



Office of the City Manager

CONSENT CALENDAR
November 3, 2022

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: Jordan Klein, Director, Department of Planning and Development

Subject: Adoption of Berkeley Building Codes, including Local Amendments to California Building Standards Code

RECOMMENDATION

1. Adopt first reading of an Ordinance repealing and reenacting the Berkeley Building, Residential, Electrical, Mechanical, Plumbing, Energy, and Green Building Standards Codes in BMC Chapters 19.28, 19.29, 19.30, 19.32, 19.34, 19.36 and 19.37, and adopting related procedural and stricter provisions; and schedule a Public Hearing for the second reading on November 29, 2022 pursuant to state law; and
2. Adopt a Resolution setting forth findings of local conditions that justify more stringent regulations than those provided by the 2022 California Building Standards Code, and rescinding Resolution No. 69,170-N.S.

SUMMARY

The purpose of this report is to provide background on the 2022 California Building Standards Code, identify key changes from the 2019 to 2022 Code editions, and summarize the proposed local amendments, which include:

- Adoption of the California Residential Code Appendix AU *Cob Construction* in support of sustainable construction practices, which reduce environmental impact and provide increased thermal efficiencies; and
- Amendments to the California Plumbing Code to require installation of motion activated gas shut off valves in construction of new and alterations or additions to existing buildings containing fuel gas piping for which a mechanical or plumbing permit is issued. This amendment is in response to a referral from the Disaster and Fire Safety Commission to help reduce or prevent gas-related fires in the event of a major seismic event; and
- Amendments to the California Green Buildings Standards Code (CALGreen) to increase electric vehicle charging infrastructure and readiness requirements in all building types.

The 2022 California Building Standards Code, with local amendments, is adopted in the Berkeley Municipal Code, Title 19, as the Berkeley Building, Residential, Electrical, Mechanical, Plumbing, Energy, and Green Codes (Berkeley Building Codes).

FISCAL IMPACTS OF RECOMMENDATION

Adoption of the revised and expanded 2022 California Buildings Standards Code, with the proposed local amendments, will increase the plan check and inspection workload. The expanded California Green Building Standards Code (CALGreen) and the more complex 2022 California Energy Code, which include additional acceptance testing, verification and documentation provisions, will increase plan check and inspection requirements. On July 16, 2019, while adopting an Ordinance Prohibiting Natural Gas Infrastructure in New Buildings, the City Council confirmed that an additional program manager position in the Building and Safety Division of the Planning and Development Department would be needed to implement the Natural Gas Prohibition, CALGreen EV requirements, regularly changing Energy Code requirements, and other Code amendments in support of the Berkeley “Deep Green” Building Initiative. In FY 2022 the Building and Safety Division recruited a Green Building Program Manager, but the position was limited to two years due to pandemic-related budget restrictions. A permanent full-time position is required for ongoing implementation and enforcement of these green building requirements, and is expected to be reflected in the FY 24/25 budget request for Council consideration. The annual cost of extending the Green Building Program Manager position is estimated at \$273,341.

CURRENT SITUATION AND ITS EFFECTS

As part of a regular three-year cycle, the State Building Standards Commission has published the 2022 California Building Standards Code that must go into effect no later than January 1, 2023. The California Building Standards Code (California Code of Regulations, Title 24) includes the Building Code (Part 2), Residential Code (Part 2.5), Electrical Code (Part 3), Mechanical Code (Part 4), Plumbing Code (Part 5), Energy Code (Part 6), Historical Code (Part 8), Existing Building Code (Part 10), and Green Building Standards Code (Part 11). The Codes provide for minimum uniform standards for health and safety related to the built environment and for their enforcement through a system of permits, plan review, and inspections.

The ordinance proposed for Council adoption, supported by the resolution of findings, provides for the adoption of the referenced California Codes along with certain local amendments, effective January 1, 2023. If this ordinance does not become effective by January 1, 2023, the 2022 California Building Standards Code will automatically become effective on that date, and until a local ordinance were to become effective, the City would not be able to maintain or implement the local amendments tailored to Berkeley. The last day to file for a building permit to be reviewed under the current 2019 Codes will be Friday, December 30, 2022.

The City's building-related codes include local amendments reflecting operations and local climatic, geological, and topographical conditions that need to be included as part of the adoption of the new code. Under state law, local jurisdictions may adopt other administrative provisions appropriate to the locality and may adopt stricter code provisions if justified by findings of local climatic, geological or topographical conditions.

This ordinance, with the local amendments, supports the City's Strategic Plan goals to create a resilient, safe, connected, and prepared city, and to be a global leader in addressing climate change, advancing environmental justice, and protecting the environment. The proposed actions also support emergency housing provisions to assist in the declared homeless shelter crisis.

BACKGROUND

The Council last adopted new California Building Standards Code with local amendments in 2019, which became effective on January 1, 2020. As with the last code adoption, staff is conducting community outreach to inform future applicants and other community members that all permit applications submitted on or before December 30, 2022, will be reviewed under the current 2019 building codes. Outreach includes notifications on the City's homepage websites, announcements on the online permit center website, notification flyers at the Permit Service Center, and email notification to local building professionals.

When the Department opens on January 3, 2023 after the observed New Year's Day holiday, new permit applications will be reviewed for conformance to the 2022 California Building Standards Code with adopted local amendments.

Codes recommended for adoption are the Berkeley Building Code (Chapter 19.28), which also includes the Historical Building Code and the Existing Building Code, the Berkeley Residential Code (Chapter 19.29), the Berkeley Electrical Code (Chapter 19.30), the Berkeley Mechanical Code (Chapter 19.32), the Berkeley Plumbing Code (Chapter 19.34), the Berkeley Energy Code (Chapter 19.26) and the Berkeley Green Code (Chapter 19.37).

Berkeley Building Code (Chapter 19.28)

The 2022 California Building Code adopted in BMC Chapter 19.28 includes numerous model code changes, impacting use and occupancies, allowable building heights and areas, fire protection features, means of egress, structural modifications, etc. Of major importance are the introduction of three additional construction types for larger and taller mass timber buildings, new provisions for small and large family care facilities in apartment buildings, introduction of the minimum safety requirements for shipping containers to be repurposed for use as buildings and structures. These changes are designed to provide enhanced protection of public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures.

Berkeley Residential Code (Chapter 19.29)

The 2022 California Residential Code adopted in BMC Chapter 19.29 includes numerous model code changes further refining prescriptive provisions for the construction of dwellings. Of major importance are the updated local climatic criteria refining the energy needs for dwelling units for the purpose of ensuring that the selected HVAC equipment meets the heating or cooling requirements, introduction of the minimum safety requirements for shipping containers to be repurposed for use as residential or accessory buildings and structures, and a new Appendix AU Cob Construction which provides requirements for clay, sand and straw to be used as the primary building material. These changes are designed to provide enhanced protection of public health, safety and general welfare as they relate to the construction and use of residential buildings and structures.

Berkeley Mechanical Code (Chapter 19.32)

The 2022 California Mechanical Code adopted in BMC Chapter 19.32 incorporates the prior local Berkeley amendment to require installation of residential kitchen range hoods with a minimum air flow of 100 cfm and maximum sound rating not exceeding 3 sones over residential stoves and cooktops.

Berkeley Plumbing Code (Chapter 19.34)

In response to a referral from the Disaster and Fire Safety Commission, adopted by the City Council on June 1, 2021 (see Attachment 3), staff proposes a local amendment to the 2022 California Plumbing Code, adopted in BMC Chapter 19.34, to include a mandatory requirement for the installation of motion activated gas shut off valves in construction of new and alterations or additions to existing buildings containing fuel gas piping for which a mechanical or plumbing permit is issued regardless of the permit valuation. This amendment is intended to reduce or prevent serious gas-related fires or explosions in the event of a major seismic event.

Berkeley Energy Code (Chapter 19.36)

The 2022 California Energy Code adopted in BMC Chapter 19.36 incorporates requirements for rooftop solar photovoltaic (PV) systems for new nonresidential and new multifamily buildings, which are based on the City of Berkeley requirements previously added through local Reach Code amendments to the 2019 Energy Code. The comprehensive electric readiness requirements now mandated for new residential construction in the 2022 California Energy Code, including building systems for water heating, space conditioning, clothes drying, and cooking, have been modeled on Berkeley's own 2019 Energy Reach code amendments.

The 2022 California Energy Code introduces substantial additional changes over the previous code cycle. It incorporates a new energy source metric, adds chapters specifically addressing energy requirements for multi-family residential buildings, adds comprehensive electric readiness requirements for single family and multi-family buildings, adds new requirements for nonresidential building systems, requires energy

storage systems (ESS) for multi-family buildings of three stories or more and nonresidential buildings, and requires higher ventilation rates.

Since the 2019 Berkeley Reach Code amendments have been incorporated into the 2022 California Energy Code and statewide cost-effectiveness studies have not been provided to justify further amendments, staff proposes adoption of the 2022 California Energy Code without amendments. This recommendation aligns with the regional consensus that any local all-electric building provisions reside outside of the Energy Code. The Natural Gas Prohibition in Berkeley Municipal Code Chapter 12.80 enables design professionals and developers to design new buildings as all-electric from project inception. All electric building compliance is verified as part of the building permit plan review and field inspection process.

Berkeley Green Code (Chapter 19.37)

The 2022 California Green Building Standards Code (CALGreen) adopted in BMC Chapter 19.37 makes moderate changes in comparison to the 2019 CALGreen, primarily concentrated on electric vehicle (EV) charging readiness, including charging provisions for medium and heavy-duty commercial vehicles. The proposed local amendments retain additional EV charging requirements, maintain requirements for low-carbon concrete, and preserve past local amendments for increased construction and demolition (C&D) waste diversion. No cost-effectiveness demonstration is required for local amendments to CALGreen.

The proposed local amendments require increased EV charging readiness and installation in new buildings, in keeping with Berkeley's amendments to the 2019 CALGreen Code and implementation of Berkeley's Electric Mobility Roadmap. Specifically, where parking spaces are provided, the proposed EV amendments require:

- Single-family homes, duplexes, and townhouses must have at least one parking space equipped with a raceway, wiring, and power to support a future Level 2 EV charging station. In contrast, the model code requires only a raceway and panel space.
- Multifamily and Hotel/Motel buildings must have at least 20% of spaces as EV capable to support future Level 2 EV charging stations and at least 5% of spaces with EV charging stations installed. In contrast, the model code requires only 10% EV capable spaces and 5% EV charging stations for buildings with 20 dwelling units or greater.
- Nonresidential buildings must have at least 20% of spaces as EV capable to support future Level 2 EV charging stations and at least 10% of spaces with EV charging stations installed. In contrast, the model code requires 15% EV capable spaces and 5% EV charging stations.

These proposed amendments further strengthen 2022 CALGreen requirements for EV charger installations which is supported by the Berkeley Electric Mobility Roadmap. EV charging infrastructure is a critical component to electric vehicle adoption, and it is significantly more expensive to install as a retrofit than during new construction. Ensuring that newly constructed residential and nonresidential parking has EV charging capability will reduce the long-term costs of EV infrastructure installation, while helping to increase EV adoption, and ultimately help to decrease greenhouse gas emissions associated with transportation.

Berkeley's Electric Mobility Roadmap emphasizes that being able to charge at home or at work location is critical for supporting EV ownership and that, increasingly, daytime charging at work or other nonresidential locations could be used to leverage surplus renewable energy. The Roadmap estimates that Berkeley will need about 380 workplace EV charging stations by 2025 to be on track for the Berkeley Climate Action Plan goal of reducing greenhouse gas emissions by 80% from 2000 levels by 2050. To get to zero net carbon in line with State goals by 2045, the goal increases to 610 workplace EV charging stations. Requiring EV charging station installation in new multifamily, nonresidential, and hotel/motel buildings, in concert with EV charging readiness requirements for residential and nonresidential developments, will substantially facilitate electric vehicle adoption in Berkeley.

Previous Local Amendments

Previous local amendments, with some revisions and updates in code language and code sections, that are recommended for continuance in the reenacted Berkeley Building Code (BMC Chapter 19.28) include:

- Article 1. Scope and Administrative Provisions – local amendments concerning permits, applications, fees, undocumented units, appeals, violations, unsafe buildings, and safety assessment placards.
- Article 2. Restrictions in Fire Zones – adding additional local requirements applicable to additions, alterations, repairs and re-roofs, and enacting fire protection areas not covered by the state-mandated areas.
- Article 3. Wood Burning Appliances – local amendment reducing the health risks caused by wood smoke based upon Berkeley's climatic conditions.
- Article 4. Projection into Public Right of Way – an administrative amendment concerning revocation, removal and indemnification regarding construction in the Right of Way.
- Article 5. Existing Buildings – adopting 2022 California Existing Building Code and certain chapters of the 2021 International Existing Building Code to reduce the risk from earthquakes.
- Article 6. Repairs to Existing Buildings and Structures – establishing updated

regulations for the repairs of damaged structures to comply with the Stafford Act, which authorizes the Federal Emergency Management Agency (FEMA) to fund the repair and restoration of eligible facilities damaged in a declared disaster and requires that the repair and restoration be "on the basis of the design of such facility as it existed immediately prior to the major disaster and in conformity with current applicable codes, specifications and standards."

- Article 7. Amendments to Structural Standards – addressing Berkeley’s close proximity to major earthquake faults. The Berkeley Building Official has participated in meetings of the Tri-chapter Uniform Code Committee (TUCC), which is part of the International Code Council East Bay Chapter. The TUCC recommended several structural amendments to the 2022 California Building and Residential Codes, which are included in the proposed local amendments for Berkeley.
- Article 8. Construction of Exterior Appurtenances – establishing more stringent construction standards for exterior elevated elements and continuing the amendments adopted in July 2015 following the balcony collapse at 2020 Kittredge Street.
- Article 9. Emergency Housing Appendix P (formally Appendix O) – establishing local amendments reflecting the particular characteristics and needs of Berkeley’s emergency shelter responses.

Previous local amendments, with some revisions and updates in code language and code sections, that are recommended for continuance in the reenacted Berkeley Residential Code (BMC Chapter 19.29) include:

- Adoption of the California Residential Code Appendices AR and AS for light straw-clay and strawbale construction in support of sustainable construction practices which reduce environmental impact and provide increased thermal efficiencies.
- Adoption of the California Residential Code Appendix AQ for tiny homes used as dwelling units, relaxing various code requirements as they apply to smaller homes in response to the California housing crisis.
- Section 19.29.050 Materials and Construction Methods for Exterior Wildlife Exposure – adding additional local requirements applicable to additions, alterations, repairs and re-roofs, and enacting fire protection areas not covered by the state-mandated areas.
- Section 19.29.060 Technical Amendments to Structural Standards – addressing Berkeley’s close proximity to major earthquake faults.

Previous local amendments, with some revisions in code language and code sections, that are recommended for continuance in the reenacted Berkeley Green Code (BMC Chapter 19.37) include:

- Section 19.37.040 Construction and Demolition debris amendments to require that 100% asphalt, concrete, excavated soil and land-clearing debris be diverted from disposal by recycling, reuse, and salvage, in addition to the general 65% diversion requirement.
- Section 19.37.040 Low-carbon concrete requirement, which requires that cement used in concrete mix design be reduced by not less than 25 percent.

ENVIRONMENTAL SUSTAINABILITY AND CLIMATE IMPACTS

Adoption of the 2022 Berkeley Building Codes with local amendments is important to meeting Berkeley's Climate Action Plan, Zero Waste, and Fossil Fuel Free Berkeley goals. The Berkeley Green Code, through expanded EV charging and low-carbon concrete requirements, limits the greenhouse gas emissions associated with transportation (currently about 60% of Berkeley's total emissions) and the use of concrete, a common building product that is responsible for approximately 8% of global carbon emissions. In addition, the increased diversion requirements for construction and demolition materials keeps waste out of landfills. Continued implementation of the Energy Code and Natural Gas Prohibition, including the verification of compliance through the building permit and inspection process, results in new buildings operating on cleaner energy, which supports Berkeley's Climate Action and Fossil Fuel Free City goals.

RATIONALE FOR RECOMMENDATION

Local codes must be adopted every three years or state codes go into effect without local amendments. Adoption of local amendments and findings are needed to adapt the state codes to Berkeley's particular administrative, topographic, geologic and climatic conditions. The purpose of the non-administrative local amendments is to provide a higher level of safety than is reflected in the 2022 codes adopted by the State. The fire and seismic danger and other local conditions, as described in detail in the attached resolution of local conditions, justify the Berkeley code amendments that are stricter than the California Building Standards Code.

According to the California Building Standards Commission, the repeal of prior code is often overlooked by municipalities and is critically important to ensure that obsolete provisions are expressly repealed.

ALTERNATIVE ACTIONS CONSIDERED

Adopt the California Buildings Standards Code with fewer, or no, local amendments; or take no action, and let the state mandated codes take effect without local amendments specifically designed for Berkeley.

CONTACT PERSON

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Development Department, 510-981-7441

Kurt Hurley, Green Building Program Manager, Building and Safety Division, Planning
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Attachments:

- 1: Code Adoption Ordinance
- 2: Resolution Adopting Local Condition
- 3: Referral from the Disaster and Fire Safety Commission, adopted by Council 6/1/21

ORDINANCE NO. –N.S.

REPEALING AND REENACTING BERKELEY MUNICIPAL CODE CHAPTERS 19.28 (BERKELEY BUILDING CODE), 19.29 (BERKELEY RESIDENTIAL CODE), 19.30 (BERKELEY ELECTRICAL CODE), 19.32 (BERKELEY MECHANICAL CODE), 19.34 (BERKELEY PLUMBING CODE), 19.36 (BERKELEY ENERGY CODE), AND 19.37 (BERKELEY GREEN CODE)

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Berkeley Municipal Code Chapter 19.28 is hereby repealed and reenacted to read as follows:

Chapter 19.28

BERKELEY BUILDING CODE*

Sections:

19.28.010 Adoption of the California Building Code

Article 1. Scope and Administrative Provisions

19.28.020 Adoption of Chapter 1 Scope and Administration

Article 2. Restrictions in Fire Zones

19.28.030 Chapter 7A Materials and Construction Methods for Exterior Wildlife Exposure

Article 3. Wood Burning Appliances

19.28.040 Wood Burning Appliances

Article 4. Projection into Public Right of Way

19.28.050 Encroachment into the Public Right of Way - Revocation and Removal Indemnification and Hold Harmless

Article 5. Existing Buildings

19.28.060 Adoption of 2022 California Existing Building Code and certain Chapters of the 2021 International Existing Building Code by Reference

Article 6. Repairs to Existing Buildings and Structures

19.28.070 Adoption of Regulations for the Repairs of Existing Structures

Article 7. Amendments to Structural Standards

19.28.080 Technical Amendments to Structural Standards

Article 8. Construction of Exterior Appurtenances

19.28.090 Technical Amendments for Construction of Exterior Projecting Elements and Appurtenances

Article 9. Emergency Housing

19.28.100 Emergency Housing and Emergency Housing Facilities

Notes:

* See Chapter 1.24 for abatement of nuisances by City.

