DOCKETED	
Docket Number:	24-BSTD-03
Project Title:	2025 Energy Code Compliance Software, Manuals and Forms
TN #:	263583
Document Title:	2025 Single-Family Certificates of Compliance (CF1R)
Description:	This draft Single-Family Certificates of Compliance (CF1R) will be subject for vote during an Energy Commission Business Meeting. 2025 Energy Code compliance documents to record compliance with the 2025 Energy Code.
Filer:	Haile Bucaneg
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	5/30/2025 1:36:13 PM
Docketed Date:	5/30/2025

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. General Information

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg):	
05	CA City:		06	Number of Dwelling Units with Additions:	
07	Zip Code:		08	Fuel Type:	
09	Climate Zone:		10	Total Conditioned Floor Area (ft^2) (Addition):	
11	Building Type:		12	Slab Area (ft^2):	
13	Project Scope:		14	Fenestration Exceptions:	

B. Opaque Surface Details – Framed (Section 150.2(a) **and 150.1(c)1**)

Notes:

- Where insulation is installed above the roofing membrane, or above the layer used to seal the roof from water penetration, the insulation shall have a maximum water absorption of 0.3 percent by volume when tested according to American Society for Testing and Materials (ASTM) Standard C272.
- Extensions of existing wood-framed walls may retain the dimensions of the existing walls and shall install cavity insulation of R-15 in a 2x4 framing, and R-21 in a 2x6 framing.

01	02	03	04	05	06a	06b	07	08	09
					Proposed			**Required**	
Tag/ID	Assembly Type	Frame Type	Frame Depth (inches)	Frame Spacing (inches)	Cavity R-value	Continuous Insulation R-value	U-Factor	U-Factor from Table 150.1-A	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

C. Opaque Surface Details – Nonframed (Section 150.1(c)1)

Note:

Where insulation is installed above the roofing membrane, or above the layer used to seal the roof from water penetration, the insulation shall have a maximum water absorption of 0.3 percent by volume when tested according to American Society for Testing and Materials (ASTM) Standard C272.

01	02	03	04	05	06	07	08	09
				Proposed			**Required**	
Tag/ID	Assembly Type	Assembly Materials	Thickness (inches)	Core Insulation R-value	Continuous Insulation R-value	U-Factor	U-Factor from Table 150.1-A	Comments

D. Opaque Surface Details – Masonry/Mass Walls (Section 150.1(c)1Bii)

Note: When insulation is added to the outside of a mass wall and/or when the inside is furred and insulated, the performance data may be adjusted using Equation 4-4 in the Reference Appendices, Joint Appendix, JA4.

01	02	03	04	05	06	07	08	09	10	11	12
		Proposed						**Required**			
				Exterior Insulation		Interior Insulation		Exterior Insulation		Interior Insulation	
Tag/ID	Above or Below Grade?	Masonry/Mass Type	Masonry/Mass Thickness (inches)	R-value	U-factor	R-value	U-factor	R-value	U-factor	R-value	U-factor

E. Slab On Grade/Concrete Raised Floor Insulation (Table 150.1-A)

Note: Heated slab floors require mandatory slab insulation (see Table 110.8-A).

01	02	03	04	05	06
	Proposed		**Required**		
Floor Type	Insulation R-value	Insulation U-factor	Insulation R-value	Insulation U-factor	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

F. Radiant Barrier (Section 150.1(c)2)

Notes: A radiant barrier is required (for Climate Zones 2-15)

- Radiant barriers shall meet specific eligibility and installation criteria to receive energy credit for compliance with the Building Energy Efficiency Standards for low-rise residential buildings. Refer to Reference Appendices, Residential Appendix, RA4.2.1
- The emittance of the radiant barrier shall be less than or equal to 0.05 as tested in accordance with American Society for Testing and Materials (ASTM) C1371 or ASTM E408.
- For Prescriptive Compliance the attic shall be ventilated to provide a minimum free ventilation area of not less than 1 square foot (ft^2) of vent area for each 300 square feet (ft^2) of attic floor area with a minimum of 30 percent to upper vents. Refer to Reference Appendices, Residential Appendix, RA4.2.1.
- Ridge vents or gable end vents are recommended to achieve the best performance. The material should be cut to allow for full airflow to the venting. Refer to Reference Appendices, Residential Appendix, RA4.2.1.1

01	02
Radiant Barrier installed below the roof deck and on all gable end walls	Comment

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

G. Roofing Products (Cool Roof) (Section 150.1(c)11)

Notes:

- Exception 1: Any roof area covered by building integrated photovoltaic (PV) panels and solar thermal panels are not required to comply with the Cool Roof requirements.
- Exception 2: Roof constructions with weight of 25 pounds per square foot (lb/ft^2) are also not required to comply with the Cool Roof requirements.
- Liquid field applied roof coatings must comply with installation criteria from Section 110.8(i)4.

01	02	03	04	05	06	07	08	09	10	11	12	13
						Proposed				**Required**		
Tag/ID	Exception	Roof Pitch	Method of Compliance	Product Type	CRRC Product ID Number	Initial Solar Reflectance	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)

H. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.2(a)1)

01	02	03	04	05	06	07	08	09	10
Addition Type ft^2	Maximum Allowed Fenestration Area for All Orientations ft^2		Maximum Allowed West-Facing Fenestration Area Only ft^2		Maximum Allowed U-factor (Windows)	Maximum Allowed U-factor (Skylights)	Maximum Allowed SHGC (Windows)	Maximum Allowed SHGC (Skylights)	Comments
	The Greater		The Greater						
	Maximum Calculated based on Allowed %	Maximum Calculated Allowed ft^2	Maximum Calculated based on Allowed %	Maximum Calculated Allowed ft^2					

PRESCRIPTIVE RESIDENTIAL ADDITIONS 1,000 FT2 OR LESS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

I. Fenestration Proposed Areas and Efficiencies (Section 150.2(a))

Note: If meeting Exception 1 to 150.1(c)3A, New dwelling units with a conditioned floor area of 500 square feet or less in Climate Zone 5 may comply with a maximum U-factor of 0.30.

