SAN RAFAEL
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Agenda Item No: 6.b

Meeting Date: September 2, 2025

SAN RAFAEL CITY COUNCIL AGENDA REPORT

Department: Community Development

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Chief Building Official
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Sustainability Program Manager

City Manager Approval: _____

TOPIC: **TRIENNIAL BUILDING CODE ORDINANCE AMENDMENTS**

SUBJECT: **INTRODUCTION OF AN ORDINANCE AMENDING TITLE 12 (BUILDING REGULATIONS) OF THE MUNICIPAL CODE OF THE CITY OF SAN RAFAEL, BY REPEALING TITLE 12 AND AMENDING TITLE 12 THEREOF; ADOPTING THE 2025 EDITION OF THE CALIFORNIA BUILDING CODE, THE CALIFORNIA RESIDENTIAL CODE, THE CALIFORNIA MECHANICAL CODE, THE CALIFORNIA PLUMBING CODE, THE CALIFORNIA ELECTRICAL CODE, THE CALIFORNIA EXISTING BUILDING CODE, THE CALIFORNIA GREEN BUILDING STANDARDS CODE, THE CALIFORNIA ENERGY CODE, AND THE CALIFORNIA REFERENCED STANDARDS CODE WITH APPENDICES AND AMENDMENTS HEREIN; ADOPTING THE 2024 EDITION OF THE INTERNATIONAL PROPERTY MAINTENANCE CODE AND THE INTERNATIONAL POOL AND SPA CODE WITH AMENDMENTS; AMENDING CHAPTER 12.360 SINGLE-FAMILY MODEL REACH CODE – FLEXPATH; HEREIN; AND ADOPTING FINDINGS OF FACT SUPPORTING THE AMENDMENTS TO THE CODE**

RECOMMENDATION:
Staff recommend that the City Council introduce the Ordinance, waive further reading, refer to it by title only, and set a public hearing for Monday, September 15, 2025.

BACKGROUND:
The State of California Code of Regulations Title 24 construction codes are typically updated and published on a three-year cycle. The California Building Standards Commission publishes the triennial codes, and State law mandates that these codes become effective throughout California 180 days after the publication date. For this latest cycle, the publication date was July 1, 2025, meaning that the current cycle of State construction codes becomes effective on January 1, 2026. This fosters uniformity in fire prevention, life/safety, and construction standards statewide. Local jurisdictions are permitted to amend the published codes based on and to suit local climatic, geological, or topographical conditions.

The proposed ordinance adopts the latest version of California Title 24 construction codes. Specifically, this includes the 2025 California Building Code, 2025 California Residential Code, the 2025 California

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FOR CITY CLERK ONLY

Council Meeting:

Disposition:

Mechanical Code, the 2025 California Plumbing Code, the 2025 California Electrical Code, the 2024 International Property Maintenance Code, the 2024 International Pool and Spa Code, the 2025 California Existing Building Code, the 2025 California Green Building Standards Code, and the California Referenced Standard Code with appendices and local amendments. State law mandates that these codes become effective statewide on January 1, 2026, with or without the incorporation of local jurisdiction amendments. Building permit applications filed with the City before January 1, 2026, would be subject to the currently adopted codes and City ordinance.

The purpose of the codes is to establish the minimum requirements to safeguard the public health, safety, and general welfare through requirements for structural strength, means of egress, access to persons with disabilities, sanitation, adequate lighting and ventilation, and energy conservation; and to provide safety to firefighters and emergency responders during emergency operations. Below is a summary of each of these codes:

2025 California Building Code: The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

2025 California Residential Code: The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above-grade in height with a separate means of egress and their accessory structures not more than three stories above the grade plane in height.

2025 California Mechanical Code: The provisions of this code shall apply to the installation, alteration, repair, and replacement of mechanical systems, including equipment, appliances, fixtures, fittings, and appurtenances, including ventilating, heating, cooling, air conditioning, and refrigeration systems, incinerators, and other energy-related systems.

2025 California Plumbing Code: The provisions of this code shall apply to the installation, alteration, repair, and replacement of plumbing systems, including equipment, appliances, fixtures, fittings, and appurtenances, where connected to a water or sewage system, gas system, and all aspects of medical gas systems.

2025 California Electrical Code: The provisions of this code shall apply to the installation and removal of electrical conductors, equipment, and raceways; signaling and communications conductors, equipment, and raceways; and optical fiber cables and raceways to public and private properties, including yards, lots, parking lots, buildings, structures, mobile homes, recreational vehicles, and floating buildings.

2024 International Property Maintenance Code: The provision of this code shall apply to all existing residential and nonresidential structures and all existing premises and constitute minimum requirements and standards for premises, structures, equipment and facilities for light, ventilation, space, heating, sanitation, protection from the elements, life safety, safety from fire and other hazards, and for safe and sanitary maintenance; the responsibility of owners, operators and occupants; the occupancy of existing structures and premises, and for administration, enforcement and penalties.

2024 International Pool and Spa Code: The provisions of this code shall apply to the construction, alteration, movement, renovation, replacement, repair, and maintenance of aquatic recreation facilities, pools, and spas. The pools and spas covered by this code are either permanent or temporary and shall be only those that are designed and manufactured to be connected to a

circulation system and that are intended for swimming, bathing, or wading. The purpose of this code is to establish minimum standards to provide a reasonable level of safety and protection of life, health, property, and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, and maintenance or use of pools and spas.

2025 California Existing Building Code: The provisions of this code provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety, and welfare insofar as they are affected by the repair, alteration, change of occupancy, addition, and relocation of existing buildings. This code shall apply to the repair, alteration, change of occupancy, addition, and relocation of all existing buildings, regardless of occupancy.

2025 California Historical Building Code: The provisions of this code provide regulations for the preservation, restoration, rehabilitation, relocation, or reconstruction of buildings or properties designated as qualified historical buildings or properties. The intent is to facilitate and provide cost-effective solutions for the preservation and continuing use of historical buildings or properties, while providing reasonable safety for building occupants and access for persons with disabilities.

2025 California Energy Code: The provisions of this code shall set minimum efficiency requirements for new and renovated buildings, assuring reductions in energy use and emissions over the life of the building.

2025 California Green Building Standards Code: The provisions of this code improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices.

2025 California Referenced Standard Code: The provisions of this code provide construction standards.

Update: A version of this item was originally presented to the City Council on August 18, 2025. Instead of having a second reading at the September 2nd City Council meeting, we must revisit the item because, on the morning after its initial adoption on August 19th, staff were notified by the California Energy Commission (CEC) that they could not approve the ordinance as written. They are supportive of increasing the Target Scores for the FlexPath Reach Code until January 1, 2027, but stated that the January 1, 2029, increase could not be approved at this time since it would have to be an amendment to the 2028 State Code, which is not available yet. The Ordinance amendment under consideration at this September 2nd Council meeting reflects the direction from the CEC, including a new requirement that the State Codes Team develop jurisdiction-specific cost-effectiveness memos and have them referenced in any proposed Ordinances. This memo, specific to San Rafael, is provided as Attachment 2 to this report.

The public hearing on the proposed ordinance will be held at the next regularly scheduled meeting of the City Council on September 15, 2025, a procedure required because the ordinance adopts various adopted State codes by reference, with appropriate local amendments, per Government Code Sections 50022.1 through 50022.10. The City Council last adopted the State codes on November 21, 2022, and the most recent Reach Code on May 20, 2024.

ANALYSIS:

Assembly Bill (AB) 130, adopted in June 2025, prohibits cities from adopting local amendments to the residential code unless certain exceptions are met, including fire safety and home hardening. One of the exceptions allows local amendments if they are “substantially equivalent” to codes in effect September 30, 2025. Another allows local amendments if the amendments are necessary to implement an amendment adopted to align with a general plan adopted or approved on or before June 10, 2025, and

that permits mixed-fuel residential construction consistent with federal law while also incentivizing all-electric construction as part of an adopted greenhouse gas emissions reduction strategy. Staff believe these exceptions would apply to the City of San Rafael since the City Council adopted the initial FlexPath Reach Code on May 20, 2024, and since San Rafael maintains a qualified greenhouse gas emissions reduction strategy and has conforming policies in the General Plan 2040. These exceptions are reflected in the Findings in Attachment 1.

Many of the proposed local amendments, including Reach Codes, are carried over from previously adopted codes and have been adjusted for reference changes or format changes in the new codes. New amendments include a definition for "kitchen" and increasing the width of stair landings when a fire riser is present. Other amendments pertaining to fire safety, such as the International Pool and Spa Code and the International Property Maintenance Code, are included as well. Previously adopted electric vehicle (EV) amendments have been removed because the State Code has been improved to a similar standard.

An amendment to the Single-Family Model Reach Code – FlexPath is included as well, to proactively amend the target scores upward, which was the intention when the Code was adopted in 2024. Due to AB 130, this amendment allows the City to proceed with the original plan using a future implementation date, while meeting the September 30, 2025, effective date of the exceptions in AB 130. Target scores will increase for each building vintage (year of construction) as shown in Table 12.360 A-1 on page 11 of the Ordinance in Attachment 1. However, further increases for 2029 have not been included in the ordinance due to a recent ruling by the California Energy Commission disallowing code amendments in future triennial code cycles. Should data and feedback from the building community not support these new target scores, they would not need to be implemented at the discretion of the Chief Building Official. These amendments are all supported by the 2022 Cost-Effectiveness Study: Single Family Building Upgrades and subsequent memos commissioned by the California Statewide Energy Codes and Standards program. These are reflected in the Findings in Attachment 1 and the data in Attachments 2 and 3.

The proposed ordinance adopts the California Green Building Standards and incorporates them into the City's local building code. This is consistent with the action taken by the Council at the last code adoption hearings in 2013, 2017, 2019, and 2022. Staff may recommend adopting additional non-residential Reach Codes for the City Council in the future.

FISCAL IMPACT:
There is no fiscal impact associated with this action.

ENVIRONMENTAL REVIEW:
It has been determined that the proposed ordinance amendments are covered by the 'general rule' that the California Environmental Quality Act (CEQA) applies only to projects that have the potential to cause a significant, physical environmental impact. Under CEQA Section 15061(b)(3), the ordinance amendments are not subject to environmental review.

OPTIONS:
The City Council has the following options to consider on this matter:

1. Introduce the Ordinance and set the public hearing for adoption as proposed.
2. Introduce the Ordinance with amendments as directed by the Council at the meeting and set the public hearing for adoption.
3. Postpone the introduction of the Ordinance to allow amendments to be incorporated into the Ordinance. Should the City Council decide to postpone adoption of the Ordinance, the State codes will become effective on January 1, 2026, without the benefit of the recommended local amendments.

RECOMMENDED ACTION:
Staff recommend that the City Council introduce the Ordinance, waive further reading, refer to it by title only, and set a public hearing for Monday, September 15, 2025.

ATTACHMENT:
1. Draft Ordinance: Title 12, 2025 Building Codes
2. Cost-Effectiveness Results Summary - San Rafael
3. 2022 to 2025 FlexPath Memo

ORDINANCE NO. ____

AN ORDINANCE OF THE SAN RAFAEL CITY COUNCIL AMENDING TITLE 12 (BUILDING REGULATIONS) OF THE MUNICIPAL CODE OF THE CITY OF SAN RAFAEL, BY REPEALING TITLE 12 AND AMENDING TITLE 12 THEREOF; ADOPTING THE 2025 EDITION OF THE CALIFORNIA BUILDING CODE, THE CALIFORNIA RESIDENTIAL CODE, THE CALIFORNIA MECHANICAL CODE, THE CALIFORNIA PLUMBING CODE, THE CALIFORNIA ELECTRICAL CODE, THE CALIFORNIA EXISTING BUILDING CODE, THE CALIFORNIA GREEN BUILDING STANDARDS CODE, THE CALIFORNIA ENERGY CODE, AND THE CALIFORNIA REFERENCED STANDARDS CODE WITH APPENDICES AND AMENDMENTS HEREIN; ADOPTING THE 2024 EDITION OF THE INTERNATIONAL PROPERTY MAINTENANCE CODE AND THE INTERNATIONAL POOL AND SPA CODE WITH AMENDMENTS; AMEND CHAPTER 12.360 SINGLE-FAMILY MODEL REACH CODE – FLEXPATH; HEREIN AND ADOPTING FINDINGS OF FACT SUPPORTING THE AMENDMENTS TO THE CODES

THE CITY COUNCIL OF THE CITY OF SAN RAFAEL DOES ORDAIN AS FOLLOWS:

DIVISION 1. AMENDMENTS TO MUNICIPAL CODE.

Section 12.100.010 of the Municipal Code of the City of San Rafael is amended to repeal and replace the chapter with the following*:*

12.100.010 Adopted codes. The following recognized codes are hereby adopted by the City of San Rafael together with the supplements, listed changes, additions, and deletions as noted:

1. 2025 Edition, California Building Code (“CBC”), chapters 2 through 28, 30, 31, 32, 33, 35, and Appendices C, G, H, I, N, and O.
2. 2025 Edition, California Electrical Code (“CEC”).
3. 2025 Edition, California Energy Code (“CEgC”).
4. 2025 Edition, California Existing Building Code (“CEBC”), chapters 2 through 16 and Appendices.
5. 2025 Edition, California Green Building Construction Standards Code (“CalGreen”), chapters 1 through 8.
6. 2025 Edition, California Historical Building Code (“CHBC”)
7. 2025 Edition, California Mechanical Code (“CMC”) chapters 2 through 17.
8. 2025 Edition, California Plumbing Code (“CPC”), chapters 2 through 17 and Appendices A, C, D, and I.
9. 2025 Edition, California Referenced Standards Code.
10. 2025 Edition, California Residential Code (“CRC”), chapters 2 through 10, chapter 44, and Appendices BB, BF, BG, BI, BJ, BK, BL, BM, BO, and CI.
11. 2024 International Property Maintenance Code (“IPMC”) chapters 1 through 8 and Appendix A.
12. 2024 Edition, International Swimming Pool and Spa Code (“ISPSC”), chapters 2 through 11.