19.28.010 Adoption of the California Building Code.

A. The California Building Code, 2022 edition, as adopted in Title 24 Part 2 of the California Code of Regulations, including Appendices I, J and P, is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. One copy of this Code is on file in the office of the City Clerk of the City of Berkeley.

B. The California Historical Building Code, 2022 edition, as adopted in Title 24 Part 8 of the California Code of Regulations, is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. One copy of this Code is on file in the office of the City Clerk of the City of Berkeley.

C. The California Existing Building Code, 2022 edition, as adopted in Title 24 Part 10 of the California Code of Regulations, including Appendix A, is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. One copy of this Code is on file in the office of the City Clerk of the City of Berkeley.

D. This Chapter shall be known as the "Berkeley Building Code" and shall be referred to in this Chapter as "this Code."

E. This Chapter will become effective on January 1, 2023, and shall not apply to any building permit submitted by December 31, 2022.

Article 1. Scope and Administrative Provisions

19.28.020 Adoption of Chapter 1 Scope and Administration

Chapter 1 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below.

CHAPTER 1 SCOPE AND ADMINISTRATION

SECTION 101 – GENERAL

101.1 Title. These regulations shall be known as the Berkeley Building Code, hereinafter referred to as "this Code".

101.4 Referenced codes. The other codes specified in Sections 101.4.1 through 101.4.9, and referenced elsewhere in this Code, shall be considered part of the requirements of this Code to the extent prescribed in each such reference.

101.4.1 Gas. The provisions of the Berkeley Mechanical Code, based on the 2022 California Mechanical Code, and the Berkeley Plumbing Code, based on the 2022 California Plumbing Code, as amended herein, shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this Code. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

101.4.2 Mechanical. The provisions of the Berkeley Mechanical Code, based on the 2022 California Mechanical Code, as amended herein, shall apply to the installation, alterations, repairs and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy-related systems.

101.4.3 Plumbing. The provisions of the Berkeley Plumbing Code, based on the 2022 California Plumbing Code, as amended herein, shall apply to the installation, alteration, repair and replacement of plumbing systems, including equipment, appliances, fixtures, fittings and appurtenances, and where connected to a water or sewage system and all aspects of a medical gas system. The provisions of the Berkeley Plumbing Code shall apply to private sewage disposal systems.

101.4.4 Residential property maintenance. The provisions of the Berkeley Housing Code, as adopted in Chapter 19.40, shall apply to existing residential buildings and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators and occupants; and occupancy of existing premises and structures.

Notwithstanding any provisions contrary in this Chapter, any building or portion thereof constructed in compliance with the Berkeley Building Code shall not be deemed to be in violation of the Housing Code provisions that may conflict.

101.4.5 Fire prevention. The provisions of the Berkeley Fire Code based on the 2022 California Fire Code, as adopted in Chapter 19.48, shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the construction, extension, repair, alteration or removal of fire suppression and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.

101.4.6 Energy. The provisions of the Berkeley Energy Code, based on the 2022 California Energy Code, as amended herein, shall apply to all matters governing the design and construction of buildings for energy efficiency.

101.4.7 Existing buildings. The provisions of the Berkeley Existing Building Code, based on the 2022 California Existing Building Code, as amended herein, shall apply to matters governing the repair, alteration, change of occupancy, addition to and relocation of existing buildings.

101.4.8 Electrical. The provisions of the Berkeley Electrical Code, based on the 2022 California Electrical Code, as amended herein, shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto.

101.4.9 Green. The provisions of the Berkeley Green Code, based on the 2022 California Green Building Standards Code, as amended herein, shall apply to enhanced design and construction of buildings through the use building concepts having a reduced negative impact or the positive environmental impact and encouraging sustainable construction practices.

101.5 References to prior codes. Unless superseded and expressly repealed, references in City forms, documents and regulations to the chapters and sections of former Berkeley Building Code editions, shall be construed to apply to the corresponding provisions contained within the 2022 Berkeley Building Code Ordinance No. X,XXX–N.S. and all ordinances amendatory thereof. Any ordinances or parts of ordinances in conflict herewith are hereby superseded and expressly repealed.

SECTION 103 – DIVISION OF BUILDING AND SAFETY

103.1 Creation of enforcement agency. The Division of Building and Safety is hereby created and the official in charge thereof shall be known as the building official. The function of the agency shall be the implementation, administration and enforcement of the provisions of this code.

103.2 Appointment. The building official shall be appointed by the City Manager.

103.3 Deputies. The building official shall have the authority to appoint an assistant building official, building inspectors, plans examiners, housing inspectors, other technical officers and employees. Such employees shall have powers as delegated by the building official.

SECTION 104 – DUTIES AND POWERS OF BUILDING OFFICIAL

104.7 Division records. The building official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, notices of violations, and notices and orders issued. Such records shall be retained in the official records for the period required for retention of public records.

Add a new Subsection 104.12 to read:

104.12 Unpermitted dwelling units. When a building permit record for a residential unit does not exist, the building official is authorized to make a determination of when the residential unit was constructed and then apply the building standards in effect when the residential unit was determined to be constructed or the current building standards, whichever is the least restrictive, provided the building or portion thereof does not become or continue to be a substandard or unsafe building. The Building Official is authorized to accept reasonable alternatives to the requirements of the prior or current code editions when dealing with unpermitted dwelling units.

SECTION 105 – PERMITS

105.3.2 Expiration of application. An application for a permit for any proposed work shall expire one year after the date of filing, unless it can be demonstrated by the applicant that such application has been pursued in good faith or a permit has been issued. The building official or the permit service center coordinator are authorized to grant one or more extensions of time for additional periods not exceeding a 180 days per extension. The extension shall be requested in writing and justifiable cause demonstrated. Requests for time extensions shall be accompanied by the payment of a fee set by resolution of the City Council.

If a project is associated with a code enforcement case, the dates specified in the code enforcement notices take precedence over the timelines specified in this section.

105.5 Expiration of permit. Permits issued by the building official shall expire one year from the date of issuance. The building official or the supervising building inspector are authorized to grant one or more extensions of time to complete the work for additional periods not exceeding one year per extension. The extension shall be requested in writing and justifiable cause demonstrated. Requests for time extensions shall be accompanied by the payment of a fee set by resolution of the City Council.

The issuance of a building permit shall not excuse the permittee or any other person from compliance with any notice and/or order to correct a code violation issued by the City.

When a permit is expired and a new permit is required to complete the work, a new permit application and plans shall be filed describing the remaining work to be done. If a site visit or other review is required to determine the extent of the remaining work, a fee may be charged to make such determination.

SECTION 109 – FEES

109.1 Payment of fees. Except when fees are deferred, a permit shall not be valid until the fees as set forth by resolution of City Council have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid.

109.2 Schedule of permit fees. On buildings, structures, electrical, gas, mechanical, and plumbing systems or alterations requiring a permit, a fee for each permit shall be paid as

required, in accordance with the fee as set forth by resolution of the City Council. Fees for permits and inspections and other related services under this Code shall be assessed and paid as set forth by resolution of the City Council. Unless waived or deferred as provided by local regulations, a plan review fee and other fees as specified in the resolution shall be paid at the time of submitting any documents for review and additional fees as specified in the resolution shall be paid at issuance of the permit.

109.4 Work commencing before permit issuance. Any person who commences any work on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary permit shall be subject to a fee as set forth by resolution of the City Council equal to and in addition to the permit fees for the portion of the scope of work performed without the permit.

109.7 Re-inspection fees. A re-inspection fee, as set forth by resolution of the City Council, may be assessed for each re-inspection when such portion of work for which an inspection is scheduled is not complete or when corrections previously called for are not made.

Re-inspection fees shall not be required each time a job is disapproved for failure to comply with the requirements of this Code. Rather this section shall be used to control the practice of calling for inspections before the job is ready for such inspection, or when the approved plans are not readily available to the inspector, or for failure to provide access on the date for which the inspection is requested, or when work deviates from the approved plans but no revision is submitted to the City.

To obtain a re-inspection, the applicant shall pay the re-inspection fee as set forth by resolution of the City Council. In instances where re-inspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.

SECTION 112 – SERVICE UTILITIES

112.4 Authority to connect utilities. Clearance for connection of one utility, either gas or electrical, will be withheld until final building, electrical, plumbing, and/or mechanical inspections are made and approval has been given for any new building or change in occupancy classification to an existing building for which connection to such utilities is sought, unless approval has been first obtained from the building official, as provided by a Temporary Certificate of Occupancy or Final Certificate of Occupancy.

112.5 Unsafe service utilities. Unsafe service utilities are hereby declared to be public nuisances and shall be abated, repaired, rehabilitated, demolished or removed in accordance with the procedures set forth in Chapter 19.40 of the Berkeley Municipal Code (BMC) for residential buildings and Berkeley Building Code for all other buildings, or any alternate procedure that may be adopted by the City of Berkeley. In addition, the City Attorney may pursue other appropriate action to prevent, restrain, correct or abate the violation as provided for in the BMC. Remedies under this section are cumulative. When

service utilities are maintained in violation of this Code and in violation of a notice issued pursuant to the provisions of this section, the building official shall institute appropriate action to prevent, restrain, correct or abate the violation.

112.6 Authority to disconnect utilities in emergencies. The building official or building official's authorized representative shall have the authority to disconnect electrical power or other energy service supplied to the building, structure or building service equipment therein regulated by this Code in case of emergency where necessary to eliminate an immediate hazard to life or property. The building official or building official's authorized representative shall, whenever possible, notify the serving utility, and the owner of the building, structure or electrical system or equipment and any building occupants of the decision to disconnect prior to taking such action and shall notify them, in writing, of the disconnection as soon as possible thereafter.

112.7 Authority to condemn electrical system and equipment. Whenever the building official determines that an electrical system or electrical equipment regulated by this Code is hazardous to life, health or property, the building official may order in writing that such electrical system or equipment either be removed or restored to a safe condition. The written notice shall fix a reasonable time limit for compliance with such order. Persons shall not use or maintain defective electrical systems or equipment after receiving such notice except as may be provided therein.

When equipment or an installation is to be disconnected, a written notice of such disconnection and the reasons therefore shall be given within 24-hours of the order to disconnect to the serving utility, the owner and occupants of the building, structure or premises.

When equipment or an installation is maintained in violation of this Code and in violation of a notice issued pursuant to the provisions of this section, the building official shall institute appropriate action to prevent, restrain, correct or abate the violation.

Unsafe electrical systems or equipment are hereby declared to be public nuisances and shall be abated by repair, rehabilitation, demolition or removal in accordance with the procedures set forth in Chapter 19.40 of the BMC for residential buildings and Berkeley Building Code for all other buildings, or any alternate procedure that may be adopted by the City of Berkeley. In addition, the City Attorney may pursue other appropriate action to prevent, restrain, correct or abate the violation as provided for in the BMC. Remedies under this section are cumulative.

112.8 Connection after order to disconnect. Persons shall not make connections to a service utility system or equipment that has been disconnected or ordered to be disconnected by the building official, or the use of which has been ordered to be discontinued by the building official, until the building official authorizes the reconnection and use of the electrical system or equipment.

SECTION 113 – BOARD OF APPEALS

113.1 General. In order to hear and decide appeals of orders, decisions, or determinations made by the building official relative to the application and interpretation of this Code, there shall be and is hereby created a board of appeals consisting of the Housing Advisory Commission pursuant to Section 19.44.020 of the Berkeley Municipal Code. The building official may convene and consult with an advisory panel of qualified individuals. This advisory panel is intended to help the building official in formulating and making staff recommendations to the Housing Advisory Commission. The advisory panel may provide written and/or oral presentations to the Housing Advisory Commission as needed.

113.3 Qualifications. The board of appeals shall consist of members meeting the qualifications required for the Housing Advisory Commission. The advisory panel shall consist of individuals found by the building official to be qualified by experience and training in the specific area of the appeal who are not employees of the jurisdiction.

SECTION 114 – VIOLATIONS

114.4 Violation penalties. Any person who violates a provision of this Code or fails to comply with any of the requirements thereof or who erects, constructs, alters or repairs a building or structure in violation of the approved construction documents or directive of the building official, or of a permit or certificate issued under the provisions of this Code, shall be subject to penalties as prescribed by law. Violations of this Code are misdemeanors, but may be cited or charged, at the election of the enforcing officer, building official, or City Attorney, as infractions, subject to an election by the defendant under Penal Code Subsection 17(d). Nothing in this Section shall prevent any other remedy afforded by law.

SECTION 116 - UNSAFE STRUCTURES AND EQUIPMENT

116.1 Conditions. Structures or existing equipment that are or hereafter become structurally unsafe, insanitary or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or which constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance shall be deemed an unsafe condition. Unsafe structures shall be taken down and removed or made safe, as the building official deems necessary and as provided for in this section. A vacant structure that is not secured against entry shall be deemed unsafe.

All such unsafe buildings, equipment, structures or appendages are hereby declared to be public nuisances and shall be abated by repair, rehabilitation, demolition or removal in accordance with the procedures set forth in Chapters 1.24, 19.28, 19.40 and/or 19.44 of the BMC as applicable. As an alternative, the building official, or other employee or official of this jurisdiction as designated by the City Council, may institute any other appropriate action to prevent, restrain, correct or abate the violation.

116.6 Safety Assessment Placards.

116.6.1 Intent. This section establishes standard placards to be used to indicate the condition of a structure for occupancy after a natural or human-caused disaster and a rapid evaluation by authorized personnel. The building official or authorized representatives shall post the appropriate placard at each entry point to a building or structure upon completion of a safety assessment.

116.6.2 Application of provisions. The provisions of this section are applicable to all buildings and structures of all occupancies regulated by the City of Berkeley. The City Council may extend the provisions as necessary.

116.6.3 Definitions.

116.6.3.1 "Safety Assessment" is a visual, non-destructive examination of a building or structure for the purpose of determining the condition for continued occupancy.

116.6.3.2 Placards. Following are titles and descriptions of the official jurisdiction placards to be used to designate the condition of a building structure for continued occupancy, partial or conditional occupancy, or unsafe to enter. Copies of placards are on file in the Building and Safety Division of the Planning and Development Department.

INSPECTED – Lawful Occupancy Permitted is to be posted on any building or structure wherein no apparent hazard has been found. This placard is not intended to mean there is no damage to the building or structure, but that any damage that occurred does not present a hazard to occupants.

RESTRICTED USE is to be posted on each building or structure that has been damaged wherein the damage has resulted in some form of restriction to the continued occupancy. The individual who posts this placard will note in general terms the type of damage encountered and will clearly and concisely note the restrictions on continued occupancy.

UNSAFE – Do Not Enter or Occupy is to be posted on each building or structure that has been damaged such that continued occupancy poses a threat to life safety. Building or structures posted with this placard shall not be entered under any circumstances except as authorized in writing by the building official, or the building official's authorized representative. Safety assessment teams shall be authorized to enter these building at any time. This placard is not to be used or considered as a demolition order. The individual who posts this placard will note in general terms the type of damage encountered.

116.6.4 Content of placard. The BMC Section number and the words "City of Berkeley" shall be permanently affixed to each placard.

116.6.5 Unlawful to remove. Once a placard has been attached to a building or structure, it is not to be removed, altered or covered until done so by an authorized representative of the Building Official. It shall be unlawful for any person, firm or corporation to alter, remove, cover or deface a placard unless authorized pursuant to this section.

Article 2. Restrictions in Fire Zones

19.28.030 CBC Chapter 7A Materials and Construction Methods for Exterior Wildlife Exposure.

Chapter 7A of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below.

701A – SCOPE, PURPOSE AND APPLICATION

701A.1 Scope. This chapter applies to building materials, systems and or assemblies used in the exterior design and construction of new buildings and structures, additions, alterations, repairs and re-roofs located within a Wildland-Urban Interface (WUI) Fire Area as defined in Section 702A.

701A.2 Purpose. The purpose of this Chapter is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Areas or any building or structure in the Wildland-Urban Interface (WUI) Fire Area to resist the intrusion of flame or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.

701A.3 Application. New buildings located in any Fire Hazard Severity Zone or new buildings and structures, additions, alterations, repairs and re-roofs located in any Wildland-Urban Interface (WUI) Fire Area designated by the enforcing agency constructed after the application date shall comply with the provisions of this chapter. This shall include all new buildings and structures, additions, alterations, repairs and re-roofs with residential, commercial, educational, institutional or similar occupancy type uses, which shall be referred to in this chapter as “applicable building(s)” (see definition in Section 702A), as well as new buildings and structures, additions, alterations, repairs and re-roofs accessory to those applicable buildings (see Exceptions 1 and 4).

Exceptions:

1. Group U occupancy accessory buildings or structures, of any size located at least 50 feet (15 240 mm) from an applicable building on the same lot.
2. Group U occupancy agricultural buildings or structures, as defined in Section 202 of this code of any size located at least 50 feet (15 240 mm) from an applicable building.
3. Group C occupancy special buildings or structures conforming to the limitations specified in Section 450.4.1.
4. New accessory buildings and miscellaneous structures specified in Section 710A shall comply only with the requirements of that section.
5. ~~Additions to and remodels of buildings originally constructed prior to July 1, 2008.~~

701A.3.1 Application date and where required. New buildings for which an application for a building permit is submitted on or after July 1, 2008 located in any Fire Hazard Severity Zone or buildings and structures, additions, alterations, repairs and re-roofs for which an application for a building permit is submitted on or after July 1, 2008 located in the Wildland Interface Fire Area shall comply with all sections of this chapter, including all of the following areas:

1. ~~All unincorporated lands designated by the State Board of Forestry and Fire Protection as State Responsibility Area (SRA) including:~~
 - 1.1. ~~Moderate Fire Hazard Severity Zones.~~
 - 1.2. ~~High Fire Hazard Severity Zones.~~
 - 1.3. ~~Very-High Fire Hazard Severity Zones.~~
2. ~~Land designated as Very-High Fire Hazard Severity Zone by cities and other local agencies.~~
3. ~~Land designated as Wildland Interface Fire Area by cities and other local agencies.~~

~~Exceptions:~~

1. ~~New buildings located in any Fire Hazard Severity Zone within State Responsibility Areas, for which an application for a building permit is submitted on or after January 1, 2008, shall comply with all sections of this chapter.~~
2. ~~New buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland Interface Fire Area designated by cities and other local agencies for which an application for a building permit is submitted on or after December 1, 2005 but prior to July 1, 2008, shall only comply with the following sections of this chapter:~~
 - 2.1. ~~Section 705A — Roofing.~~
 - 2.2. ~~Section 706A — Attic Ventilation.~~

702A – DEFINITIONS

APPLICABLE BUILDING. A building or structure that has residential, commercial, educational, institutional or similar occupancy type use.

FIRE ZONE ONE shall encompass the entire City of Berkeley except for Fire Zones Two and Three.