If meeting Exception 2 to 150.1(c)3A, Installing less than or equal to 3 square feet (ft^2) glass in door or less than or equal to 3 square feet (ft^2) tubular skylight, it is assumed to meet the minimum required U-factor of 0.27 for climate zones 1 through 5, 11 through 14 and 16, and 0.30 for climate zones 6 through 10 and 15 & SHGC of 0.23 for climate zones 2, 4, 6 through 15.

If meeting Exception 3 to 150.1(c)3A, Installing less than or equal to 16 square feet (ft^2) tubular skylight, it is assumed to meet the minimum required U-factor (40) & SHGC (0.30). In Climate Zones 1, 3, 5, and 16 there is no SHGC requirement.

Doors with greater than or equal to 25 percent glazing area are considered glazed doors and are treated as fenestration products.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Tag/ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation N, S, W, E	Number of Panes	Proposed Fenestration Area (ft^2) (N, S, E)	Proposed West Facing Fenestration Area (ft^2)	Proposed U-factor	Proposed U-factor Source	Proposed SHGC	Proposed SHGC Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03
15	Total Proposed Fenestration Area												
16	Maximum Allowed Fenestration Area												
17	Compliance Statement:												
18	Total Proposed West-Facing Fenestration Area												
19	Maximum Allowed West-Facing Fenestration Area												
20	Compliance Statement:												
21	Proposed Fenestration U-factor (Windows)												
22	Required Fenestration U-factor (Windows)												
23	Compliance Statement:												
24	Proposed Fenestration SHGC (Windows)												
25	Required Fenestration SHGC (Windows)												
26	Compliance Statement:												
27	Proposed Fenestration U-factor (Skylights)												
28	Required Fenestration U-factor (Skylights)												
29	Compliance Statement:												
30	Proposed Fenestration SHGC (Skylights)												
31	Required Fenestration SHGC (Skylights)												
32	Compliance Statement:												

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

J. Opaque Swinging Doors to Exterior (Section 150.1(c)5)

Notes:

- Any door with 25 percent or more glass is counted as a fenestration product in Tables H and I.
- Do not include fire-rated doors between garage or unconditioned space and conditioned space.
- If using weighted average to achieve required maximum U-factor, attach CF1R-ENV-02-E.

01	02	03	04	05	06	07
Tag/ID	Area	Proposed U-factor	Proposed U-factor Source	Required Maximum U-factor	Weighted Average (Yes/No)	Comments

K. Space Conditioning (SC) Systems – Heating/Cooling (Section 150.2(b) or Section 150.1(c)7)

01	02	03
Dwelling Unit Name	Dwelling Unit Total CFA = Sum of Existing + Addition (ft^2)	Comments

L. Water Heating Systems (Section 150.2(a)1D)

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.

Options:

1. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has an ANSI/CTA-2045-B communication port; or
2. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
3. For addition that are 500 square feet or less, an electric water heater with point of use distribution as specified in the Reference Appendices, Residential Appendix, RA4.4.5

01	02	03	04	05	06	07
Water Heating System ID or Name	System Option (from §150.2(a)1D)	# of Water Heaters/ Compressors in System	Water Heater Type	Fuel Type	Tank Location	Distribution Type

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

M. Indoor Air Quality (IAQ) Fan Information

01	02	03
Fan Name	IAQ Type	Comments

PRESCRIPTIVE RESIDENTIAL ADDITIONS 1,000 FT2 OR LESS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

CF1R-ADD-01-E User Instructions

Minimum requirements for prescriptive addition compliance can be found in Building Energy Efficiency Standards Section 150.2(a), and Table 150.1-A. Completing these compliance documents will require that you have the Reference Appendices for the 2025 Building Energy Efficiency Standards, which contain the Joint Appendices used to determine climate zone and to complete the section for opaque surfaces. When the term CF1R is used it means the CF1R-ADD-01. Worksheets are identified by their entire name and subsequently by only the worksheet number, such as CF1R-ENV-02.

Instructions for sections with column numbers and row letters are given separately.

If any part of the addition does not comply, prescriptive compliance fails, in which case the performance (or computer) compliance approach may be used in an attempt to achieve compliance. Only the new construction is required to meet the requirements specified in this documentation. If any alterations to the existing building are occurring, those are documented on one or more of the CF1R-ALT compliance documents.

A. General Information

1. Project Name: Identifying information, such as owner's name.
2. Date Prepared: Date of document preparation.
3. Project Location: Legal street address of property or other applicable identifying information.
4. Building Front Orientation: Building front expressed in degrees, where North = 0, East = 90, South = 180, and West = 270. The Standards (Section 100.1) include the following additional details for determining orientation:
    - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
    - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
    - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
    - West is oriented to within 45 degrees of true west, including 45 degrees north of west.
5. CA City: Legal city/town of property.
6. Number of Dwelling Units with Additions: this field will automatically default to 1 for single family
7. Zip Code: 5-digit zip code for the project location (used to determine climate zone).
8. Fuel Type: this field will automatically default to Electricity.

9. Climate Zone: From Joint Appendix JA2.1.1.
10. Total Conditioned Floor Area: Enter the new conditioned floor area, in ft^2, as measured from the outside of exterior walls of the addition.
11. Building Type: this field will automatically default to Single Family (includes duplex)
12. Slab Area: Area of the first floor slab of the addition (if any) in square feet (ft^2).