CHAPTER 12.200 - CALIFORNIA BUILDING CODE AMENDMENTS

Chapter 12.200 of the Municipal Code of the City of San Rafael is hereby repealed in its entirety

and replaced with the following:

12.200.010 General. For purposes of this Chapter:

Deleted language from the base code has been ~~stricken through~~.
Added language to the base code has been underlined.

12.200.020 Amendments. The 2025 California Building Code is amended or modified as follows:

Amend Section 202 to read as follows:

The definition of "Kitchen" is deleted and added to read as follows:

KITCHEN. An area in which the preparation of food for eating occurs (that has provisions for cooking or heating of food; washing and storing of dishware and utensils; and refrigeration or storing of food).

The definition of "Substantial Remodel" is added to read as follows:

SUBSTANTIAL REMODEL. Substantial remodel shall mean the alteration of any structure which, combined with any additions to the structure, performed within any three (3) year period, affects a floor area which exceeds fifty percent (50%) of the existing floor area of the structure. When any changes are made in the building, such as walls, columns, beams or girders, floor or ceiling joists and coverings, roof rafters, roof diaphragms, foundations, piles or retaining walls or similar components, the floor area of all rooms affected by such changes shall be included in computing floor areas for purposes of applying this definition. This definition does not apply to the replacement and upgrading of residential roof coverings or exterior wall finishes.

Amend Section 903.2 is amended to read as follows:

903.2 Where Required. Approved automatic fire sprinkler systems ~~in new buildings and structures~~ shall be provided in the locations described in Sections 903.2.1 through 903.2.12 and 903.2.14 through 903.2.21 and in all of the following:

1. Newly constructed buildings or facilities, except detached Group U occupancies not more than one thousand (1,000) square feet in floor area and provided with exterior wall and opening protection as per Table 602 of the California Building Code.
2. Newly created, attached, second dwelling units which meet the definition of a substantial remodel.
3. All other existing buildings, fire sprinkler systems may be required by the fire chief in accordance with the following:
    3.1. All buildings where improvements occur during any three (3) year period that cumulatively meet the definition of a substantial remodel.
    3.2. All buildings, except R-3 occupancies, in excess of three thousand (3,000) square

feet that have more than ten percent (10%) floor area added within any three (3) year period. Exceptions may be granted by the fire chief when alternate means of protection are installed as approved by the fire code official.

3.3. A change in the use of a building that results in a higher fire or life safety hazard when the square footage of the area changing use is more than 50% of the square footage of the existing building.

3.4. Where fire sprinklers are required by provisions of this code, they shall be extended throughout the building.

4. All public storage facilities. Exceptions may be granted by the fire chief when alternate means of protection are installed as approved by the fire code official

5. All tunnels used for the transportation of people or any type of vehicle.

The requirements for fire sprinkler systems in this code section are not meant to disallow the provisions for area increase, height increase, or fire-resistive-rated substitution if otherwise allowed by this code.

Exception [Unchanged.]

Section 903.2.1 through 903.2.17. [Unchanged.]

Amend Section 903.2.18 by deleting the exception.

Section 903.2.19. [Unchanged.]

Amend Section 909.2. by adding the following sentence at the end of the paragraph:

Replacement of an existing smoke alarm that is hardwired and/or interconnected shall be made with an alarm of the same functionality.

Amend Section 1011.6 to read as follows:

1011.6 Stairway Landings. There shall be a floor or landing at the top and bottom of each stairway. The width of landings, measured perpendicularly to the direction of travel, shall be not less than the width of stairways served. Every landing shall have a minimum depth, measured parallel to the direction of travel, equal to the width of the stairway or 48 inches (1219 mm), whichever is less. Every landing with a fire riser or other fire system apparatus shall increase the minimum required depth, measured parallel to the direction of travel, by an additional 8 inches (203 mm). Doors opening onto a landing shall not reduce the landing to less than one-half the required width. When fully open, the door shall not project more than 7 inches (178 mm) into the required width of a landing. Where wheelchair spaces are required on the stairway landing in accordance with Section 1009.6.3, the wheelchair space shall not be located in the required width of the landing and doors shall not swing over the wheelchair spaces. Exceptions [Unchanged.]

Amend Section 1015.2 by adding the following concluding sentence:

Guards are also required at waterfront bulkheads, fixed piers, and gangways.

Add Section 1015.8.2 & 1015.8.3 to read as follows:

1015.8.2 Existing Hotels. The provisions of sections 1015.8 shall apply retroactively to all existing hotels.

1015.8.3 Clear area adjacent to hotel window opening. There shall be no furniture, fixed or movable, placed within thirty-six inches (36") of any openable portion of a window. Hotels shall also provide notice to prospective guests of this requirement.

Amend Section 1505.1 by deleting the last sentence and the referenced Table 1505.1.
Exception [Unchanged]

Amend Section 1505.1.1 to read as follows:

1505.1.1 Roofing requirements within Fire Hazard Severity Zone or in the Wildland-Urban Interface (WUI). Roofing requirements for structures located within Fire Hazard Severity Zones or in the Wildland-Urban Interface Fire (WUI) shall be a fire-retardant roof covering that is at least Class A and shall also comply with Section 705A.

Amend Section 1505.1.2 to read as follows:

1505.1.2 Roof coverings within all other areas. The entire roof covering of every existing structure, where more than 50% of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class ~~C~~ A fire classification.

All roof coverings that are not at least Class A shall be a fire-retardant roof covering that is at least Class A by May 31, 2027.

Add Section 1807.4 to read as follows:

1807.4 Wooden retaining walls. Wooden retaining walls may not be used to support any building surcharge or vehicular way. In addition, wooden retaining walls shall not be employed to retain soils above or below a building where failure of the wall may subject the building to damage.

CHAPTER 12.210 - CALIFORNIA ELECTRICAL CODE AMENDMENTS

12.210.010 No amendment. The 2025 California Electrical Code is not amended or modified.

CHAPTER 12.220 - CALIFORNIA ENERGY CODE AMENDMENTS

12.220.010 No amendment. The 2025 California Energy Code is not amended or modified.

CHAPTER 12.230 - CALIFORNIA EXISTING BUILDING CODE AMENDMENTS

12.230.010 General. For purposes of this Chapter:

Deleted language from the base code has been ~~stricken through~~.
Added language to the base code has been underlined.

12.230.020 Amendments. The 2025 California Existing Building Code is amended or modified as follows:

Add Section 406.2.1 & 406.2.2 to read as follows:

406.2.1 Existing Hotels. The provisions of section 406.2 shall apply retroactively to all existing hotels.

406.2.2 Clear area adjacent to hotel window opening. There shall be no furniture, fixed or movable, placed within thirty-six inches (36") of any openable portion of a window. Hotels shall also provide notice to prospective guests of this requirement.

CHAPTER 12.235 - CALIFORNIA GREEN BUILDING CONSTRUCTION STANDARDS CODE AMENDMENTS

12.235.010 No amendment. The 2025 California Green Building Construction Standards Code is not amended or modified.

CHAPTER 12.240 - CALIFORNIA HISTORICAL BUILDING CODE AMENDMENTS

12.240.010 No amendment. The 2025 California Historical Building Code has not been amended or modified.

CHAPTER 12.245 - CALIFORNIA MECHANICAL CODE AMENDMENTS

12.245.010 No amendment. The 2025 California Mechanical Code is not amended or modified.

CHAPTER 12.250 - CALIFORNIA PLUMBING CODE AMENDMENTS

12.250.010 No amendment. The 2025 California Plumbing Code is not amended or modified.

CHAPTER 12.255 - CALIFORNIA RESIDENTIAL CODE AMENDMENTS

12.255.010 General. For purposes of this Chapter:

Deleted language from the base code has been ~~stricken through~~.

Added language to the base code has been underlined.

12.255.020 Amendments. The 2025 California Residential Code is amended or modified as follows:

Amend Section R202 to read as follows:

The definition of "Kitchen" is deleted and added to read as follows:

KITCHEN. An area in which the preparation of food for eating occurs (that has provisions for cooking or heating of food; washing and storing of dishware and utensils; and refrigeration or storing of food).

The definition of "Substantial Remodel" is added to read as follows:

SUBSTANTIAL REMODEL. Substantial remodel shall mean the alteration of any structure, which, combined with any additions to the structure, performed within any three (3) year period, affects a floor area that exceeds fifty percent (50%) of the existing floor area of the structure. When any changes are made in the building, such as walls, columns, beams or girders, floor or ceiling joists and coverings, roof rafters, roof diaphragms, foundations, piles or retaining walls or similar components, the floor area of all rooms affected by such changes shall be included in computing floor areas for purposes of applying this definition. This definition does not apply to the replacement and upgrading of residential roof coverings or exterior wall finishes.

Delete exception to Section R309.1 and amend Section R309.1 to read as follows:

R309.1 Townhouse automatic fire sprinkler systems. An automatic residential fire sprinkler system shall be installed in all newly constructed townhouses and in existing townhouses where alterations and/or additions to the existing structure, performed over any 3-year period, qualify as a "Substantial Remodel" as defined in this code. Any addition to a building with an existing fire sprinkler system shall have that system extended to the new portions of the building, irrespective of the size of the addition.

R309.1.1 [Unchanged]

Amend Section R309.2 to read as follows:

R309.2 One-and two-family dwellings automatic fire systems. An Automatic residential fire sprinkler system shall be installed in all newly constructed one-and two-family dwellings and in existing one-and two-family dwellings where alterations and/or additions to the existing structure, performed over any 3-year period, qualify as a "Substantial Remodel" as defined in this code. Any addition to a building with an existing fire sprinkler system shall have that system extended to the new portions of the building, irrespective of the size of the addition.

R309.2.1. [Unchanged]

Amend Section R309.3.1.2 by deleting exception #4.

Amend Section R310.7.2 by adding the following:

Smoke alarms shall be tested and maintained in accordance with the manufacturer's instructions. Smoke alarms that no longer function shall be replaced. Replacement of an existing smoke alarm that is hardwired and/or interconnected shall be made with an alarm of the same functionality.

Amend Section R902.1.1 to read as follows:

R902.1.3 Roofing requirements with Fire Hazard Severity Zones or a Wildland-Urban Interface (WUI) area. Roofing requirements for structures located within Fire Hazard Severity Zones or in a Wildland-Urban Interface (WUI) area shall be a fire-retardant roof covering that is at least Class A and shall also comply with Part 7, California Wildland-Urban Interface Code.

Amend Section R902.1.2 to read as follows:

R902.1.2 Roof coverings in all other areas other than the Fire Hazard Severity Zones or a Wildland-Urban Interface (WUI) area. The entire roof covering of every existing structure where more than 50% of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class ~~C~~ A fire classification and shall also comply with Part 7, California Wildland-Urban Interface Code.

All roof coverings that are not at least Class A shall be a fire-retardant roof covering that is at least Class A by May 31, 2027.

CHAPTER 12.260 – INTERNATIONAL PROPERTY MAINTENANCE CODE AMENDMENTS

12.260.010 General. For purposes of this Chapter:

Deleted language from the base code has been ~~stricken through~~.
Added language to the base code has been underlined.

12.260.020 Amendments. The 2024 International Property Maintenance Code is amended or modified as follows:

Delete Section 101.1, 103, 104, 106, and 107

Amend Section 109.4 to read as follows:

109.4 Notice. Whenever the code official determines that there has been a violation of this code or has grounds to believe that a violation has occurred, notice shall be given in the manner prescribed in Section 1.08.060 of the San Rafael Municipal Code. ~~109.4.1 and 109.4.2 to the owner or the owner's authorized agent, for the violation as specified in this code. Notices for condemnation procedures shall comply with this section.~~

Delete Section 109.4.1 and 109.4.2.

Amend Sections 110.2, 110.3, and 110.4 to read as follows:

110.2 Temporary safeguards. Notwithstanding other provisions of this code, whenever, in the opinion of the code official, there is imminent danger due to an unsafe condition, the code official ~~shall~~ may order the necessary work to be done, including the boarding up of openings, to render such structure temporarily safe whether or not the legal procedure herein described has been instituted; and shall cause such other action to be taken as the code official deems necessary to meet such emergency.

110.3 Closing streets. When necessary for public safety, the code official ~~shall~~ may temporarily close structures and close or order the authority having jurisdiction to close, sidewalks, streets, public ways and places adjacent to unsafe structures, and prohibit the same from being utilized.

110.4 Emergency repairs. For the purposes of this section, the code official ~~shall~~ may employ the necessary labor and materials to perform the required work as expeditiously as possible.

Delete Sections 110.5 and 110.6.

Amend Sections 111.2 and 111.3 to read as follows:

111.2 Notices and orders. All notices and orders shall comply with ~~Section 109.4~~ Chapter 1.46 of the San Rafael Municipal Code.