FIRE ZONE TWO encompasses those areas designated as Combined Hillside District in the Official Zoning map of the City of Berkeley and those areas designated as Very High in the official Fire Hazard Severity Zones (FHSZ) map of The Department of Forestry and Fire Protection (CAL FIRE), as they may be amended from time to time. The following properties, not part of the Combined Hillside District, are included in Fire Zone Two under the Very High designation of the FHSZ map: the eastern section of the University of California, Berkeley main campus, block number 2042 (Alameda County Assessor's parcel numbering (APN) system), to the east city line; all of the Clark-Kerr campus, block number 7690, to the east city line; all of block number 7680 in the City of Berkeley; portions of block number 1702 in the City of Berkeley. See Exhibit A for the specific parcels by APN and address.

FIRE ZONE 3 encompasses those areas designated as Environmental Safety – Residential Districts on the Official Zoning Map of the City of Berkeley, as it may be amended from time to time.

LOCAL RESPONSIBILITY AREA (LRA). Areas of the state in which the financial responsibility of preventing and suppressing fires is the primary responsibility of a city, county, city and county, or district. Fire Zones 2 and 3 are designated as Local Responsibility Area.

WILDLAND-URBAN INTERFACE (WUI). A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires. Fire Zones 2 and 3 are designated as Wildland-Urban Interface (WUI) Fire Area.

705A – ROOFING

705A.1 General. Roofs shall comply with the requirements of Chapter 7A and Chapter 15. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions. Roof assemblies in the Fire Hazard Severity Zones shall be Class A rating when tested in accordance with ASTM E108 or UL790.

Wooden shakes and shingles are prohibited roof coverings regardless of the assembly rating of the roof system.

Exception: Replacement of less than 50% of the roof area within a 5-year period.

705A.5 Spark Arrestors. All chimneys of fireplaces, stoves, barbecues or heating appliances using solid fuel shall be provided with an approved spark arrestor whenever modification has been made to any of these appliances, or whenever a structure is re-roofed. The net free area of the spark arrestor shall be not less than four times the net free area of the outlet of the chimney. The spark arrestor shall have heat and corrosion resistance equivalent to twelve-gauge wire, nineteen-gauge galvanized wire, or twenty-four-gauge stainless steel. Openings shall not permit the passage of spheres having a

diameter larger than one-half inch and shall not block the passage of spheres having a diameter of less than three-eighths inch. The arrestor shall be securely attached to the chimney or stovepipe and shall be adequately supported. The use of bands, mollies, masonry anchors or mortar ties are recommended depending upon the individual need.

707A – EXTERIOR COVERING

707A.3.2 Replacement of Exterior Wall Covering. Materials for replacement of existing exterior wall covering shall meet or exceed the standards set forth in this Chapter.

Exception: Where less than 50% of any wall surface is being replaced or repaired, and the matching of the new plane to the existing plane on that wall is not possible.

711A – UNDERGROUND UTILITY CONNECTIONS

711A.1 Underground utility connections. For new construction, provisions shall be made for the undergrounding of all utilities serving the property, including but not limited to electrical, telephone and cable television, by the installation of appropriately sized underground conduits extending from the street property.

712A – ADDITIONAL REQUIREMENTS IN FIRE ZONE THREE

712A.1 General. In addition to meeting the other requirements of this Chapter, buildings or structures hereinafter erected, constructed, moved, altered, added, or repaired within Fire Zone Three shall comply with the following requirements for buildings and structures.

712A.2 Fire warning system. All residential units shall be equipped with a Fire Warning System as specified by the residential smoke detector requirements of the current edition of the California Building Code and with an audible exterior alarm. The exterior alarm must meet the requirements of NFPA 72 or equivalent and generate 45 decibels ten feet from the alarm, or more.

712A.3 Automatic fire sprinklers, Berkeley Fire Code Section 903.2.23. Any new construction or new additions to existing structures requiring a permit determined to be \$100,000 or more in construction costs shall be required to install automatic fire sprinklers throughout the structure.

712A.4 Utilities. Utilities, pipes, furnaces, water heaters or other mechanical devices located in an exposed underfloor area of a building or structure shall be enclosed with material as required for exterior one hour fire resistive construction. Adequate covered access openings for servicing and ventilation of such facilities shall be provided as required by appropriate codes.

712A.5 Control of brush or vegetation. Brush and vegetation shall be controlled as required in the Berkeley Fire Code.

712A.6 Special Conditions. The following additional conditions must be met:

1. Public access roads and fire trails. No person(s) shall use any public access road or fire trail for the storage of any construction material, stationary construction equipment, construction office, portable refuse container, or earth from any grading or excavating.
2. Water Service. The water service to the site shall be installed with a ¾” hose bib connection prior to beginning any wood framing. The person responsible for the construction shall have at the site a 75 ft ¾” hose available.

Exhibit A
Parcels in Addition to the Combined Hillside District

The following additional parcels by Assessor’s Parcel Number and address are included in Fire Zone Two:

Parcel Number (APN)	Address
048-7680-001-02	3 Tanglewood Road
048-7680-002-01	5 Tanglewood Road
048-7680-031-00	7 Tanglewood Road
048-7680-019-00	11 Tanglewood Road
048-7680-014-00	19 Tanglewood Road
048-7680-032-01	25 Tanglewood Road
048-7680-027-00	29 Tanglewood Road
054-1702-067-00	10 Tanglewood Road
054-1702-068-00	18 Tanglewood Road
054-1702-069-00	22 Tanglewood Road
054-1702-070-00	28 Tanglewood Road
054-1702-063-00	2701 Belrose Avenue
054-1702-076-00	2715 Belrose Avenue
054-1702-075-00	2721 Belrose Avenue
054-1702-074-00	2729 Belrose Avenue
054-1702-073-00	2737 Belrose Avenue
054-1702-112-00	2801 Claremont Boulevard
054-1702-123-01	2811 Claremont Boulevard
054-1702-122-00	2815 Claremont Boulevard
054-1702-120-01	2821 Claremont Boulevard
054-1702-114-01	2816 Claremont Avenue
054-1702-115-00	2820 Claremont Avenue
054-1702-072-00	3005 Garber Street
054-1702-071-00	3015 Garber Street
054-1702-113-00	3020 Garber Street
054-1702-116-00	3017 Avalon Avenue

Article 3. Wood Burning Appliances

19.28.040 Wood Burning Appliances.

Chapter 31 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below.

3116 Wood Burning Appliances.

A. The purpose of this section is to reduce the health risks caused by wood smoke under the climatic conditions applicable to Berkeley.

B. For purposes of this section the following terms shall be defined as set forth below.

1. "EPA" means the United States Environmental Protection Agency.
2. "EPA Certified" means any wood heater that is labeled "EPA Certified" in accordance with the standards in Title 40, Part 60, Subpart AAA, of the Code of Federal Regulations or equivalent, in effect at the time the wood heater is installed.
3. "Pellet heater" means wood heaters that burn pellet fuel exclusively and are either EPA-certified or exempted under EPA requirements set forth in Part 60 Title 40, Subpart AAA, of the Code of Federal Regulations, February 26, 1988.
4. "Wood-burning" means an appliance that burns wood or any wood-based solid fuel, including but not limited to wood pellets.
5. "Wood burning cooking device" means any wood-burning device that is designed or primarily used for cooking.
6. "Wood-burning fireplace" means any permanently-installed masonry or factory-built wood-burning appliance, either open or with doors in front of the combustion chamber, which is neither a wood heater as defined in 40 CFR 60.531 nor designed and used for cooking.

C. No wood-burning fireplace or wood heater as defined in 40 CFR 60.531, that is not EPA certified or exempted by under EPA requirements may be installed in any occupancy.

Exception: Existing masonry fireplaces may be repaired in accordance with the applicable codes in effect at the time of the proposed repair or reconstruction. For purposes of this exception, the term repair includes resurfacing the combustion chamber, but does not include replacing any other part of the combustion chamber.

D. Wood burning cooking devices are not prohibited by this section.

E. Any person planning to install a wood-burning fireplace or heating stove must submit verifiable documentation to the City showing that the appliance conforms to the requirements of this section.

Article 4. Projection into Public Right of Way

19.28.050 Encroachments into the Public Right of Way – Revocation, Removal, Indemnification and Hold Harmless.

Chapter 32 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below.

3202 – ENCROACHMENTS

3202.5 Projection into the Public Right of Way – Revocation, Removal, Indemnification and Hold Harmless.

Any permits granted pursuant to this Code which allow any projection upon, over, or under the public right of way may be revoked by the City at any time. Upon such revocation, the permittee or permittee's successor(s) or assignee(s) shall forthwith remove such projection at permittee's cost and expense and without any cost or expense whatsoever to the City.

Any person who is granted a permit pursuant to the provisions of this Code which allows a projection upon, over or under the public right of way shall by the issuance of such permit thereby indemnify and hold harmless the City of Berkeley, its officers and employees of and from any and all liabilities, claims, demands, actions or causes of action for injury or injuries to any person or persons or death or deaths of any person or persons or damage to property arising out of or occasioned in any way by the issuance of said permit, the work performed pursuant to such permit, or the existence of such projection. The obligation of such indemnification and hold harmless provision shall be applicable to the successor(s) and assignee(s) of the permittee.

Article 5. Existing Buildings

19.28.060 Adoption of 2022 California Existing Building Code and certain Chapters of the 2021 International Existing Building Code by reference.

2022 California Existing Building Code (CEBC), including Appendix A, is adopted in its entirety subject to the modifications thereto which are set forth below.

DIVISION II SCOPE AND ADMINISTRATION

All of the administrative provisions contained in Article 1 of Chapter 19.28, the Berkeley Building Code, shall apply to this Code as well and take precedence over any CEBC administrative provisions that may conflict.

101.9 Adoption of Certain Chapters of the 2021 International Existing Building Code by reference.

When seismic retrofit is not otherwise required by this Code, the following Chapters of the 2021 International Existing Building Code (IEBC) published by the International Code Council contained in the IEBC Appendix A are hereby adopted by reference as applicable to the types of buildings as designated therein as though fully set forth herein:

Chapter A2, Earthquake Hazard Reduction in Existing Reinforced Concrete and Reinforced Masonry Wall Buildings with Flexible Diaphragms

Article 6. Repairs to Existing Buildings and Structures

19.28.070 Adoption of Regulations for the Repairs of Existing Structures.

Add a new Subsection 405.2.7 to Chapter 4 Section 405 of the California Existing Building Code.

405.2.7 Seismic Evaluation and Design Procedures for Repairs. The seismic evaluation and design shall be based on the procedures specified in the California Building Code or ASCE 41 *Seismic Evaluation and Retrofit of Existing Buildings*. The procedures contained in Appendix A Chapters A1, A3 and A4 of the California Existing Building Code and Appendix A Chapter A2 of the International Existing Building Code shall be permitted to be used as specified in Section 405.2.7.2.

405.2.7.1 Compliance with CBC level seismic forces. Where compliance requires the use of full seismic forces, the criteria shall be in accordance with one of the following:

1. One-hundred percent of the values in the California Building Code. Where the existing seismic force-resisting system is a type that can be designated as “Ordinary,” the values of R , Ω_o , and C_d used for analysis in accordance with Chapter 16 of the California Building Code shall be those specified for structural systems classified as “Ordinary” in accordance with Table 12.2-1 of ASCE 7, unless it is demonstrated that the structural system will provide performance equivalent to that of a “Detailed,” “Intermediate” or “Special” system.
2. ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 405.2.7.1.

**Table 405.2.7.1
PERFORMANCE OBJECTIVES FOR USE IN ASCE 41 FOR COMPLIANCE WITH
FULL SEISMIC FORCES**

RISK CATEGORY (Based on CBC Table 1604.5)	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-1N EARTHQUAKE HAZARD LEVEL	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-2N EARTHQUAKE HAZARD LEVEL
I	Life Safety (S-3)	Collapse Prevention (CP)
II	Life Safety (S-3)	Collapse Prevention (CP)
III	Damage Control (S-2)	Limited Safety (S-4)
IV	Immediate Occupancy (S-1)	Life Safety (S-3)

405.2.7.2 Compliance with reduced CBC level seismic forces. Where seismic evaluation and design is permitted to meet reduced seismic forces, the criteria used shall be in accordance with one of the following:

1. The California Building Code using 75 percent of the prescribed forces. Values of R , Ω_o , and C_d used for analysis shall be as specified in Section 405.2.7.1 Item 1.

2. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A of the California Existing Building Code (CEBC) or Appendix A of the International Existing Building Code (IEBC) as specified in Items 2.1 through 2.4 below shall be deemed to comply with this section.

2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in Risk Category I or II are permitted to be based on the procedures specified in CEBC Appendix A Chapter A1, provided the design is no less stringent than required in Berkeley Municipal Code Section 19.38.130.

2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Risk Category I or II are permitted to be based on the procedures specified in IEBC Appendix A Chapter A2.

2.3. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in Risk Category I or II are permitted to be based on the procedures specified in CEBC Appendix A Chapter A3.

2.4. Seismic evaluation and design of soft, weak, or open-front wall conditions in multiunit residential buildings of wood construction in Risk Category I or II are permitted to be based on the procedures specified in CEBC Appendix A Chapter A4.

3. ASCE 41, using the performance objective in Table 405.2.7.2 for the applicable risk category. The design spectral response acceleration parameters S_{xs} and S_{x1} specified in ASCE 41 shall not be taken less than 75 percent of the respective design spectral response acceleration parameters S_{DS} and S_{D1} defined by the *California Building Code* and its reference standards.

**Table 405.2.7.2
PERFORMANCE OBJECTIVES FOR USE IN ACCE 41 FOR COMPLIANCE WITH
REDUCED SEISMIC FORCES**

RISK CATEGORY (Based on CBC Table 1604.5)	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-1E EARTHQUAKE HAZARD LEVEL	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-2E EARTHQUAKE HAZARD LEVEL
I	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
II	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
III	Damage Control (S-2). See Note a	Limited Safety (S-4). See Note b
IV	Immediate Occupancy (S-1)	Life Safety (S-3). See Note c

- a. For Risk Categories I, II, and III, the Tier 1 and Tier 2 procedures need not be considered for the BSE-1E earthquake hazard level.
- b. For Risk Category III, the Tier 1 screening checklists shall be based on the Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on MS-factors that are the average of the values for Collapse Prevention and Life Safety.
- c. For Risk Category IV, the Tier 1 screening checklists shall be based on Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on MS-factors for Life Safety.

**Table 405.2.7.3
REFERENCED STANDARDS**

Standard Reference Number	Title	Referenced in Code Section Number
ASCE 41-17	Seismic Evaluation and Retrofit of Existing Buildings	405.2.7 Table 405.2.7.1 405.2.7.2 Table 405.2.7.2

Article 7. Technical Amendments to Structural Standards

19.28.080 Various Technical Amendments to Structural Standards.

Chapter 17 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below.

1705.3 Concrete construction. Special inspections and tests of concrete construction shall be performed in accordance with this section and Table 1705.3.

Exception: Special inspections and tests shall not be required for: 1. Isolated spread concrete footings of buildings three stories or less above grade plane that are fully supported on earth or rock, where the structural design of the footing is based on a specified compressive strength, f'_c , no greater than 2,500 pounds per square inch (psi) (17.2 MPa).

Chapter 19 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below.

1905.1.7 ACI 318, Section 14.1.4. Delete ACI 318, Section 14.1.4, and replace with the following:

14.1.4 - Plain concrete in structures assigned to Seismic Design Category C, D, E or F.

14.1.4.1 - Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

- ~~Structural plain concrete basement, foundation or other walls below the base are permitted in detached one and two family dwellings three stories or less in height constructed with stud bearing walls. In dwellings assigned to seismic design category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall not be less than 7¹/₂ inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 14.6.1.~~
- Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.

~~**Exception:** In detached one and two family dwelling three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.~~

- (Plain concrete footings supporting walls are permitted, provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. ~~For footings that exceed 8" inches (203 mm) in thickness, A~~ minimum of one bar shall be

provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exceptions:

1. ~~In seismic design categories A, B and C, detached one- and two-family dwellings three stories or less in height and constructed with stud bearing walls, are permitted to have plain concrete footings without longitudinal reinforcement.~~
2. ~~For foundation systems consisting of a plain concrete footing and a plain concrete stem wall, a minimum of one bar shall be provided at the top of the stem wall and at the bottom of the footing.~~
3. ~~Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.~~

Article 8. Construction of Exterior Appurtenances

19.28.090 Technical Amendments for Construction of Exterior Projecting Elements and Appurtenances.

Chapter 12 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below:

1202.7 Ventilation of weather exposed enclosed assemblies. Balconies, landings, decks, stairs and similar exterior projecting elements and appurtenances exposed to the weather and sealed underneath shall have cross ventilation for each separate enclosed space by ventilation openings protected against the entrance of rain and snow and as set forth in Section 2304.12.2.5. Blocking and bridging shall be arranged so as not to interfere with the movement of air. The net free ventilating area shall not be less than 1/150th of the area of the space ventilated. Ventilation openings shall comply with Section 1202.2.2. An access panel of sufficient size shall be provided on the underside of the enclosed space to allow for periodic inspection.

Exceptions:

1. An access panel is not required where the exterior coverings applied to the underside of joists are easily removable using only common tools.
2. Removable soffit vents 4 inches minimum in width can be used to satisfy both ventilation and access panel requirements.

Chapter 14 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below:

1403.15 Projections exposed to weather. Balconies, landings, decks, stairs and similar floor projections exposed to the weather shall be constructed of naturally durable wood,

preservative-treated wood, corrosion resistant (e.g., galvanized) steel, or similar approved materials.

Chapter 23 of the 2022 California Building Code is adopted in its entirety subject to the modifications thereto which are set forth below:

2304.12.2.3 Supporting members for permanent appurtenances. Naturally durable or preservative-treated wood shall be utilized for those portions of wood members that form the structural supports of buildings, balconies, porches or similar permanent building appurtenances ~~where such members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering to prevent moisture or water accumulation on the surface or at joints between members.~~

2304.12.2.4 Supporting members for permeable floors and roofs. Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood ~~unless and shall be~~ separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.

Table 2308.6.1 WALL BRACING REQUIREMENTS^{a, f, g}

Add new footnotes “f” and “g” to the end of Table 2308.6.1 to read:

f. Methods GB, PBS, HPS and SFB are not permitted in Seismic Design Categories D or E. In Seismic Design Categories D, the use of Method PCP is limited to one-story dwellings and accessory structures.

g. Methods DWB and PCP are not permitted in Seismic Design Categories E.

Article 9. Emergency Housing

19.28.100 Emergency Housing and Emergency Housing Facilities.

HCD Appendix P of the 2022 California Building Code is adopted on an emergency basis and reproduced in its entirety subject to the modifications thereto which are set forth below:

APPENDIX P EMERGENCY HOUSING

SECTION P101

GENERAL

P101.1 Scope. This appendix shall be applicable to emergency housing and emergency housing facilities, as defined in Section P102. The provisions and standards set forth in this appendix shall be applicable to emergency housing established pursuant to the declaration of a shelter crisis under Government Code section 8698 et seq. and located

in new or existing buildings, structures, or facilities owned, operated, erected, or constructed by, for or on behalf of the City of Berkeley on land owned or leased by the City of Berkeley.