13. Project Scope: Select all that apply: Addition less than 300 square feet (ft^2), Addition greater than 300 to less than 400 square feet (ft^2), Addition greater than 400 to less than 700 square feet (ft^2), Addition greater than 700 to less than 1000 square feet (ft^2), Accessory Dwelling Unit (ADU) Addition 300 square feet (ft^2) or less, Accessory Dwelling Unit (ADU) Addition greater than 300 ft^2 up to 400 ft^2, Accessory Dwelling Unit (ADU) Addition greater than 400 ft^2 up to 700 ft^2, Accessory Dwelling Unit (ADU) Addition greater than 700 ft^2 up to 1000 ft^2, space heating system, space cooling system, space conditioning duct system, water heating, or fenestration, kitchen remodel.
14. Exceptions to Fenestration U-factor and SHGC: Installing less than or equal to 3 square feet (ft^2) glass in door, Installing less than or equal to 3 square feet (ft^2) tubular skylight, Installing less than or equal to 16 square feet (ft^2) skylight, in Climate Zones 2, 4, and 6 through 15 with a maximum U-factor of 0.40 and a maximum SHGC of 0.30 or NA.

B. Opaque Surface Details - Framed

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Roof, Ceiling, Wall, or Floor.
3. Frame Type: Wood or Metal.
4. Frame Depth: Nominal dimensions (in inches) of framing material such as 2x4 or 2x6.
5. Frame Spacing: 16,24 or 48 (inches on center).

6a. Proposed Cavity R-value: Insulation installed between framing members.

6b. Proposed Continuous Insulation: R-value of rigid or continuous insulation (not interrupted by framing). See Table 4.3.4. of the Reference Appendices, Joint Appendix, JA4 for metal frame construction.

7. Proposed U-factor: The U-factor for the proposed assembly must be less than or equal to Column 10 or have an attached Area Weighted Average Calculation Worksheet (CF1R-ENV-01-E) to show that a weighted U-factor for multiple assemblies will meet the maximum value in Column 10.
8. Required U-factor: From Package A or from Section 150.2. Value required based on climate zone and assembly type.
9. Comments: Any notes regarding location, unique conditions, or attachments.

C. Opaque Surface Details – Non-Framed

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Assembly Type: Roof, Wall.
3. Assembly Materials: SIP OSB, SIP I-Joist, SIP Single 2x, SIP Double 2x.
4. Thickness: Thickness in inches.
5. Proposed Core Insulation R-value: Insulation installed within the materials or on the inside. See Reference Appendices, Joint Appendix, JA4 for guidance.
6. Proposed Continuous Insulation R-value: Insulation installed on the exterior. See Reference Appendices, Joint Appendix, JA4 for guidance.
7. Proposed U-factor: Proposed assembly U-factor from Reference Appendices, Joint Appendix, JA4 or CF1R-ENV-02-E. Must be less than or equal to Column 10.

8. Required U-factor from Table 150.1-A: Based on assembly type and climate zone.
9. Comments: Any notes regarding location, unique conditions, or attachments.

D. Opaque Surface Details – Masonry/Mass Walls

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Mass Wall Location: Indicate whether the mass wall is installed above grade o below grade..
3. Masonry/Mass Wall Type: Clay Brick, Clay Hollow Unit, Concrete Masonry Unit (CMU) Light Weight, Concrete Masonry Unit (CMU) Medium Weight, Concrete Masonry Unit (CMU) Normal Weight, Concrete, ICF. See Reference Appendices, Joint Appendix, JA4 for guidance.
4. Masonry/Mass Wall Thickness: Thickness (in inches) of mass.

5-6. Proposed Exterior Insulation R-value or U-factor: Enter the R-value or U-factor of proposed insulation on the outside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

7-8. Proposed Interior Insulation R-value or U-factor: Enter the R-value or U-factor) of proposed insulation on the inside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

9-10. Required Exterior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 7 or 8) for exterior insulation will be completed based on the Table 150.1-A requirements for the wall type.

11-12. Required Interior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 9 or 10) for interior insulation will be completed based on the Table 150.1-A requirements for the wall type.

E. Slab On Grade/Concrete Raised Floor Insulation

Slab edge performance specifications and installation criteria are found in Sections 150.0(l) and 150.1(c)1D (Table 150.1-A). Requirements vary by climate zone and slab conditions.

1. Floor type: Types include slab-on-grade or raised slab.
    - Slab-on-grade floors require slab edge insulation in climate zone 16 only.
    - Raised slab must be insulated to R-8 in climate zones 1, 2, 11, 13, 14 and 16, R-4 in climate zones 12 and 15, and no insulation is required in climate zones 3-10.
2. Proposed R-value: When required, insulation can be specified by either R-value or U-factor (use the same descriptor throughout Table E). When specifying an R-value complete Column 2. Use the same descriptor (R-value or U-factor) throughout Table E.
3. Proposed Insulation U-Factor: When required, specify the U-factor of proposed insulation in Column 3.
4. Required Insulation R-value: Specify the value required, which will vary by climate zone and type of slab. Values are from Table 150.1-A.
5. Required Insulation U-factor: Specify the value required, which will vary by climate zone and type of slab. Values are from Table 150.1-A.
6. Comments: Any notes regarding location, unique conditions, or attachments.

NOTE: There is a mandatory slab edge insulation requirement for heated slab floors. Since mandatory requirements are not listed on the Certificate of Compliance, this is provided for information purposes only. The specific requirements are in Sections 110.8(g) and Table 110.8-A.

F. Radiant Barrier

1. Radiant Barrier installed below the roof deck and on all gable end walls: Yes or No..
2. Comments: Any notes regarding location, unique conditions, or attachments.

NOTE: Radiant barrier performance specifications and installation criteria are found in Sections 110.8(j) and 150.1(c)2, and in Reference Appendices, Residential Appendix, RA4.2.1.

G. Roofing Products (Cool Roof)

Roofing requirements are found in Section 110.8(i) and 150.1(c)11. Depending on the climate zone and roof slope, a cool roof (defined as a minimum aged solar reflectance and thermal emittance, or a minimum SRI) may be required by Package A.