111.3 Failure to comply. If the owner of a premises fails to comply with a demolition order within the time prescribed, the code official ~~shall~~ may cause the structure to be demolished and removed, either through the forces of the an available public agency or by contract or arrangement with private persons, and the cost of such demolition and removal shall be charged against the real estate upon which the structure is located and shall be a lien upon such real estate.

Delete Sections 112 and 113.

Amend Section 202 to read as follows:

The definition for "Code Official" is added as follows:

CODE OFFICIAL. Where used in this code, the term code official shall mean the planning manager, code enforcement manager, or the building official of the City of San Rafael, and their designees.

Amend Section 302.4 to read as follows:

302.4 Weeds. Premises and exterior property shall be maintained free from weeds or plant growth in excess of 6 inches tall. Noxious weeds shall be prohibited. Weeds shall be defined as all grasses, annual plants and vegetation, other than trees or shrubs, provided however, this term shall not include cultivated flowers and gardens. [Rest of section to remain unchanged.]

Amend Section 304.14 to read as follows:

304.14 Insect Screens. ~~During the period from [DATE] to [Date] every~~ Every door, window and other outside opening required for ventilation of habitable rooms, food preparation areas, food service areas or any areas where products to be included or utilized in food for human consumption are processed, manufactured, packaged or stored shall be supplied with approved tightly fitting screens of not less than 16 mesh per inch (16 mesh per 25 mm),and every screen door used for insect control shall have a self-closing device in good working condition.
Exception [Unchanged.]

Amend Section 308.2.2 to add these words to the end of the sentence:

or securing the doors in an approved manner.

Amend Section 308.3.1 by adding the following:

Every person maintaining or using any solid waste can or receptacle shall keep the same clean and sanitary.

Amend Section 308.3.2 by adding the following:

Within all residential districts in the city, no person shall use, locate, or maintain (store) any solid waste can, garbage container, or other waste receptacle within the public right-of-way other than on the day of removal service. Such waste receptacles shall be stored out of public view on non-service dates, whenever practical, or stored nearest the main structure.

Amend Section 602.3 to read as follows:

602.3 Heat supply. Every owner and operator of any building who rents, leases or lets one or more dwelling units or sleeping units on terms, either expressed or implied, to furnish heat to the occupants thereof shall supply heat ~~during the period from [DATE] to [DATE]~~ to maintain a temperature of not less than 68°F (20°C) in all habitable rooms, bathrooms and toilet rooms.
Exceptions [Unchanged.]

Amend Section 602.4 to read as follows:

602.4 Occupiable work spaces. Indoor occupiable work spaces shall be supplied with heat ~~during the period from [DATE] to [DATE]~~ to maintain a temperature of not less than 65°F (18°C) during the period the spaces are occupied.
Exceptions [Unchanged.]

CHAPTER 12.265 – INTERNATIONAL SWIMMING POOL AND SPA CODE AMENDMENTS

12.265.010 General. For the purposes of this Chapter:

Deleted language from the base code has been ~~stricken through~~.
Added language to the base code has been underlined.

12.265.020 Amendments. The 2024 International Swimming Pool and Spa Code is amended

or modified as follows:

Amend Section 202 to add the following definition:

> **PRIVATE SWIMMING POOL** means a swimming pool or pool located at and intended primarily for the use of the occupants of a single or two-family dwelling unit.

Amend Section 301 by adding the following:

> **301.2 Existing swimming pools.** Any person who owns or is in possession of an existing private swimming pool that does not conform to the requirements of this section shall make the pool conform to the requirements of this section within ninety (90) days from its effective date.
>
> > **Exceptions:** The chief building official is hereby authorized to exempt any private swimming pool from the provisions of the Health and Safety Code 115922:
> >
> > 1. If it is secured from unauthorized entry by a natural or artificial barrier that provides the same or a greater degree of protection than would an enclosure.
>
> An application for exception shall be filed in writing with the chief building official. The application shall contain a brief statement evidencing that the applicant is entitled to the exception and such other information as the chief building official may prescribe.

Delete Sections 302 and 305.

Amend Section 305 by adding the following:

> **305.1 General.** Pool barriers and enclosures shall meet the requirements of the California Swimming Pool Safety Act. The text in CBC 3109.2 contains the statutory language that is required to be duplicated and published in the California Code of Regulations, Title 24. As such, the section numbers reflect those within the Health and Safety Code.
>
> **305.2 Enclosure required for private swimming pools.** Every person who owns or is in possession of any land on which there is situated a private swimming pool shall secure the pool from unauthorized entry by an enclosure that meets all of the requirements of the Health and Safety Code 115923. The enclosure shall be specifically designed to prevent unauthorized entry from adjacent private and/or public property. This enclosure shall be in addition to the "safety features" required by the Health and Safety Code 115922.

Chapter 12.360 of the Municipal Code of the City of San Rafael is amended to read as follows, with additions shown as underlined and deletions shown with ~~strikethrough~~:

CHAPTER 12.360 – SINGLE-FAMILY MODEL REACH CODE - FLEXPATH

> **12.360.010 Purpose.** The purpose of this chapter is to specify additional energy efficiency and renewable energy measures for additions, alterations and remodels of Covered Single-Family Projects.
>
> **12.360.20 Definitions.** For the purpose of this chapter, the following definitions shall apply:

1. "Single-Family Building" shall mean any of the following:
    a. Residential building of Occupancy Group R-3 or under the California Residential Code with two or fewer dwellings.
    b. A townhouse.
    c. A building of Occupancy Group R-3.1, or
    d. A building of Occupancy Group U when located on a residential site.

2. "Covered Single-Family Project" shall mean the addition, alteration, or remodel of a Single-Family Building originally permitted for construction before 2011 that affects a floor area which exceeds 500 square feet of existing floor area and/or new floor area. When any changes are made in the building, such as walls, columns, beams or girders, floor or ceiling joists and coverings (subfloor and drywall), roof rafters, roof diaphragms, foundations, piles or retaining walls or similar components, the floor area of all rooms affected by such changes shall be included in computing floor areas for purposes of applying this definition.

These definitions does not apply to project scopes that are solely limited to any of the following: the replacement and upgrading of residential roof coverings, exterior wall finishes and/or floor finishes; alterations that add no more than 75 square feet of fenestration; alterations that add no more than 16 square feet of skylight area with a maximum U-factor of 0.55 and a maximum SHGC of 0.30; alterations that are limited to providing access for persons with disabilities; or voluntary state seismic retrofit program. A Covered Single-Family Project shall not include a project that is a newly constructed building under the California Energy Code, Title 24, Part 6.

12.360.020 Scope. In addition to all requirements of the California Energy Code applicable to Single Family Building additions and alterations, the provisions of this chapter shall apply to all Covered Single-Family Projects.

12.360.020 Requirements. A Covered Single-Family Project shall install a set of measures based on the building vintage from the Measure Menu in Table 12.360 B, to achieve a total Measure Point Score that is equal to or greater than the Target Score in Table 12.360 A. In addition, all mandatory measures listed in Table 12.360 B shall be installed. The installed measures shall meet the specifications in Table 12.360 C.

Beginning January 1, 2027, or later as determined by the Chief Building Official, Covered Single Family Projects shall install a set of measures based on the building vintage from the Measure Menu in Table 12.360 B, to achieve a total Measure Point Score that is equal to or greater than the Target Score in Table 12.360 A-1. In addition, all mandatory measures listed in Table 12.360 B shall be installed. The installed measures shall meet the specifications in Table 12.360 C.

Building vintage is the year in which (1) a building permit for construction of the structure was submitted, as documented by building department records, or (2) a building permit was issued for an addition or alteration that satisfied the Performance Standards (California Energy Code, Title 24, Part 6, Section 150.1(b)) in effect at time of building permit issuance, whichever is later. Unless otherwise specified, the requirements shall apply to the entire dwelling unit, not just the additional or altered portion. Measures from the Measure Menu table that already exist in the home may be counted towards compliance with these requirements. Measures

from the Measure Menu table that are to be installed to satisfy requirements under the California Energy Code, Title 24, Part 6, may not count towards compliance with these requirements. Where these requirements conflict with other California Energy Code requirements, the stricter requirements shall prevail.

Exceptions

1. If the applicant demonstrates that the Energy Budget of the building under the proposed project would be less than or equal to the Energy Budget of the building under the proposed project if it included any set of measures that would achieve compliance under this chapter 12.360. For purposes of this section, "Energy Budget" shall have that meaning set forth in CBC section 100.1(b), as that section may be amended.

2. Mobile Homes, Manufactured Housing, or Factory-built Housing as defined in Division 13 of the California Health and Safety Code (commencing with Section 17000 of the Health and Safety Code).

3. Due to conditions specific to the project, if it is technically or economically infeasible to achieve compliance, the Building Official may reduce the Target Score and/or waive some or all of the mandatory requirements.

4. A measure that is necessary for compliance is prohibited because of a covenant or other deed restriction on the property, such as a homeowners' association covenant.

5. The Building Official may reclassify the vintage of the building based on existing conditions.

6. An applicant who resides in the dwelling unit and qualifies as a low-income utility customer, or is the owner of the dwelling unit which is occupied by a dependent who qualifies as a low-income utility customer, may comply by either a) installing the duct sealing measure, the lighting measure and water heating package, or b) installing at least 1 kW of solar PV that meets the requirements of 2022 Title 24 Reference Appendix JA11. A low-income utility customer is anyone who is eligible for the California Alternative Rates for Energy (CARE) or Family Electric Rate Assistance Program (FERA) ~~program~~. A Covered Single-Family Project that consists solely of medically necessary improvements or solely of seismic safety improvements.

7. Nothing in this ordinance shall be construed to prohibit any one appliance covered by the Energy Policy and Conservation Act (EPCA) (42 U.S.C. 6292(a)). Should an applicant establish that this ordinance, as applied, prohibits a covered appliance in the applicant's project, the Building Official shall waive that portion of the ordinance causing such prohibition.

Table 12.360 A
Target Scores, Climate Zone 2

Building Vintage	Pre-1978	1978-1991	1992-2010
Target Score	12	8	40*

*Note: 1992-2010 Building Vintages are only required to complete the Mandatory Lighting Measure if not already complete.

Table 12.360 A-1
Target Scores, Climate Zone 2
(effective January 1, 2027)

Building Vintage	Pre-1978	1978-1991	1992-2010
Target Score	16	9	~~60~~*

*Note: 1992-2010 Building Vintages are only required to complete the Mandatory Lighting Measure if not already complete.

Table 12.360 B
Measure Menu, Climate Zone 2

ID	Measure	Building Vintage		
		Pre-1978	1978-1991	1992-2010
E1	Lighting Measures	Mandatory		
E2	Water Heating Package	1	1	1
E3	Air Sealing	2	2	1
E4	Attic Insulation (R-38)	6	2	1
E5	Duct Sealing	6	4	1
E6	New Ducts + Duct Sealing	9	6	2
E7	Windows	5	3	3
E8	Wall Insulation (R-13~~3~~15)	7	--	--
E10	Raised floor insulation (R-19)/(R-30)	8/10	8/9	--
FS1	Heat Pump Water Heater Replacing Gas	12	12	12
FS2	High Eff. Heat Pump Water Heater Replacing Gas	14	14	14
FS3	Heat Pump Water Heater Replacing Electric	4	4	4
FS4	High Eff. Heat Pump Water Heater Replacing Electric	6	6	6
FS5	Heat Pump Space Heater	23	18	15
FS6	High Eff. Heat Pump Space Heater	25	19	17
FS7	Dual Fuel Heat Pump Space Heater	20	15	14
FS8	Heat Pump Clothes Dryer	2	2	2
FS9	Induction Cooktop	1	1	1
PV	Solar PV	16	15	13

The measures in the Measure Menu shall conform to the specifications in Table 12.360C.