P101.2 Application. Notwithstanding any provisions of this Code to the contrary, the following requirements shall apply to emergency housing operated during a shelter crisis, as provided for in Government Code Section 8698 et seq. Other than the specific requirements set forth in this appendix, the facilities need not comply with the requirements of this Code for Group R occupancies unless otherwise specified in this Code.

SECTION P102

DEFINITIONS

P102.1 General. The following words and terms shall, for the purposes of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code for general definitions.

DECLARATION OF SHELTER CRISIS. The duly proclaimed existence of a situation in which a significant number of persons are without the ability to obtain shelter, resulting in a threat to their health and safety. (See Government Code Section 8698)

DEPENDENT UNIT. Emergency housing not equipped with a kitchen area, toilet, and sewage disposal system. Recreational vehicles that are not self-contained and without utility service connections shall be considered dependent units.

EMERGENCY HOUSING. Housing in a permanent or temporary structure(s), occupied during a declaration of state of emergency, local emergency, or shelter crisis. Emergency housing may include, but is not limited to, buildings and structures constructed in accordance with the California Building Standards Code; and emergency sleeping cabins, emergency transportable housing units, and tents constructed in accordance with this appendix.

EMERGENCY HOUSING FACILITIES. On-site common use facilities supporting emergency housing. Emergency housing facilities include, but are not limited to, kitchen areas, toilets, showers and bathrooms with running water. The use of emergency housing facilities is limited exclusively to the occupants of the emergency housing, personnel involved in operating the housing, and other emergency personnel.

EMERGENCY HOUSING SITE. A site containing emergency housing and emergency housing facilities supporting the emergency housing.

EMERGENCY SLEEPING CABIN. Relocatable hard-sided structure constructed in accordance with this appendix, which may be occupied only for emergency housing if allowed by the enforcing agency.

EMERGENCY TRANSPORTABLE HOUSING UNIT. A single- or multiple-section prefabricated structure that is transportable by a vehicle and that can be installed on a permanent or temporary site in response to a need for emergency housing. Emergency transportable housing units include, but are not limited to, manufactured homes, mobilehomes, multifamily manufactured homes, recreational vehicles, and park trailers. For the purposes of this appendix, emergency transportable housing units may also include commercial modulars as defined in the Health and Safety Code Section 18001.8, if approved by the enforcing agency. Emergency transportable housing units do not include factory-built housing as defined in the Health and Safety Code Section 19971.

LANDING PLATFORM. A landing provided as the top step of a stairway accessing a loft.

LOCAL EMERGENCY. Local Emergency as defined in the Government Code, Section 8558.

LOFT. A floor level located more than 30 inches (762 mm) above the main floor and open to it on at least one side with a ceiling height of less than 6 feet 8 inches (2032 mm), used as a living or sleeping space.

MANUFACTURED HOME. A structure designed to be used as a single-family dwelling, as defined in the Health and Safety Code, Section 18007.

MEMBRANE STRUCTURE. An air-inflated, air-supported, cable or frame-covered structure, not otherwise defined as a tent. (See Chapter 31 of this code.)

MOBILEHOME. A structure designed to be used as a single-family dwelling, as defined in the Health and Safety Code, Section 18008.

MULTIFAMILY MANUFACTURED HOME. A structure designed to contain not less than two dwelling units, as defined in the Health and Safety Code, Section 18008.7.

PARK TRAILER. A trailer designed for human habitation that meets all requirements in the Health and Safety Code, Section 18009.3.

RECREATIONAL VEHICLE. A motor home, travel trailer, truck camper, or camping trailer, with or without motive power, designed for human habitation, that meets all requirements in the Health and Safety Code, Section 18010.

STATE OF EMERGENCY. State of Emergency as defined in the Government Code, Section 8558.

TENT. A structure, enclosure or shelter, with or without sidewalls or drops, constructed of fabric or pliable material supported by any manner except by air or the contents that it protects.

SECTION P103

EMERGENCY HOUSING

P103.1 General. Emergency sleeping cabins, emergency transportable housing units including commercial modulars, membrane structures and tents constructed and/or assembled in accordance with this appendix, shall be occupied only during declaration of state of emergency, local emergency, or shelter crisis.

Buildings and structures constructed in accordance with the California Building Standards Code, used as emergency housing, shall be permitted to be permanently occupied.

P103.2 Existing buildings. Existing residential and nonresidential buildings or structures shall be permitted to be used as emergency housing and emergency housing facilities provided such buildings or structures comply with the building code provisions and/or other regulations in effect at the time of original construction and/or alteration. Existing buildings or structures used as emergency housing shall not become or continue to be substandard buildings, as determined by the enforcing agency.

P103.2.1 New additions, alterations, and change of occupancy. New additions, alterations, and change of occupancy to existing buildings shall comply with the requirements of the California Building Standards Code effective at the time of addition, alteration, or change of occupancy. The requirements shall apply only to and/or within the specific area of the addition, alteration, or change of occupancy.

Exceptions:

1. Existing buildings and structures used for emergency housing and emergency housing facilities may not be required to comply with the California Energy Code, as determined by the enforcing agency.
2. Change in occupancy shall not mandate conformance with new construction requirements set forth in the California Building Standards Code, provided such change in occupancy meets the minimum fire and life safety requirements set forth in Section P112 of this appendix.

P103.3 Occupant load. Except as otherwise stated in this appendix, the maximum occupant load allowed in buildings and structures used as emergency housing shall be determined by the enforcing agency, but the interior floor area shall not be less than 70 square feet (6.5 m²) for one occupant. Where more than one person occupies the building/structure, the required floor area shall be increased at the rate of 50 square feet (4.65 m²) for each occupant in excess of one.

Exceptions:

1. Tents.
2. Recreational vehicles and park trailers designed for human habitation that meet the requirements in the Health and Safety Code, Sections 18009.3 and 18010, as applicable

3. For emergency housing, including emergency sleeping cabins, the minimum interior floor area may be reduced to 53 square feet (4.9 m²) if the enforcing agency determines that 53 square feet (4.9 m²) is adequate space for a single-occupancy sleeping unit.

P103.4 Fire and life safety requirements not addressed in this appendix. If not otherwise addressed in this appendix, fire and life safety measures, including, but not limited to, means of egress, fire separation, fire sprinklers, smoke alarms, and carbon monoxide alarms, shall be determined and enforced by the enforcing agency.

P103.5 Privacy. Emergency housing shall be provided with a privacy lock on each entrance door and all windows for use by the occupants.

P103.6 Heating. All sleeping areas shall be provided with adequate heating as determined by the enforcing agency.

SECTION P104

EMERGENCY SLEEPING CABINS

P104.1 General. Emergency sleeping cabins shall have an interior floor area of not less than 70 square feet (6.5 m²) for one occupant. Where more than one person occupies the cabin, the required floor area shall be increased at the rate of 50 square feet (4.65 m²) for each occupant in excess of one. The interior floor area shall not exceed 400 square feet (37 m²), excluding lofts.

P104.2 Live loads. Emergency sleeping cabins shall be designed to resist intrusion of wind, rain, and to support the following live loads:

1. Floor live loads not less than 40 pounds per square foot (1.92 kPa) of floor area.
2. Horizontal live loads not less than 15 pounds per square foot (718 Pa) of vertical wall and roof area.
3. Roof live loads not less than 20 pounds per square foot (958 Pa) of horizontal roof area.
4. In areas where snow loads are greater than 20 pounds per square foot (958 Pa), the roof shall be designed and constructed to resist these additional loads.

P104.3 Minimum ceiling height. Habitable space and hallways in emergency sleeping cabins shall have a ceiling height of not less than 80 inches (2032 mm). Bathrooms, toilet rooms, and kitchens, if provided, shall have a ceiling height of not less than 76 inches (1930 mm). Obstructions shall not extend below these minimum ceiling heights including beams, girders, ducts, lighting and other obstructions.

Exception: Ceiling heights in lofts constructed in accordance with Section P108 are permitted to be less than 80 inches (2032 mm).

P104.4 Means of egress. Emergency sleeping cabins shall be provided with at least two forms of egress placed remotely from each other. One form of egress may be an egress window complying with Section P104.4.1. When a loft is provided, one form of egress shall be an egress window complying with Section P104.4.1, provided in the loft space.

P104.4.1 Egress window. The bottom of the clear opening of the egress window shall not be more than 44 inches (1118 mm) above the floor. The egress window shall have a minimum net clear opening height of 24 inches (610 mm), and a minimum net clear opening width of 20 inches (508 mm). The egress window shall have a minimum net clear opening area of 5 square feet (0.465 m²).

P104.5 Plumbing and gas service. If an emergency sleeping cabin contains plumbing or gas service, it shall comply with all applicable requirements of the California Plumbing Code and the California Mechanical Code.

P104.6 Electrical. Emergency sleeping cabins shall be provided with all of the following installed in compliance with the California Electrical Code:

1. Continuous source of electricity.

Exception: The source of electricity may be an emergency generator or renewable source of power such as solar or wind power.

2. At least one interior lighting fixture.

3. Electrical heating equipment listed for residential use and a dedicated receptacle outlet for the electrical heating equipment.

Exception: Electrical heating equipment and a dedicated receptacle outlet for the electrical heating equipment are not required if a nonelectrical source of heating is provided.

4. At least one GFCI-protected receptacle outlet for use by the occupant(s).

P104.7 Ventilation. Emergency sleeping cabins shall be provided with means of ventilation (natural and/or mechanical) allowing for adequate air replacement, as determined by the enforcing agency.

P104.8 Smoke alarms. Emergency sleeping cabins shall be provided with at least one smoke alarm installed in accordance with the California Residential Code, Section R314.

P104.9 Carbon monoxide alarms. If an emergency sleeping cabin contains a fuel-burning appliance(s) or a fireplace(s), a carbon monoxide alarm shall be installed in accordance with the California Residential Code, Section R315

SECTION P105

EMERGENCY TRANSPORTABLE HOUSING UNITS

P105.1 General. In addition to the requirements in this appendix, manufactured homes, mobilehomes, multifamily manufactured homes, commercial modulars, recreational vehicles, and park trailers used as emergency transportable housing shall comply with all applicable requirements in the Health and Safety Code, Division 13, Part 2; and Title 25, Division 1, Chapter 3, Subchapter 2.

No provisions of Sections P111 through P114 of this appendix shall be deemed to grant authorization for any additional work that may conflict with the standards specified in Section P105 applicable for emergency transportable housing units.

SECTION P106

TENTS AND MEMBRANE STRUCTURES

P106.1 General. Tents shall not be used to house occupants for more than 7 days unless such tents are maintained with tight wooden floors raised at least 4 inches (101.6 mm) above the ground level and are equipped with baseboards on all sides to a height of at least 6 inches (152.4 mm). Tents may be maintained with concrete slabs with the finished surface at least 4 inches (101.6 mm) above grade and equipped with curbs on all sides at least 6 inches (152.4 mm) high.

A tent shall not be considered a suitable sleeping place when it is found necessary to provide heating facilities in order to maintain a minimum temperature of 50 degrees Fahrenheit (10 degrees Celsius) within such tent during the period of occupancy.

Membrane structures installed and/or assembled in accordance with Chapter 31 of this code, may be permitted to be used as emergency housing and emergency housing facilities, as determined by the enforcing agency.

Tents and membrane structures shall comply with Chapter 31 of the California Fire Code and shall not be erected for a period of more than 180 days within a 12 month period. Tents and membrane structures shall be limited to one level located at the level of Fire Department vehicle access road or lane. Tents and membrane structures complying with Chapter 31 of the California Fire Code shall not be subject to additional provisions of Sections P111 and P112 of this appendix.

Tents and membrane structures used for sleeping purposes shall be equipped with single station battery powered smoke alarms installed in accordance with Section 907.2.11 of the California Fire Code.

SECTION P107

ACCESSIBILITY

P107.1 General. Emergency housing shall comply with the applicable requirements in Chapter 11B and/or the US Access Board Final Guidelines for Emergency Transportable Housing.

Note: The Architectural and Transportation Barriers Compliance Board (US Access Board) issued the Final Guidelines for Emergency Transportable Housing on May 7, 2014. The final guidelines amended the 2004 ADA Accessibility Guidelines (2004 ADAAG) and the 2004 Architectural Barriers Act (ABA) Accessibility Guidelines (2004 ABAAG) to specifically address emergency transportable housing units provided to disaster survivors by entities subject to the ADA or ABA. The final rule ensures that the emergency transportable housing units are readily accessible to and usable by disaster survivors with disabilities.

SECTION P108

LOFTS IN EMERGENCY HOUSING

P108.1 Minimum loft area and dimensions. Lofts used as a sleeping or living space shall meet the minimum area and dimension requirements of Sections P108.1.1 through P108.1.3.

P108.1.1 Minimum area. Lofts shall have a floor area of not less than 35 square feet (3.25 m²).

P108.1.2 Minimum dimensions. Lofts shall be not less than 5 feet (1524 mm) in any horizontal dimension.

P108.1.3 Height effect on loft area. Portions of a loft with a sloping ceiling measuring less than 3 feet (914 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the loft.

Exception: Under gable roofs with a minimum slope of 6:12, portions of a loft with a sloping ceiling measuring less than 16 inches (406 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required area for the loft.

P108.2 Loft access. The access to and primary egress from lofts shall be any type described in Sections P108.2.1 through P108.2.4.

P108.2.1 Stairways. Stairways accessing lofts shall comply with the California Residential Code or with Sections P108.2.1.1 through P108.2.1.6.

P108.2.1.1 Width. Stairways accessing a loft shall not be less than 17 inches (432 mm) in clear width at or above the handrail. The minimum width below the handrail shall be not less than 20 inches (508 mm).

P108.2.1.2 Headroom. The headroom in stairways accessing a loft shall be not less than 74 inches (1880 mm), as measured vertically, from a sloped line connecting the tread or landing platform nosings in the middle of their width.

P108.2.1.3 Treads and risers. Risers for stairs accessing a loft shall be not less than 7 inches (178 mm) and not more than 12 inches (305 mm) in height. Tread depth and riser height shall be calculated in accordance with one of the following formulas:

1. The tread depth shall be 20 inches (508 mm) minus $\frac{4}{3}$ of the riser height, or
2. The riser height shall be 15 inches (381 mm) minus $\frac{3}{4}$ of the tread depth.

P108.2.1.4 Landing platforms. The top step of stairways accessing lofts shall be constructed as a landing platform where the loft ceiling height is less than 74 inches (1880 mm). The landing platform shall be 18 inches (457 mm) to 22 inches (559 mm) in depth measured from the nosing of the landing platform to the edge of the loft, and 16 inches (406 mm) to 18 inches (457 mm) in height measured from the landing platform to the loft floor.

P108.2.1.5 Handrails. Handrails shall comply with the California Residential Code, Section R311.7.8.

P108.2.1.6 Stairway guards. Guards at open sides of stairways shall comply with the California Residential Code, Section R312.1.

P108.2.2 Ladders. Ladders accessing lofts shall comply with Sections P108.2.2.1 and P108.2.2.2.

P108.2.2.1 Size and capacity. Ladders accessing lofts shall have a rung width of not less than 12 inches (305 mm), and 10 inches (254 mm) to 14 inches (356 mm) spacing between rungs. Ladders shall be capable of supporting a 200 pound (90.7 kg) load on any rung. Rung spacing shall be uniform within $\frac{3}{8}$ -inch (9.5 mm).

P108.2.2.2 Incline. Ladders shall be installed at 70 to 80 degrees from horizontal.

P108.2.3 Alternating tread devices. Alternating tread devices are acceptable as allowed by the enforcing agency.

P108.2.4 Loft guards. Loft guards shall be located along the open side of lofts. Loft guards shall not be less than 36 inches (914 mm) in height or one-half of the clear height to the ceiling, whichever is less. Loft guards shall not have openings from the walking surface to the required guard height that allow passage of a sphere 4 inches (102mm) in diameter.

SECTION P109

LOCATION, MAINTENANCE AND IDENTIFICATION

P109.1 Maintenance. Emergency housing and emergency housing facilities shall be maintained in a safe and sanitary condition, and free from vermin, vectors and other matter of an infectious or contagious nature. The grounds within emergency housing sites shall be kept clean and free from accumulation of debris, filth, garbage and deleterious matter. Emergency housing and emergency housing facilities shall not be occupied if a substandard condition exists, as determined by the enforcing agency.

P109.1.1 Fire hazards. Dangerous materials or materials that create a fire hazard, as determined by the enforcing agency, shall not be allowed on the grounds within emergency housing sites.

P109.3 Identification. Emergency housing shall be designated by address numbers, letters, or other suitable means of identification. The identification shall be in a conspicuous location facing the street or driveway fronting the building or structure. Each identification character shall be not less than 4 inches (102 mm) in height and not less than 0.5 inch (12.7 mm) in width, installed/painted on a contrasting background.

SECTION P110

EMERGENCY HOUSING FACILITIES SANITATION REQUIREMENTS

P110.1 Drinking water. Potable drinking water shall be provided for all occupants of emergency housing.

P110.2 Kitchens and food facilities. Where provided, kitchens and food facilities, as defined in Section 113789 of the California Health and Safety Code, which support emergency housing sites, shall comply with applicable food safety provisions of Sections 113980 – 114094.5 of the California Health and Safety Code.

Where occupants of dependent units are permitted or required to cook for themselves, a separate area shall be equipped and maintained as a common use kitchen. Refrigerated storage shall be provided for safe storage of food.

P110.3 Toilet and bathing facilities. When dependent units are used as emergency housing, the emergency housing site shall be provided with one toilet and one bathing facility for every 15 occupants of each gender. The enforcing agency may permit different types and ratios of toilet and bathing facilities. The approval shall be based upon a finding that the type and ratio of toilet and bathing facilities are sufficient to process the anticipated volume of sewage and waste water, while maintaining sanitary conditions for the occupants of the emergency housing.

Bathing facilities shall be provided with heating equipment which shall be capable of maintaining a temperature of 70 degrees F (21.0 degrees Celsius) within such facilities.

Lavatories with running water shall be installed and maintained in the toilet facilities or adjacent to the toilet facilities.

P110.4 Garbage, waste and rubbish disposal. All garbage, kitchen waste and rubbish shall be deposited in approved covered receptacles, which shall be emptied when filled and the contents shall be disposed of in a sanitary manner acceptable to the enforcing agency.

SECTION P111

EMERGENCY HOUSING LIGHTING AND VENTILATION REQUIREMENTS

P111.1 Lighting. Buildings or structures used for emergency housing shall be provided with natural light by means of exterior glazed openings in accordance with Section 1204.2 of the California Building Code, or shall be provided with artificial light in accordance with Section 1204.3 of the California Building Code.

P111.2 Ventilation. Buildings or structures used for emergency housing shall be provided with natural ventilation in accordance with Section 1202.5 of the California Building Code, or mechanical ventilation in accordance with the California Mechanical Code.

SECTION P112

EMERGENCY HOUSING FIRE AND LIFE SAFETY REQUIREMENTS

P112.1 Location on property. Buildings or structures used for emergency housing, including sleeping cabins, shall be located in accordance with the requirements of Section 705 and Table 705.5 of the California Building Code, based on their type of construction and fire-resistance ratings of the exterior walls. During a shelter crisis, the fire separation distances are permitted to be measured to the existing buildings on the adjacent parcels rather than to the interior lot lines, provided the open spaces are to remain unobstructed for the duration of the shelter crisis.