NOTE: Exceptions include (1) additions of 300 square feet (ft^2) or less, (2) low-slope roofs (pitch less than 2:12) in climate zones 1-12, 14 and 16; (3) steep-slope roofs (pitch greater than or equal to 2:12) in climate zones 1-9 and 16; (4) roof constructions that have thermal mass over the roof membrane with at least 25 pounds per square feet (lb/ft^2); and (5) any roof area covered by building integrated photovoltaic (PV) panels and solar thermal panels (the area of roof not covered by photovoltaic panels would still need to meet any applicable cool roof requirements).

1. Tag/ID: A label (if any) from the plans, such as R1.
2. Exception: User selects from 1, 2, or None. Mass roofs are not required to have a cool roof even if the climate zone specifies minimum performance requirements.
3. Roof Pitch: Expressed as 4:12, for example, which means the roof rises 4 feet within a span of 12 feet. When roofs have multiple pitches the requirements are based on the pitch of 50 percent or more of the roof.
4. Method of Compliance: Indicate if the method of compliance is going to be based on Aged Solar Reflectance and Thermal Emittance or is it going to be based on the Solar Reflectance Index (SRI).
5. Product Type: See Cool Roof Rating Council's directory. Generally, product types include single-ply roof, wood shingles, asphalt roof, metal roof, tile roof.
6. The CRRC Product ID Number is obtained from the Cool Roof Rating Council's Rated Product Directory. Products are listed by manufacturer, brand, type of installation, roofing material, and color, as well as product performance.
7. Proposed Initial Solar Reflectance: Based on the product chosen from the Cool Roof Rating Council's Rated Product Directory. If using default assumption indicate NA since the Aged Solar Reflectance is available.
8. Proposed Aged Solar Reflectance: Value is from the Cool Roof Rating Council's Rated Product Directory. If the aged value is not available, calculate the calculated Aged Solar Reflectance using the Solar Reflectance Index (SRI) Calculation worksheet located on the California

Energy Commission website or the aging equation $\rho_{aged}=[0.2+\beta[\rho_{initial}-0.2]$, where $\rho_{initial}$ = the initial solar reflectance and soiling resistance β is listed by product type below.

VALUES OF SOILING RESISTANCE β BY PRODUCT TYPE

Product Type	CRRC Product Category	β
Field-Applied Coating	Field-Applied Coating	0.65
Other	Not A Field-Applied Coating	0.70

9. Proposed Thermal Emittance: From the product specification default value. If using a calculated SRI, enter the thermal emittance used to calculate SRI.
10. Proposed Solar Reflectance Index (SRI): It is optional to meet the SRI, but if chosen to do so use the Solar Reflectance Index (SRI) Calculation Worksheet found on the California Energy Commission website.
11. Required Aged Solar Reflectance: Based on climate zone and roof slope.
12. Required Thermal Emittance: Based on climate zone and roof slope.
13. Required Solar Reflectance Index (SRI): Based on climate zone and roof slope.

If the cool roofing requirements will be met by a liquid field applied coating, Section 110.8(i)4 requires the coating be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the manufacturer.

H. Fenestration/Glazing Allowed Areas and Efficiencies

Fenestration areas are expressed in square feet, not square inches.

The climate zone and size of the addition will affect the area of fenestration (also known as glazing) allowed. If limited to 20 percent, for example, this is calculated as Conditioned Floor Area (CFA) of the addition x 0.20 = Total square footage (ft^2) of fenestration allowed.

1. Addition Type: Based on "Project Scope." The addition's area in square feet (ft^2)—whether less than or equal to 300, greater than 300 to less than or equal to 400, greater than 400 to less than or equal to 700, or greater than 700 to less than or equal to 1,000.

2 - 9. These fields will be completed based on conditioned floor area of the addition and/or climate zone. The values in these fields will be entered into Section I.

Maximum allowed fenestration area for all orientations is the greater of the values in Column 2 or 3:

2. Maximum Calculated based on Allowed Percentage (%): The addition's CFA multiplied by the allowed percentage (%). The maximum total fenestration area is 30 percent for additions up to 400 square feet (ft^2), 25 percent for additions greater than 400 square feet (ft^2) but no greater than 700 square feet (ft^2), and 20 percent for additions greater than 700 square feet (ft^2).
3. Maximum Calculated Allowed Area (ft^2): The maximum total fenestration area is 75 square feet (ft^2) for additions up to 400 square feet (ft^2), 120 square feet (ft^2) for additions greater than 400 square feet (ft^2) but no greater than 700 square feet (ft^2), and 175 square feet (ft^2) for additions of greater than 700 square feet (ft^2).

Maximum allowed west-facing area is the greater of the values in Column 4 or 5:

4. Maximum Calculated based on Allowed Percentage (%): The maximum west-facing fenestration area (in climate zones 2, 4, and 6-16) is 5 percent for additions greater than 700 square feet (ft^2).
5. Maximum Calculated Allowed Area (ft^2): The maximum west-facing fenestration area (in climate zones 2, 4, and 6-16) is 60 square feet (ft^2) for additions no greater than 700 square feet (ft^2), and 70 square feet (ft^2) for additions of greater than 700 square feet (ft^2).

Addition CFA:	**≤ 400 ft^2**		**> 400 to ≤ 700 ft^2**		**> 700 to ≤ 1,000 ft^2**	
	The Greater Of:		**The Greater Of:**		**The Greater Of:**	
Orientation	**Percentage**	**Area (ft^2)**	**Percentage**	**Area (ft^2)**	**Percentage**	**Area (ft^2)**
West-facing (CZs 2, 4, 6-16)	-	60	-	60	5%	70
All Orientations	30%	75	25%	120	20%	175

NOTE: West includes any vertical fenestration oriented to within 45 degrees of true west (in either direction), including 45 degrees north of west, any skylights oriented west, and skylights facing any direction with a pitch of less than 1:12.

