer block shall be provided,

b. Where heated slabs are below grade, below-grade walls shall comply with the exterior insulation requirements for heated slabs.

c. "Mass floors" shall be in accordance with Section C402.2.3.

d. "Mass walls" shall be in accordance with Section C402.2.2.

e. The first value is for perimeter insulation and the second value is for full, under-slab insulation.

9. *Section C402.1.4 Assembly U-factor, C-factor or F-factor-based method*, is hereby deleted in its entirety.

10. *Section C402.1.5 Component performance alternative*, is hereby deleted in its entirety.

11. *Table C402.4 Building Envelope Fenestration Maximum U-Factor and SHGC Requirements*, is hereby deleted and replaced with the following:

Table C402.4
Building Envelope Fenestration

Vertical Fenestration	
Maximum U-Factor	0.45
Maximum SHGC	0.33
Maximum Air leakage rate for all fenestration except curtain walls and storefront glazing	.20 cfm/ft²

Maximum air leakage rate for curtain walls and storefront glazing	.06 cfm/ft
Skylights	
Maximum U-Factor	0.50
Maximum SHGC	0.40
Maximum Air leakage rate	.20 cfm/ft2

12. Section C402.4.1 Maximum area, is hereby deleted and replaced with the following:

C402.4.1 Minimum area of natural lighting. Not less than eight percent of the floor area shall be glazed.

12. Section C402.4.1.2 is deleted and replaced with the following:

C402.4.1 Minimum area of natural lighting. Not less than 8% of wall area for warehouses, and industrial shall be glazed.

13. Section C402.4.2 Minimum skylight fenestration area, is hereby deleted and replaced with the following:

C402.4.2 Minimum area of natural lighting. A minimum skylight area of three percent of the roof area shall be provided for all roofs.

Exception: Roof areas designated for solar ready zones shall not be included in roof area calculation.

13. C403.2 System design. Mechanical systems shall be designed to comply with Sections C403.2.1 through 403.2.3 C403.2.4. Where elements of a building's mechanical systems are addressed in Sections C403 through C403.14, such elements shall comply with the applicable provisions of those sections.

14. Section C403.2.4 Space heating equipment is added as follows:

C403.2.4. Heat pump efficiencies:

a. Ductless System

1. 14.3 SEER2

2. 7.5 HSPF2

3. Or EnergyStar Cold Climate certified

b. Ducted System

1. 15.2 SEER2

2. 9 HSPF2

3. Or EnergyStar Cold Climate certified

1. Section C403.3.2 HVAC equipment performance requirements, is hereby deleted in its entirety and replaced amended by adding the following at the beginning of the section with remainder of section to remain to read as follows:

C403.3.2 When HVAC fuel fired equipment is permitted to be installed, equipment shall meet the minimum efficiency requirements of Tables C403.3.2(1) through C403.3.2(16) when tested and rated in accordance with the applicable test procedure. Plate-type liquid-to-liquid heat exchangers shall meet the minimum requirements of AHRI 400. The efficiency shall be verified through certification under an approved certification program or, where a certification program does not exist, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils, from different manufacturers are used, calculations and supporting data shall be furnished by the designer that demonstrates that the combined efficiency of the specified components meets the requirements herein.

HVAC/fuel fired equipment performance requirements. Unless built all-electric, all new combustion equipment shall comply with the more efficient HVAC equipment performance of Sections C406.2, C406.2.3, and C406.2.4 and the additional electric infrastructure requirements in Section C405.14. A mechanical compliance certificate demonstrating compliance with section C406.2.3 and/or C406.2.4 shall be required for all HVAC, fuel fired and Service Water Heating equipment.

The efficiency shall be verified through certification under an approved certification program or, where a certification program does not exist, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils, from different manufacturers are used, calculations and supporting data shall be furnished by the designer that demonstrates that the combined efficiency of the specified components meets the requirements herein. (Tables C403.2.(1) through (16) are expressly retained and remain applicable to HVAC equipment performance.)

Exceptions:

1. Factory, laboratory, and high hazard occupancy combustion equipment, except for HVAC and domestic water heating.
2. Commercial Kitchens.
3. Other combustion equipment approved by the Building Official based on demonstration by the applicant that compliance with this section is not feasible and the equipment proposed is the most efficient appliance reasonably available.

16. Section C403.4.1 Thermostatic controls, is hereby deleted and replaced with the following:

C403.4.1 Thermostatic controls. The supply of heating and cooling energy to each zone shall be controlled by individual thermostatic controls capable of responding to temperature within the zone. Where humidification or dehumidification or both is provided, no fewer than one humidity control device shall be provided for each humidity control system. Occupancy sensors shall be provided on the thermostat to setback in accordance with C403.4.2.1

Exception: Independent perimeter systems that are designed to offset only building envelope heat losses, gains or both serving one or more perimeter zones also served by an interior system provided that both of the following conditions are met:

1. The perimeter system includes not fewer than one thermostatic control zone for each building exposure having exterior walls facing only one orientation (within ± 45 degrees) (0.8 rad) for more than 50 contiguous feet (15 240 mm).
2. The perimeter system heating and cooling supply is controlled by thermostats located within the zones served by the system.

17. Section C403.12.1 Duct and plenum insulation and sealing, is hereby deleted and replaced with the following:

C403.12.1 Duct and plenum insulation and sealing. All supply and return air ducts and plenums shall be insulated with not less than R-12. Ducts, air handlers and filter boxes shall be sealed. Joints and seams shall comply with Section 603.9 of the International Mechanical Code.

18. Section C403.12.3 Piping insulation, is hereby amended to read as follows:

C403.12.3 Piping insulation. Piping serving as part of a heating or cooling system shall be thermally insulated to R-3.

19. Section C404.4 Insulation of piping, is hereby amended to read as follows:

C404.4 Insulation of piping. Piping from a water heater to the termination of the heated water fixture supply pipe shall be insulated to R-3. On both the inlet and outlet piping of a storage water heater or heated water storage tank, the piping to a heat trap or the first 8 feet (2438 mm) of piping, whichever is less, shall be insulated. Piping that is heat traced shall be insulated to R-3 or the heat trace manufacturer's instructions.

39. *Section C405.4.3 Gas lighting, is hereby amended to read as follows:*

C405.4.3 Gas lighting. Gas-fired lighting appliances shall not be permitted.

40. A new *Section C405.14 Additional electric infrastructure*, is hereby added to read as follows:

Section C405.14 Additional electric infrastructure. All *combustion equipment* and end-uses shall be installed in accordance with this section.

C405.14.1 Electric infrastructure for dwelling and sleeping units. *Combustion equipment* and end-uses serving individual dwelling units or sleeping units shall comply with Section R404.5.

C405.14.2 Combustion equipment. *Combustion equipment* shall be provided with conduit that is continuous between a junction box located within 3 feet (914 mm) of the appliance or equipment and an electrical panel. The junction box, conduit and bus bar in the electrical panel shall be rated and sized to accommodate a branch circuit with sufficient capacity for an equivalent electric appliance, equipment or end use with an equivalent equipment capacity. The electrical junction box and electrical panel shall have labels stating, "For Future Electric Equipment".

Exception: Industrial and manufacturing uses are exempt from Section C405.14.