P112.2 Buildings on same lot. Buildings or structures used for emergency housing, including sleeping cabins, shall be separated from each other and from other buildings on the same lot as set forth in Section 705.3 of the California Building Code. The Building Official and Fire Marshal may accept reasonable alternatives to these requirements provided reasonably equivalent fire and life safety is achieved.

P112.3 Means of egress. Buildings or structures used for emergency housing shall be provided with means of egress complying with Chapter 10 of the California Building Code, unless modified elsewhere in this appendix.

P112.4 Emergency escape and rescue. Each area of a building or structure used for sleeping purposes in emergency housing shall be provided with an emergency escape and rescue opening in accordance with Section 1031 of the California Building Code, unless modified elsewhere in this appendix.

P112.5 Smoke alarms. Buildings or structures used for emergency housing, which provide sleeping accommodations, shall be equipped with single station battery powered smoke alarms installed in accordance with the location requirements of Section 907.2.11 of the California Fire Code, unless modified elsewhere in this appendix.

P112.6 Carbon monoxide alarms. Buildings or structures used for emergency housing, which provide sleeping accommodations, and equipped with fuel-burning appliances shall be provided with carbon monoxide detection in accordance with Section 915 of the California Fire Code, unless modified elsewhere in this appendix.

P112.7 Fire alarm. A manual fire alarm system capable of arousing sleeping occupants in accordance with Section 907.2.9.1 of the California Fire Code shall be installed in buildings, structures, or groups of buildings or structures used for emergency housing and having a gross floor area of more than 2,500 square feet or having more than 49 sleeping occupants.

Exception: Individual buildings or structures in a group of buildings or structures with sufficient separation distances to allow each building or structure to function independently in case of a fire, as approved by the Fire Marshal.

P112.8 Automatic sprinkler systems. Fire sprinklers shall be provided for new and existing buildings or structures used for emergency housing, including sleeping cabins, which provide sleeping facilities, as required by Section 903.3 of the California Fire Code. Strict compliance with the requirements of Section 903.3 may not be required when approved by the Fire Marshal. The Fire Marshal is authorized to accept reasonably equivalent alternatives to the installation provisions of Section 903.3 when dealing with buildings or structures used for emergency housing.

P112.9 Fire extinguishers. Portable fire extinguishers shall be provided in accordance with Section 906.1 of the California Fire Code.

P112.10 Flammable or combustible liquids. The possession or storage of any flammable or combustible liquids or gases shall not be permitted (intact cigarette lighters excepted). The use of any type of open flame indoors is prohibited unless conditionally approved by the Fire Chief.

P112.11 Storage in attics, under-floor and concealed spaces. Combustible materials, including but not limited to the possessions of occupants, users and staff shall not be stored in attics, under-floor spaces, or within other concealed spaces of buildings or structures used for emergency housing with sleeping accommodations.

P112.12 Fire department access. Fire Department access to building and premises used for emergency housing shall be in compliance with Section 503, Section 504 and Appendix D of the California Fire Code, as approved by the Fire Chief.

P112.13 Water supply. An approved fire protection water supply complying with Section 507 of the California Fire Code, or as approved by the Fire Chief, shall be provided for each structure, group of structures or premises used for emergency housing.

SECTION P113

ADDITIONAL REQUIREMENTS

P113.1 Operating procedures. Operating procedures including a security plan and service requirements shall be developed by the professional service provider and shown to be consistent with the shelter standards imposed by the Alameda County Social Services Agency. These procedures shall be designed to maintain order and safety within the buildings or structures used for emergency housing.

SECTION P114

ALTERNATIVES AND MODIFICATIONS

P114.1 Alternatives and modifications. Alternative compliance and/or modifications that are reasonably equivalent to the requirements in this appendix may be granted by the Local Administrative Authority in individual cases when dealing with buildings or structures used for emergency housing.

NOTE:

Authority Cited: Health and Safety Code Sections 17040, 17050, 17920.9, 17921, 17921.5, 17921.6, 17921.10, 17922, 17922.6, 17922.12, 17922.14, 17927, 17928, 18300, 18552, 18554, 18620, 18630, 18640, 18670, 18690, 18691, 18865, 18871.3, 18871.4, 18873, 18873.1 through 18873.5, 18938.3, 18944.11, and 19990; and Government Code Section 12955.1.

Reference: Health and Safety Code Sections 17000 through 17062.5, 17910 through 17995.5, 18200 through 18700, 18860 through 18874, and 19960 through 19997; Civil Code Sections 1101.4 and 1101.5; and Government Code Sections 12955.1 and 12955.1.1. (Ord. 7613-NS § 3, 2018)

Section 2. That Berkeley Municipal Code Chapter 19.29 is hereby repealed and reenacted to read as follows:

Chapter 19.29

BERKELEY RESIDENTIAL CODE

Sections:

19.29.010	Adoption of California Residential Code.
19.29.020	Title.
19.29.030	Administrative Provisions.

- 19.29.040 Subsection R301.2 Climatic and Geographic Design Criteria.**
- 19.29.050 Section R337 Materials and Construction Methods for Exterior Wildlife Exposure.**
- 19.29.060 Technical Amendments to Structural Standards.**

19.29.010 Adoption of California Residential Code.

The California Residential Code, 2022 Edition, as adopted in Title 24 Part 2.5 of the California Code of Regulations, including Appendices AH, AQ, AR, AS, AU and AX is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. A copy of this Code is on file for use and examination by the public in the office of the City Clerk of the City of Berkeley.

19.29.020 Title.

This Code shall be known as the "Berkeley Residential Code" and may be cited as "this Code".

19.29.030 Administrative provisions.

All of the administrative provisions contained in Article 1 of Chapter 19.28, the Berkeley Building Code, shall apply to this Code as well and take precedence over any CRC administrative provisions that may conflict.

For regulations governing wood burning appliances see BMC 19.28.040.

19.29.040 CRC Subsection R301.2 Climatic and geographic design criteria.

**TABLE R301.2
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA**

GROUND SNOW LOAD ^o	WIND DESIGN				SEISMIC DESIGN CATEGORY ^f	SUBJECT TO DAMAGE FROM		
	Speed ^d (mph)	Topographic effects ^k	Special wind region ^l	Wind-borne debris zone ^m		Weathering ^a	Frost line depth ^b	Termite ^c
ZERO	85	NO	NO	NO	D ₂ or E	NEGLIGIBLE	N/A	VERY HEAVY
ICE BARRIER UNDERLAYMENT REQUIRED^h		FLOOD HAZARDS^g		AIR FREEZING INDEXⁱ		MEAN ANNUAL TEMP^j		
NO		See Footnote 'p'		ZERO		57.2°F		

MANUAL J DESIGN CRITERIA ⁿ						
Elevation	Altitude correction factor e	Coincident	Indoor winter	Indoor		Heating

		wet bulb	design <u>relative</u> <u>humidity</u>	winter design dry-bulb temperature	Outdoor winter design dry-bulb temperature	temperature difference
345	N/A	63	N/A	70	40	30
Latitude	Daily range	Indoor summer design relative humidity	<u>Summer</u> <u>Design</u> <u>Grains</u>	Indoor summer design dry-bulb temperature	Outdoor summer design dry-bulb temperature	Cooling temperature difference
38	16	50	-6	75	80	5

For SI: 1 pound per square foot = 0.0479 kPa, 1 mile per hour = 0.447 m/s.

- a. Where weathering requires a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this Code, the frost line depth strength required for weathering shall govern. The weathering column shall be filled in with the weathering index, “negligible,” “moderate” or “severe” for concrete as determined from Figure R301.2.(1). The grade of masonry units shall be determined from ASTM C34, ASTM C55, ASTM C62, ASTM C73, ASTM C90, ASTM C129, ASTM C145, ASTM C216 or ASTM C652.
- b. Where the frost line depth requires deeper footings than indicated in Figure R403.1(1), the frost line depth strength required for weathering shall govern. The jurisdiction shall fill in the frost line depth column with the minimum depth of footing below finish grade.
- c. The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local subterranean termite damage.
- d. The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map Figure R301.2(2). Wind exposure category shall be determined on a site-specific basis in accordance with Section R301.2.1.4.
- e. The jurisdiction shall fill in this section of the table to establish the design criteria using Table 10A from ACCA Manual J or established criteria determined by the jurisdiction.
- f. The jurisdiction shall fill in this part of the table with the seismic design category determined from Section R301.2.2.1.
- g. The jurisdiction shall fill in this part of the table with: the date of the jurisdiction’s entry into the National Flood Insurance Program (date of adoption of the first code or ordinance for management of flood hazard areas); and the title and date of the currently effective Flood Insurance Study or other flood hazard study and maps adopted by the authority having jurisdiction, as amended.
- h. In accordance with Sections R905.1.2, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1, where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall fill in this part of the table with “NO.”
- i. The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (BF-days) from Figure R403.3(2) or from the 100-year (99 percent) value on the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F).”

- j. The jurisdiction shall fill in this part of the table with the mean annual temperature from the National Climatic Data Center data table “Air Freezing Index-USA Method (Base 32°F).”
- k. In accordance with Section R301.2.1.5, where there is local historical data documenting structural damage to buildings due to topographic wind speed-up effects, the jurisdiction shall fill in this part of the table with “YES.” Otherwise, the jurisdiction shall indicate “NO” in this part of the table.
- l. In accordance with Figure R301.2(2), where there is local historical data documenting unusual wind conditions, the jurisdiction shall fill in this part of the table with “YES” and identify any specific requirements. Otherwise, the jurisdiction shall indicate “NO” in this part of the table.
- m. In accordance with Section R301.2.1.2 the jurisdiction shall indicate the wind-borne debris wind zone(s). Otherwise, the jurisdiction shall indicate “NO” in this part of the table.
- n. The jurisdiction shall fill in these sections of the table to establish the design criteria using Table 1a or 1b from ACCA Manual J or established criteria determined by the jurisdiction.
- o. The jurisdiction shall fill in this section of the table using the Ground Snow Loads in Figures R301.2(3) and R301.2(4).
- p. Flood Hazard Data for the City of Berkeley:
 - Date of Jurisdiction’s Entry into the NFIP: December 7, 1973;
 - Date of adoption of the first code or ordinance for management of flood hazards: Ordinance No. 5085-N.S., July 25, 1978;
 - Date of Flood Insurance study: Aug 3, 2009;
 - Panel numbers and dates of all currently effective maps adopted by the AHJ (Ordinance 7108-NS 9/29/09):
 - FEMA’s “Use of Digital Flood Hazard Data” establishes that paper and digital maps are equivalent. Policy and related information are available from FEMA. The policy implements section 107 of Public Law 108-264, 118 Stat. 724 (2004)
 - Panel 13 (not available in printed form)
 - Panel 14 of 725, Map Number 06001C0014G, August 3, 2009
 - Panel 18 of 725, Map Number 06001C0018G, August 3, 2009
 - Panel 19 of 725, Map Number 06001C0019G, August 3, 2009
 - Panel 38 (not available in printed form)
 - Panel 51 (not available in printed form)
 - Panel 52 of 725, Map Number 06001C0052G, August 3, 2009
 - Panel 53 (not available in printed form)
 - Panel 54 of 725, Map Number 06001C0054G, August 3, 2009
 - Panel 56 of 725, Map Number 06001C0056G, August 3, 2009
 - Panel 57 of 725, Map Number 06001C0057G, August 3, 2009
 - Panel 80 of 725, Map Number 06001C0080G, August 3, 2009

19.29.050 CRC Section R337 Materials and Construction Methods for Exterior Wildlife Exposure.

Chapter 3 of the 2022 California Residential Code is adopted in its entirety subject to the modifications thereto which are set forth below.

R337.1 – SCOPE, PURPOSE AND APPLICATION

R337.1.1 Scope. Section R337 and all subsections apply to building materials, systems and or assemblies used in the exterior design and construction of new buildings and structures, additions, alterations, repairs and re-roofs located within a Wildland-Urban Interface (WUI) Fire Area as defined in Section R337.2.

R337.1.2 Purpose. The purpose of Section R337 is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Areas or any building or structure in the Wildland-Urban Interface (WUI) Fire Area to resist the intrusion of flame or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.

R337.1.3 Application. New buildings located in any Fire Hazard Severity Zone or new buildings and structures, additions, alterations, repairs and re-roofs located in any Wildland-Urban Interface (WUI) Fire Area designated by the enforcing agency constructed after the application date shall comply with the provisions of this section. This shall include all ~~new~~ buildings with residential, commercial, educational, institutional or similar occupancy type use, which shall be referred to in this section as “applicable building” (see definition in Section R337.2), as well as ~~new~~ buildings and structures accessory to those applicable buildings (see Exceptions 1 and 4).

Exceptions:

1. Group U occupancy accessory buildings or structures of any size located at least 50 feet (15 m) from an applicable building on the same lot.
2. Group U occupancy agricultural building or structure, as defined in Section 202 of the California Building Code, of any size located at least 50 feet (15 m) from an applicable building.
3. Group C occupancy special buildings conforming to the limitations specified in Section 450.4.1 of the California Building Code.
4. New accessory buildings and miscellaneous structures specified in Section R337.10 shall comply only with the requirements of that section.
5. ~~Additions to and remodels of building originally constructed prior to July 1, 2008.~~

R337.1.3.1 Application date and where required. New buildings for which an application for a building permit is submitted on or after July 1, 2008 located in any Fire Hazard Severity Zone or buildings and structures, additions, alterations, repairs and re-roofs for which an application for a building permit is submitted on or after July 1, 2008 located in the Wildland Interface Fire Area shall comply with all sections of this chapter.

R337.2 – DEFINITIONS

For the purposes of this Section R337, certain terms are defined below:

FIRE ZONE ONE shall encompass the entire City of Berkeley except for Fire Zones Two and Three.

FIRE ZONE TWO encompasses those areas designated as Combined Hillside District in the Official Zoning map of the City of Berkeley and those areas designated as Very High in the official Fire Hazard Severity Zones (FHSZ) map of The Department of Forestry and Fire Protection (CAL FIRE), as they may be amended from time to time. The following properties, not part of the Combined Hillside District, are included in Fire Zone Two under the Very High designation of the FHSZ map: the eastern section of the University of California, Berkeley main campus, block number 2042 (Alameda County Assessor's parcel numbering (APN) system), to the east city line; all of the Clark-Kerr campus, block number 7690, to the east city line; all of block number 7680 in the City of Berkeley; portions of block number 1702 in the City of Berkeley. See Exhibit A for the specific parcels by APN and address.

FIRE ZONE 3 encompasses those areas designated as Environmental Safety – Residential Districts on the Official Zoning Map of the City of Berkeley, as it may be amended from time to time.

LOCAL RESPONSIBILITY AREA (LRA). Areas of the state in which the financial responsibility of preventing and suppressing fires is the primary responsibility of a city, county, city and county, or district. Fire Zones 2 and 3 are designated as Local Responsibility Area.

WILDLAND-URBAN INTERFACE (WUI) is a geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires. Fire Zones 2 and 3 are designated as Wildland-Urban Interface (WUI) areas.

R337.5 – ROOFING

R337.5.1 General. Roofs shall comply with the requirements of Sections R337 and R902. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions. Roof assemblies in the Fire Hazard Severity Zones shall be Class A rating when tested in accordance with ASTM E108 or UL790. Wooden shakes and shingles are prohibited roof coverings regardless of the assembly rating of the roof system.

Exception: Replacement of less than 50% of the roof area within a 5 year period.

R337.5.5 Spark Arrestors. All chimneys of fireplaces, stoves, barbecues or heating appliances using solid fuel shall be provided with an approved spark arrestor whenever modification has been made to any of these appliances, or whenever a structure is re-roofed. The net free area of the spark arrestor shall be not less than four times the net

free area of the outlet of the chimney. The spark arrestor shall have heat and corrosion resistance equivalent to twelve-gauge wire, nineteen-gauge galvanized wire, or twenty-four-gauge stainless steel. Openings shall not permit the passage of spheres having a diameter larger than one-half inch and shall not block the passage of spheres having a diameter of less than three-eighths inch. The arrestor shall be securely attached to the chimney or stovepipe and shall be adequately supported. The use of bands, mollies, masonry anchors or mortar ties are recommended depending upon the individual need.

R337.7 – EXTERIOR COVERING

R337.7.3.2 Replacement of Exterior Wall Covering. Materials for replacement of existing exterior wall covering shall meet or exceed the standards set forth in this chapter.

Exception: Where less than 50% of any wall surface is being replaced or repaired, and the matching of the new plane to the existing plane on that wall is not possible.

R337.11 – UNDERGROUND UTILITY CONNECTIONS

R337.11.1 Underground utility connections. For new construction, provisions shall be made for the undergrounding of all utilities serving the property, including but not limited to electrical, telephone and cable television, by the installation of appropriately sized underground conduits extending from the street property.

R337.12 – ADDITIONAL REQUIREMENTS IN FIRE ZONE THREE

R337.12.1 General. In addition to meeting the other requirements of this Chapter, buildings or structures hereinafter erected, constructed, moved, altered, added, or repaired within Fire Zone Three shall comply with the following requirements for buildings and structures.

R337.12.2 Fire Warning System. All residential units shall be equipped with a Fire Warning System as specified by the residential smoke detector requirements of the current edition of the California Building Code and with an audible exterior alarm. The exterior alarm must meet the requirements of NFPA 72 or equivalent and generate 45 decibels ten feet from the alarm, or more.

R337.12.3 Automatic Fire Sprinklers, Berkeley Fire Code Section 903.2.23 Any new construction or new additions to existing structures requiring a permit determined to be \$100,000 or more in construction costs shall be required to install automatic fire sprinklers throughout the structure.

R337.12.4 Utilities. Utilities, pipes, furnaces, water heaters or other mechanical devices located in an exposed underfloor area of a building or structure shall be enclosed with material as required for exterior one hour fire resistive construction. Adequate covered access openings for servicing and ventilation of such facilities shall be provided as required by appropriate codes.

R337.12.5 Control of brush or vegetation. Brush and vegetation shall be controlled as required in the Berkeley Fire Code.

R337.12.6 Special Conditions. The following additional conditions must be met:

1. Public access roads and fire trails. No person(s) shall use any public access road or fire trail for the storage of any construction material, stationary construction equipment, construction office, portable refuse container, or earth from any grading or excavating.
2. Water Service. The water service to the site shall be installed with a ¾” hose bib connection prior to beginning any wood framing. The person responsible for the construction shall have at the site a 75 ft ¾” hose available.