Table 12.360 C

Measure Specifications

ID	Energy Measure Specification
Energy Measures	
E1	Mandatory - Lighting Measures – ~~Replace all interior and exterior screw-in incandescent, halogen, and compact fluorescent lamps with LED lamps. Install photocell controls on all exterior lighting luminaires.~~ Install lighting with an efficiency of 45 lumens per watt or greater in all interior and exterior screw-in fixtures. Install photocell, occupancy sensor, or energy management system controls that meet the requirements of 150.0(k)3 in all outdoor lighting permanently mounted to a residential building or to other buildings on the same lot.
E2	Water Heating Package: Insulate all accessible hot water pipes with pipe insulation a minimum of ¾ inch thick. This includes insulating the supply pipe leaving the water heater, piping to faucets underneath sinks, and accessible pipes in attic spaces or crawl spaces. Upgrade fittings in sinks and showers to meet current California Green Building Standards Code (Title 24, Part 11) Section 4.303 water efficiency requirements. Exception: Upgraded fixtures are not required if existing fixtures have rated or measured flow rates of no more than ten percent greater than the ~~2022~~ 2025 California Green Building Standards Code (Title 24, Part 11) Section 4.303 water efficiency requirements.
E3	Air Sealing: Seal all accessible cracks, holes, and gaps in the building envelope at walls, floors, and ceilings. Pay special attention to penetrations including plumbing, electrical, and mechanical vents, recessed can light luminaires, and windows. Weather-strip doors if not already present. Verification shall be conducted following a prescriptive checklist that outlines which building aspects need to be addressed by the permit applicant and verified by an inspector. Compliance can also be demonstrated with blower door testing conducted by a certified ~~HERS~~ ECC Rater no more than three years prior to the permit application date that either: a) shows at least a 30 percent reduction from pre-retrofit conditions; or b) shows that the number of air changes per hour at 50 Pascals pressure difference (ACH50) does not exceed ten for Pre-1978 vintage buildings, seven for 1978 to 1991 vintage buildings and five for 1992-2010 vintage buildings. If combustion appliances are located within the pressure boundary of the building, conduct a combustion safety test by a certified ECC Rater or a professional certified by the Building Performance Institute, in accordance with the BPI Technical Standards for the Building Analyst Professional. ~~professional certified by the Building Performance Institute in accordance with the ANSI/BPI-1200-S-2017 Standard Practice for Basic Analysis of Buildings, the Whole House Combustion Appliance Safety Test Procedure for the Comfortable Home Rebates Program 2020 or the California Community Services and Development Combustion Appliance Safety Testing Protocol.~~
E4	R-38 Attic Insulation: Attic insulation shall be installed to achieve a weighted assembly U-factor of 0.025 or insulation installed at the ceiling level shall have a thermal resistance of R-38 or greater for the insulation alone. Recessed downlight luminaires in the ceiling shall be covered with insulation to the same depth as the rest of the ceiling. Luminaires not rated for insulation contact must be replaced or fitted with a fire-proof cover that allows for insulation to be installed directly over the cover. Exception: In buildings where existing R-30 is present and existing recessed downlight luminaires are not rated for insulation contact, insulation is not required to be installed over the luminaires.
E5	Duct Sealing: Air seal all space conditioning ductwork to meet the requirements of the 2025 Title 24, Part 6, Section ~~California Energy Code~~ 150.2(b)1E. The duct system

	must be tested by a ~~HERS~~ ECC Rater no more than three years prior to the Covered Single Family Project permit application date to verify the duct sealing and confirm that the requirements have been met. This measure may not be combined with the New Ducts and Duct Sealing measure in this Table. Exception: Buildings without ductwork or where the ducts are in conditioned space.
E6	New Ducts, R-6 insulation + Duct Sealing: Replace existing space conditioning ductwork with new R-6 ducts that meet the requirements of ~~2022~~ 2025 Title 24 Section 150.0(m)11. This measure may not be combined with the Duct Sealing measure in this Table. To qualify, a preexisting measure must have been installed no more than three years before the Covered Single Family Project permit application date.
E7	Windows: Replace at least 50% of existing windows with high-performance windows with an area-weighted average U-factor no greater than 0.~~30~~27.
E8	R-~~13~~ 15 Wall Insulation: Install wall insulation in all exterior walls to achieve a weighted U-factor of ~~0.102~~ 0.095 or install wall insulation in all exterior wall cavities that shall result in an installed thermal resistance of R-~~13~~15 or greater for the insulation alone.
E9	Reserved for future use
E10	R-19 / R-30 Floor Insulation: Raised-floors shall be insulated such that the floor assembly has an assembly U-factor equal to or less than U-0.037 / U-~~0.034~~0.028 or shall be insulated between wood framing with insulation having an R-value equal to or greater than R-19 / R-30.
Fuel Substitution Measures	
FS1	Heat Pump Water Heater (HPWH) Replacing Gas: Replace the existing natural gas water heater with a heat pump water heater that meets the requirements of Sections 110.3 and 150.2(b)1.H.iii.b.
FS2	High Efficiency Heat Pump Water Heater (HPWH) Replacing Gas: Replace the existing natural gas water heater with a heat pump water heater with a Northwest Energy Efficiency Alliance (NEEA) Tier 3 or higher rating that also meets the requirements of Sections 110.3 and 150.2(b)1.H.iii.c.
FS3	Heat Pump Water Heater (HPWH) Replacing Electric: Replace the existing electric resistance water heater with a heat pump water heater that meets the requirements of Sections 110.3 and 150.2(b)1.H.iii.b.
FS4	High Efficiency Heat Pump Water Heater (HPWH) Replacing Electric: Replace the existing electric resistance water heater with a heat pump water heater with a Northwest Energy Efficiency Alliance (NEEA) Tier 3 or higher rating.
FS5	Heat Pump Space Heater: Replace all existing gas and electric resistance primary space heating systems with an electric-only heat pump system that also meets the requirements of Sections 110.3 and 150.2(b)1.H.iii.c.
FS6	High Efficiency Heat Pump Space Conditioning System~~Heater~~: Replace all existing gas and electric resistance primary space heating systems with an electric-only heat pump system that meets the requirements of Sections 110.3 and 150.2(b)1.C, 150.2(b)1.E, 150.2(b)1.F, and 150.2(b)1.G and one of the following: A. A ducted electric-only heat pump system with a SEER2 rating of 16.5 or greater, an EER2 rating of 12.48 or greater and an HSPF2 rating of 9.5 or greater; or B. A ductless mini-split heat pump system with a SEER2 rating of 14.3 or greater, an EER2 rating of 11.7 or greater and an HSPF2 rating of 7.5 or greater
FS7	Dual Fuel Heat Pump Space Heater: Either

	A. Replaces all existing gas and electric resistance primary heating systems with a hybrid gas and electric heat pump system, or B. ~~Install~~ an electric-heat pump system in tandem with a gas furnace and ~~install~~ controls ~~to operate the heat pump~~ to use the ~~existing~~ gas furnace for backup heat only.
FS8	Heat Pump Clothes Dryer: Replace the existing electric resistance clothes dryer with a heat pump dryer with no resistance element and cap the gas line.
FS9	Induction Cooktop: Replace all existing gas and electric resistance stove tops with an ~~inductive~~ induction stove top and cap the gas line.
Solar PV and Electric-Readiness Measures	
PV	~~Solar PV + Electric Ready Pre-Wire: Install a solar PV system that meets the requirements of California Energy Code Section 150.1(c)14. In addition, upgrade the panelboard to meet the requirements of Item ER1 in this Table and install any one other measures from Item ER2.~~ Solar PV + Electric Ready Pre-Wire: Install a solar PV system that meets the requirements of California Energy Code Section 150.1(c)14. In addition, for existing PV systems that had been installed prior to the application date of the current project, install any one measure from the list below. A. Heat Pump Water Heater Ready, as specified in California Energy Code Section 150.0(n)1. B. Heat Pump Space Heater Ready, as specified in California Energy Code Section 150.0(t). C. Electric Cooktop Ready, as specified in California Energy Code Section 150.0(u). D. Electric Clothes Dryer Ready, as specified in California Energy Code Section 150.0(v). E. Energy Storage Systems (ESS) Ready, as specified in California Energy Code Section 150.0(s). F. EV Charger Ready. Install a dedicated 208/240-volt branch circuit as specified in the California Green Building Code, Title 24, Part 11, Section A4.106.8.1, which otherwise applies to new construction.

DIVISION 2 FINDINGS.

California Health and Safety Code Sections 17958, 17958.5, 17958.7, and 18941.5 allow the City, by ordinance, to make modifications or changes to building standards within the California Building Standards Code in Title 24 of the California Code of Regulations and other regulations adopted pursuant to Health and Safety Code Section 17922.

The Health and Safety Code requires such changes to be determined to be reasonably necessary because of local climatic, geologic, or topographic conditions.

The Health and Safety Code requires that the City, before making any modifications or changes, make an express finding that each such modification or change is needed.

The Health and Safety Code requires such findings to be made available as a public record and a copy of such findings to be filed with the California Building Standards Commission.

Staff has recommended that changes and modifications be made to the California Building Standards Code in Title 24 of the California Code of Regulations as reasonably necessary due to the unique local climatic, geologic, or topographic conditions in the City of San Rafael.

The City Council finds that certain local climatic, geologic, or topographic conditions exist as follows:

A. The City of San Rafael has within its borders and along its boundaries significant areas of grass, brush, and heavily forested lands. These hazardous conditions present an exceptional and continuing fire danger to the residents of the community due to the difficulty of the terrain and topography of the area, much of it consisting of boxed canyons with steep, brush-covered slopes; narrow winding streets used by residents of the area and the Fire Department for ingress and egress, steep hills which hinder Fire Department response time; older and inadequate water systems in certain areas of the community; and the location of buildings and structures with relation to these dangerous areas. (Topography)

B. A great number of structures located within the City of San Rafael were built in the late 1800s and early 1900s, thus lacking the built-in protection of modern construction. Many of the residential structures had been built on steep slopes with boxed canyons, and a large percentage are located in areas of heavy natural growth. Many structures (new and old) are constructed of highly combustible material, which offers little resistance to fire and could contribute to the spread of fire. (Topography)

C. Many of the City's street and pathway system was laid out in the late 1800s and early 1900s. Many of the City's streets have less than 20 feet of unobstructed width and turning radius. Roadways with less than 20 feet of unobstructed paved surface are considered hazardous in terms of fire access and protection. In the event that the Fire Department is called to respond to a fire emergency in any of these areas, its response time to an emergency is increased by these topographic conditions. (Topography)

D. The desire of the community to preserve natural vegetation and open space has resulted in the encroachment of brush and grass on fire roads, trails, breaks, and streets within the City, thus rendering such separations ineffective against the spread of fires. Natural growth, which is highly flammable during the summer and fall months, encroaches upon many properties, thus posing a potential fire threat to many structures and creating a substantial hindrance to the control of such fires. (Climate, Topography)

E. The City's precipitation ranges from 15 to 42 inches per year, with an average of approximately 31 inches per year. Approximately 90% of the precipitation falls during the months of October through April, and 10% from May through September. Times of little or no rainfall, of low humidity, and high temperatures create extremely hazardous fire conditions. (Climate)

F. The City's natural topographic and geological features create an increased risk from flooding, hillside runoff, and landslides due to a combination of factors,

including periodic heavy winter rainfalls, soil conditions, proximity to San Francisco Bay, and other related factors. Low-lying areas can also be subject to tidal fluctuations and liquefaction following an earthquake. (Topography, Geology)

G. Seismically, the City sits between two active earthquake faults (San Andreas and Hayward) and numerous potentially active faults. Fire following an earthquake has the potential of causing greater loss of life and damage than the earthquake itself. Should a significant seismic event occur, public safety resources would have to be prioritized to mitigate the greatest threat and may not be available for every structural fire. In such events, individual structures should be equipped to help in mitigating the risk of damage. (Geology)

H. Many areas of the City, including some highly developed industrial and commercial areas, are located on bay alluvial soils which are subject to liquefaction in the event of an earthquake. (Topography, Geology)

I. The United Nations Intergovernmental Panel on Climate Change (IPCC) has warned that failure to address the causes of global climate change within the next few years will result in significant sea level increases and frequency of wildland fires, and reduced freshwater resources, which will significantly increase the cost of providing local governmental services and protecting public infrastructure. (Climate)

J. Sea levels could rise from as little as 2 to 3 feet if emissions trend downward, to as much as 8.5 to 35 feet by the end of the century if emissions continue to rise in a “business as usual” scenario. Sea level rise will expand the areas subject to flooding and will directly impact low-lying areas of San Rafael. (Climate, Topography)

Pursuant to Health and Safety Code Section 17958, 17958.5, and 17958.7, the San Rafael City Council hereby expressly finds that the local amendments to the building standards within the California Building Standards Code in Title 24 of the California Code of Regulations are necessary for the protection of public health, safety, and welfare, due to the following local climatic, geologic, or topographical conditions:

Code	Sections	Findings
CBC	202	A, B, C, D, E, G, H, J, K
	903.2	A, B, C, D, E, F, H, J
	909.2	A, B, C, D, E, F, H, J
	1011.6	A, B, C, D, E, F, H, J
	1015.2	H
	1015.8.2	H
	1015,8,3	H
	1505.1.1	A, B, C, D, E, F, H, J
	1505.1.2	A, B, C, D, E, F, H, J
	1807.4	A, B, C, D, E, G, H, J, K
	3110	A, B, C, D, E, F, H, J
CBC Appendices	C	A, B, C, D, E, F, H, J
	G	G, H, I, J
	H	H

	I N O	A, B, C, D, E, F, H, J J, K J, K
CEBC	505.2.1 505.2.2	H H
CPC Appendices	A C D I	F, J, K F, J, K F, J, K F, J, K
CRC	R202 R309.1 R309.2 R309.3.1.2 R310.7.2 R902.1.1 R902.1.2	A, B, C, D, E, G, H, J, K A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J
CRC Appendices	BB BF BG BI BJ BK BL BM BO CI	A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J A, B, C, D, E, F, H, J

In addition, the City Council finds that:

1. The 2025 California Building Standards Code is scheduled to take effect statewide on January 1, 2026.
2. Cities are empowered to adopt local amendments to the code before the effective date of the new code so that the adopted amendments may be implemented concurrently with the state Code.
3. This ordinance is in effect as of September 30, 2025, and will be implemented with the state Code on January 1, 2026.
4. Changes to the Building and Energy Codes, including Reach Codes, are substantially equivalent to those previously filed and in effect as of September 30, 2025.
5. Changes to the Building and Energy Codes, including Reach Codes are necessary to implement a local code amendment adopted to align with the City of San Rafael's General Plan 2040, approved before June 10, 2025, and permits mixed-fuel residential construction consistent with Federal law, while also incentivizing all-electric construction as part of the City's Greenhouse Gas Reduction Strategy.
6. Changes to the Building and Energy Codes, including Reach Codes, have been determined at a regular Council meeting to be cost-effective and will require buildings to be designed to consume less energy than permitted by the California Energy Code as demonstrated by the 2022 Cost-Effectiveness Study: Single Family Building Upgrades and subsequent Memos commissioned by the California Statewide Energy Codes and Standards Program, including Cost-Effectiveness Explorer Evidence City-of-San-Rafael.