41. *Section C502.1.1 General*, is hereby amended to read as follows:

Additions to an existing building, building system or portion thereof shall conform to the provisions of Section C401.2.4 as those provisions relate to new construction without requiring the unaltered portion of the existing building or building system to comply with this code. Additions shall not create unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building.

43. *Section C503.2 Building Envelope* is amended with exception remaining to read as follows:

New building envelope assemblies that are part of the alteration shall comply with Sections C402.1 through C402.5. Existing ceilings, roofs, all wall types, or floors exposed during construction shall comply with Table C402.1.3.

44. Section C505.1 General, is hereby amended to read as follows:

C505.1 General. Where the use in a space changes from one use in Table C405.3.2(1) or C405.3.2(2) to another use in Table C405.3.2(1) or C405.3.2(2), the installed lighting wattage shall comply with Section C405.3. Where the space undergoing a change in occupancy or use is in a building with a fenestration area that exceeds the limitations of Section C402.4.1, the space is exempt from Section C402.4.1 provided that there is not an increase in fenestration area.

Exception: Egress doors with fenestration are allowed to bring total fenestration percentages over the allowed maximum amount of vertical fenestration.

APPENDIX PT MODELING TO A PERFORMANCE TARGET

PT101 Scope. This section establishes criteria for demonstrating compliance with a performance target, and is required for new hotels (occupancy R-1), multifamily (occupancy R-2), offices, primary and secondary schools, and warehouses. All end use load components within and associated with the building and their building sites shall be modeled.

PT102 Mandatory requirements. The requirements in this section are mandatory requirements and shall be required in addition to the provisions of ASHRAE 90.1 Appendix G.

PT103 Performance target. Projects of the types listed in Table PT103 shall demonstrate that the proposed design reaches a fixed energy use intensity (EUI) less than or equal to the values in Table PT103, calculated utilizing the energy modeling procedures of Appendix G of ASHRAE 90.1. For *buildings* with multiple occupancy types, the modeled performance target shall be a weighted average of the floor area of each occupancy type.

Exception: Energy used for electric vehicle charging, data centers, and process loads shall be excluded from compliance modeling.

**TABLE PT103
PERFORMANCE TARGETS**

BUILDING TYPE	PERFORMANCE TARGET (kBTU/ft2)
<u>Hotel (Occupancy R-1)</u>	<u>32</u>
Multifamily (Occupancy R-2)	32
Office, small (> 0 - 5,000 ft2)	19
Office, medium (5,000 – 50,000 ft2)	23
Office, large (>50,000 ft2)	28
School, primary	34
School, secondary	31
Warehouse	11

PT104 Renewable Energy. On-site renewable energy generated by a system installed as part of this project that is used by the building shall be subtracted from the proposed design energy consumption prior to calculating the proposed building performance.

PT105 Performance documentation. Documentation to verify compliance with this section shall be provided to the code official.

PT105.1 Projected compliance report. Permit submittals shall include a report documenting the proposed design is projected to meet the EUI target. The compliance report shall include the following specific information beyond the information required in ASHRAE 90.1 Appendix G:

1. Address of the building.
2. An inspection checklist documenting the building component characteristics of the proposed design.
3. Name of individual completing the report.
4. Name and version of compliance software tool.
5. Documentation of the reduction in energy use associated with on-site energy.

PT105.2 Construction plan requirements. Construction plans shall depict all component characteristics of the proposed design utilized for the EUI in accordance with ASHRAE 90.1 Appendix G.

45. Section R101.1 Title, is amended to insert "the City of Louisville" so the section will read:

R101.1 Title. These regulations shall be known as the Energy Conservation Code of the City of Louisville and shall be cited as such. It is referred to herein as "this code."

46. Section R103.2 Information on construction documents, is amended to read as follows:

R103.2 Information on construction documents. Construction documents shall be drawn to scale upon suitable material. Electronic media documented are permitted to be submitted when *approved* by the *code official*. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment herein governed. Details shall include the following as applicable:

1. Energy compliance path.
2. Insulation materials and their *R*-values
3. Fenestration *U*-factor and solar heat gain coefficients (SHGCs).
4. Area-weighted *U*-factor and solar heat gain coefficient (SHGC) calculations.
5. Mechanical system design criteria.
6. Mechanical and service water heating systems and equipment types, sizes, fuel source and efficiencies.
7. Equipment and system controls.
8. Duct sealing, duct and pipe insulation and location.
9. Air sealing detail.
10. Location of pathways for routing of raceways or cable from the solar ready zone to the electrical service panel.

47. Section R202 General Definitions, is hereby amended by adding, in alphabetical order, the following definitions:

All-Electric Building: A building that contains no combustion equipment for primary heating, or plumbing or piping for combustion equipment, installed within the building or building site.

Commented [CD2]: If this Appendix PT is the state code then we should formally adopt that and reference it in what we are doing. If we are not then why are we showing areas struck out that have never been previously adopted?

Combustion Equipment: Any equipment or appliance used for space heating, service water heating, cooking, clothes drying and/or lighting that uses fuel gas or fuel oil.

Electric Vehicle (EV): A vehicle registered for on-road use, primarily powered by an electric motor that draws current from a rechargeable storage source that is charged by being plugged into an electrical current source.

Electric Vehicle Supply Equipment (EVSE): The electrical conductors and associated equipment external to the electric vehicle that provide a connection between the premises wiring and the electric vehicle to provide electric vehicle charging.

Electric Vehicle Capable Space: A designated parking space that is provided with conduit sized and rated for a minimum 40-amp, 208/240-Volt dedicated branch circuit and shall be no less than 1" in size. Conduit must be continuous from the future or existing electrical panel board or switchboard location(s) and end at a junction box or receptacle located within close proximity of the parking space. The electrical panel serving the parking space shall have sufficient capacity and physical space for a dual-pole, 40-amp breaker. The conduit shall be sealed at the junction or outlet box that is capped off, with the conduit sealed and the cap labeled as "For future electric vehicle charging".

Electric Vehicle Ready Space: A designated parking space that is provided with a dedicated branch circuit with wiring capable of supporting a minimum 40-ampere, 208/240- Volt circuit that terminates at a receptacle, plug, junction box, or an installed electric vehicle supply equipment within close proximity of the parking space. There shall be adequate reserved space in an electrical panel board or switchboard to meet the electric vehicle requirements.

Residential Building. For this code, includes detached one- and two-family dwellings and multiple single-family dwellings (townhouses) and R-3 and R-4 buildings three stories or less in height above grade plane.

48. Section R401.2 Application, is hereby deleted and replaced with the following:

R401.2 Application. New Residential buildings shall be built using appendix RB or RC and shall be built all-electric unless the fuel gas options of R403.7 and additional electric infrastructure requirements of R404.5 are met. All residential buildings shall comply with the R401.2.1 City of

Commented [CD3]: Why are we removing these definitions if we still have references to EV infrastructure in code?

Louisville's Prescriptive Compliance or R406 Energy Rating Index with a maximum rating index of 50 before the installation of solar panels

Exceptions:

1. New residential buildings certified through the Passive House Institute US, Inc. (PHIUS) program
2. Additions shall comply with R401.2.1 and Chapter 5
3. Additions, ~~a~~Alterations, repairs and changes of occupancy to existing buildings complying with Chapter 5.