6. Maximum Allowed U-factor (Windows): Maximum area-weighted average of 0.30 for climate zones 6-10 and 15, and 0.27 for climate zones 1-5, 11-14 and 16.
7. Maximum Allowed U-factor (Skylights): Maximum area-weighted average of 0.30 for climate zones 6-10 and 15, and 0.27 for climate zones 1-5, 11-14 and 16, unless meeting one of the Exceptions to 150.1(c)3A. If meeting one of the Exceptions, this field will be 0.40.
8. Maximum Allowed SHGC (Windows): Maximum area-weighted average of 0.23 for climate zones 2, 4, and 6-14 and 0.20 for climate zone 15; otherwise N/A.
9. Maximum Allowed SHGC (Skylights): Maximum area-weighted average of 0.23 for climate zones 2, 4, 6 through 15, unless meeting one of the Exceptions to 150.1(c)3A. If meeting one of the Exceptions, this field will be 0.30; otherwise, N/A.
10. Comments: Any notes regarding location, unique conditions, or attachments.

I. Fenestration/Glazing Proposed Areas and Efficiencies

1. Tag/ID: Provide a name or designator for each unique type of fenestration surface. This designator should be used consistently throughout the plan set (elevations, finish schedules, etc.) such as Window-1, Skylight-1, etc. to identify each surface. It should also be consistently used on the other compliance documents.
2. Fenestration Type: Indicate the type of fenestration construction (e.g., Fixed Window, Operable Window, Skylight, Tubular Skylight, or Glass in Door).

NOTE: Doors with glazing are counted in one of two ways. The entire area of a door with 25 percent or more glazing is considered fenestration. A door with less than 25 percent glazing can be considered as all fenestration, or can be calculated as the actual glass area with a 2-inch (0.17 ft) frame all around.

3. Frame Type: Metal, metal thermal break, or non-metal.
4. Dynamic Glazing: Indicate whether the fenestration has an integrated shading device, chromogenic glazing, or none for no dynamic glazing. Chromogenic glazing shall be considered separately from other fenestration types.
5. Orientation: Orientation can be North, East, South, or West. If documentation is for a building that may be built in any direction, in a climate zone that limits west-facing fenestration, complete this section assuming the side of the building with the most fenestration faces west.
   NOTE: West includes any vertical fenestration oriented to within 45 degrees of true west, excluding 45 degrees south of west; any skylights oriented west; and skylights facing any direction with a pitch of less than 1:12.
6. Number of Panes: Indicate the number of panes for each Tag/ID; is it a single, double, or triple pane window?
7. Proposed Fenestration Area (ft^2): The size of any windows, doors with glass, or skylights within the floor area of the addition (combine windows with the same characteristics). Indicate the area in square feet (ft^2) of each exterior fenestration type, including west-facing fenestration.
8. Proposed West Facing Fenestration Area (ft^2): In climate zones 2, 4, and 6-16, enter the size of any west-facing windows, doors with glass, or skylights within the floor area of the addition. Indicate the area in square feet (ft^2) of each exterior west-facing fenestration type separately.
9. Proposed U-factor: Enter
   (a) the National Fenestration Rating Council (NFRC) U-factor based on the proposed brand and type of fenestration using NFRC certified values; or
   (b) the default value from Table 110.6-A; or
   (c) the NA6.2 alternate default U-factor (for non-rated site-built fenestration only); or
   (d) the area-weighted average from CF1R-ENV-02.

   If any products (other than the exceptions noted below) have a higher U-factor than 0.30, first complete a CF1R-ENV-02-E to calculate the area-weighted average U-factor, which must be 0.30 or less, and attach it to the CF1R-ADD-01-E.

   NOTES: (1) If meeting Exception 1 to 150.1(c)3A, New dwelling units with a conditioned floor area of 500 square feet or less in Climate Zone 5 may comply with a maximum U-factor of 0.30.
   (2) For the exception – up to 3 square feet (ft^2) of glass in door, enter 0.30 for climate zones 6 through 10 and 15, and enter 0.27 for climate zones 1 through 5, 11 through 14 and 16 .
   (3) For the exceptions - up to 3 square feet (ft^2) of tubular skylights and up to 16 square feet (ft^2) of skylight area, enter 0.40.
   (4) Dynamic glazing is a glazing system that changes its performance U-factor and SHGC based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and solar heat gin coefficient (SHGC) in Columns 9 and 11.
10. Source: The source of the U-factor data for the fenestration product—indicate whether National Fenestration Rating Council (NFRC), Tables 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-weighted Average Worksheet (CF1R-ENV-02).
11. Proposed SHGC: In climate zones 2, 4, and 6-16, enter

(a) the National Fenestration Rating Council (NFRC) solar heat gain coefficient (SHGC) based on the proposed brand and type of fenestration using NFRC certified values, or
(b) the default value from Table 110.6-B, or
(c) the NA6.3 alternate default SHGC (for non-rated site-built fenestration only), or
(d) the Area-weighted Average from CF1R-ENV-02.

If any products (other than the exceptions noted below) have a higher solar heat gain coefficient (SHGC) than 0.23 in a climate zone with a maximum SHGC value, first complete a CF1R-ENV-02-E to calculate the area-weighted average SHGC, which must be 0.23 or less, and attach it to the CF1R-ADD-01-E.

NOTES: (1) For the exceptions - up to 3 square feet (ft^2) of tubular skylights and up to 16 square feet (ft^2) of skylight area, enter 0.30.
(2) For the exception – up to 3 square feet (ft^2) of glass in door, enter 0.23 for climate zones 2, 4, and 6-15; otherwise N/A .

12. Source: The source of the solar heat gain coefficient (SHGC) data for the fenestration product—indicate whether National Fenestration Rating Council (NFRC), Tables 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-weighted Average Worksheet (CF1R-ENV-02).
13. Exterior Shading Device: If exterior shading devices are used to meet the solar heat gain coefficient (SHGC) requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03-E Solar Heat Gain Coefficient Worksheet) and attach the CF1R-ENV-03-E.