DIVISION 3. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

This Ordinance is exempt from the California Environmental Quality Act (CEQA), pursuant to 14 CCR Section 15061(b)(3), since it can be seen with certainty that there is no possibility that the adoption of this Ordinance may have a significant effect on the environment. (14 Cal. Code Regs. Section 15061(b)(3), 'general rule' provision).

DIVISION 4 SEVERABILITY.

If any section, subsection, sentence, clause, or phrase of this Ordinance is for any reason held to be invalid, such decision shall not affect the validity of the remaining portion of this Ordinance. The City Council of the City of San Rafael hereby declares that it would have adopted the Ordinance and each section, subsection, sentence, clause, or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, or phrases shall be declared invalid.

DIVISION 5. EFFECTIVE DATE OF ORDINANCE.

This Ordinance shall be published once, in full or in summary form, before its final passage, in a newspaper of general circulation, published and circulated in the City of San Rafael, and shall be operative and implemented on January 1, 2026, to coincide with the effective date of the 2025 California Building Standards Code statewide. If published in summary form, the summary shall also be published within fifteen (15) days after the adoption, together with the names of those Council members voting for or against the same, in a newspaper of general circulation published and circulated in the City of San Rafael, County of Marin, State of California.

THE FOREGOING ORDINANCE was first read and introduced at a regular meeting of the San Rafael City Council on the 18th day of August 2025, and was passed and adopted at a regular meeting of the San Rafael City Council on the 2nd day of September 2025 by the following vote, to wit:

AYES: COUNCILMEMBERS:
NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:

_____
Kate Colin, Mayor

Attest:

_____
LINDSAY LARA, City Clerk

Cost Effectiveness Explorer

EXPLORER.LOCALENERGYCODES.COM

Cost-Effectiveness Results Summary

City of San Rafael

Climate Zone 2

Generated August 20, 2025 by the Cost-Effectiveness Explorer

https://explorer.localenergycodes.com/policies/4876/documents?per_component_name=PolicyExistingBuildingsWithFlexiblePathRequirements&per_climate_zone_raw=2-MCE&per_c

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

Single Family | Climate Zone 2

Pre-1978 | Existing Single Family Building Upgrades [1] | Release Date: May 23, 2024

Maximum Cost-Effective Target Score Calculation

Cost-Effective Measures and Packages	Energy Savings site MMBtu/year	Flexible Score
R-30 Raised Floor Insulation	9.03	9
New Ducts, R-8 Insulation + Duct Sealing	8.48	8
R-13 Wall Insulation	6.29	6
R-49 Attic insulation	5.81	6
Maximum using available flexible measures (On-Bill (2025))	29.61	29

Maximum Cost-Effective Score

The maximum cost-effective score is the highest flexible score that can be met cost-effectively, based on the energy savings of measures for your policy. Any required flexible score that falls below or is equal to this maximum score has a cost-effective pathway available to permit applicants.

Single Family | Climate Zone 2

1978-1991 | Existing Single Family Building Upgrades [1] | Release Date: May 23, 2024

Maximum Cost-Effective Target Score Calculation

Cost-Effective Measures and Packages	Energy Savings site MMBtu/year	Flexible Score
R-30 Raised Floor Insulation	8.80	9
New Ducts, R-8 Insulation + Duct Sealing	5.93	6
R-49 Attic insulation	2.45	2
Maximum using available flexible measures (On-Bill (2025))	17.18	17

Maximum Cost-Effective Score

The maximum cost-effective score is the highest flexible score that can be met cost-effectively, based on the energy savings of measures for your policy. Any required flexible score that falls below or is equal to this maximum score has a cost-effective pathway available to permit applicants.

Cost Effectiveness Explorer

EXPLORER.LOCALENERGYCODES.COM

Sources

1 **Existing Single Family Building Upgrades (May 23, 2024)**
https://localenergycodes.com/download/1222/file_path/fieldList/Single%20Family%20Retrofits%20CostEff%20Report.pdf

Generated August 20, 2025 by the Cost-Effectiveness Explorer

https://explorer.localenergycodes.com/policies/4876/documents?per_component_name=PolicyExistingBuildingsWithFlexiblePathRequirements&per_climate_zone_raw=2-MCE&per_c

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

Application of the 2022 Studies to the 2025 Energy Code:
Existing Single Family Building Upgrades

Prepared by:
Frontier Energy, Inc
Misti Bruceri & Associates, LLC

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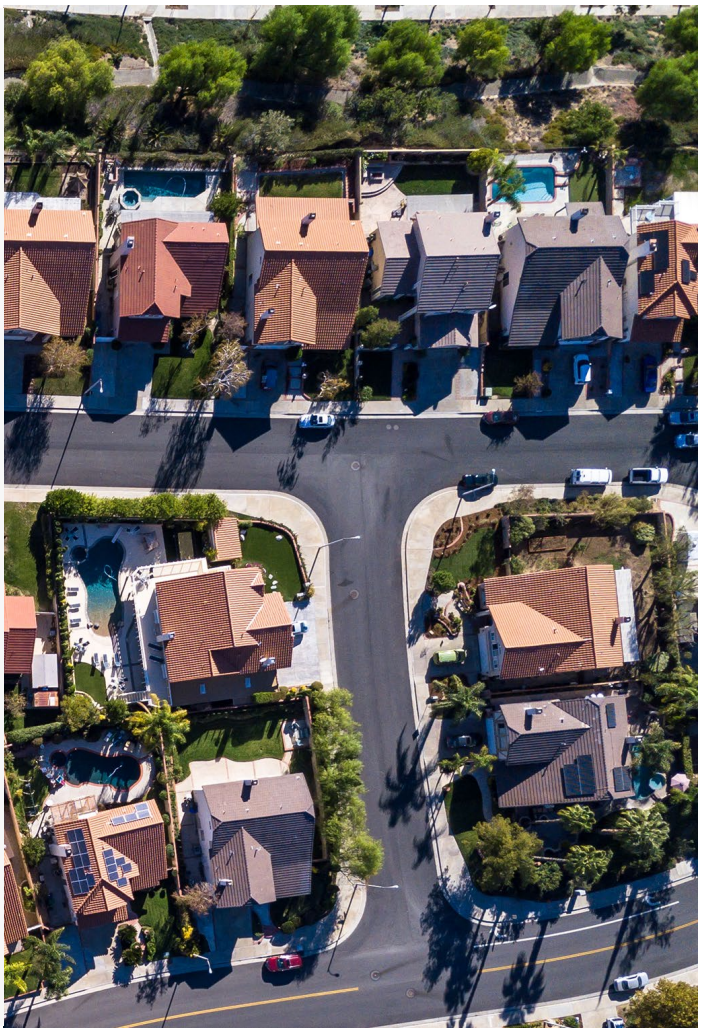

Table 1 Summary of Revisions

Date	Description	Reference (page or section)
8/15/2025	Original Release	N/A

Acronym List

B/C – Lifecycle Benefit-to-Cost Ratio

CASE – Codes and Standards Enhancement

CFL – Compact Fluorescent Lamps

CPAU – City of Palo Alto Utilities

CPUC – California Public Utilities Commission

CZ – California Climate Zone

kWh – Kilowatt Hour

NPV – Net Present Value

PG&E – Pacific Gas and Electric Company

PV – Photovoltaic

SCE – Southern California Edison

SDG&E – San Diego Gas and Electric

SMUD – Sacramento Municipal Utility District

SoCalGas – Southern California Gas Company

Therm – Unit for quantity of heat that equals 100,000 British thermal units

Table of Contents

List of Tables

List of Figures

No table of figures entries found.

1 Summary

The California Codes and Standards (C&S) Reach Codes program provides technical support to local governments considering adopting a local ordinance (reach code) intended to support meeting local and/or statewide energy efficiency and greenhouse gas reduction goals. The program facilitates adoption and implementation of the code when requested by local jurisdictions by providing resources such as cost-effectiveness studies, model language, sample findings, and other supporting documentation.

In April 2024, the Statewide Reach Codes Team published the 2022 Cost-Effectiveness Study: Existing Single Family Building Upgrades. This study focuses on existing single family buildings identifying cost-effective measures and measure package upgrades in all 16 California climate zones. The study was conducted to complement Part 6 of the California Building Code (the Energy Code) for the 2022 code cycle, effective January 1, 2023. In the 2019 code cycle the 2019 Cost-Effectiveness Study: Existing Single Family Residential Building Upgrades study included outdoor lighting and a water heater package that was discontinued in the 2022 study but has been brought back in this memo by request from jurisdictions. The studies document the estimated costs, benefits, energy impacts and greenhouse gas emission reductions that may result from implementing an ordinance to help local leadership, residents, and other stakeholders make informed policy decisions.

The Statewide Reach Codes Team reviewed the cost-effectiveness study for impacts of code changes implemented in the 2025 Energy Code. Measures that are now required by code may alter the results presented in the 2022 study. Below is a summary of the changes to the additions and alterations for residential buildings sections of the 2025 Energy Code.

- Mandatory wall insulation R-value has been increased from R-13 to R-15. [Section 150.2(a) of the Energy Code]
- Prescriptive window U-factor has decreased from 0.30 to 0.27 in Climate Zones 1-5, 11-14, and 16. [Section 150.2(b)1B of the Energy Code]

The wall insulation measure has been re-evaluated with R-15 instead of R-13. There is generally a slight increase in utility cost savings as expected with the increase in efficiency. However, there is not a substantial impact on the cost-effectiveness results.

For the prescriptive window U-factor, the original study modeled U-0.28 in all climate zones. This updated memo drops the U-factor from 0.28 to 0.27 in all climate zones. The SHGC is maintained at 0.23 for climate zone 2, 4, and 6-15 and 0.35 for CZ 1, 3, 5, 16. There is minimal impact on the cost-effectiveness results due to this update. However, there are two instances in the 1978-1991 vintage where cost-effectiveness flips from cost-effective to not cost-effective. Climate zone 4 in PGE territory utilizing standard rates and the modest gas escalation is no longer cost-effective on-bill by the smallest margin. Climate zone 10 in SDGE territory utilizing CARE rates and the modest gas escalation has also become no longer cost-effective on-bill.

The 2022 study included a whole building air sealing measure defined as a 30% reduction in air leakage. A new measure – air sealing of the ceiling floor, representing a 14% reduction in air leakage – is added in this memo. Further details and cost-effectiveness results are provided in Section 2.

Lighting measures were previously presented in the 2019 Cost-Effectiveness Study: Existing Single Family Residential Building Upgrades study but were not analyzed in the 2022 study. Updated cost-effectiveness analysis for this measure is presented in Section 3.

The water heating package measure was previously presented in 2019 Cost-Effectiveness Study: Existing Single Family Residential Building Upgrades study. Updated cost-effectiveness analysis for this measure is presented in Section 4.

The 3 kW PV measure from the 2022 study is revised here with an updated cost-effectiveness analysis that accounts for the elimination of the Federal Solar tax credit December 31, 2025. Additional details and analysis are provided in Section 5.

The 2022 report, model ordinance language and other resources are posted on the C&S Reach Codes Program website at LocalEnergyCodes.com. Local jurisdictions that are considering adopting an ordinance may contact the program for further technical support at info@localenergycodes.com.

2 Air Sealing at the Ceiling

Unlike full air sealing, which has previously been presented, air sealing of the ceiling floor may be an attractive measure for an attic remodel project. The whole building air sealing measure estimated a 30% reduction in air leakage, while air sealing at the ceiling measure results in a 14% reduction in air leakage.

Table 2 through Table 7 present the cost-effectiveness results for the air sealing at the ceiling plane measure. The estimated incremental cost for air sealing at the ceiling plane is $1,963 which is from the 2022 Residential Additions and Alterations CASE Report (Statewide CASE Team, 2020).