49. Section R401.2.1 Prescriptive Compliance Option, is hereby deleted and replaced with the following:

R401.2.1 City of Louisville's Prescriptive Compliance. The City of Louisville's Prescriptive compliance requires compliance with Sections R401 through R404.

50. Section R401.2.2 Total Building Performance Option, is hereby deleted in its entirety.

51. Section R401.2.4 Tropical Climate Region, is hereby deleted in its entirety.

52. Section R401.2.5 Additional Energy Efficiency, is hereby amended to read as follows:

Section R401.2.5 Additional Energy Efficiency. Building shall comply with one of the additional efficiency options and shall be installed in according to Section R408.2.

53. A new Section R401.4 Mandatory requirements for residential buildings, is hereby added to read as follows:

R401.4 Mandatory requirements for residential buildings. Residential building must comply with the following sections from the 2021 International Energy Conservation Code found in Table R401.4 and Section R401.2.

Table R401.34

Mandatory requirements for residential buildings

Title	IECC Section
Vapor retarder	R402.1.1
Eave baffle	R402.2.3
Access hatches and doors	R402.2.4.1
Crawl space wall insulation	R402.4.1.2
Maximum fenestration U-factor and SHGC	R402.5

Commented [CD4]: Why is this deleted?

Commented [CR5R4]: Not needed appendix RC Prescriptive for minor builds

Commented [CD6]: Code sections and tables should never be renumbered.

Mechanical Controls	R403.1
Ducts	R403.3 except R403.3.2, R403.3.3, and R403.6
Mechanical system piping insulation	R403.4
Heated water circulation and temperature maintenance systems	R403.5.1
Drain Water heat recovery units	R403.5.3
Mechanical ventilation	R403.6 including E403.6.1
Equipment sizing and efficiency rating	R403.7
Systems serving multiple dwelling units	R403.8
Snow melt and ice systems	R403.9
Energy consumption of pools and spas	R403.10
Portable spas	R403.11
Residential pools and permanent residential spas	R403.12
Lighting equipment	R404.1
Interior lighting controls	R404.2

54. *Section R402.1 General*, is hereby amended to read as follows:

R402.1 General. The building thermal envelope shall comply with the requirements of Section R402.1.1 and R402.1.2.

55. *Section R402.1.2 Insulation and fenestration*, is hereby deleted and replaced with the following:

R402.1.2 Insulation and fenestration. New and replacement Assemblies shall have R-value of insulation materials equal to or greater than that specified in Table R402.1.2 unless an alternative path is specified while using HERS energy rating index of 50.

Exception: New Construction complying with R401.2 or exception 1

56. *Section R402.1.2.1 Fenestration* is hereby added to read as following:

R402.1.2.1 Fenestration. New and replacement assemblies shall not exceed the value specified in Table R402.1.2.

Exception: New Construction complying with R401.2 or exception 1

Table R402.1.2

Average Insulation and Fenestration Requirements by Component

Roof	R-60
------	------

Above grade walls	R-21
Below grade walls	R-19
Floors	R-38
Non heated slab on grade	R-10 for 4ft
Heated slab on grade	R-15 for 4 ft + R-5 under full slab
Fenestration U-Factor	.30
Fenestration SHGC	.33
Skylight U-Factor	.50
Skylight SHGC	.40
Hot Water Pipes	R-3
Warm Air Ducts	R-8

55. Section R402.1.5 Total UA alternative, is hereby deleted in its entirety.

56. Section R402.3.3 Glazed fenestration exemption, is hereby amended to read as follows:

R402.3.3 Glazed fenestration exemption. Not greater than 15 square feet (1.4 m²) of glazed fenestration per dwelling unit shall be exempt from the U-factor and SHGC requirements in Section R402.1.2.

57. Section R402.4.1.2 Testing, is hereby deleted and replaced to read as follows:

Section R402.4.1.2 Testing. All new buildings or dwelling units that are heated or cooled, and additions over 500 square feet shall be tested for air leakage.

58. Section R402.5 Maximum fenestration U-factor and SHGC, is hereby deleted and replaced with the following:

Section R402.5 Maximum fenestration U-factor and SHGC. The maximum U-factor and solar heat gain coefficient (SHGC) for fenestration shall not be required in storm shelters complying with ICC 500.

59. Section R403.3.1 Ducts located outside conditioned space, is hereby deleted and replaced with the following:

R403.3.1 Ducts located outside conditioned space. All supply and return ducts shall be insulated to a minimum R-8 if located outside a conditioned space.

60. Section R403.5.2 Hot water pipe insulation, is hereby deleted and replaced with the following:

R403.5.2 Hot water pipe insulation. All service hot water piping shall be insulated to a minimum R-3.

62. Section R403.7 Equipment sizing and efficiency rating, is hereby deleted and replaced with the following:

R403.7 Equipment sizing and efficiency rating. All new buildings and additions greater than 500 square feet with heating and cooling equipment shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved heating and cooling calculation methodologies. In addition to complying with Sec. R404.6 Additional Electric Infrastructure, new and replacement electrical heating and cooling equipment shall have an efficiency rating equal to or greater than the minimum required by federal law for the geographic location where the equipment is installed. New gas heating equipment shall comply with the following efficiencies:

- 1. Gas furnaces shall have a minimum of 95% efficiency.**
- 2. Gas boilers shall have a minimum of 95% AFUE.**
- 3. On demand water heaters shall have a greater than .92 uniform energy factor.**

4. Heat pump efficiencies:

- c. Ductless System**
 - 1. 14.3 SEER2**
 - 2. 7.5 HSPF2**
 - 3. Or EnergyStar Cold Climate certified**
- d. Ducted System**
 - 1. 15.2 SEER2**
 - 2. 9 HSPF2**
 - 3. Or EnergyStar Cold Climate certified**

Exception: Solid fuel stoves/gas fireplaces, outdoor fire pits, gas stoves and ovens.

63. Section R404.1.1 Fuel gas lighting equipment, is hereby amended to read as follows:

R404.1.1 Fuel gas lighting equipment. Fuel gas lighting systems shall not be installed.

65. A new **Section R404.5 Additional electric infrastructure**, is hereby added to read as follows:

R404.5 Additional electric infrastructure. *Combustion equipment* shall be installed in accordance with this section.

R404.5.1 Combustion equipment and end-uses. *Combustion equipment* shall be provided with a dedicated, appropriately phased circuit that shall have a minimum amperage requirement for a comparable electric appliance, equipment or end use, an electrical receptacle or junction box that is connected to the electric panel, and conductors of adequate capacity within 6 feet (1829 mm) of the appliance or equipment.

Each such circuit shall be accessible with no obstructions. A reserved circuit breaker space shall be installed in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled for each circuit. Both ends of the unused conductor or conduit shall be labeled "For Future Electric Equipment" and be electrically isolated.

66. **Section R405 Total building performance**, is deleted in its entirety.

67. **Section R406.3 Building thermal envelope**, is hereby deleted in its entirety and replaced with the following:

R406.3 Building thermal envelope. Building and portions thereof shall comply with Table R406.3. The building thermal envelope shall be greater or equal to the levels of efficiency and SHGC in Table R402.1.2.

68. **Section R406.3.1 On-site renewables are not included**, is deleted in its entirety.

69. **Section R406.3.2 On-site renewables are included**, is deleted in its entirety.

70. *Section 406.3.2 R407 Tropical Climate Region Compliance Path*, is deleted in its entirety.