    NOTES: (1) An exterior shading device is not used for products with a National Fenestration Rating Council (NFRC) rated U-factor and SHGC based on a factory integrated shading device.
    (2) Chromogenic glazing shall be considered separately from other fenestration.
14. Combined SHGC from CF1R-ENV-03: If exterior shading devices are combined with the solar heat gain coefficient (SHGC) value of the fenestration to meet the prescriptive SHGC requirements (as indicated in I. 13), indicate the SHGC calculated on form CF1R-ENV-03 and attach the form for each window with an exterior shading device.

15.-32. Automatically completed entries; no user input required.

J. Opaque Swinging Doors to Exterior

1. Tag/ID: Provide a name or designator for each unique door. This designator should be used consistently throughout the plan set (elevations, door schedules, etc.)
2. Area: Calculated area in square feet (ft^2) for each unique door.
3. Proposed U-factor: Enter the proposed U-factor. If value is greater than 0.20, column 06 will autocomplete as Yes.
4. Source: National Fenestration Rating Council (NFRC) or Reference Appendices, Joint Appendix, Table 4.5.1s, 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02).
5. Required Maximum U-factor. This field will always be 0.20.
6. Weighted Average: If column 03 is greater than 0.20 U-factor, attach form CF1R-ENV-02-E.
7. Comments: Any notes regarding location, unique conditions, or attachments.

K. Space Conditioning Systems – Heating/Cooling

If an existing space system will condition an addition, the prescriptive requirements do not apply to that system (Exception 4 to Section 150.2(a)). The enforcement agencies may require verification that the capacity of the existing heating system is adequate to meet the added load of the additional conditioned floor area. Since there is no health and safety code requirement to provide cooling, the enforcement agency will not ask for verification that the capacity of the existing system is adequate to meet the added load of the additional conditioned floor area.

If a new system is installed complete a Certificate of Compliance for Alterations to Space Conditioning Systems (CF1R-ALT-02).

1. Dwelling Unit Name: Name of dwelling unit or any other identifying name.
2. Dwelling Unit Total Conditioned Floor Area (CFA) – Sum of Existing Plus Addition (ft^2): Total dwelling unit conditioned floor area in square feet (ft^2), as measured from the outside of exterior walls of the dwelling unit or building being altered.
3. Comments: Any notes regarding location or unique conditions.

L. Water Heating Systems for Additions

Water heating compliance for an addition is described in Section 150.2(a)1D. When a water heater is added as part of an addition in a single dwelling the Prescriptive Standards allow three
options under Section 150.2(a)1D.

1. Water Heating System Identification or Name: Provide a unique name for each unique water heating system type in the building. If the same water heating system type is used in more than one location in the building, it is sufficient to list the unique water heating system type only once. In order for one water heating system type to be considered the same as another, it must have the same description in Columns 2 through 12.
2. System option:
    1. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has an ANSI/CTA-2045-B communication port; or
    2. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
    3. A gas or propane instantaneous water heater with an input of 200,000 Btu per hour or less and no storage tank; or
    4. For addition that are 500 square feet or less, an electric water heater with point of use distribution as specified in the Reference Appendices, Residential Appendix, RA4.4.5
3. Number of Water Heaters/Compressors in System:
4. Water heater Type: Field is auto-filled based on which system option was chosen.
5. Fuel Type: Field is auto-filled based on which system option was chosen.
6. Tank Location: Field is auto-filled based on which system option was chosen.
7. Distribution Type: Field is auto-filled based on which system option was chosen.

M. Indoor Air Quality (IAQ) Fan Information

1. Fan Name: Provide a unique name for each unique indoor air quality (IAQ) fan type in the building.
2. IAQ Type: Supply, Balanced, Balanced – ERV, Balanced – HRV, Central Fan Integrated (CFI), Central Ventilation System – Supply, or Central Ventilation System – Balanced.
3. Comments: Any notes regarding location or unique conditions.

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

Registration

The CF1R must be registered with an ECC provider prior to submitting for a building permit.

PRESCRIPTIVE RESIDENTIAL ADDITIONS THAT DO NOT REQUIRE FIELD VERIFICATION

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ADD-02-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

This compliance document is only applicable to addition that do not require field verification for compliance. When field verification is required, a CF1R-ADD-01 shall first be registered with an ECC-Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from field verification and diagnostic testing requirements may use the CF1R-ADD-02 and CF2R-ADD-02 compliance documents. Possible exemptions from duct leakage testing include: less than 25 feet (ft) of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by an ECC-Rater. If space conditioning systems are altered and are not exempt from field verification and diagnostic testing, then a CF1R-ADD-01 and CF1R-ALT-02 must be completed and registered with an ECC-Provider Data Registry.

Additions or alterations that utilize closed cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value greater than 5.8 per inch, or open cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R ADD-01 with an ECC-Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

PRESCRIPTIVE RESIDENTIAL ADDITIONS THAT DO NOT REQUIRE FIELD VERIFICATION

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ADD-02-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

A. General Information

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg):	
05	CA City:		06	Number of Dwelling Units with Additions:	
07	Zip Code:		08	Fuel Type:	
09	Climate Zone:		10	Total Conditioned Floor Area (ft^2) (Addition):	
11	Building Type:		12	Slab Area (ft^2):	
13	Project Scope:		14	Fenestration Exceptions	

B. Opaque Surface Details – Framed (Section 150.2(a) and 150.1(c)1)

Note:

- Where insulation is installed above the roofing membrane, or above the layer used to seal the roof from water penetration, the insulation shall have a maximum water absorption of 0.3 percent by volume when tested according to American Society for Testing and Materials (ASTM) Standard C272.
- Extensions of existing wood-framed walls may retain the dimensions of the existing walls and shall install cavity insulation of R-15 in a 2x4 framing, and R-21 in a 2x6 framing.

01	02	03	04	05	06a	06b	07	08	09
					Proposed			**Required**	
Tag/ID	Assembly Type	Frame Type	Frame Depth (inches)	Frame Spacing (inches)	Cavity R-value	Continuous Insulation R-value	U-Factor	U-Factor from Table 150.1-A	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

C. Opaque Surface Details – Nonframed (Section 150.1(c)1)

Notes:

Where insulation is installed above the roofing membrane, or above the layer used to seal the roof from water penetration, the insulation shall have a maximum water absorption of 0.3 percent by volume when tested according to American Society for Testing and Materials (ASTM) Standard C272.