Table 2. [Pre-1978] Air Sealing at the Ceiling (Std)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	First-year Utility Savings	Lifecycle NPV Savings		
				2025 LSC NPV	On-Bill NPV Modest Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$1,963	$33	($465)	($997)	($432)
CZ02	PGE	$1,963	$18	($1,114)	($1,433)	($1,118)
CZ03	PGE	$1,963	$17	($1,180)	($1,463)	($1,171)
CZ04	PGE	$1,963	$25	($1,081)	($1,290)	($979)
CZ04	CPAU	$1,963	$21	($1,081)	($1,379)	($1,069)
CZ05	PGE	$1,963	$16	($1,230)	($1,500)	($1,235)
CZ05	PGE/SCG	$1,963	$14	($1,230)	($1,555)	($1,325)
CZ06	SCE/SCG	$1,963	($2)	($1,797)	($1,987)	($1,937)
CZ07	SDGE	$1,963	($3)	($1,813)	($2,008)	($1,934)
CZ08	SCE/SCG	$1,963	$7	($1,680)	($1,775)	($1,703)
CZ09	SCE/SCG	$1,963	$10	($1,597)	($1,693)	($1,592)
CZ10	SCE/SCG	$1,963	$17	($1,497)	($1,540)	($1,420)
CZ10	SDGE	$1,963	$23	($1,497)	($1,366)	($1,237)
CZ11	PGE	$1,963	$32	($1,014)	($1,120)	($816)
CZ12	PGE	$1,963	$22	($1,147)	($1,348)	($1,064)
CZ12	SMUD/PGE	$1,963	$17	($1,147)	($1,468)	($1,190)
CZ13	PGE	$1,963	$31	($1,114)	($1,162)	($918)
CZ14	SCE/SCG	$1,963	$32	($897)	($1,130)	($832)
CZ14	SDGE	$1,963	$42	($897)	($845)	($519)
CZ15	SCE/SCG	$1,963	$40	($1,297)	($1,041)	($946)
CZ16	PGE	$1,963	$30	($581)	($1,071)	($551)

Table 3. [1978-1991] Air Sealing at the Ceiling (Std)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	First-year Utility Savings	Lifecycle NPV Savings		
				2025 LSC NPV	On-Bill NPV Modest Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$1,963	$23	($931)	($1,292)	($903)
CZ02	PGE	$1,963	$13	($1,364)	($1,570)	($1,341)
CZ03	PGE	$1,963	$10	($1,480)	($1,668)	($1,496)
CZ04	PGE	$1,963	$16	($1,330)	($1,522)	($1,292)
CZ04	CPAU	$1,963	$13	($1,330)	($1,575)	($1,356)
CZ05	PGE	$1,963	$11	($1,447)	($1,649)	($1,466)
CZ05	PGE/SCG	$1,963	$10	($1,447)	($1,684)	($1,522)
CZ06	SCE/SCG	$1,963	($1)	($1,830)	($1,967)	($1,934)
CZ07	SDGE	$1,963	($4)	($1,896)	($2,040)	($1,991)
CZ08	SCE/SCG	$1,963	$4	($1,797)	($1,860)	($1,813)
CZ09	SCE/SCG	$1,963	$5	($1,747)	($1,823)	($1,764)
CZ10	SCE/SCG	$1,963	$10	($1,663)	($1,722)	($1,652)
CZ10	SDGE	$1,963	$14	($1,663)	($1,603)	($1,517)
CZ11	PGE	$1,963	$25	($1,264)	($1,320)	($1,096)
CZ12	PGE	$1,963	$16	($1,380)	($1,520)	($1,314)
CZ12	SMUD/PGE	$1,963	$12	($1,380)	($1,604)	($1,402)
CZ13	PGE	$1,963	$23	($1,364)	($1,373)	($1,199)
CZ14	SCE/SCG	$1,963	$22	($1,230)	($1,397)	($1,182)
CZ14	SDGE	$1,963	$28	($1,230)	($1,212)	($974)
CZ15	SCE/SCG	$1,963	$32	($1,463)	($1,225)	($1,154)
CZ16	PGE	$1,963	$21	($1,014)	($1,357)	($1,001)

Table 4. [1992-2010] Air Sealing at the Ceiling (Std)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	First-year Utility Savings	Lifecycle NPV Savings		
				2025 LSC NPV	On-Bill NPV Modest Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$1,963	$14	($1,314)	($1,550)	($1,309)
CZ02	PGE	$1,963	$9	($1,530)	($1,687)	($1,529)
CZ03	PGE	$1,963	$7	($1,613)	($1,744)	($1,618)
CZ04	PGE	$1,963	$11	($1,530)	($1,653)	($1,501)
CZ04	CPAU	$1,963	$9	($1,530)	($1,701)	($1,557)
CZ05	PGE	$1,963	$7	($1,613)	($1,759)	($1,637)
CZ05	PGE/SCG	$1,963	$6	($1,613)	($1,788)	($1,686)
CZ06	SCE/SCG	$1,963	$1	($1,863)	($1,936)	($1,911)
CZ07	SDGE	$1,963	$0	($1,896)	($1,944)	($1,911)
CZ08	SCE/SCG	$1,963	$3	($1,830)	($1,885)	($1,851)
CZ09	SCE/SCG	$1,963	$3	($1,780)	($1,892)	($1,853)
CZ10	SCE/SCG	$1,963	$6	($1,763)	($1,814)	($1,767)
CZ10	SDGE	$1,963	$8	($1,763)	($1,741)	($1,681)
CZ11	PGE	$1,963	$14	($1,530)	($1,581)	($1,437)
CZ12	PGE	$1,963	$10	($1,580)	($1,693)	($1,560)
CZ12	SMUD/PGE	$1,963	$8	($1,580)	($1,737)	($1,606)
CZ13	PGE	$1,963	$12	($1,580)	($1,643)	($1,531)
CZ14	SCE/SCG	$1,963	$12	($1,530)	($1,639)	($1,503)
CZ14	SDGE	$1,963	$16	($1,530)	($1,537)	($1,382)
CZ15	SCE/SCG	$1,963	$17	($1,680)	($1,572)	($1,532)
CZ16	PGE	$1,963	$14	($1,314)	($1,556)	($1,314)

Table 5. [Pre-1978] Air Sealing at the Ceiling (CARE)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	First-year Utility Savings	Lifecycle NPV Savings		
				2025 LSC NPV	On-Bill NPV Modest Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$1,963	$26	($465)	($1,212)	($766)
CZ02	PGE	$1,963	$14	($1,114)	($1,550)	($1,302)
CZ03	PGE	$1,963	$13	($1,180)	($1,574)	($1,343)
CZ04	PGE	$1,963	$18	($1,081)	($1,459)	($1,216)
CZ04	CPAU	$1,963	$0	($1,081)	($1,963)	($1,963)
CZ05	PGE	$1,963	$12	($1,230)	($1,604)	($1,395)
CZ05	PGE/SCG	$1,963	$11	($1,230)	($1,648)	($1,467)
CZ06	SCE/SCG	$1,963	($1)	($1,797)	($1,969)	($1,928)
CZ07	SDGE	$1,963	($1)	($1,813)	($1,976)	($1,918)
CZ08	SCE/SCG	$1,963	$5	($1,680)	($1,824)	($1,768)
CZ09	SCE/SCG	$1,963	$8	($1,597)	($1,764)	($1,686)
CZ10	SCE/SCG	$1,963	$12	($1,497)	($1,659)	($1,566)
CZ10	SDGE	$1,963	$16	($1,497)	($1,546)	($1,443)
CZ11	PGE	$1,963	$23	($1,014)	($1,353)	($1,116)
CZ12	PGE	$1,963	$17	($1,147)	($1,503)	($1,279)
CZ12	SMUD/PGE	$1,963	$11	($1,147)	($1,623)	($1,406)
CZ13	PGE	$1,963	$22	($1,114)	($1,394)	($1,205)
CZ14	SCE/SCG	$1,963	$23	($897)	($1,352)	($1,120)
CZ14	SDGE	$1,963	$30	($897)	($1,163)	($905)
CZ15	SCE/SCG	$1,963	$27	($1,297)	($1,334)	($1,266)
CZ16	PGE	$1,963	$24	($581)	($1,270)	($859)

Table 6. [1978-1991] Air Sealing at the Ceiling (CARE)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	First-year Utility Savings	Lifecycle NPV Savings		
				2025 LSC NPV	On-Bill NPV Modest Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$1,963	$18	($931)	($1,442)	($1,135)
CZ02	PGE	$1,963	$10	($1,364)	($1,658)	($1,477)
CZ03	PGE	$1,963	$8	($1,480)	($1,734)	($1,598)
CZ04	PGE	$1,963	$12	($1,330)	($1,627)	($1,446)
CZ04	CPAU	$1,963	$0	($1,330)	($1,963)	($1,963)
CZ05	PGE	$1,963	$8	($1,447)	($1,719)	($1,575)
CZ05	PGE/SCG	$1,963	$7	($1,447)	($1,746)	($1,619)
CZ06	SCE/SCG	$1,963	($0)	($1,830)	($1,959)	($1,933)
CZ07	SDGE	$1,963	($2)	($1,896)	($2,003)	($1,964)
CZ08	SCE/SCG	$1,963	$3	($1,797)	($1,886)	($1,848)
CZ09	SCE/SCG	$1,963	$4	($1,747)	($1,859)	($1,813)
CZ10	SCE/SCG	$1,963	$7	($1,663)	($1,790)	($1,736)
CZ10	SDGE	$1,963	$10	($1,663)	($1,710)	($1,641)
CZ11	PGE	$1,963	$18	($1,264)	($1,500)	($1,325)
CZ12	PGE	$1,963	$12	($1,380)	($1,631)	($1,469)
CZ12	SMUD/PGE	$1,963	$8	($1,380)	($1,716)	($1,558)
CZ13	PGE	$1,963	$16	($1,364)	($1,545)	($1,411)
CZ14	SCE/SCG	$1,963	$16	($1,230)	($1,545)	($1,378)
CZ14	SDGE	$1,963	$20	($1,230)	($1,422)	($1,233)
CZ15	SCE/SCG	$1,963	$22	($1,463)	($1,460)	($1,410)
CZ16	PGE	$1,963	$16	($1,014)	($1,491)	($1,211)

Table 7. [1991-2010] Air Sealing at the Ceiling (CARE)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	First-year Utility Savings	Lifecycle NPV Savings		
				2025 LSC NPV	On-Bill NPV Modest Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$1,963	$11	($1,314)	($1,642)	($1,452)
CZ02	PGE	$1,963	$7	($1,530)	($1,749)	($1,625)
CZ03	PGE	$1,963	$6	($1,613)	($1,793)	($1,693)
CZ04	PGE	$1,963	$8	($1,530)	($1,729)	($1,609)
CZ04	CPAU	$1,963	$0	($1,530)	($1,963)	($1,963)
CZ05	PGE	$1,963	$5	($1,613)	($1,804)	($1,708)
CZ05	PGE/SCG	$1,963	$5	($1,613)	($1,827)	($1,747)
CZ06	SCE/SCG	$1,963	$1	($1,863)	($1,940)	($1,920)
CZ07	SDGE	$1,963	$0	($1,896)	($1,944)	($1,918)
CZ08	SCE/SCG	$1,963	$2	($1,830)	($1,905)	($1,879)
CZ09	SCE/SCG	$1,963	$2	($1,780)	($1,908)	($1,878)
CZ10	SCE/SCG	$1,963	$4	($1,763)	($1,855)	($1,819)
CZ10	SDGE	$1,963	$6	($1,763)	($1,805)	($1,758)
CZ11	PGE	$1,963	$10	($1,530)	($1,685)	($1,572)
CZ12	PGE	$1,963	$7	($1,580)	($1,759)	($1,654)
CZ12	SMUD/PGE	$1,963	$5	($1,580)	($1,802)	($1,700)
CZ13	PGE	$1,963	$9	($1,580)	($1,732)	($1,644)
CZ14	SCE/SCG	$1,963	$9	($1,530)	($1,722)	($1,615)
CZ14	SDGE	$1,963	$11	($1,530)	($1,652)	($1,529)
CZ15	SCE/SCG	$1,963	$12	($1,680)	($1,696)	($1,667)
CZ16	PGE	$1,963	$11	($1,314)	($1,645)	($1,454)

3 Lighting Measures

LED lighting and exterior lighting control measures were previously evaluated in the 2019 Cost-Effectiveness Study: Existing Single Family Residential Building Upgrades study. These measures are not included in the 2022 Cost-Effectiveness Study: Existing Single Family Building Upgrades study, but have been re-evaluated and included in this memo. The updated analysis follows the same methodology as the 2019 study, but with updated costs for equipment and updated utility rates.

The three measures evaluated are LED lighting, exterior photosensor, and LED lighting plus photosensor. Table 8 through Table 10 show the results for the different lighting measures evaluated. Each measure is explained in more detail below.

LED Lighting: Replace screw-in (A-based for lamps) incandescent lamps and compact fluorescent lamps (CFLs) with light-emitting diode (LED) A-lamps. This analysis was conducted external to the energy model and evaluated replacement of a 13 W CFL lamp with an 9.6 W LED lamp operating 620 hours annually. Annual hour estimates were based on whole building average hours of operation from a 2010 lighting study by KEMA (KEMA, 2010). Lifetime assumptions were 10,000 hours for CFLs and 25,000 hours for LED lamps. For incremental cost calculations it was assumed CFLs have a lifetime of 15 years, are installed five years prior to the retrofit, and would need to be replaced at year ten and 25.

Exterior Lighting Controls/Photosensor: Evaluation of exterior lighting controls was completed on a per-luminaire basis external to the energy model and assumes a screw-in photosensor control is installed in outdoor lighting luminaires. Energy savings of 12.1 kWh per year was applied based on analysis done by the Consortium for Energy Efficiency, assuming LED lamps, 2.6 hours per day of operation, and that photosensor controls reduce operating hours on average 20 percent each day (CEE, 2014). Energy savings will be higher for incandescent or CFL luminaires.

Exterior Lighting Controls/Photosensor+LED: An additional evaluation was completed for exterior lighting controls on a per-luminaire basis external to the energy model and assumes a screw-in photosensor control is installed in outdoor lighting luminaires and incandescent lamps CFLs are replaced with light-emitting diode (LED) A-lamps. Energy savings of 14.3 kWh per year was applied based on the sum of the LED lighting and Exterior Lighting Controls with Photosensor kWh energy savings.

For the measures including a LED, a cost of $3.49 for LED dimmable A19 lamp 60 W equivalent is used. A cost of $1.74 is used for an equivalent CFL product which was used to estimate total replacement costs at years 10 and 25. Costs are based on a single LED lamp replacement. For the photosensor, an incremental cost of $12.62, based on a screw-in photosensor control, was obtained from an on-line product search of available products. A five-year lifetime for this type of control was assumed.