Exhibit A
Parcels in Addition to the Combined Hillside District

The following additional parcels by Assessor’s Parcel Number and address are included in Fire Zone Two:

Parcel Number (APN)	Address
048-7680-001-02	3 Tanglewood Road
048-7680-002-01	5 Tanglewood Road
048-7680-031-00	7 Tanglewood Road
048-7680-019-00	11 Tanglewood Road
048-7680-014-00	19 Tanglewood Road
048-7680-032-01	25 Tanglewood Road
048-7680-027-00	29 Tanglewood Road
054-1702-067-00	10 Tanglewood Road
054-1702-068-00	18 Tanglewood Road
054-1702-069-00	22 Tanglewood Road
054-1702-070-00	28 Tanglewood Road
054-1702-063-00	2701 Belrose Avenue
054-1702-076-00	2715 Belrose Avenue
054-1702-075-00	2721 Belrose Avenue
054-1702-074-00	2729 Belrose Avenue
054-1702-073-00	2737 Belrose Avenue
054-1702-112-00	2801 Claremont Boulevard
054-1702-123-01	2811 Claremont Boulevard
054-1702-122-00	2815 Claremont Boulevard
054-1702-120-01	2821 Claremont Boulevard
054-1702-114-01	2816 Claremont Avenue
054-1702-115-00	2820 Claremont Avenue
054-1702-072-00	3005 Garber Street
054-1702-071-00	3015 Garber Street
054-1702-113-00	3020 Garber Street
054-1702-116-00	3017 Avalon Avenue

19.29.060 Technical Amendments to Structural Standards

Chapter 6 of the 2022 California Residential Code is adopted in its entirety subject to the modifications thereto which are set forth below.

Table R602.10.3(3) BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY^{i,j}

Add new footnotes "i" and "j" to the end of Table R602.10.3(3) to read:

i. Methods GB, PBS, HPS and SFB are not permitted in Seismic Design Categories D₀, D₁, and D₂.

j. Method DWB are not permitted in Seismic Design Categories D₀, D₁, and D₂ where S₁ is greater than or equal to 0.75.

Add a new Subsection R602.10.4.5, to read:

R602.10.4.5 Limits on methods GB and PCP. In Seismic Design Categories D₀, D₁, and D₂, Method GB is not permitted, but gypsum board is permitted to be placed on the opposite side of the studs from other types of braced wall panel sheathing. In Seismic Design Categories D₀, D₁, and D₂, the use of Method PCP is limited to one-story dwellings and accessory structures.

Section 3. That Berkeley Municipal Code Chapter 19.30 is hereby repealed and reenacted to read as follows:

Chapter 19.30

BERKELEY ELECTRICAL CODE

Sections:

19.30.010 Adoption of California Electrical Code.

19.30.020 Title.

19.30.030 Administrative provisions.

19.30.010 Adoption of California Electrical Code.

The California Electrical Code, 2022 Edition, as adopted by the California Code of Regulations, Title 24, Part 3 is hereby adopted and made a part of this Chapter as though fully set forth herein subject to the modifications thereto which are set forth in this Chapter. A copy of this Code is on file for use and examination by the public in the office of the City Clerk of the City of Berkeley.

19.30.020 Title.

This Code shall be known as the "Berkeley Electrical Code" and may be cited as "this Code".

19.30.030 Administrative provisions.

All of the administrative provisions contained in Article 1 of Chapter 19.28, the Berkeley Building Code, shall apply to this Code as well and take precedence over any administrative provisions contained in Article 89 General Code Provisions that may conflict.

Section 4. That Berkeley Municipal Code Chapter 19.32 is hereby repealed and reenacted to read as follows:

Chapter 19.32

BERKELEY MECHANICAL CODE

Sections:

- 19.32.010 Adoption of the California Mechanical Code.**
- 19.32.020 Title.**
- 19.32.030 Administrative provisions.**
- 19.32.040 Amendments to the California Mechanical Code**

19.32.010 Adoption of the California Mechanical Code.

The California Mechanical Code, 2022 Edition, as adopted in Title 24 Part 4 of the California Code of Regulations, is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. A copy of this Code is on file for use and examination by the public in the office of the City Clerk of the City of Berkeley.

19.32.020 Title.

This Code shall be known as the "Berkeley Mechanical Code" and may be cited as "this Code".

19.32.030 Administrative provisions.

All of the administrative provisions contained in Article 1 of Chapter 19.28, the Berkeley Building Code, shall apply to this Code as well and take precedence over any California Mechanical Code administrative provisions that may conflict.

19.32.040 Amendments to the California Mechanical Code

Chapter 4 of the 2022 California Mechanical Code is adopted in its entirety subject to the modifications thereto which are set forth below:

405.4 Kitchen Exhaust. A mechanical exhaust directly to the outdoors shall be provided in each kitchen. The fan shall run intermittently (on demand) or continuously. A readily accessible manual control designed to be operated as needed or an automatic control shall be provided for intermittent operations.

405.4.1 Exhaust Rate. For intermittent-controlled operations, the exhaust rate shall be not less than 100 ft³/min (0.047 m³/s) for range hoods or 300 ft³/min (0.141 m³/s) for mechanical exhaust fans including downdraft appliances, and shall be rated for sound at a maximum of 3 sone at greater than or equal to 100 cfm. For continuous operated ventilation, the exhaust rate shall be not less than 5 air changes per hour based on kitchen volume for enclosed kitchens and shall be rated for sound at a maximum of 1.0 sone.

Exception: A vented range hood shall not be required in dwelling unit kitchens equipped with a local mechanical exhaust system installed in accordance with ASHRAE 62.2.

Section 5. That Berkeley Municipal Code Chapter 19.34 is hereby repealed and reenacted to read as follows:

Chapter 19.34

BERKELEY PLUMBING CODE

Sections:

19.34.010	Adoption of the California Plumbing Code.
19.34.020	Title.
19.34.030	Administrative provisions.
19.34.040	Gas Shut-Off Valves

19.34.010 Adoption of the California Plumbing Code.

The California Plumbing Code, 2022 Edition, as adopted in Title 24 Part 5 of the California Code of Regulations, including Appendices A, B and D, is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. A copy of this Code is on file for use and examination by the public in the office of the City Clerk of the City of Berkeley.

19.34.020 Title.

This Code shall be known as the "Berkeley Plumbing Code" and may be cited as "this Code."

19.34.030 Administrative Provisions.

All of the administrative provisions contained in Article 1 of Chapter 19.28, the Berkeley Building Code, shall apply to this Code as well and take precedence over any California Plumbing Code administrative provisions that may conflict.

19.34.040 Gas Shut-Off Valves

Chapter 12 of the 2022 California Plumbing Code is adopted in its entirety subject to the modifications thereto which are set forth below.

Retitle and amend Section 1209.0 Excess Flow Valves to read:

1209.0 Automatic Gas Shut-Off Valves

1209.1 General. Where automatic excess flow valves are installed, they shall be listed to CSA Z21.93 and shall be sized and installed in accordance with the manufacturer's instructions. [NFPA 54:5.13]

1209.2 General Requirements for Automatic Gas Shut-Off Valves. Automatic gas shut-off valves shall:

1. Comply with all applicable requirements of the Berkeley Plumbing Code.
2. Be tested and listed by recognized testing agencies such as the Independent Laboratory of the International Approval Services (IAS), Underwriter's Laboratory (UL), International Association of Plumbing and Mechanical Officials (IAPMO) or any other agency approved by the State of California Office of the State Architect (OSA).
3. Be installed on downstream side of the gas utility meter.
4. Be installed in accordance with the manufacturer's instructions.
5. Provide a method for expedient and safe gas shut-off in an emergency.
6. Provide a capability for ease of consumer or owner resetting in a safe manner.

1209.3 Definitions

For the purpose of this Section, terms shall be defined as follows:

AUTOMATIC GAS SHUT- OFF VALVE shall mean either a motion activated gas shut-off valve or device or an excess flow gas shut-off valve or device.

DOWNSTREAM OF GAS UTILITY METER shall mean all gas piping on the property owner's side of the gas meter and after the service tee.

MOTION ACTIVATED GAS SHUT OFF VALVE shall mean an approved gas valve activated by motion. Valves are set to activate in the event of a moderate or strong seismic event greater than 5.0 on the Richter scale.

UPSTREAM OF GAS UTILITY METER shall mean all gas piping installed by the utility up to and including the meter and the utility's service tee.

1209.4 Motion Activated Gas Shut-off Valve, Required. A listed motion activated gas shut-off valve shall be installed as follows:

1209.4.1 New Construction. In any newly constructed building or structure containing fuel gas piping.

1209.4.2 Existing Buildings with a single meter. In any existing building or structure containing fuel gas piping served by a single gas meter, when any addition, alteration or repair is made for which a mechanical or plumbing permit is issued.

1209.4.3 Existing Buildings with separate meters serving individual units or tenant spaces. In any existing building or structure containing fuel gas piping served by multiple gas meters, when any addition, alteration or repair is made to an individual unit or tenant space for which a mechanical or plumbing permit is issued. The requirement for a motion activated gas shut off valve shall apply to the gas meter serving the individual unit or tenant space and the gas meter serving common area(s).

Exceptions:

1. Existing automatic gas shut-off valves installed prior to the effective date of this Section, provided the valves are maintained in operational condition.
2. Automatic gas shut-off valves installed on a gas distribution system owned or operated by a public utility.

Note: For the purpose of the requirements of this Section, excess flow valves are not permitted to be installed as a substitute for motion activated gas shut-off valves.

1209.5 Mounting. Motion activated seismic gas shut-off valves shall be mounted rigidly to the building or structure containing the fuel gas piping, unless otherwise specified in the manufacturer's installation instructions.

Section 6. That Berkeley Municipal Code Chapter 19.36 is hereby repealed and reenacted to read as follows:

Chapter 19.36

BERKELEY ENERGY CODE

Sections:

19.36.010	Adoption of the California Energy Code.
19.36.020	Title.
19.36.030	Administrative provisions.
19.36.040	Amendments to the California Energy Code.
19.36.050	CEQA

19.36.010 Adoption of the California Energy Code.

The California Energy Code, 2022 Edition, as adopted in Title 24 Part 6 of the California Code of Regulations, is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. A copy of this Code is on file for use and examination by the public in the office of the City Clerk of the City of Berkeley.

19.36.020 Title.

This Code shall be known as the “Berkeley Energy Code” and may be cited as “this Code”.

19.36.030 Administrative provisions.

All of the administrative provisions contained in Article 1 of Chapter 19.28, the Berkeley Building Code, shall apply to this Code as well and take precedence over any California Energy Code administrative provisions that may conflict.

Section 7. That Berkeley Municipal Code Chapter 19.37 is hereby repealed and reenacted to read as follows:

Chapter 19.37

BERKELEY GREEN CODE

Sections:

- 19.37.010 Adoption of the California Green Building Standards Code.**
- 19.37.020 Title.**
- 19.37.030 Administrative provisions.**
- 19.37.040 Amendments to the California Green Building Standards Code.**

The California Green Building Standards Code (CALGreen), 2022 Edition, as adopted in Title 24 Part 11 of the California Code of Regulations, is hereby adopted and made a part of this Chapter as though fully set forth herein, subject to the modifications thereto which are set forth in this Chapter. A copy of this Code is on file for use and examination by the public in the office of the City Clerk of the City of Berkeley.

19.37.020 Title.

This Code shall be known as the “Berkeley Green Code” and may be cited as “this Code”.

19.37.030 Administrative provisions.

All of the administrative provisions contained in Article 1 of Chapter 19.28, the Berkeley Building Code, shall apply to this Code as well and take precedence over any California Green Building Standards Code administrative provisions that may conflict.

19.37.040 Amendments to the California Green Building Standards Code.

Chapter 3 Green Building of the California Green Building Standards Code is adopted in its entirety subject to the modifications thereto which are set forth below:

Add a new Subsection 301.1.2 to read:

301.1.2 Residential waste diversion. The requirements of Section 4.408 shall be required for:

1. Any additions or alterations, which increase the building's conditioned area, volume or size
2. Any building alterations with a permit valuation over \$100,000
3. Any interior or exterior demolitions valued over \$3,000

Modify Subsection 301.3.2 to read:

301.3.2 Nonresidential waste diversion. The requirements of Section 5.408 shall be required for additions and, alterations and demolitions whenever a permit is required for work.

Chapter 4 Residential Mandatory Measures of the California Green Buildings Code is adopted in its entirety subject to the modifications thereto which are set forth below:

Modify Subsection 4.106.4.1 to read:

4.106.4.1 New one- and two-family dwellings and townhouses with attached or detached private garages, carports, or any other on-site parking. For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere 208/240-volt minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device minimum 40-ampere 208/240-volt dedicated EV branch circuit in close proximity to the proposed location of an EV charger at the time of original construction in accordance with the California Electrical Code.

Exception: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the proposed location of an EV charger at the time of original construction in accordance with the California Electrical Code.

4.106.4.1.1 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging

as "EV CAPABLE READY". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE READY".

Modify Subsection 4.106.4.2.1 to read:

4.106.4.2.1 Multifamily development projects with less than 20 dwelling units; and hotels and motels with less than 20 sleeping units or guest rooms. The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1. **EV Capable.** ~~Ten (10)~~ Twenty (20) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at a minimum of 40 amperes.

The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the California Electrical Code.

Exception:

- ~~1. When EV chargers (Level 2 EVSE) are installed in a number equal to or greater than the required number of EV capable spaces.~~
- ~~2. When EV chargers (Level 2 EVSE) are installed in a number less than the required number of EV capable spaces, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed.~~
1. When EV chargers (Level 2 EVSE) are installed in a number greater than five (5) percent of parking spaces required by Section 4.106.4.2.1, Item 3, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed over the five (5) percent required.

Notes:

- a. Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.
- b. There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or EV chargers are installed for use.

2. **EV Ready.** Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit.

Exception: Areas of parking facilities served by parking lifts, provided the required percentage of EV Ready spaces are installed elsewhere.

3. **EV Chargers.** Five (5) percent of the total number of parking spaces shall be equipped with Level 2 EVSE. Where common use parking is provided, at least one EV charger shall be located in the common use parking area and shall be available for use by all residents or guests.

When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EVSE shall have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical capacity to the required EV capable spaces.

Exception: Areas of parking facilities served by parking lifts, provided the required percentage of EV Chargers spaces are installed elsewhere.

NOTE: Calculations required by Section 4.106.4.2.1, Items 1 – 3 shall be rounded up to the nearest whole number.

Modify Subsection 4.106.4.2.2 to read:

4.106.4.2.2 Multifamily development projects with 20 or more dwelling units, hotels and motels with 20 or more sleeping units or guest rooms. The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1. **EV Capable.** ~~Ten (10)~~ Twenty (20) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at a minimum of 40 amperes.

The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the California Electrical Code.

Exception: When EV chargers (Level 2 EVSE) are installed in a number greater than five (5) percent of parking spaces required by Section 4.106.4.2.2, Item 3, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed over the five (5) percent required.

Notes:

- a. Construction documents shall show locations of future EV spaces.
 - b. There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or EV chargers are installed for use.
2. **EV Ready.** Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit.

Exception: Areas of parking facilities served by parking lifts-, provided the required percentage of EV Ready spaces are installed elsewhere.

3. **EV Chargers.** Five (5) percent of the total number of parking spaces shall be equipped with Level 2 EVSE. Where common use parking is provided, at least one EV charger shall be located in the common use parking area and shall be available for use by all residents or guests.

When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EVSE shall have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical capacity to the required EV capable spaces.

Exception: Areas of parking facilities served by parking lifts, provided the required percentage of EV Chargers spaces are installed elsewhere.

NOTE: Calculations required by Section 4.106.4.2.2, Items 1 – 3 shall be rounded up to the nearest whole number.

Add a new Subsection 4.405.1 to read:

4.405.1 Reduction in cement use. As allowed by the enforcing agency, cement used in concrete mix design shall be reduced not less than 25 percent. Products commonly used to replace cement in concrete mix designs include, but are not limited to:

1. Fly ash
2. Slag
3. Silica fume
4. Rice hull ash

Exception: Minimum cement reductions in concrete mix designs approved by the Engineer of Record may be lower where high early strength is needed for concrete products or to meet an accelerated project schedule.

Modify Subsection 4.408.1 to read:

4.408.1 Construction waste management. Recycle and/or salvage for reuse 100% of excavated soil and land-clearing debris, 100% of concrete, 100% of asphalt, and a minimum of 65 percent of the other nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance.

Exceptions:

1. ~~Excavated soil and land-clearing debris.~~
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.
3. The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.

Chapter 5 Nonresidential Mandatory Measures of the California Green Buildings Code is adopted in its entirety subject to the modifications thereto which are set forth below:

Modify Subsection 5.106.5.3.1 to read:

5.106.5.3.1 EV Capable Spaces. [N] Twenty (20) percent of the total number of parking spaces shall be EV capable spaces. Calculation for EV capable spaces shall be rounded up to the nearest whole number. shall be provided in accordance with Table 5.106.5.3.1 and The spaces shall comply with the following requirements:

1. Raceways complying with the California Electrical Code and no less than 1-inch (25 mm) diameter shall be provided and shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the EV capable space and into a suitable listed cabinet, box, enclosure or equivalent. A common raceway may be used to serve multiple EV capable spaces.
2. A service panel or subpanel(s) shall be provided with panel space and electrical load capacity for a dedicated 208/240 volt, 40-ampere minimum branch circuit for each EV capable space, with delivery of 30-ampere minimum to an installed EVSE at each EVCS.
3. The electrical system and any on-site distribution transformers shall have sufficient capacity to supply full rated amperage at each EV capable space.
4. The service panel or subpanel circuit directory shall identify the reserved overcurrent protective device space(s) as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."

Note: A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any applicable minimum parking space requirements established by an enforcement agency. See Vehicle Code Section 22511.2 for further details.

Delete Table 5.106.5.3.1.

Modify Subsection 5.106.5.3.2 to read:

5.106.5.3.2 Electric Vehicle Charging Stations (EVCS) [N] Ten (10) percent of the total number of parking spaces shall be EV capable spaces shall be provided with EVSE to create EVCS. Calculation for EVCS shall be rounded up to the nearest whole number. in the number indicated in Table 5.106.5.3.1. The EVCS required by Table 5.106.5.3.1 may be provided with EVSE in any combination of Level 2 and Direct Current Fast Charging (DCFC), except that at least one Level 2 EVSE shall be provided.

One EV charger with multiple connectors capable of charging multiple EVs simultaneously shall be permitted if the electrical load capacity required by Section 5.106.5.3.1 for each EV capable space is accumulatively supplied to the EV charger.

The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by five and reduce proportionally the required electrical load capacity to the service panel or subpanel.

5.405 Material Sources

Add a new Subsection 5.405.1 to read:

5.405.1 Reduction in cement use. As allowed by the enforcing agency, cement used in concrete mix design shall be reduced not less than 25 percent. Products commonly used to replace cement in concrete mix designs include, but are not limited to:

1. Fly ash.
2. Slag.
3. Silica fume.
4. Rice hull ash.

Exception: Minimum cement reductions in concrete mix designs approved by the Engineer of Record may be lower where high early strength is needed for concrete products or to meet an accelerated project schedule.

5.408.3 Concrete, asphalt, excavated soil and land clearing debris. 100 percent of concrete, asphalt, trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

Section 8. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

* * * * *

RESOLUTION NO. ##,###-N.S.