71. *Section R502.1.1 General*, is hereby amended to read as follows:

Additions to an existing building, building system or portion thereof shall conform to the provisions of R401.2.1 as those provisions relate to new construction without requiring the unaltered portion of the existing building or building system to comply with this code. Additions shall not create unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code where the addition alone complies, where the existing building and addition comply with this code as a single building, or where the building with the addition does not use more energy than the existing building. Additions shall be in accordance with Section R502.2 or R502.3.

72. *Section R503.1.1 Building Envelope* is amended to read as follows: Building envelope assemblies that are part of the alteration shall comply with Section R401.2.1

Section R503.1.1 Building envelope Exception 2 is deleted in its entirety and replaced with the following.

2. *Section R402.4.1.2 Testing*

73. *Section R505.1 General* is hereby amended to remove the exception.

74. *Section R505.1.1 Unconditioned space*, is hereby deleted and replaced with the following:

R505.1.1 Unconditioned space. Any unconditioned or low-energy space that is altered to become a conditioned space shall comply with Section R503.

75. *RC102.1 General* is amended to read as follows.

RC102.1 General. New residential buildings shall comply with Sections RC102.2 through RC102.9.

76. *RC102.2 Energy Rating Index zero energy score* is amended to read as follows.

RC102.2 Energy Rating Index zero energy score.

Compliance with this section requires that the rated design be shown to have a Home Energy Rating System (HERS) score of 50 before solar and 0 with solar when compared to the Energy Rating Index (ERI) reference design determined in accordance with RESNET/ICC 301 for both of the following:

- 1. ERI value not including on-site power production (OPP) calculated in accordance with RESNET/ICC 301 HERS**
- 2. ERI value including on-site power production calculated in accordance with RESNET/ICC 301 HERS with the OPP in Equation 4.1.2 of RESNET/ICC 301 HERS adjusted in accordance with Equation RC-1.**

Adjusted OPP = OPP + CREF + REPC (Equation RC-1)

where:

CREF = Community Renewable Energy Facility power production—the yearly energy, in kilowatt hour equivalent (kWh_{eq}), contracted from a community renewable energy facility that is qualified under applicable state and local utility statutes and rules, and that allocates bill credits to the rated home.

REPC = Renewable Energy Purchase Contract power production—the yearly energy, in kilowatt hour equivalent (kWh_{eq}), contracted from an energy facility that generates energy with photovoltaic, solar thermal, geothermal energy or wind systems, and that is demonstrated by an energy purchase contract or lease with a duration of not less than 15 years.

RC102.2.1 HERS Score. Buildings shall comply with the scores in Table RC102.2.1.

Table RC102.2.1.

<u>HERS SCORE NOT INCLUDING OPP</u>	<u>HERS SCORE INCLUDING OPP</u>
<u>50</u>	<u>0</u>

76. RC102.3 through RC102.9 are added to Appendix RC to read as follows.

RC102.3 Mandatory Sections. All projects shall comply with all sections within Table RC102.3.

Table RC102.3

Mandatory requirements for residential buildings

<u>Title</u>	<u>IECC Section</u>
<u>Vapor retarder</u>	<u>R402.1.1</u>
<u>Eave baffle</u>	<u>R402.2.3</u>

Commented [CD7]: It does not appear that HERS of 47 has ever been required in the code. There is a table that references and ERI of 47 but this is not the same as HERS. This should be a HERS of 50.

Talk to Chad about this to get back story on bldg moratorium.

Commented [CR8R7]: Appendix RC trumps all from Here on HERS 47 before solar and HERS of 0 or less after solar. Hers of 50 will not be used on minor rebuilds due to cost.

<u>Access hatches and doors</u>	<u>R402.2.4.1</u>
<u>Crawl space wall insulation</u>	<u>R402.4.1.2</u>
<u>Maximum fenestration U-factor and SHGC</u>	<u>R402.5</u>
<u>Mechanical Controls</u>	<u>R403.1</u>
<u>Ducts</u>	<u>R403.3 except R403.3.2, R403.3.3, and R403.6</u>
<u>Mechanical system piping insulation</u>	<u>R403.4</u>
<u>Heated water circulation and temperature maintenance systems</u>	<u>R403.5.1</u>
<u>Drain Water heat recovery units</u>	<u>R403.5.3</u>
<u>Mechanical ventilation</u>	<u>R403.6 including E403.6.1</u>
<u>Equipment sizing and efficiency rating</u>	<u>R403.7</u>
<u>Systems serving multiple dwelling units</u>	<u>R403.8</u>
<u>Snow melt and ice systems</u>	<u>R403.9</u>
<u>Energy consumption of pools and spas</u>	<u>R403.10</u>
<u>Portable spas</u>	<u>R403.11</u>
<u>Residential pools and permanent residential spas</u>	<u>R403.12</u>
<u>Lighting equipment</u>	<u>R404.1</u>
<u>Interior lighting controls</u>	<u>R404.2</u>

RC102.4 Building Envelope. The building thermal envelope shall be greater or equal to the levels of efficiency and SHGC in Table R402.1.2.

RC102.5 Verification by approved agency.

Verification of compliance with Section R102.4 as outlined in Sections of this appendix shall be completed by an approved third party. Verification of compliance with Section R102.3 shall be completed by the authority having jurisdiction or an approved third-party inspection agency in accordance with Section R105.4.

RC102.6 Documentation.

Documentation of the software used to determine the ERI and the parameters for the residential building shall be in accordance with Sections RC102.6.1 through RC102.6.4

RC102.6.1 Compliance software tools.

Software tools used for determining HERS shall be Approved Software Rating Tools in accordance with RESNET/ICC 301.

RC102.6.2 Compliance report.

Compliance software tools shall generate a report that documents that the home and the HERS score of the rated design complies with RC102. Compliance documentation shall be created for the proposed design and shall be submitted with the application for the building permit. Confirmed compliance documents of the built dwelling unit shall be created and submitted to the code official for review before a certificate of occupancy is issued. Compliance reports shall include information in accordance with Sections RC102.6.3 and RC102.6.4.

RC102.7 Additional documentation.

The code official shall be permitted to require the following documents:

- 1. Documentation of the building component characteristics of the ERI reference design.**
- 2. A certification signed by the builder providing the building component characteristics of the rated design.**
- 3. Documentation of the actual values used in the software calculations for the rated design.**

RC102.8 Specific approval.

Performance analysis tools meeting the applicable subsections of Section RC102 shall be approved. Documentation demonstrating the approval of performance analysis tools in accordance with Section RC102 shall be provided.

RC102.9 Input values.

Where calculations require input values not specified by Sections RC 102, those input values shall be taken from HERS RESNET/ICC 301.

INTRODUCED, READ, PASSED ON FIRST READING, AND ORDERED
PUBLISHED this _____ day of _____, 2024.

Chris Leh, Mayor

ATTEST:

Meredyth Muth, City Clerk

APPROVED AS TO FORM:

Kelly PC, City Attorney

PASSED AND ADOPTED ON SECOND AND FINAL READING, this
_____ day of _____, 2024.

Chris Leh, Mayor

ATTEST:

Meredyth Muth, City Clerk

Discussion Items for Next Meeting –
None at this time.

Next meeting has not been determined.

Adjourn – The meeting was adjourned at _____ 8:45pm _____.