Table 8. [All Vintages] LED Lamp vs. CFL

Climate Zone	Electric/ Gas Utility	Measure Cost	Electricity Savings	First Year Utility Cost Savings	Customer On-Bill Modest Gas Escalation		Customer On-Bill High Gas Escalation	
					B/C Ratio	NPV	B/C Ratio	NPV
CZ01	PGE	$1.75	2.2	$0.77	10.05	$15.82	10.58	$16.74
CZ02	PGE	$1.75	2.2	$0.86	11.26	$17.94	11.85	$18.98
CZ03	PGE	$1.75	2.2	$0.78	10.14	$15.99	10.68	$16.92
CZ04	PGE	$1.75	2.2	$0.80	10.39	$16.42	10.94	$17.38
CZ04	CPAU	$1.75	2.2	$0.41	5.32	$7.56	5.60	$8.05
CZ05	PGE	$1.75	2.2	$0.78	10.14	$15.99	10.67	$16.92
CZ05	PGE/SCG	$1.75	2.2	$0.78	10.14	$15.99	10.67	$16.92
CZ06	SCE/SCG	$1.75	2.2	$0.66	8.44	$13.01	8.99	$13.97
CZ07	SDGE	$1.75	2.2	$0.95	13.15	$21.24	13.03	$21.04
CZ08	SCE/SCG	$1.75	2.2	$0.74	9.51	$14.89	10.14	$15.98
CZ09	SCE/SCG	$1.75	2.2	$0.71	9.17	$14.29	9.77	$15.33
CZ10	SCE/SCG	$1.75	2.2	$0.73	9.38	$14.65	9.99	$15.72
CZ10	SDGE	$1.75	2.2	$1.07	14.86	$24.24	14.74	$24.02
CZ11	PGE	$1.75	2.2	$0.85	11.05	$17.57	11.63	$18.59
CZ12	PGE	$1.75	2.2	$0.79	10.32	$16.29	10.86	$17.24
CZ12	SMUD/PGE	$1.75	2.2	$0.47	6.08	$8.88	6.40	$9.44
CZ13	PGE	$1.75	2.2	$0.86	11.27	$17.96	11.86	$19.00
CZ14	SCE/SCG	$1.75	2.2	$0.74	9.58	$15.00	10.21	$16.10
CZ14	SDGE	$1.75	2.2	$1.06	14.68	$23.93	14.56	$23.71
CZ15	SCE/SCG	$1.75	2.2	$0.78	10.01	$15.75	10.66	$16.90
CZ16	PGE	$1.75	2.2	$0.77	9.98	$15.71	10.51	$16.62

Table 9. [All Vintages] Exterior Photosensor

Climate Zone	Electric/ Gas Utility	Measure Cost	Electricity Savings	First Year Utility Cost Savings	Customer On-Bill Modest Gas Escalation		Customer On-Bill High Gas Escalation	
					B/C Ratio	NPV	B/C Ratio	NPV
CZ01	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ02	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ03	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ04	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ04	CPAU	$54.03	12.1	$2.12	0.89	($5.69)	0.94	($3.15)
CZ05	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ05	PGE/SCG	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ06	SCE/SCG	$54.03	12.1	$3.48	1.45	$24.36	1.55	$29.48
CZ07	SDGE	$54.03	12.1	$5.07	2.27	$68.58	2.25	$67.53
CZ08	SCE/SCG	$54.03	12.1	$3.48	1.45	$24.36	1.55	$29.48
CZ09	SCE/SCG	$54.03	12.1	$3.48	1.45	$24.36	1.55	$29.48
CZ10	SCE/SCG	$54.03	12.1	$3.48	1.45	$24.36	1.55	$29.48
CZ10	SDGE	$54.03	12.1	$5.07	2.27	$68.58	2.25	$67.53
CZ11	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ12	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ12	SMUD/PGE	$54.03	12.1	$1.46	0.62	($20.73)	0.65	($18.98)
CZ13	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74
CZ14	SCE/SCG	$54.03	12.1	$3.48	1.45	$24.36	1.55	$29.48
CZ14	SDGE	$54.03	12.1	$5.07	2.27	$68.58	2.25	$67.53
CZ15	SCE/SCG	$54.03	12.1	$3.48	1.45	$24.36	1.55	$29.48
CZ16	PGE	$54.03	12.1	$4.16	1.75	$40.75	1.85	$45.74

Table 10. [All Vintages] LED and Photosensor

Climate Zone	Electric/ Gas Utility	Measure Cost	Electricity Savings	First Year Utility Cost Savings	Customer On-Bill Modest Gas Escalation		Customer On-Bill High Gas Escalation	
					B/C Ratio	NPV	B/C Ratio	NPV
CZ01	PGE	$55.77	14.3	$4.93	2.01	$56.57	2.12	$62.48
CZ02	PGE	$55.77	14.3	$5.02	2.05	$58.70	2.16	$64.72
CZ03	PGE	$55.77	14.3	$4.94	2.02	$56.74	2.12	$62.66
CZ04	PGE	$55.77	14.3	$4.95	2.03	$57.17	2.13	$63.12
CZ04	CPAU	$55.77	14.3	$2.53	1.03	$1.87	1.09	$4.90
CZ05	PGE	$55.77	14.3	$4.94	2.02	$56.74	2.12	$62.66
CZ05	PGE/SCG	$55.77	14.3	$4.94	2.02	$56.74	2.12	$62.66
CZ06	SCE/SCG	$55.77	14.3	$4.13	1.67	$37.37	1.78	$43.45
CZ07	SDGE	$55.77	14.3	$6.02	2.61	$89.82	2.59	$88.57
CZ08	SCE/SCG	$55.77	14.3	$4.22	1.70	$39.25	1.82	$45.46
CZ09	SCE/SCG	$55.77	14.3	$4.19	1.69	$38.65	1.80	$44.82
CZ10	SCE/SCG	$55.77	14.3	$4.21	1.70	$39.01	1.81	$45.20
CZ10	SDGE	$55.77	14.3	$6.14	2.66	$92.82	2.64	$91.55
CZ11	PGE	$55.77	14.3	$5.00	2.05	$58.33	2.15	$64.33
CZ12	PGE	$55.77	14.3	$4.95	2.02	$57.05	2.13	$62.98
CZ12	SMUD/PGE	$55.77	14.3	$1.93	0.79	($11.85)	0.83	($9.54)
CZ13	PGE	$55.77	14.3	$5.02	2.05	$58.71	2.16	$64.73
CZ14	SCE/SCG	$55.77	14.3	$4.22	1.71	$39.37	1.82	$45.58
CZ14	SDGE	$55.77	14.3	$6.13	2.66	$92.51	2.64	$91.24
CZ15	SCE/SCG	$55.77	14.3	$4.26	1.72	$40.12	1.83	$46.38
CZ16	PGE	$55.77	14.3	$4.92	2.01	$56.46	2.12	$62.36

4 Water Heating Package

This package includes the following:

- R-6 water heater blanket
- R-3 hot water pipe insulation
- Low flow fixtures: two low flow showerheads and three sink aerators.

This analysis assumes the homeowner installs these measures themselves and therefore no labor costs. Costs are based on Home Depot prices from August of 2025. The water heater package is evaluated over a 15-year analysis period and assumes the modest gas escalation rate.

Table 11. [All Vintages] Water Heating Package

Climate Zone	Electric/ Gas Utility	Measure Cost	Gas Savings (therms)	First Year Utility Cost Savings	Customer On-Bill	
					B/C Ratio	NPV
CZ01	PGE	$125.68	14.69	$31.11	3.96	$371.76
CZ02	PGE	$125.68	15.60	$35.20	4.48	$437.15
CZ03	PGE	$125.68	15.70	$31.43	4.00	$376.88
CZ04	PGE	$125.68	16.05	$32.62	4.15	$395.78
CZ04	CPAU	$125.68	16.05	$31.99	4.07	$385.77
CZ05	PGE	$125.68	15.83	$31.37	3.99	$375.88
CZ05	PGE/SCG	$125.68	15.83	$28.29	3.60	$326.59
CZ06	SCE/SCG	$125.68	16.67	$29.18	3.71	$340.84
CZ07	SDGE	$125.68	16.75	$37.25	4.74	$469.81
CZ08	SCE/SCG	$125.68	16.78	$29.36	3.74	$343.80
CZ09	SCE/SCG	$125.68	16.66	$29.27	3.72	$342.34
CZ10	SCE/SCG	$125.68	16.58	$28.99	3.69	$337.73
CZ10	SDGE	$125.68	16.58	$37.77	4.80	$478.19
CZ11	PGE	$125.68	15.87	$32.96	4.19	$401.32
CZ12	PGE	$125.68	15.90	$32.85	4.18	$399.47
CZ12	SMUD/PGE	$125.68	15.90	$32.85	4.18	$399.47
CZ13	PGE	$125.68	16.32	$33.00	4.20	$401.93
CZ14	SCE/SCG	$125.68	16.11	$29.79	3.79	$350.57
CZ14	SDGE	$125.68	16.11	$39.23	4.99	$501.49
CZ15	SCE/SCG	$125.68	17.40	$30.16	3.84	$356.50
CZ16	PGE	$125.68	15.14	$31.75	4.04	$381.87

5 PV

The results for 3 kW PV have been updated from the 2022 study to remove the federal solar tax credit from the cost-effectiveness calculations. The removal of the solar tax credit has a substantial impact on many climate zones across all vintages and will impact the FlexPath.

The following describes the impacts and changes to cost-effectiveness from the 2022 study. These observations are utilizing standard rates. Previously, with the solar tax credit, the 3 kW PV measure in the pre-1978 vintage was on-bill cost effective in all climate zones using both the modest and high gas escalation rates. However, with the credit removed, Climate Zones 1-3, 5, 6, and 12 are no longer cost effective on-bill for both the modest and high gas escalations.

Previously for the 1978-1991 vintage the only cases that were not on-bill cost effective were climate zones 2 and 6 utilizing the modest gas escalation. Now, with the credit removed, many more climate zones are no longer cost effective. Using the modest gas escalation, climate zones 1-3, 5, 6, 12, and 16 are not cost effective on-bill. Using the high gas escalation, climate zones 1-3, 5, 6, and 12 (SMUD) are not cost effective on-bill.

Previously for the 1992-2010 vintage the following cases were not cost effective on-bill: climate zones 1-3, 5, and 6 utilizing the modest gas escalation and climate zone 6 using the high gas escalation. With the credit removed an increased number of climate zones are no longer cost effective. Using the modest gas escalation, climate zones 1-3, 4 (PGE) 5-9, 10 (SCE/SCG),12, and 16 are not cost effective on-bill. Using the high gas escalation, climate zones 1-3, 4 (PGE), 5-7, 9, 12, and 16 are not cost effective on-bill.

The cost-effectiveness results are presented in Table 12 through Table 1717.

Table 12. [Pre-1978] 3 kW PV without Solar Tax Credit (Std)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	On-Bill Savings			
			On-Bill B/C Modest Gas Escalation	On-Bill NPV Modest Gas Escalation	On-Bill B/C High Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$13,726	0.80	($3,074)	0.85	($2,410)
CZ02	PGE	$13,726	0.80	($3,072)	0.85	($2,409)
CZ03	PGE	$13,726	0.77	($3,567)	0.81	($2,930)
CZ04	PGE	$13,726	1.11	$1,652	1.16	$2,564
CZ04	CPAU	$13,726	1.38	$5,983	1.45	$7,123
CZ05	PGE	$13,726	0.78	($3,431)	0.82	($2,786)
CZ05	PGE/SCG	$13,726	0.78	($3,431)	0.82	($2,786)
CZ06	SCE/SCG	$13,726	0.87	($2,118)	0.92	($1,231)
CZ07	SDGE	$13,726	1.31	$4,886	1.30	$4,711
CZ08	SCE/SCG	$13,726	1.30	$4,655	1.38	$5,984
CZ09	SCE/SCG	$13,726	1.18	$2,821	1.26	$4,030
CZ10	SCE/SCG	$13,726	1.29	$4,622	1.38	$5,948
CZ10	SDGE	$13,726	1.99	$15,550	1.97	$15,284
CZ11	PGE	$13,726	1.55	$8,684	1.64	$9,967
CZ12	PGE	$13,726	1.07	$1,117	1.13	$2,002
CZ12	SMUD/PGE	$13,726	0.93	($1,109)	0.98	($342)
CZ13	PGE	$13,726	1.80	$12,597	1.90	$14,085
CZ14	SCE/SCG	$13,726	1.58	$9,098	1.68	$10,717
CZ14	SDGE	$13,726	2.15	$17,983	2.13	$17,695
CZ15	SCE/SCG	$13,726	2.24	$19,477	2.39	$21,774
CZ16	PGE	$13,726	1.04	$579	1.09	$1,435