ADOPTING FINDINGS AS TO LOCAL CLIMATIC, GEOLOGICAL, AND TOPOGRAPHICAL CONDITIONS, AND COST-EFFECTIVENESS OF LOCAL AMENDMENTS TO THE ENERGY CODE, RENDERING REASONABLY NECESSARY ENUMERATED LOCAL BUILDING STANDARDS THAT ARE MORE STRINGENT THAN THOSE MANDATED BY THE CALIFORNIA BUILDING STANDARDS CODE

WHEREAS, the City is proposing to adopt various enumerated changes and modifications to the 2022 California Building Standards Code, California Code of Regulations, Title 24, as set forth below; and

WHEREAS, Health & Safety Code §17958 allows the City to make modifications or changes to the California Building Standards Code and other regulations adopted pursuant to Health & Safety Code §17921(a) which result in more stringent local requirements; and

WHEREAS, Health & Safety Code §17958, §17958.5 and §17958.7 require that such changes be supported by findings made by the governing body that such more stringent local requirements are necessary because of "local climatic, geological, or topographical conditions"; and

WHEREAS, such findings must be made available as a public record and a copy thereof with each such modification or change shall be filed with the California Building Standards Commission; and

WHEREAS, on November 12, 2019, the Berkeley City Council adopted Resolution No. 69,170-N.S. making findings in support of previous local code amendments.

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Berkeley that it finds that each of the proposed changes or modifications to the California Building Standards Code which are enumerated below are reasonably necessary because of local conditions in the area encompassed by the City of Berkeley, as set forth below:

A. LOCAL CONDITIONS

1. Climatic Conditions

a. Discussion

The City of Berkeley is located at the geographic center of the Bay Area. The western limits are defined by the Bay at near sea level and the eastern limits by the abruptly rising Berkeley Hills to 1,200 feet. The eastern limit faces open parklands and open space (covered with vegetative fuel loading) to the east and is exposed to a unique danger from wild land fires during periods of hot, dry weather in the summer months.

Many of the Berkeley homes in this area have wood shake and shingle roofs and are surrounded by brush type vegetation. The situation is made even worse by the negative effects of high wind conditions during the fire season. During May to October, critical climatic fire conditions occur where the temperature is greater than 80°F, the wind speed is greater than 15 mph, fuel moisture is less than or equal to 10.0 percent, wind direction is from north to the east-southeast and the ignition component is 65 or greater. These conditions occur more frequently during the fire season but this does not preclude the possibility that a serious fire could occur during other months of the year. The critical climate fire conditions create a situation conducive to rapidly moving, high intensity fires. Fires starting in the wild land areas along the easterly border are likely to move rapidly westward into Berkeley's urban areas.

In September 1923, critical climatic fire conditions were in effect and Berkeley sustained one of the most devastating fires in California's history. A fire swept over the range of the hills to the northeast of Berkeley and within two hours was attacking houses within the City limits. A total of 130 acres of built-up territory burned. 584 Berkeley buildings were wholly destroyed and about 30 others seriously damaged. By far the greater portion were single-family dwellings, but among the number were 63 apartments, 13 fraternity, sorority and students' house clubs and 6 hotels and boarding houses.

In December of 1980, during critical climatic fire conditions, a small fire started at Berkeley's northeast limits and within minutes five homes were totally destroyed by fire.

On October 20, 1991, a disastrous firestorm swept down from the Oakland hills. Within the first few hours, thousands of people were evacuated. Ultimately over 3,000 dwelling units were destroyed, of which more than 70 were in Berkeley. This fire matched the pattern established by the fires of 1923 and 1980. Additionally, the conditions that led to it were the same as the conditions that led to a 1970 fire that destroyed 70 homes in Oakland.

Berkeley frequently experiences cold winter days with accompanying temperature inversions which trap wood smoke near the ground and increase air pollution. These stagnant air days are marked by increased acute respiratory disease, including asthma, and a small but consistent increase in deaths from heart and lung disease. During these periods the usual onshore flow of clean marine air ceases and wood smoke air pollution becomes an area-wide phenomena. Studies by the Bay Area Air Quality Management District suggest that between 20 and 50% of air polluting small particles come from residential wood burning.

In addition, local surface winds frequently transport moisture laden air from the surface of the Bay waters into the City. Larger scale prevailing weather patterns and winds created by the jet stream from the west also transport highly humid air and storms across the Pacific Ocean through the strait between the San Francisco peninsula and the Marin Headlands straddled by Golden Gate Bridge and into the City. The moderating effect of the Bay waters on local temperatures tends to reduce local temperature extremes, even during periods of high inland temperatures. The combination of moist air from adjacent waters and the associated mild temperatures means that it is common for local weather

conditions to hover near the dew point. This can result in the formation of fog associated with local and regional marine weather layers, which commonly cover the City for hours or even days at a time with an average morning relative humidity of 82 percent.

Much of Northern California is considered to possess a predominantly Mediterranean climate. At times Berkeley does experience periods of high temperature and/or low humidity particularly between mid-July and mid-October, when the danger of hillside fires is greatest. Throughout the rest of the year, the marine weather environment is characterized by higher humidity and lower overall prevailing temperatures, resulting in a higher overall moisture content in building construction materials and slower drying of building materials and assemblies once wet or humidified.

Scientific evidence has established that natural gas combustion, procurement and transportation produce significant greenhouse gas emissions that contribute to global warming and climate change. Human activities releasing greenhouse gases into the atmosphere cause increases in worldwide average temperature, which contribute to melting of glaciers and thermal expansion of ocean water, drought conditions, increase in vegetative fuel, and length of fire seasons. As a coastal city located on the San Francisco Bay, Berkeley is experiencing the repercussions of climate change due excessive greenhouse gas emissions. Rising sea levels have caused significant coastal erosion and have increased impacts to infrastructure during extreme tides.

Scientific evidence also suggests storms are growing with higher intensity due to climate change and will be followed by an increased frequency of dry periods. By 2100, average temperatures in the San Francisco Bay Area is expected to increase up to 11°, bringing 6-10 additional heat waves to Berkeley each year. According to historical records, Bay Area sea level has risen 8 inches over the last century and the pace of sea level rise has increased since 2011. While regional variability exists, the median increase for the San Francisco Bay is expected to reach almost 1 ft by 2050¹ under a low risk model, while 2.7 ft is projected under an extreme risk scenario. Such climate change events are expected to increase the risk of flooding in low-lying areas of Berkeley, while hillside communities face increased risk of wildfires.

b. Summary

Local climatic conditions of periods of limited rainfall, high temperature and/or low humidity particularly between mid-July and mid-October, and high winds along with existing building construction create periodic extremely hazardous fire conditions that adversely affect the acceleration intensity and size of fires in the City. The same climatic conditions may result in the concurrent occurrence of one or more fires, which may spread in the more populated areas of the City without adequate fire department personnel to protect against and control such a situation. Throughout the rest of the year, the marine weather environment is characterized by higher humidity and lower overall prevailing

¹ Griggs, G., Cayan, D., Tebaldi, C., Fricker, H., & Árvai, J. (2017). Rising Seas in California. California Ocean Science Trust, (April), 71. Retrieved from <http://www.opc.ca.gov/webmaster/ftp/pdf/docs/rising-seas-in-california-an-update-on-sea-level-rise-science.pdf>

temperatures, resulting in a higher overall moisture content in building construction materials and slower drying of building materials and assemblies once wet or humidified. Berkeley is susceptible to the impacts of climate change, including sea level rise, increased average temperatures, and reduced air quality.

2. Geological Conditions

a. Discussion

The City of Berkeley is in a region of high seismic activity and is traversed by the Hayward fault. It has the San Andreas earthquake fault to the west and the Calaveras earthquake fault to the east. All three faults are known to be active as evidenced by the damaging earthquakes they have produced in the last 100 years and can, therefore, be expected to do the same in the future. Of primary concern to Berkeley is the Hayward Fault, which has been estimated to be capable of earthquakes exceeding a magnitude of 7.0 on the Richter scale. It extends through many residential areas and passes through a small business district and the University of California. A large number of underground utilities cross the fault, including major water supply and natural gas lines. Intensified damage during an earthquake may be expected in liquefaction zones along the Bay west of Interstate 80 and in known slide areas, as well as hillside areas (occupied mainly by dwellings) located within or near the fault zone; some areas are steep and have been subjected to slides.

The waterfront areas and areas in the Berkeley flatlands immediately adjacent to creeks and water streams present a major potential for soil liquefaction hazard. The Eastshore Freeway may liquefy and fail under heavy shaking or it may be inundated by a tsunami. The north hill area is most susceptible to landslides because of the presence of soft and unconsolidated sediments, extensive water content in the ground and the steepness of slopes.

Great potential damage can be related to the likely collapse of freeway overpasses. In the event of a major earthquake, Berkeley's firefighting capability could be significantly affected by loss of its main water supply. There is also the strong possibility of inundation due to failure of water reservoirs in the hill area. Summit Reservoir at the Kensington border in Berkeley and Berryman Reservoir North have recently been replaced by steel tanks. Berryman Reservoir South has received a seismic upgrade. Additional potential situations following an earthquake include broken natural gas mains and ensuing fire in the streets, building fires, as the result of broken service connections, the need for rescues for collapsed structures, and the rendering of first aid and other medical attention to a large number of people.

b. Summary

Local geological conditions include high seismic activity and large concentrations of residential type buildings as well as a major freeway. Since the City of Berkeley is located in a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, the

modifications cited herein are intended to better limit property damage as a result of a seismic activity and to establish criteria for repair of damaged properties following a local emergency.

3. Topographical Conditions

a. Discussion

The City of Berkeley has many homes built throughout the urban portion of the Berkeley Hills that are reached by narrow and often winding paved streets which hamper access for fire apparatus and escape routes for residents. In addition, many of the hillside homes are on the extreme eastern edge of the City and require longer response times for the total required firefighting force. Panoramic Way and other hill areas with narrow and winding streets may face the problem of isolation from the rest of the City.

In the areas north and south of the University of California, there are large concentrations of apartments, rooming houses, and fraternity and sorority houses. A number of apartments in these areas are of wood frame construction and are up to five stories in height from grade level. The fire potential is moderately high due to building congestion, heights, and wood shingle roof coverings and siding. Fires can be expected to involve large groups of buildings in these areas. It is noted that Berkeley most probably has more physically impaired people per capita than any other community in the United States. It is estimated that 14% of the approximate population of 124,321 per the 2021 Census in Berkeley are physically impaired. Emergency egress and rescue for these people are more difficult during a fire or other life safety emergency.

The Eastshore Freeway, running along the western edge of Berkeley, is one of the most heavily used and congested freeway sections in the state. Noted impacts have included increased rates of asthma, particularly among children. The proximity of Berkeley to this freeway and its location downwind from prevailing patterns negatively affects air quality, thus increasing the impact of wood smoke in Berkeley.

Part of the Pacific Coast Range, the Berkeley Hills, define the eastern boundary of the City and form a natural obstruction to the movement of humidified, cooler air out of the San Francisco Bay basin and the City of Berkeley into the dryer adjacent inland valleys and the interior of the State. Although these hills do not form an absolute air barrier, they do play a significant role in the creation of local microclimates. This effect is evidenced by the disparity in temperatures and relative humidity commonly experienced during periods of warm weather between communities adjacent to the San Francisco Bay / Pacific Ocean and communities in the Bay Area inland valleys only a few miles inland.

The City of Berkeley is part of a densely populated metropolitan area with limited space for landfills. It is important to preserve the limited landfill space for materials which cannot be diverted and to keep land-clearing debris out of landfills, where decomposition of such organic material would result in methane.

b. Summary

Local topographical conditions include hillside housing with many narrow and winding streets with slide potential for blockage in the abruptly rising Berkeley hills. These conditions create an extremely serious problem for the Fire Department when a major fire or earthquake occurs. Many situations will result in limiting or total blockage of fire department emergency vehicular traffic, overtaxed fire department personnel and a total lack of resources for the suppression of fire in buildings and structures in the City of Berkeley. In addition, under these local conditions, the presence of wood smoke can cause increased disease, including asthma, and increased deaths from heart and lung disease. The built environment also provides little space for landfills.

B. REASONABLE NECESSITY

The proposed changes and modifications to the California Building Standards Code are reasonably necessary due to the local conditions set forth above because they reduce the risks to life, public safety, health, welfare and property which result from the City's changing climate and location astride an active earthquake fault. They are further justified for the reasons set forth below.

In adopting the California Building Standards Code as the Berkeley Building Codes, the City proposes to make certain substantive modifications whose effect is to impose more stringent requirements locally than are mandated by the California Building Standards Code. These are:

- (1) Building standards relating to increased fire resistance in Fire Zones 2 and 3 (Berkeley Building Code Chapter 19.28 Article 2, Berkeley Residential Code Chapter 19.29 Section 19.29.050);
- (2) Standards to reduce the health risk caused by wood smoke under the climatic conditions of Berkeley (Berkeley Building Code Chapter 19.28 Article 3);
- (3) Building standards for retrofit of certain existing building types with seismic weaknesses (Berkeley Building Code Chapter 19.28 Article 5);
- (4) Standards for repair of existing buildings (Berkeley Building Code Chapter 19.28, Article 6);
- (5) Provisions requiring retrofitting of unreinforced masonry buildings (Berkeley Building Code Chapter 19.28 Article 6 and Berkeley Municipal Code Chapter 19.38);
- (6) Provisions requiring retrofitting of soft, weak, or open front buildings (Berkeley Building Code Chapter 19.28 Article 6 and Berkeley Municipal Code Chapter 19.39);
- (7) Various technical amendments to structural standards (Berkeley Building Code Chapter 19.28 Article 7, Berkeley Residential Code Chapter 19.29 Section 19.29.060);

- (8) Building standards for construction of exterior elevated elements (E3) to resist moisture intrusion (Berkeley Building Code Chapter 19.28 Article 8);
- (9) Building standards for emergency housing during the declaration of a shelter crisis (Berkeley Building Code Chapter 19.28 Article 9);
- (10) Provisions requiring range hood ventilation with sound ratings in residential dwelling units (Berkeley Mechanical Code Chapter 19.32 Section 19.32.040);
- (11) Provisions requiring installation of motion activated gas shut-off valves (Berkeley Plumbing Code Chapter 19.34 Section 19.34.040);
- (12) Provisions increasing and expanding the applicability of construction and demolition waste diversion requirements (Berkeley Green Code Chapter 19.37 Section 19.37.040);
- (13) Provisions to reduce the cement content in construction concrete mix designs (Berkeley Green Code Chapter 19.37 Section 19.37.040); and
- (14) Provisions for increasing electric vehicle charging requirements in new low-rise residential, multifamily, and nonresidential buildings. (Berkeley Green Code Chapter 19.37 Section 19.37.040).

These more stringent local requirements are reasonably necessary to address risks created by local conditions set forth above for the following reasons:

- The construction in the fire zones modifications made by Chapter 19.28 Article 2, and Chapter 19.29 Section 19.29.050 reduce the risk to life and property created by wildfires in the hillside areas of the City.
- The air pollution modifications made by Chapter 19.28 Article 3 Section 19.28.040, and Chapter 19.32 Section 19.32.040 reduce the risk to public safety created by air pollution throughout the City.
- The structural modifications made by Chapter 19.28 Article 5, Article 6, Article 7, Chapter 19.29 Section 19.29.060, Chapter 19.32 Section 19.32.40, Chapter 19.34 Section 19.34.040, Chapters 19.38 and 19.39 reduce the risk to life and property and hasten recovery from predictable future natural disasters.
- The E3 modifications made by Chapter 19.28, Article 8, reduce the risk to life and property resulting from the effect of the City's climate and topography on exterior building construction features and materials.
- The waste diversion modifications made by Chapter 19.37 Section 19.37.040 improve public health, safety and welfare by preserving the limited landfill space for materials which cannot be diverted resulting from the effect of local topography with limited space for landfills, and mitigating the impacts of climate change.
- The cement reduction modifications made by Chapter 19.37 Section 19.37.040 support the City's decarbonization efforts by reducing the embodied emissions

associated with the production of concrete, thus mitigating the impacts of climate change.

- The EV infrastructure modifications made by Chapter 19.37 Section 19.37.040 support the City's decarbonization efforts by increasing electric vehicle charging infrastructure in both low-rise residential, multifamily, and nonresidential buildings, thus mitigating the impacts of climate change.

BE IT FURTHER RESOLVED that certain local amendments to the Codes are not more stringent than the provisions of the California Codes but rather cover matters not addressed by those Codes or are administrative in nature and do not modify building standards pursuant to Health & Safety Code §17958, §17958.5 and §17958.7. These amendments establish administrative regulations for the effective enforcement of building standards throughout the City of Berkeley as follows:

Chapter 19.28, Article 1 (Administrative provisions and definitions) and Article 4 (Construction in the Right of Way), and Administrative amendments to Chapter 19.29 (California Residential Code), to Chapter 19.30 (California Electrical Code), to Chapter 19.32 (California Mechanical Code), to Chapter 19.34 (California Plumbing Code), to Chapter 19.36 (California Energy Code) and to Chapter 19.37 (California Green Building Standards Code), which are local amendments to the California Codes affecting administration provisions only.

BE IT FURTHER RESOLVED that this Resolution shall go into effect on January 1, 2023.

BE IT FURTHER RESOLVED that Resolution No. 69,170-N.S. is hereby rescinded effective January 1, 2023.



Disaster and Fire Safety Commission

CONSENT CALENDAR

June 1, 2021

To: Honorable Mayor and Members of the City Council

From: Disaster and Fire Safety Commission

Submitted by: Jose Bedolla, Chairperson, Disaster and Fire Safety Commission

Subject: Referral Response: Amending Chapter 19.34 of the Berkeley Municipal Code to Expand Automatic Gas Shut-Off Valve Requirements in Multifamily, Condominium and Commercial Buildings Undergoing Renovations

RECOMMENDATION

The proposed ordinance modifications in the referral dated October 29, 2019, shown in Attachment 2 to the staff report (the Referral), can be briefly summarized as:

- Expand the Gas Shut-Off Valve requirements to remove exceptions for multifamily, condominium, and commercial buildings

The Disaster and Fire Safety Commission (DFSC) recommends that changes of the Berkeley Municipal Code be referred to the City Manager and Planning Department to be modified in accordance with the Referral as part of the 2022 Code adoption cycle, including the following changes:

1. Do not allow excess flow valves to substitute for motion-activated shut-off valves as a way to comply with this ordinance.
2. Clarify requirements for excess flow valves and motion activated (seismic) valves.
3. Include a provision to include gas valves for common areas when required for any individual unit of a building.
4. Do not include any requirements regarding sale or transfer of the building.
5. Remove the dollar limit on the modifications and replace with a requirement to comply any time a plumbing or mechanical permit is issued.

In addition, the Commission recommends the inclusion of wording in the Berkeley Emissions Saving Ordinance (BESO) to require that in any transfer of property, that the property be required to be equipped with a seismic gas shutoff valve.

FISCAL IMPACTS OF RECOMMENDATION

Staff savings realized from first responders not having to shut off valves manually in case of emergency.