Approval of Meeting Minutes from 8/28/24

The minutes were approved by all members present.

Public Comments on Items Not on the Agenda

None.

Review of Home Hardening Code ordinance

Fire-Resistant Decking, Guardrails, and Lithium Storage

Henderson agreed with the city's collaborative approach on fire-resistant decking and guardrails. She expressed concerns about combustible lithium energy storage systems and suggested more research for cost-effective fire protection solutions. She mentioned the toxicity of lithium-ion batteries installed indoors and proposed placing them outside homes with sealed boxes per the new code. She also raised the need to restrict storage of certain items in basements to mitigate fire risks for rescue crews.

Root explained that the Fire Department and City requirement suggestions are similar. The requirement of fire resistant guardrails would not make a large difference and that they cannot hold up the requirements of 200+ pounds and the cost to increase to metal and/or cementitious product would dramatically increase the price.

Lithium Storage

The Board members do not think that the requirement for lithium battery storage to be outside the home does not belong as part of the "Home Hardening Code" since all the other items refer to fire starting from an exterior environment, such as a wildfire. This requirement refers to protection from a fire starting inside the home, so does not fall in line with the intent of the other items.

Dino expressed that the exception which would allow the installation inside a garage if fire-suppression and fire-rated wall would be cost prohibitive to most homeowners since in most cases this would be retrofit to an existing structure.

Gatto asked for clarification as to where this requirement originated. **Root** explained that it is in response to the Fire Department not being able to enter a home where interior lithium batteries are on fire, except for an initial search, due

to the toxicity of the materials that burn from lithium storage. By keeping lithium storage on the exterior of the building envelope, the fire department can attempt to control the burn and keep it from spreading.

Root: If lithium batteries catch on fire inside the home, the home will need to be gutted due to the toxic buildup from the materials, if the home is still standing. This requirement was included in the Home Hardening Code proposal since it relates to the fire department's ability to keep the fire from spreading from one structure to the adjoining property.

Berry explained that the term "hardening" refers to a flame and ignition starting from outside the home and that the lithium battery restriction would refer to a fire started inside the home which should be addressed through fire "rating" rather than home hardening.

In response to **Gatto's** comment that this should not be in the Home Hardening Code and belongs in the Building Code, **Henderson** explained that by having this item in the Home Hardening Code, they are trying to create a space currently to prevent lithium batteries (e-scooter batteries, solar batteries, and other lithium batteries) from being stored inside the home because there are no other restrictions at the moment.

Henderson confirmed that this requirement is part of the 2024 code, and if the 2024 code is adopted by the City, it would be addressed with that code.

Berry questioned if this requirement could be added as an amendment to the current code. **Root** explained that since the Home Hardening Code is currently being reviewed it made sense to include it with this proposal.

Berry states that the "hardening" code prevents or stalls the ignition of a home, whereas the ability to safely exit a home on fire is part of the building code, and that the lithium requirement should be part of the building code.

Dino also expressed concern that by requiring these batteries to be outside the home, if there were only a few companies that make these batteries capable of installation on the outside, we could be supporting a monopoly.

Geise asked **Root** if the Building Department could require people to put the ESS systems either outside or in the garage and **Root** explained that without code to support it the Building Department cannot enforce it.

Geise made a motion to strike #7, 7.1 and 7.2 from the Home Hardening code (Lithium Energy Storage Systems (ESS)) in its entirety. **Dino** seconded; approved by all Board members present.

Other items in the Home Hardening Code

Berry: add 4th exception: Class A with “flame spread less than 25” would satisfy the “unknown” that is not covered specifically by the other items.

Geise asked the Board if anyone had researched the availability of the 1/8” mesh. **Berry** said he was able to find some but cannot confirm that each one of the items listed in the Home Hardening Code is possible. **Geise** explained that by adding in the exception stating that by requiring a Class A system, it would be a catch-all just in case anything else specific was not stated.

Berry would like to add one item to the exceptions to help account for any materials or other items that they may not have considered.

Berry made a motion to include this exception, approved by all Board members.

Exception 4: Alternate materials with a class A fire rating OR a flame spread of less than 25 may be considered.

Staff update/discussion of 2021 IECC Energy Code decision from City Council Meeting from 9/17/24 and Staff update on adoption of 2024 ICC codes

Root explained the suggestions to Council:

- Appendix RC removed
- Change HERS rating requirement to 50 (without solar); cost difference between 47 and 50 is significant
- Gas backup systems for Commercial properties. 2020 engineering spoke at the meeting to support this since the equipment for heat pumps etc when the weather is extremely cold, and also just as a backup system
- Appendix PT for Commercial buildings; reduce redundancies for monitoring
- Allowing multi-family R-2 Occupancy to be used under the PT which is the same as R-1; previously they would have to use Appendix RC which would have been cost-prohibitive
- City has deferred on EV charging to follow the State code and has moved to the Planning Division
- R-12 duct equipment

Root also explained that anytime the City adopts or amends the Building Code, the City needs to ensure that it meets the State Energy Code. If we adopt a code later than June of 2025 the City will have to meet the Carbon Offset code adopted by the State, unless the City adopts the 2024 IECC before that time.

Root also explained that the previous definition of an all-electric building has been removed:

An all-electric building is a building that contains no combustion equipment including piping or plumbing or combustion equipment installed in the home or building site. (both residential and commercial)

New definition: "A building that contains no combustion equipment"

Dino asked when these changes will be presented to City Council and will the Board be able to review it again before then. **Root** responded that he would like

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Minutes

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to get a packet together for the Board sometime in October, but that City Council would also like to adopt the 2024 IECC code as soon as possible. He further explained that the energy code is hard to enforce and would like to find another avenue other than inspectors to enforce the energy code.

Root explained that what he would work on and propose is a modified prescriptive code based on the 2024 Energy Code. One example would be to remove the ERV requirements since homeowners are not aware of, and will likely not comply with, the requirement to change the filters in order for the equipment to run as designed.

Geise stated that he feels the Board's opinions are being shelved again and would like to have the Board meet with the sustainability group to explain the issues of equipment and materials may not be obtainable or available, even though it is required in the 2024 IECC code.

Berry's opinion based on the last City Council meeting is that they believe that the 2024 Energy code is similar to 2.0 version of a software in that it "fixed" issues from the 2021 code, but that this is not how the code works. He believes that educating City Council to understand that just because the other ICC codes are being adopted that the 2024 IECC code does not also need to be adopted at the same time.

Dino stated that his opinion of the meeting was that City Council understood the issues with the 2021 IECC code and that he thinks City Council believes that adopting the 2024 IECC would be cleaner than trying to continue to clean up the 2021 code.

Root explained that he is looking into options for the sustainability dept to take over review of energy documents with regard to HERS ratings, energy certificates, and insulation certificates to verify the accuracy. He explained that Building Staff does not have the bandwidth to review and correct the documents today and that the quality of the submissions is poor and requires a lot of back and forth with the contractors and energy raters. **Dino** expressed his concern that the department pushing for these changes be the ones to review and enforce the code.

Geise suggested that the City increase the budget to account for the sustainability requirements for review and inspection.

Building Code Board of Appeals

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Root mentioned that it was suggested that one of our energy code consultants that Building Departments and contractors need to get involved with the energy codes to be a part of the process or special interest groups will start to control the Energy Code.