01	02	03	04	05	06	07	08	09
				Proposed			**Required**	
Tag/ID	Assembly Type	Assembly Materials	Thickness (inches)	Core Insulation R-value	Continuous Insulation R-value	U-Factor	U-Factor from Table 150.1-A	Comments

D. Opaque Surface Details – Masonry/Mass Walls (Section 150.1(c)1Bii)

Note: When insulation is added to the outside of a mass wall and/or when the inside is furred and insulated, the performance data may be adjusted using Equation 4-4 in the Reference Appendices, Joint Appendix, JA4.

01	02	03	04	05	06	07	08	09	10	11	12
		Proposed						**Required**			
				Exterior Insulation		Interior Insulation		Exterior Insulation		Interior Insulation	
Tag/ID	Above or Below Grade?	Masonry/Mass Wall Type	Masonry/ Mass Thickness (inches)	R-value	U-factor	R-value	U-factor	R-value	U-factor	R-value	U-factor

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

E. Slab On Grade/Concrete Raised Floor Insulation (Table 150.1-A)

Note:

Heated slab floors require mandatory slab insulation (see Table 110.8-A).

01	02	03	04	05	06
	Proposed		**Required**		
Floor Type	Insulation R-value	Insulation U-factor	Insulation R-value	Insulation U-factor	Comments

F. Radiant Barrier (Section 150.1(c)2)

A radiant barrier is required (for Climate Zones 2-15)

- Radiant barriers shall meet specific eligibility and installation criteria to receive credit for compliance with the Building Energy Efficiency Standards for low-rise residential buildings. Refer to Reference Appendices, Residential Appendix, RA4.2.1
- The emittance of the radiant barrier shall be less than or equal to 0.05 as tested in accordance with American Society for Testing and Materials (ASTM) C1371 or ASTM E408.
- For Prescriptive Compliance the attic shall be ventilated to provide a minimum free ventilation area of not less than 1 square foot (ft^2) of vent area for each 300 square feet (ft^2) of attic floor area with a minimum of 30 percent upper vents. Refer to Reference Appendices, Residential Appendix, RA4.2.1.
- Ridge vents or gable end vents are recommended to achieve the best performance. The material should be cut to allow for full airflow to the venting. Refer to Reference Appendices, Residential Appendix, RA4.2.1.1

01	02
Radiant Barrier installed below the roof deck and on all gable end walls	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

G. Roofing Products (Cool Roof) (Section 150.1(c)11)

Notes:

Exception 1: Any roof area covered by building integrated photovoltaic (PV) panels and solar thermal panels are not required to comply withthe Cool Roof requirements.

- Exception 2: Roof constructions with weight of 25 pounds per square foot (lb/ft^2) are also not required to comply with the Cool Roof requirements.
- Liquid field applied coatings must comply with installation criteria from Section 110.8(i)4.

01	02	03	04	05	06	07	08	09	10	11	12	13
						Proposed				**Required**		
Tag/ID	Exception	Roof Pitch	Method of Compliance	Product Type	CRRC Product ID Number	Initial Solar Reflectance	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)

H. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.2(a)1)

01	02	03	04	05	06	07	08	09	10
Addition Type ft^2	Maximum Allowed Fenestration Area for All Orientations ft^2		Maximum Allowed West-Facing Fenestration Area Only ft^2		Maximum Allowed U-factor (Windows)	Maximum Allowed U-factor (Skylights)	Maximum Allowed SHGC (Windows)	Maximum Allowed SHGC (Skylights)	Comments
	The Greater		The Greater						
	Maximum Calculated based on Allowed %	Maximum Calculated Allowed ft^2	Maximum Calculated based on Allowed %	Maximum Calculated Allowed ft^2					

PRESCRIPTIVE RESIDENTIAL ADDITIONS THAT DO NOT REQUIRE FIELD VERIFICATION

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

I. Fenestration Proposed Areas and Efficiencies (Section 150.2(a))

Note:

If meeting Exception 1 to 150.1(c)3A, New dwelling units with a conditioned floor area of 500 square feet or less in Climate Zone 5 may comply with a maximum U-factor of 0.30.

If meeting Exception 2 to 150.1(c)3A, Installing less than or equal to 3 square feet (ft^2) glass in door, or less than or equal to 3 square feet (ft^2) tubular skylight, it is assumed to meet the minimum required U-factor of 0.27 for climate zones 1 through 5, 11 through 14 and 16, and 0.30 for climate zones 6 through 10 and 15 & SHGC of 0.23 for climate zones 2, 4, 6 through 15.

If meeting Exception 3 to 150.1(c)3A, If meeting Exception 1 to 150.1(c)3A, Installing less than or equal to 16 square feet (ft^2) tubular skylight, it is assumed to meet the minimum required U-factor (0.40) & SHGC (0.30). In Climate Zones 1, 3, 5, and 16 there is no SHGC requirement. Doors with greater than or equal to 25 percent glazing area are considered glazed doors and are treated as fenestration products.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Tag/ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation N, S, W, E	Number of Panes	Proposed Fenestration Area (ft^2) (N, S, E)	Proposed West Facing Fenestration Area (ft^2)	Proposed U-factor	Proposed U-factor Source	Proposed SHGC	Proposed SHGC Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03
15	Total Proposed Fenestration Area												
16	Maximum Allowed Fenestration Area												
17	Compliance Statement:												
18	Total Proposed West-Facing Fenestration Area												
19	Maximum Allowed West-Facing Fenestration Area												
20	Compliance Statement:												
21	Proposed Fenestration U-factor (Windows)												
22	Required Fenestration U-factor (Windows)												
23	Compliance Statement:												
24	Proposed Fenestration SHGC (Windows)												
25	Required Fenestration SHGC (Windows)												
26	Compliance Statement:												
27	Proposed Fenestration U-factor (Skylights)												
28	Required Fenestration U-factor (Skylights)												
29	Compliance Statement:												
30	Proposed Fenestration SHGC (Skylights)												
31	Required Fenestration SHGC (Skylights)												
32	Compliance Statement:												

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

J. Opaque Swinging Doors to Exterior (Section 150.1(c)5)

Notes:

- Any door with 25 percent or more glass is considered a glazed door and is counted as a fenestration product in Tables H and I.
- Do not include fire-rated doors between garage or unconditioned space, and conditioned space.
- If using weighted average to achieve required maximum U-factor, attach CF1R-ENV-02-E.