Table 13. [1978-1991] 3 kW PV without Solar Tax Credit (Std)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	On-Bill Savings			
			On-Bill B/C Modest Gas Escalation	On-Bill NPV Modest Gas Escalation	On-Bill B/C High Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$13,726	0.77	($3,570)	0.81	($2,932)
CZ02	PGE	$13,726	0.71	($4,549)	0.75	($3,963)
CZ03	PGE	$13,726	0.74	($4,106)	0.78	($3,497)
CZ04	PGE	$13,726	1.00	$7	1.05	$833
CZ04	CPAU	$13,726	1.35	$5,517	1.42	$6,633
CZ05	PGE	$13,726	0.75	($3,985)	0.79	($3,369)
CZ05	PGE/SCG	$13,726	0.75	($3,985)	0.79	($3,369)
CZ06	SCE/SCG	$13,726	0.73	($4,249)	0.78	($3,501)
CZ07	SDGE	$13,726	1.17	$2,623	1.16	$2,466
CZ08	SCE/SCG	$13,726	1.20	$3,086	1.27	$4,313
CZ09	SCE/SCG	$13,726	1.09	$1,487	1.17	$2,609
CZ10	SCE/SCG	$13,726	1.18	$2,884	1.26	$4,097
CZ10	SDGE	$13,726	1.85	$13,356	1.84	$13,108
CZ11	PGE	$13,726	1.41	$6,420	1.48	$7,583
CZ12	PGE	$13,726	0.97	($512)	1.02	$287
CZ12	SMUD/PGE	$13,726	0.93	($1,109)	0.98	($342)
CZ13	PGE	$13,726	1.63	$9,953	1.72	$11,302
CZ14	SCE/SCG	$13,726	1.42	$6,655	1.52	$8,115
CZ14	SDGE	$13,726	2.00	$15,653	1.98	$15,386
CZ15	SCE/SCG	$13,726	1.94	$14,686	2.06	$16,670
CZ16	PGE	$13,726	0.95	($737)	1.00	$49

Table 1414. [1992-2010] 3 kW PV without Solar Tax Credit (Std)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	On-Bill Savings			
			On-Bill B/C Modest Gas Escalation	On-Bill NPV Modest Gas Escalation	On-Bill B/C High Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$13,726	0.71	($4,475)	0.75	($3,885)
CZ02	PGE	$13,726	0.73	($4,198)	0.77	($3,593)
CZ03	PGE	$13,726	0.72	($4,411)	0.76	($3,817)
CZ04	PGE	$13,726	0.80	($3,121)	0.84	($2,459)
CZ04	CPAU	$13,726	1.16	$2,477	1.22	$3,433
CZ05	PGE	$13,726	0.73	($4,299)	0.76	($3,700)
CZ05	PGE/SCG	$13,726	0.73	($4,299)	0.76	($3,700)
CZ06	SCE/SCG	$13,726	0.61	($6,143)	0.65	($5,520)
CZ07	SDGE	$13,726	0.94	($931)	0.93	($1,057)
CZ08	SCE/SCG	$13,726	0.98	($242)	1.05	$767
CZ09	SCE/SCG	$13,726	0.88	($1,890)	0.94	($988)
CZ10	SCE/SCG	$13,726	0.96	($676)	1.02	$305
CZ10	SDGE	$13,726	1.51	$8,054	1.50	$7,852
CZ11	PGE	$13,726	1.10	$1,569	1.16	$2,477
CZ12	PGE	$13,726	0.80	($3,169)	0.84	($2,510)
CZ12	SMUD/PGE	$13,726	0.93	($1,109)	0.98	($342)
CZ13	PGE	$13,726	1.27	$4,170	1.33	$5,215
CZ14	SCE/SCG	$13,726	1.15	$2,295	1.22	$3,470
CZ14	SDGE	$13,726	1.66	$10,386	1.65	$10,164
CZ15	SCE/SCG	$13,726	1.37	$5,788	1.46	$7,191
CZ16	PGE	$13,726	0.81	($3,006)	0.85	($2,338)

Table 1515. [Pre-1978] 3 kW PV without Solar Tax Credit (CARE)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	On-Bill Savings			
			On-Bill B/C Modest Gas Escalation	On-Bill NPV Modest Gas Escalation	On-Bill B/C High Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$13,726	0.62	($6,030)	0.65	($5,522)
CZ02	PGE	$13,726	0.64	($5,707)	0.67	($5,182)
CZ03	PGE	$13,726	0.60	($6,344)	0.63	($5,853)
CZ04	PGE	$13,726	0.83	($2,725)	0.87	($2,042)
CZ05	PGE	$13,726	0.60	($6,266)	0.63	($5,771)
CZ05	PGE/SCG	$13,726	0.60	($6,266)	0.63	($5,771)
CZ06	SCE/SCG	$13,726	0.71	($4,578)	0.75	($3,852)
CZ07	SDGE	$13,726	0.71	($4,508)	0.71	($4,604)
CZ08	SCE/SCG	$13,726	0.97	($483)	1.03	$510
CZ09	SCE/SCG	$13,726	0.90	($1,530)	0.96	($605)
CZ10	SCE/SCG	$13,726	0.97	($465)	1.03	$530
CZ10	SDGE	$13,726	1.19	$3,032	1.18	$2,872
CZ11	PGE	$13,726	1.07	$1,150	1.13	$2,036
CZ12	PGE	$13,726	0.79	($3,324)	0.83	($2,673)
CZ13	PGE	$13,726	1.23	$3,587	1.29	$4,601
CZ14	SCE/SCG	$13,726	1.17	$2,662	1.25	$3,861
CZ14	SDGE	$13,726	1.28	$4,436	1.27	$4,264
CZ15	SCE/SCG	$13,726	1.57	$8,962	1.67	$10,572
CZ16	PGE	$13,726	0.79	($3,342)	0.83	($2,692)

Table 1616. [1978-1991] 3 kW PV without Solar Tax Credit (CARE)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	On-Bill Savings			
			On-Bill B/C Modest Gas Escalation	On-Bill NPV Modest Gas Escalation	On-Bill B/C High Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$13,726	0.60	($6,343)	0.63	($5,851)
CZ02	PGE	$13,726	0.56	($6,845)	0.59	($6,380)
CZ03	PGE	$13,726	0.57	($6,757)	0.60	($6,287)
CZ04	PGE	$13,726	0.76	($3,715)	0.80	($3,085)
CZ05	PGE	$13,726	0.57	($6,686)	0.60	($6,213)
CZ05	PGE/SCG	$13,726	0.57	($6,686)	0.60	($6,213)
CZ06	SCE/SCG	$13,726	0.61	($6,195)	0.64	($5,575)
CZ07	SDGE	$13,726	0.62	($6,004)	0.61	($6,087)
CZ08	SCE/SCG	$13,726	0.91	($1,483)	0.96	($555)
CZ09	SCE/SCG	$13,726	0.85	($2,368)	0.90	($1,497)
CZ10	SCE/SCG	$13,726	0.90	($1,597)	0.96	($676)
CZ10	SDGE	$13,726	1.10	$1,560	1.09	$1,413
CZ11	PGE	$13,726	0.98	($295)	1.03	$515
CZ12	PGE	$13,726	0.72	($4,320)	0.76	($3,722)
CZ13	PGE	$13,726	1.12	$1,893	1.18	$2,818
CZ14	SCE/SCG	$13,726	1.07	$1,051	1.14	$2,144
CZ14	SDGE	$13,726	1.18	$2,878	1.17	$2,719
CZ15	SCE/SCG	$13,726	1.37	$5,735	1.45	$7,135
CZ16	PGE	$13,726	0.74	($4,126)	0.78	($3,517)

Table 1717. [1992-2010] 3 kW PV without Solar Tax Credit (CARE)

Climate Zone	Electric/ Gas Utility	First Incremental Cost	On-Bill Savings			
			On-Bill B/C Modest Gas Escalation	On-Bill NPV Modest Gas Escalation	On-Bill B/C High Gas Escalation	On-Bill NPV High Gas Escalation
CZ01	PGE	$13,726	0.56	($6,963)	0.59	($6,504)
CZ02	PGE	$13,726	0.26	($11,640)	0.20	($12,611)
CZ03	PGE	$13,726	0.55	($6,997)	0.58	($6,540)
CZ04	PGE	$13,726	0.62	($5,900)	0.66	($5,385)
CZ05	PGE	$13,726	0.56	($6,932)	0.59	($6,471)
CZ05	PGE/SCG	$13,726	0.56	($6,932)	0.59	($6,471)
CZ06	SCE/SCG	$13,726	0.51	($7,652)	0.55	($7,127)
CZ07	SDGE	$13,726	0.48	($8,115)	0.48	($8,180)
CZ08	SCE/SCG	$13,726	0.78	($3,430)	0.83	($2,629)
CZ09	SCE/SCG	$13,726	0.72	($4,462)	0.76	($3,728)
CZ10	SCE/SCG	$13,726	0.76	($3,748)	0.81	($2,968)
CZ10	SDGE	$13,726	0.86	($2,225)	0.85	($2,340)
CZ11	PGE	$13,726	0.79	($3,259)	0.83	($2,605)
CZ12	PGE	$13,726	0.63	($5,876)	0.66	($5,359)
CZ13	PGE	$13,726	0.89	($1,678)	0.94	($941)
CZ14	SCE/SCG	$13,726	0.89	($1,676)	0.95	($761)
CZ14	SDGE	$13,726	0.95	($838)	0.94	($964)
CZ15	SCE/SCG	$13,726	0.99	($142)	1.06	$873
CZ16	PGE	$13,726	0.63	($5,850)	0.66	($5,333)

6 References

California Energy Commission. (2017). Rooftop Solar PV System. Measure number: 2019-Res-PV-D Prepared by Energy and Environmental Economics, Inc. Retrieved from https://efiling.energy.ca.gov/getdocument.aspx?tn=221366

California Energy Commission. (2021b). *Final Express Terms for the Proposed Revisions to the 2022 Energy Code Reference Appendices.* Retrieved from https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-BSTD-01

California Energy Commission. (2023). *2025 Energy code Hourly Factors*. Retrieved from https://www.energy.ca.gov/files/2025-energy-code-hourly-factors

California Energy Commission. (2023). *Draft 2025 Energy Code Express Terms.* Retrieved from https://efiling.energy.ca.gov/GetDocument.aspx?tn=252915&DocumentContentId=88051

California Public Utilities Commission. (2021a). *Utility Costs and Affordability of the Grid of the Future: An Evaluation of Electric Costs, Rates, and Equity Issues Pursuant to P.U. Code Section 913.1.* Retrieved from https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2021/senate-bill-695-report-2021-and-en-banc-whitepaper_final_04302021.pdf

California Public Utilities Commission. (2021b). *Database for Energy-Efficient resources (DEER2021 Update).* Retrieved April 13, 2021, from http://www.deeresources.com/index.php/deer-versions/deer2021

E-CFR. (2020). *https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431_197*. Retrieved from Electronic Code of Federal Regulations: https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=8de751f141aaa1c1c9833b36156faf67&mc=true&n=pt10.3.431&r=PART&ty=HTML#se10.3.431_197

Statewide CASE Team. (2020). *Residential Energy Savings and Process Improvements for Additions and Alterations.*

Statewide CASE Team. (2023). *Multifamily Domestic Hot Water.* Retrieved from https://title24stakeholders.com/wp-content/uploads/2023/08/2025_T24_CASE-Report-_MF-DHW-Final-1.pdf

Statewide CASE Team. (2023). *Residential HVAC PErformance.* Retrieved from https://title24stakeholders.com/wp-content/uploads/2023/11/Revised_2025_T24_Final-CASE-Report-RES-HVAC-Performance.pdf

Statewide Reach Codes Team. (2021). *2019 Cost-Effectiveness Study: Existing Single Family Residential Buidling Upgrades.* Retrieved from https://localenergycodes.com/content/resources

Get In Touch

The adoption of reach codes can differentiate jurisdictions as efficiency leaders and help accelerate the adoption of new equipment, technologies, code compliance, and energy savings strategies.

As part of the Statewide Codes & Standards Program, the Reach Codes Subprogram is a resource available to any local jurisdiction located throughout the state of California.

Our experts develop robust toolkits as well as provide specific technical assistance to local jurisdictions (cities and counties) considering adopting energy reach codes. These include cost-effectiveness research and analysis, model ordinance language and other code development and implementation tools, and specific technical assistance throughout the code adoption process.

If you are interested in finding out more about local energy reach codes, the Reach Codes Team stands ready to assist jurisdictions at any stage of a reach code project.

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Contact

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Explore

The Cost-Effectiveness Explorer is a free resource to help California local governments and stakeholders develop energy policies for buildings.

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August 18, 2025

San Rafael City Council
1400 5th Avenue
San Rafael, CA 94901

RE: Building Code Ordinance Amendments

Honorable Mayor and Council Members,
Sustainable San Rafael appreciates the City's efforts to strengthen the Flexpath portions of the proposed State Building Code to bring them into closer alignment with San Rafael's conditions and goals.

By updating scoring targets for evaluating the rehabilitation of homes built prior to 1992, the recommended San Rafael ordinance improves on the version adopted last year. The approach suggested by staff is an innovative response to recently enacted State constraints.

However, rather than zeroing out the currently required score for homes built between 1992 and 2010, we request that the City maintain a minimal score of 1 for those buildings. Assuming that it satisfies State calculations, such a low score would at least keep in place the process by which building owners consider additional energy efficiency improvements from the wide menu of potential improvements offered.

We applaud the City's adoption of the portions of the new State code relating to new construction, which we understand will encourage significantly greater electrification and energy efficiency. It is also our understanding from the Staff Report that the portions of the new State code relating to EV readiness closely match the City requirements being replaced.

Thank you for the Council's commitment to a more sustainable community, and for recognizing the importance of building electrification in meeting our greenhouse gas goals and in maintaining the health of our residents.

Sincerely,

William Carney,
Vice President