Discussion Items for Next Meeting

- Review of final document on the 2021 IECC changes before it is presented to City Council.
- 2024 ICC codes and adoption process.

Adjourn – The meeting was adjourned at 3:50pm.

From: [Tawnya Somauroo](#)
To: [City Council](#)
Subject: Home hardening code TONIGHT
Date: Tuesday, October 15, 2024 1:21:26 PM

Dear Council,

It really warms my heart see the draft ordinance coming to Council tonight for a first reading. Thanks to all for the support from Council and Staff and the Board of Appeals that got the ordinance this far!

I have one comment about the draft: the exemption to the code for houses that are more than 35 feet set back from property boundaries and include fire sprinklers does not make sense. Please consider removing.

The policy behind home hardening is to ember harden structures. Fire sprinklers do not help ember harden a home. They may slow down a fire progression, but they will not prevent the exterior of a house from catching fire or put an exterior fire out. And increasing the distance between homes also will not reduce the risk that embers will ignite a home. Spacing homes further apart mostly works to decrease the risk of structure to structure fire. For these reasons, the exemption to ember hardening based on sprinklers and distance to other structures seems hard to justify. Moreover, creating an exception that only applies to larger homes built and owned by wealthier homeowners is inequitable.

Two other comments/questions:

- 1) Will this code apply to City buildings (which I am hoping will be hardened in the coming years)?
- 2) What happened to Council's request for guidance on landscaping? Please consider banning new junipers within the City and/or requiring 5 ft of defensible space for new buildings.

Thank you again for your support in making Louisville more resilient.

Best regards,
Tawnya Somauroo
Larkspur Ln

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From: [David Pomeroy](#)
To: [Building Safety](#)
Cc: [City Council](#)
Subject: Please adopt Home Hardening code, and let's go further
Date: Monday, August 26, 2024 10:02:09 PM

Hello,

I'd like to ask the City to adopt the proposed home hardening code that will be discussed at the building code meeting on Wednesday. This code will significantly improve our community wildfire defense as more homes are retrofitted with hardening measures. These rules are a sensible minimum that we need to implement as quickly as possible.

However, these rules don't go far enough and don't get the work done fast enough. Our town is a tinderbox of cedar fences, unscreened attics, and juniper bushes ready to spark. The city should also take aggressive action to reduce the fire risk caused by dangerous vegetation. Using whatever means is available, such as laws allowing for eradication of invasive or dangerous plants, the city should begin a process to identify and eliminate all of the juniper or other highly flammable plants within neighborhoods. They are simply too dangerous to have in our closely interdependent community.

Thank you,
David

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From: [Lisa Hughes](#)
To: [Chad Root](#); [City Council](#); [Rob Zuccaro](#)
Subject: Louisville Home Hardening Code
Date: Sunday, August 25, 2024 3:10:43 PM

To the Building Code Board of Appeals,

I am writing to support the adoption of the Louisville Home Hardening Code. This code will ensure upcoming and future construction in Louisville is aligned with what is currently understood best practice for areas at wildfire risk. Louisville has been shown to be at risk by the Marshall Fire. Our county and state continue to face the hazards of fire as evidenced by the 3 recent wildfires in the area. This building code will promote more resilient and safe neighborhoods. While I don't want to speak for them, it is my understanding that our first responders support this code. Chief Willson recently wrote a letter to Council in support of this code that was included in the July 30 City Council meeting packet.

Building resiliently is also economically smart. In the 2021 Insurance Institute for Business and Home Safety (IBHS) Report, *Building Codes and Standards: Advancements in Resiliency But Continued Resistance to Adoption and Enforcement* the IBHS estimates an "average return on investment of \$11 for every dollar spent on adopting modern codes".

Beyond safety and economics, fire hardening code is also consistent with sustainability. Many of the firewise construction and landscaping methods use more durable materials that will last longer, such as rock mulch instead of bark mulch. Same for fences. Metal and other non-combustible materials should be promoted, especially where neighborhoods interface with grasslands or back up to open space. Cedar fences are a liability because they are a fire hazard. Additionally, they deteriorate rapidly and they have to be replaced with some frequency. Metal fences are firewise and very durable. Including significant components of this topic in the proposed code is important and appreciated.

Regarding **Urban Defensible Space Non-Combustible surface/ landscaping 24" out from foundation** Item 8 from your agenda for the 8/24 meeting, this is not aligned with known best practice. In another IBHS report, *The Return of the Conflagration In Our Built Environment*, the authors and scientists that analyzed the data conclude that during the Marshall Fire: "One major vulnerability at the parcel level was present. Dense vegetation within the 0-5 foot home ignition zone was observed on nearly all homes. In addition the native grassland was interconnected with the neighborhood with no fuel breaks." (pg. 13) They also concluded that during the Marshall fire, dense vegetation and wooden privacy fences provided a continuity of fuels. Fences spread embers quickly into the built

environment and ignite houses on fire. IBHS has done multiple tests and research showing that wood fences contribute to fire spread. In Cornerstone, where I live, many of us have built back with fire resistant metal fences. Most have not. However, as I look around town, I see wood fences popping up all over the rebuilt neighborhoods including my own neighborhood. I know the risk these fences pose and I would like for all neighbors to have safer construction and landscaping elements because it truly does matter.

IBHS concluded that only 13/57 homes by Spring Drive survived the fire. These homes had large spaces between them and incorporated many elements of building hardscaping, yet they still burned because combustible vegetative landscaping elements were found in the 0-5 foot non-combustible zone. Maintaining a non-combustible zone 0-5 feet around the house is one of the key elements promoted by IBHS and has been adopted by firewise codes elsewhere. For many rebuilds, landscaping was up to us to decide. Many neighbors that have rebuilt, did not fully implement all the aspects of the landscaping recommendations because they were unaware of them, their builders/landscapers also weren't aware of them, and also we were pretty overwhelmed with the whole process. The landscaping and fencing conversation still requires further development and consideration. However, adopting this code is a huge positive step forward that I am very thankful for.

Here are some recent IBHS resources including a video with a fence burning that ignites a house.

- [NBC Bay Area with Chris Chmura](#)- great short video of the importance of defensible space
- IBHS Wildfire Prepared Home [website](#)
- IBHS [Wildland Fire Embers and Flames: Home Mitigations That Matter](#)
- IBHS [Noncombustible Zone 0: Minimizing Pathways to Home Ignition](#)
- IBHS [The Return of Conflagration in our Built Environment](#)

<https://headwaterseconomics.org/natural-hazards/austin-texas-built-for-wildfire/>

My builder did incorporate many fire safe aspects into my build, such as cementitious siding, a class A roof, pvc decking, etc. However, on many aspects of home hardening such as

putting mesh on vents, and on which products were fire safe- ie class A decking vs Class C we as homeowners had to educate them. This is why the code is so important so that it will give people a baseline to start with, and hopefully the City can provide more education to builders and landscapers.