Costs will include staff time to submit ordinance to the Building Standards Commission. In addition, building inspector staff time will be necessary to ensure compliance with new provisions.

CURRENT SITUATION AND ITS EFFECTS

Currently, BMC 19.34.040 requires automatic gas shut-off valves in all new construction or existing buildings that undergo repair or alteration exceeding \$50,000 consistent with sewer lateral requirements. However, it makes several exceptions for multi-unit buildings, as described in Attachment 2. As a result, residents of multi-unit buildings as well as neighboring buildings that may be impacted by a gas-driven fire after an earthquake, are not protected by a gas shut-off valve requirement.

BACKGROUND

In October of 2019 the Disaster and Fire Safety Commission received a referral from Councilmembers Harrison, Wengraf, Hahn, and Bartlett on modifications to the BMC 19.34.040 Gas Shut-Off Valves ordinance.

The Referral's proposed ordinance modifications expands the Gas Shut-Off Valves requirement by removing several exceptions, including an exception for multi-unit buildings.

The Referral was discussed by the DFSC in the 12/4/19, 1/22/20, and 2/26/20 meetings. Several meetings subsequent were cancelled due to Covid-19.

At the March 24, 2021 regular meeting of the Disaster and Fire Safety Commission, the commission took the following action:

Action: Recommend that changes of the Berkeley Municipal Code be referred to the City Manager and Planning Department to be modified in accordance with the Referral as part of the 2022 Code adoption cycle: Couzin

Second: Stein

Vote: 9 Ayes - Couzin, Dean, Bradstreet, Degenkolb, Grimes, Bedolla, Simmons, Rader, Stein.

Additional background can be found in the Referral, Attachment 1.

ENVIRONMENTAL SUSTAINABILITY

In addition to potentially saving lives and property, increasing gas shut-off valve use may reduce the spread of house-fires and wildland-urban interface fires, reducing the pollution, hazardous waste, loss of habitat, and other environmental damage caused by uncontrolled fires, and reducing greenhouse gas emissions caused by gas leaks after an earthquake.

RATIONALE FOR RECOMMENDATION

The DFSC generally concurs with the rationale for this recommendation described in the Referral. The modifications to the ordinance are intended to increase the use of automatic gas shutoff valves to help reduce or prevent gas-related fires in the event of an earthquake.

In a major earthquake, gas piping is subjected to forces which may result in significant leaks of natural gas. These leaks can in turn result in serious fires or explosions.

A good article about the dangers of gas fires in an earthquake and the performance of Motion Activated Gas Shutoff Valves can be found here:

<http://www.strandearthquake.com/psgsv.html>.

The DFSC differs from the Referral regarding excess flow valves:

The ordinance modifications in the Referral allow the use of excess flow shut-off valves in place of motion-activated shut-off valves. The DFSC recommends against allowing excess flow valves to substitute for motion-activated shut-off valves.

Excess flow valves are appropriate for connection to individual appliances and are readily available incorporated in appliance connection lines. However, these valves would have to allow for a very large flow if connected to a whole house, and the leaks resulting from an earthquake may not be adequate to trigger an excess flow valve, while still being large enough to create a severe potential for fire or explosion.

Therefore, we recommend against allowing excess flow valves at the whole-house level to satisfy the requirements of the ordinance. Our edits in Attachment 1 incorporate this suggestion.

The DFSC believes that setting a minimum project value to trigger the installation of seismic gas shutoff valves is not the right way to trigger that requirement. In practice, the installation of a Seismic Gas Shutoff Valve is a simple task for a plumbing or mechanical contractor, however it is not within the designated ability of many other contractors. The \$10,000 minimum value set could easily be exceeded by work done by persons not approved to contract for such work, which could add significantly to the cost of a contract. On the other hand, the work required to install a seismic shutoff valve is generally less than an hour for a mechanical or plumbing contractor and the valve itself will usually cost less than \$150. The change in cost to the property owner should be minor compared to the cost of the other work performed under mechanical or plumbing permits. Therefore, it makes sense to require that having an operational seismic gas shutoff valve in place to receive a final signoff on a permit is not a significant burden to the property owner.

Referral Response: Amending Chapter 19.34 of the Berkeley Municipal Code to Expand Automatic Gas Shut-Off Valve Requirements in Multifamily, Condominium and Commercial Buildings Undergoing Renovations

CONSENT CALENDAR
June 1, 2021

Finally, the DFSC has been informed that the building department does not get involved with transfer of property except as permit applications are filed. Any requirements affecting the transfer of property, especially those involving natural gas service, should be addressed through the Office of Energy and Sustainable Development.

ALTERNATIVE ACTIONS CONSIDERED

n/a This is in response to a City Council referral.

CITY MANAGER

The City Manager concurs the content and recommendations of the Commission's Report.

CONTACT PERSON

Keith May, Secretary, Disaster and Fire Safety Commission, 510-981-5508

Attachments:

1. 10/19/2019 referral to the Disaster and Fire Safety Commission



Kate Harrison
Councilmember District 4

CONSENT CALENDAR
October 29, 2019

To: Honorable Mayor and Members of the City Council
From: Councilmembers Harrison, Wengraf, Hahn, and Bartlett
Subject: Amending Chapter 19.34 of the Berkeley Municipal Code to Expand Automatic Gas Shut-Off Valve Requirements in Multifamily, Condominium and Commercial Buildings Undergoing Renovations and to All Existing Buildings Prior to Execution of a Contract for Sale or Close of Escrow

RECOMMENDATION

Refer to the Disaster and Fire Safety Commission to consider an ordinance amending Berkeley Municipal Code (BMC) 19.34.040 to expand requirements for automatic natural gas shut-off valves or excess flow valves in multifamily, condominium and commercial buildings undergoing renovations and in all existing buildings prior to execution of a contract for sale or close of escrow. Ask the Commission to consider other triggers as appropriate.

POLICY COMMITTEE RECOMMENDATION

On October 3, 2019, the Facilities, Infrastructure, Technology, Environment & Sustainability Committee adopted the following action: M/S/C (Harrison/Robinson) to send the item with a Positive Qualified Recommendation back to the City Council with the following amendments.

Amend the recommendation revised to read as follows:

1. Refer to the Disaster and Fire Safety Commission to consider an ordinance amending Berkeley Municipal Code (BMC) 19.34.040 to expand requirements for automatic natural gas shut-off valves or excess flow valves in multifamily, condominium and commercial buildings undergoing renovations and in all existing buildings prior to execution of a contract for sale or close of escrow and to ask the Commission to consider other triggers as appropriate.

Amend the Financial Implications to read:

Staff savings realized from responders not having to shut off gas in an emergency.

Vote: All Ayes.

BACKGROUND

The California Building Standards Code, or Title 24 of the California Code of Regulations, specifies the standards for buildings and other structures in California. Title 24 is intended to protect public health, safety, and general welfare building occupants, and is updated at the state level and adopted by local jurisdictions every three years. Municipalities are permitted to make local amendments to the Building Standards Code¹ as deemed necessary for general welfare, as long as they are submitted to the California Building Standards Commission with the necessary findings. The ideal time to update local buildings codes is before the next code cycle. Berkeley will adopt the 2019 code on January 1, 2020.

Natural gas in buildings poses significant risks to health and safety. A recent ordinance adding Chapter 12.80 to the Berkeley Municipal Code phases out natural gas in new buildings.² This will make Berkeley's new building stock safer and greener over time, but there is an outstanding need to prevent seismic and other disasters in existing buildings.

Gas shut-off valves are a component of a plumbing system capable of preventing the flow within a gas piping system. Shut-off valves allow for a resident to stop the flow of gas in their homes in case of an emergency, such as an earthquake or a gas leak.

All existing buildings, if they have natural gas, should have a shut-off valve of some kind. However, manual shut-off valves require timely attention during a seismic event, physical access and exertion, and mechanical knowledge to operate. In case of a natural disaster, relying purely on manual shut-off valves can be dangerous. For example, following the 2010 San Bruno explosion, Pacific Gas & Electric officials testified before the National Transportation Safety Board that "gas feeding the flames could have been shut off an hour earlier if PG&E had automatic or remotely controlled valves on the pipeline that exploded."³ Since the San Bruno explosion, gas companies across California have urged a fast transfer to automatic shut-off valves.

Currently, BMC 19.34.040 requires automatic gas shut-off valves in all new construction or existing buildings that undergo repair or alteration exceeding \$50,000 consistent with sewer lateral requirements. However, it makes blanket exceptions for buildings with individually metered residential units when the building contains five or more residential units, unless the units are condominiums, putting renters at risk of physical harm.

¹ "Local Amendments to Building Standards—Ordinances," California Building Standards Commission, <https://www.dgs.ca.gov/BSC/Codes/Local-Jurisdictions-Code-Ordinances>.

² Susie Cagle, "Berkeley became first US city to ban natural gas. Here's what that may mean for the future," The Guardian, <https://www.theguardian.com/environment/2019/jul/23/berkeley-natural-gas-ban-environment>.

³ Paul Rogers, "PG&E officials grilled about automatic shut of valves," Mercury News, March 1, 2011, <https://www.mercurynews.com/2011/03/01/pge-officials-grilled-about-automatic-shut-off-valves-3/>.

In recommending this exception for multi-unit buildings in 2010, City staff intended to reduce the cost burden to property owners. For example, City staff were concerned that the ordinance would require very large multifamily buildings to install shut-off valves in every unit in a 50 unit building when completing a \$50,000 renovation.⁴

While financial costs are important, there will also likely be significant costs to human life and property resulting from natural gas infrastructure during seismic events that far outweigh the costs to property owners for installing shut-off valves. A more-tailored and comprehensive approach was adopted by the City of Los Angeles's 1997 policy in the wake of the Northridge Earthquake, requiring valves in all multifamily, condominium and commercial units when a permit for any addition, alteration or repair valued in excess of \$10,000 is taken out affecting the entire building, or in specific units affected by work in excess of \$10,000.⁵

This item proposes to apply the \$50,000 threshold for all work affecting multifamily, condominium and commercial buildings exclusive of work affecting the units and apply a \$10,000 threshold to work in excess of \$10,000 inclusive of any individual unit. In addition, this item proposes maintaining the current single-family home requirement when a permit is taken out of any addition, alteration or repair valued in excess of \$50,000.

Consistent with the Los Angeles code, the item removes the exception for commercial occupancies and uses in mixed use buildings of residential and non-residential occupancies with a single gas service line larger than 1 1/2 inches that serves the entire building. Berkeley City staff in 2010 previously suggested that pipes larger than 1 1/2 inches were marginally more expensive to retrofit with valves and therefore warranted an exception. Though upon further review, the few additional hundred dollars in labor and materials per valve does not warrant an exception due to ongoing risks to health and safety.

Berkeley is on top of one of California's most dangerous fault lines, the Hayward fault, making it prone to earthquakes. The extreme fire risk associated with natural gas infrastructure is illustrated by the 2017 U.S. Geological Survey stimulation of "a 7.0 quake on the Hayward fault line with the epicenter in Oakland." The agency's report predicted that "about 450 large fires could result in a loss of residential and commercial building floor area equivalent to more than 52,000 single-family homes and cause

⁴ "Installation of Automatic Gas Shut-off Valves," Berkeley Planning and Development Department, July 13, 2010, <https://www.cityofberkeley.info/recordsonline/api/Document/Af7NhvRQQKZ1%C3%81%C3%89xY9QpwmChW6QBqKp%C3%89scsKBclRXOVsvA1QlgXjP%C3%89Rs2zLVn2kCnCNjn918yaZSDbGqiogM WpBM%3D/>

⁵ City of Los Angeles Ordinance No. 171874, December 16, 1997, http://clkrep.lacity.org/onlinedocs/1995/95-0217-S1_ORD_171874_02-05-1998.pdf; See also, City of Los Angeles Plumbing Code Section 94.1217.0.

property (building and content) losses approaching \$30 billion.”⁶ The report identified ruptured gas lines as a key fire risk factor. This finding mirrors the destructive gas fires resulting from the Loma Prieta (1989) and Northridge (1994) earthquakes. According to the most recent census, 59.1% of units in Berkeley are occupied by renters.⁷ It is vital to extend the shut-off valve requirement to rental units to prioritize the health and safety of all Berkeley residents and the broader community.

Beyond extending this protection to large rental buildings during major renovations, this ordinance amends BMC 19.34 to mirror the City of Los Angeles’s code to require installing automatic shut-off valves prior to execution of a contract for sale in all buildings and units therein.

The transfer of property triggers various state and local building code requirements. For example, at time of sale the state health and safety code requires that, gas water heaters are seismically braced, anchored, or strapped.⁸ Other local ordinances related to environment, such as the BMC 19.81: the Building Energy Saving Ordinance, require energy efficiency reports prior to time of sale. The intention of Section 1209.4.2 is to ensure that all buildings that are sold in Berkeley include automatic gas shut-off valves, therefore enhancing seismic safety across the existing building stock.

FINANCIAL IMPLICATIONS

Staff savings realized from first responders not having to shut off valves manually in case of emergency.

Staff time to submit ordinance to the Building Standards Commission. In addition, building inspector staff time will be necessary to compliance with new provisions.

ENVIRONMENTAL SUSTAINABILITY

Mandating shut-off valves in rental units undergoing renovation and all units at sale will prevent the excess release of greenhouse gases (methane) due to gas leaks and fires during seismic events and other related emergencies.

CONTACT PERSON

Councilmember Kate Harrison, Council District 4, (510) 981-7140

ATTACHMENTS

1: Ordinance

⁶ “The HayWired earthquake scenario—Engineering implications,” U.S. Geological Survey, April 18, 2018, <https://pubs.er.usgs.gov/publication/sir20175013v2>.

⁷ “Bay Area Census: City of Berkeley” <http://www.bayareacensus.ca.gov/cities/Berkeley.htm>

⁸ Health and Safety Code § 18031.7, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=18031.7.&lawCode=HSC

AMENDING CHAPTER 19.34 OF THE BERKELEY MUNICIPAL CODE TO EXPAND
AUTOMATIC GAS SHUT-OFF VALVE REQUIREMENTS IN MULTIFAMILY,
CONDOMINIUM AND COMMERCIAL BUILDINGS UNDERGOING RENOVATIONS
AND TO ALL EXISTING BUILDINGS PRIOR TO EXECUTION OF A CONTRACT FOR
SALE OR CLOSE OF ESCROW

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Berkeley Municipal Code Section 19.36.040 is hereby amended to read as follows:

19.34.040 Gas Shut-Off Valves.

Chapter 12 of the 2016~~9~~ California Plumbing Code is adopted in its entirety subject to the modifications thereto which are set forth below.

1209.2 General Requirements for Gas Shut-Off Valves. Automatic gas shut-off valves installed either in compliance with this Section or voluntarily pursuant to a plumbing permit issued on or after the effective date of this Section, shall comply with the following:

1209.2.1 All valves shall:

1. Comply with all applicable requirements of the Berkeley Plumbing Code.
2. Be tested and listed by recognized testing agencies such as the Independent Laboratory of the International Approval Services (IAS), Underwriter's Laboratory (UL), International Association of Plumbing and Mechanical Officials (IAPMO) or any other agency approved by the State of California Office of the State Architect (OSA).
3. Be listed by the State of California Office of the State Architect (OSA).
4. Be installed on downstream side of the gas utility meter.
5. Be installed in accordance with the manufacturer's instructions.
6. Be installed in accordance with a plumbing permit issued by the City of Berkeley.
7. Provide a method for expedient and safe gas shut-off in an emergency.
8. Provide a capability for ease of consumer or owner resetting in a safe manner.

1209.2.2 Motion activated seismic gas shut-off valves shall be mounted rigidly to the exterior of the building or structure containing the fuel gas piping, unless otherwise specified in the manufacturer's installation instructions.

1209.3 Definitions

For the purpose of this Section terms shall be defined as follows:

AUTOMATIC GAS SHUT-OFF VALVE shall mean either a motion activated gas shut-off valve or device or an excess flow gas shut-off valve or device.

DOWNSTREAM OF GAS UTILITY METER shall mean all gas piping on the property owner's side of the gas meter and after the service tee.

EXCESS FLOW GAS SHUT-OFF VALVE shall mean an approved valve or device that is activated by significant gas leaks or overpressure surges that can occur when pipes rupture inside a structure. Such valves are installed at each appliance, unless otherwise specified by the manufacturer's installation instructions.

MOTION ACTIVATED GAS SHUT OFF VALVE shall mean an approved gas valve activated by motion. Valves are set to activate in the event of a moderate or strong seismic event greater than 5.0 on the Richter scale.

UPSTREAM OF GAS UTILITY METER shall mean all gas piping installed by the utility up to and including the meter and the utility's service tee.

1209.4 Devices When Required. Approved automatic gas shut-off or excess flow valves shall be installed as follows:

1209.4.1 New Construction. In any new building construction containing gas piping for which a building permit is first issued on or after the effective date of this Section.

1209.4.2 Existing Buildings. In any existing building, when any addition, alteration or repair is made for which a building permit is issued on or after the effective date of this Section and the valuation for the work exceeds \$50,000.

1209.4.2.1 Multifamily, Condominium and Commercial Buildings.

1. In any existing commercial, multifamily and condominium and commercial building, and applicable to all units and tenant spaces therein if the building is individually metered and lacks a central automatic shut-off valve downstream of the utility delivery point, when any addition, alteration or repair exclusive of individual units or tenant spaces is made for which a building permit is issued on or after the effective date of this Section and the valuation for the work exceeds \$50,000.
2. In any existing commercial, multifamily and condominium unit for all gas piping serving only those individual units, when any addition, alteration or repair inclusive of individual units or tenant spaces is made for which a building permit is issued on or after the effective date of this Section and the valuation for the work exceeds \$10,000.

1209.4.3 Sale of Existing Buildings.

The requirement to install seismic gas shutoff or excess flow shutoff valves shall apply

prior to entering into a contract of sale, or prior to the close of escrow when an escrow agreement has been executed in connection with a sale as follows:

1. in any building or structure, and all units therein when gas piping serving those units lacks a central automatic shut-off valve downstream of the utility delivery point; or
2. in an individual condominium unit for all gas piping serving that individual unit.

1209.4.4 Exceptions:

~~1.— Buildings with individually metered residential units when the building contains 5 or more residential units, unless the units are condominiums.~~

~~2.— For residential or mixed use condominium buildings, valves are required when the value of the work exceeds \$50,000 in any single condominium unit or when any work done outside of the units exceeds \$50,000.~~

~~3.— Commercial occupancies and uses in mixed use buildings of residential and non-residential occupancies with a single gas service line larger than 1 1/2 inches that serves the entire building.~~

14. Automatic gas shut-off valves installed with a building permit on a building prior to the effective date of this Section provided the valves remain installed on the building or structure and are adequately maintained for the life of the building or structure.

25. Automatic gas shut-off valves installed on a gas distribution system owned or operated by a public utility.

Section 2. The effective date of this amendment shall be January 1, 2020, or the effective adoption date of the 2019 California Building Standards Code, whichever is sooner.

Section 3. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