Additionally, and maybe more importantly, from an insurance perspective, community home hardening and mitigation is critical for residents to maintain homeowners insurance in our city. In a recent town hall on homeowners insurance put on by the Colorado Sun, Carole Walker from the Rocky Mtn Insurance Association, an association representing insurance companies in Colorado, said that community mitigation is what insurers will be looking to in the future to keep communities and residents insured. I work for a non profit consumer organization called United Policyholders and we help homeowners work to keep and maintain insurance. Recently, in my role for UP, I was in a meeting with insurance agents last week who agreed with Ms.Walker that insurance companies will come to expect home hardening and mitigation, *just to keep residents insured in the coming years*. Now is the time for Louisville to act to pass this code, so that its citizens will be able to keep their homeowners insurance in the future and contribute to the economy of Louisville, and its vitality. Adopting this fire hardening code brings our building code closer to best practice for promoting safety and sustainability, and aligns with what many other communities in Colorado, Boulder County, and the nation have done. This makes a lot of sense for our community.

I would like to express much gratitude to staff for drafting this code and for having this item on the agenda so quickly. On this issue, time is definitely of the essence. Thank you for your consideration and deliberation on this fire hardening code.

Sincerely,

Lisa Hughes

887 Larkspur Court

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From: [Maria McClure](#)
To: [Building Safety](#); [City Council](#)
Subject: Home hardening code
Date: Saturday, August 24, 2024 5:56:44 PM

To the Building Code Board of Appeals,

I am writing to support the adoption of the Louisville Hardening Code. This code will ensure upcoming and future construction in Louisville is aligned with what is currently understood best practice for areas at wildfire risk. Louisville has been shown to be at risk by the Marshall Fire. Our county and state continue to face the hazards of fire. This building code will promote more resilient and safe neighborhoods. I do not presume to speak for them, but it is my understanding that our first responders support this code.

Building resilient is also economically smart. In the 2021 Insurance Institute for Business and Home Safety (IBHS) Report, *Building Codes and Standards: Advancements in Resiliency But Continued Resistance to Adoption and Enforcement* the IBHS estimates an “average return on investment of \$11 for every dollar spent on adopting modern codes”.

Beyond safety and economics, fire hardening code is also consistent with sustainability. Many of the firewise construction and landscaping methods use more durable materials that will last longer, such as rock mulch instead of bark mulch. Same for fences. Metal and other non-combustible materials should be promoted, especially where neighborhoods interface with grasslands or other wooded areas. Cedar fences are a liability because they are a fire hazard. Additionally, they deteriorate rapidly and they have to be replaced with some frequency. Metal fences are firewise and very durable. Including significant components of this topic in the proposed code is important and appreciated.

Regarding **Urban Defensible Space Non-Combustible surface/ landscaping 24” out from foundation** Item 8, this is not aligned with known best practice. In another IBHS report, *The Return of the Conflagration In Our Built Environment*, the authors and scientists that analyzed the data conclude that during the Marshall Fire: “One major vulnerability at the parcel level was present. Dense vegetation within the 0-5 foot home ignition zone was observed on nearly all homes. In addition the native grassland was interconnected with the neighborhood with no fuel breaks.” (pg. 13) They also concluded that during the Marshall fire, dense vegetation and wooden privacy fences provided a continuity of fuels. From speaking with neighbors and recreating events that day, it became apparent to us that our 6-ft privacy wooden fences ignited from the grass, which then ignited wooden decks and then our homes were quickly engulfed in flames. So far, myself and my neighbors in Cherrywood II have primarily rebuilt with non-combustible and fire resistant metal fences. However, as I look around town, including my own neighborhood I know the risk these fences pose and I would like for all neighbors to have safer construction and landscaping elements because it truly does matter.

This was their conclusion explaining why only 13/57 homes by Spring Drive survived the fire. These homes had large spaces between them and incorporated many elements of building hardscaping, yet they still burned because combustible vegetative landscaping elements were found in the 0-5 foot non-combustible zone. Maintaining a non-combustible zone 0-5 feet around the house is one of the key elements promoted by IBHS and has been adopted by firewise codes elsewhere. For many rebuilds, landscaping was up to us to decide. Many neighbors that have rebuilt, myself included, did not fully implement all the aspects of the landscaping recommendations because we were unaware of them and also pretty overwhelmed with the whole process. The landscaping and fencing conversation still requires further development and consideration. However, adopting this code is a huge positive step forward that I am very thankful for.

My experience rebuilding is that I was very lucky that I had a builder that constructed my home to firewise standards. Boulder Creek implemented many components of this code in the construction of my house without me asking for or fully understanding the complexities of fire hardening. Since moving back home, I have been pleasantly surprised by the firewise features Boulder Creek incorporated into their builds without there being specific code to require it. Code would make it certain that all new construction will have these features.

It is also wise to adopt this code because then it would be covered by Law and Ordinance insurance provisions in homeowners policies. Additionally, building to this code makes our homes and buildings more likely to maintain insurability. In these ways, this code promotes economic vitality. Adopting this fire hardening code brings our building code closer to best practice for promoting safety and sustainability. This makes a lot of sense for our community.

I would like to express gratitude to staff for drafting this code and for having this item on the agenda so quickly. On this issue, time is definitely of the essence. Thank you for your consideration and deliberation on this fire hardening code.

Sincerely,
Maria McClure
105 Cherrywood Lane

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From: [Lisa Hughes](#)
To: [City Council](#)
Subject: Thank you and follow up comments
Date: Thursday, August 1, 2024 2:47:26 PM

Dear City Council,

I want to express my thanks to you all for agreeing that passing a home hardening code for Louisville is crucial to protect our community, and I look forward to seeing the code when it comes forward. Thank you also for directing staff in the future to do a WUI code for Louisville. Combined with the state WUI code that will be coming out at the end of this year, this will also help to make our City safer.

I wanted to comment further on home hardening pieces that I didn't get to mention at the meeting.

Caleb- here is the link to the GUI

storymap-<https://storymaps.arcgis.com/stories/62435c5cd6554d4d8143dd0c967fc2d3>

Also, there was brief mention at the meeting from Director Zuccaro and brief discussion about the additional cost this code would put on residents. While that is true, there is \$ available to residents through Rep Junie Joseph's bill that passed last year for retrofits for lower income folks. The City could also look for grants to incentivize this for homeowners. I believe the Dept of Fire Prevention and Control and the Colorado Forest Service may have \$ available to municipalities to support this.

Additionally, by communities engaging in home hardening and potentially participating in Wildfire Partners new Community Mitigation program, communities will be set to become Firewise Communities. This is a nationally recognized program that insurance companies do recognize in deciding whether to insure people. And the more of these we have in the City, and County, the safer we will all be.

<https://www.nfpa.org/education-and-research/wildfire/firewise-usa>

Our group, the Neighborhood Resilience Coalition has done extensive research in this area and would be happy to speak with any of you further.

Thank you,

Lisa Hughes

Louisville resident and member of the Neighborhood Resilience Coalition

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From: [Susan Loo](#)
To: [City Council](#)
Subject: The time it takes for home hardening to work
Date: Wednesday, July 31, 2024 12:56:02 AM

Dear Council,

Regarding the question about the time for home hardening to have any demonstrative effect on making Louisville more fire safe. Granted the process is very slow but it still matters.

This is a story from long ago and not too far away. . .

This was 1990 and fire in the backdrop was not the public issue it has become over the years. California fire departments, especially The Los Angeles Fire Department, were the nation's pioneers in how to fight fire in what became known as "the wildland urban interface". LAFD was successful in getting an ordinance passed that banned the use of wood shingle roofs in LA. People loved wood shingle roofs because they look so beautiful. However, wood shingle roofs were notorious for throwing off embers and catching the whole block on fire. Wood shingle roof bans are now a standard ordinance in most fire-threatened communities, but back then it was revolutionary.

Among the many reasons the City of Boulder hired Larry Donner was to "implement change". Boulder was a huge sea of wood shingle roofs. As Boulder's new fire chief, Larry decided an ordinance banning wood shingle roofs would be a good thing. Boulder became the second city in the nation to do so. Council kicked around the idea for almost a year but they finally passed the ordinance unanimously. The best selling feature was people had 20 years to replace a wood roof. Larry reasoned that with the regular destruction of roofs in hail storms in Colorado, most households would have new roofs paid for by the insurance companies. The insurance companies were thrilled because they hated how expensive wood roof replacement was.

The wood shingle industry concerned about what they rightfully perceived as a coming trend sued the City of Boulder and also Larry personally. The industry had not sued LA because the speculation was LA had the resources to handily win a lawsuit. And Boulder didn't. They sued Larry personally to keep him from becoming a very effective spokesperson for wood shingle bans. As soon as the lawsuit was filed, our attorney told him to stop talking to the press. The lawsuit was filed in Federal Court; it was an international affair because both the U.S. and Canadian wood shingle industries joined together. To this day, Larry has been the only fire chief, the industry has gone after personally. We were definitely out-resourced, but we won anyway.

At the end of the 20-year phase-in, only three wood shingle roofs existed out of the thousands existing when the ordinance passed. Yes, it took a long time but every year that went by fewer wood roofs existed and Boulder's risk went down. Larry linked house modification with advanced firefighter training and education wherein no Boulder home was ever lost to wildfire during his 24-year tenure. Was some luck involved? Yes, probably. But always remember, put your community in the position to make its own luck.

Thanks for letting me share that story and your preference for home hardening. You made our community's own luck.

Best wishes,
Sue

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From: [Ann](#)
To: [City Council](#); [Christopher Leh](#)
Subject: input for 7/30 discussion of fire hardening codes
Date: Tuesday, July 30, 2024 10:59:37 AM

Dear Mayor Leh and City Council Members:

I can't be at tonight's meeting, but I urge you to move forward with the recommendations from Mr. Zucarro and Mr. Root about fire hardening and WUI codes. I appreciate all the work that has gone into the excellent presentation and report that are included in tonight's packet.

I believe that requiring Home Hardening measures for the whole City is the minimum we should do now. We know that embers from the Marshall Fire penetrated well into the City, igniting unexpected areas. I spoke with several fire responders at a public meeting after the MF who said they were preparing themselves to **lose all of Louisville** if the wind had not died down that night. It's imperative we start to prepare the entire City for the potential of future wildfires, which continue to occur in our area.

I also believe the more extensive WUI requirements are critical, at least on the west side of town. Those of us in the MF area are watching with dismay as houses are being rebuilt with cedar fences, junipers, and other flammable landscaping. These materials are proven conductors of wildfire, especially in wind-driven situations. I know this will be a harder lift, so maybe it can be a staged policy implementation. It will have to be matched with funding to help residents from some grant or incentive. At the very least we should remove any requirement for wood fencing in any part of the City.

We should also pursue collaboration with Wildfire Partners and other relevant programs aggressively. Voluntary actions of homeowners, contractors, and landscapers can impact existing housing stock that is not coming through the code process. I know this will take staff time and resources, which I urge you to allocate.

It has been well documented that implementing fire-ready measures is beginning to attract the attention of insurers, which will be crucial to the economic vitality of our region in the future.

I have communicated previously with Council (see emails from 11/1/23 and 4/21/24 in the packet) on this topic. In those emails I was focused primarily on spec homes being built in the MF area. At the time some of us felt strongly that we were missing the opportunity to impact the 500+ new houses that would be rebuilt, and that targeting spec homes was perhaps the easiest and fastest way to capture a portion of that opportunity. Now that the area is mostly rebuilt or under construction and that opportunity is behind us, we should turn our attention to the whole City. These code changes will help ensure the safety and sustainability of our community.

I respectfully ask you to direct City staff to pursue these policy changes and provide adequate staff time and resources to do so.

Thank you for your consideration.

Ann Brennan
888 Larkspur Court



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From: [Joanne Speirs](#)
To: [City Council](#); [Building Safety](#); [Chad Root](#)
Subject: Home hardening for wildfires
Date: Monday, July 15, 2024 8:55:48 PM

I understand that in the next couple of weeks, the City will be addressing potential updates to the building codes. I have attached a recent article in The NY Times discusses home hardening, insurance rates, and “firewise” communities. Clearly the Insurance Industry supports home hardening practices and in a very effective demonstration in the article, shows the impact of fire hardening on homes.

My husband and I recently moved into our rebuild in the Enclave neighborhood. We have home hardened our rebuild in the hopes that it will help save our lives, (we have BOCO alerts), save some insurance costs and just might slow the fire down so that it won’t burn out our neighbors. In the meantime, a neighbor near us just planted 21 juniper trees.

I know folks are tired of hearing from fire survivors, but safety is in the forefront of our minds. This is a minor but important measure that the City could take to help prevent or mitigate another disaster.

Here's a gift link: https://www.nytimes.com/2024/07/15/business/wildfires-home-insurance-building-standards.html?unlocked_article_code=1.7U0.VIwh.XiLqhzUToo6G&smid=url-share.

Please contact me if you are unable to open the attachment.

Kind Regards,
Joanne Speirs
1112 W. Enclave Circle
Louisville, CO 80027
303 589 2877

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City of Louisville Fire Hardening Code

Ordinance No. 1884, Series 2024

**Public Hearing
November 4, 2024**



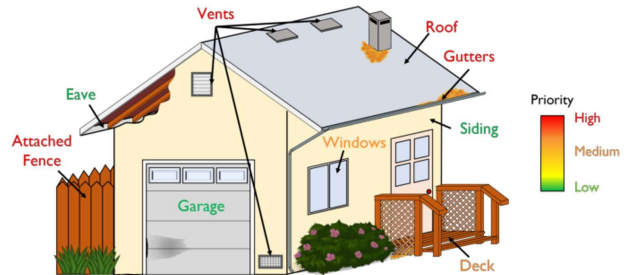
Background:

- *Louisville Fire Protection District Recommendation to Consider City-Wide Code for Homes*
- *July 30, 2024 City Council Review of Wildland Urban Interface (WUI) and Building Hardening Code Concepts*
 - ✓ *Council Direction to Draft City-Wide Building Hardening Code for New Construction, Additions and Remodels*
 - ✓ *Costs and Potential Impacts on Housing Affordability and Costs to Maintain Homes Considered*



Proposal:

- *Minimum Regulations for the Following Building Elements:*
 - ✓ *Roof Coverings*
 - ✓ *Siding and Eave Materials*
 - ✓ *Vent Coverings*
 - ✓ *Gutter Materials and Guards*
 - ✓ *Fence Materials Within Five Feet of Structure*
 - ✓ *Deck Surface Materials*
 - ✓ *Removable Solar Panel Screens*



Building Code Board of Appeals (BCBOA)

Recommendation:

- *Serves as Advisory Board to Council on All Building Code Adoptions*
- *Reviewed Structure Hardening Code on August 28, 2024 and September 25, 2024 Meetings*
 - ✓ *Recommends Approval*

Staff Recommendation:

- *Staff Recommends Approval*