01	02	03	04	05	06	07
Tag/ID	Area	Proposed U-factor	Proposed U-factor Source	Required Maximum U-factor	Weighted Average (Yes/No)	Comments

K. Space Conditioning (SC) Systems – Heating/Cooling (Section 150.2(b) or Section 150.1(c)7)

Alterations to space conditioning systems shall be exempt from field verification and diagnostic testing requirements as prerequisite for use of the CF1R-ADD-02 and CF2R-ADD-02 compliance documents. If new space conditioning systems are installed or existing systems are altered and are not exempt from field verification and diagnostic testing, then a CF1R-ADD-01 and CF1R-ALT-02 shall be completed and registered with an ECC-Provider Data Registry. In each row below for each space conditioning system, check the box that indicates the exemption from field verification compliance:

☐ a: space conditioning system was not altered;
☐ b: less than 25 feet (ft) of ducts were added or replaced;
☐ c: (exempt from duct leakage testing) if: the existing duct system was insulated with asbestos;
☐ d: (exempt from duct leakage testing) if: the existing duct system was previously tested and passed by an ECC-Rater.

01	02	03
SC System Identification or Name	SC System Location or Area Served	Exemption from Field Verification
		☐ a ☐ b ☐ c ☐ d
		☐ a ☐ b ☐ c ☐ d
		☐ a ☐ b ☐ c ☐ d

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

L. Water Heating Systems (Section 150.2(a)1D)

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.

Options:

1. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has an ANSI/CTA-2045-B communication port; or
2. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
3. For addition that are 500 square feet or less, an electric water heater with point of use distribution as specified in the Reference Appendices, Residential Appendix, RA4.4.5

01	02	03	04	05	06	07
Water Heating System ID or Name	System Option (from §150.2(a)1D)	# of Water Heaters/ Compressors in System	Water Heater Type	Fuel Type	Tank Location	Distribution Type

PRESCRIPTIVE RESIDENTIAL ADDITIONS THAT DO NOT REQUIRE FIELD VERIFICATION

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ADD-02-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/ ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to fulfill this requirement.
6. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to fulfill this requirement.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

CF1R-ADD-02-E User Instructions

NOTE: If more space is needed, print a duplicate page and fill in.

Minimum requirements for prescriptive addition compliance can be found in Building Energy Efficiency Standards Section 150.2(a), and Table 150.1-A. Completing these forms will require that you have the Reference Appendices for the 2025 Building Energy Efficiency Standards, which contain the Joint Appendices used to determine climate zone and to complete the section for opaque surfaces. When the term CF1R is used it means the CF1R-ADD-02. Worksheets are identified by their entire name and subsequently by only the worksheet number, such as ENV-02.

Instructions for sections with column numbers and row numbers are given separately.

If any part of the addition does not comply, prescriptive compliance fails, in which case the performance (or computer) compliance approach may be used in an attempt to achieve compliance. Only the new construction is required to meet the requirements specified in this documentation. If any alterations to the existing building are occurring, those are documented on one or more of the CF1R-ALT forms.

A. General Information

1. Project Name: Identifying information, such as owner's name.
2. Date Prepared: Date of document preparation.
3. Project Location: Legal street address of property or other applicable identifying information.
4. Building Front Orientation: Building front orientation expressed in degrees, where North = 0, East = 90, South = 180, and West = 270. The Standards (section 100.1) include the following additional details for determining orientation:
    - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
    - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
    - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
    - West is oriented to within 45 degrees of true west, including 45 degrees north of west.
5. CA City: Legal city/town of property.
6. Number of Dwelling Units with Additions: 1 for single-family
7. Zip Code: 5-digit zip code for the project location (used to determine climate zone).
8. Fuel Type: Electricity.

    NOTE: Prescriptive compliance only allows electricity if natural gas is not connected to the building.

9. Climate Zone: From Reference Appendices, Joint Appendix, JA2.1.1.

10. Total Conditioned Floor Area: Enter the new conditioned floor area, in square feet (ft^2), as measured from the outside of exterior walls of the addition.
11. Building Type: Single Family (includes duplex)
12. Slab Area: Area of the first floor slab of the addition (if any) in square feet (ft^2).
13. Project Scope: 300 square feet (ft^2) or less, greater than 300 ft^2 up to 400 ft^2, greater than 400 ft^2 up to 700 ft^2, or greater than 700 ft^2 up to 1000 ft^2, Accessory Dwelling Unit (ADU) Addition 300 square feet (ft^2) or less, Accessory Dwelling Unit (ADU) Addition greater than 300 ft^2 up to 400 ft^2, Accessory Dwelling Unit (ADU) Addition greater than 400 ft^2 up to 700 ft^2, or Accessory Dwelling Unit (ADU) Addition greater than 700 ft^2 up to 1000 ft^2 , heating system, space cooling system, space conditioning duct system, water heating, or fenestration.
14. Exceptions to Fenestration U-factor and SHGC: Installing less than or equal to 3 square feet (ft^2) glass in door, Installing less than or equal to 3 ft^2 tubular skylight, Installing less than or equal to 16 ft^2 skylight, or NA.

B. Opaque Surface Details - Framed

Walls: Additions of any size must meet the requirements of Table 150.1-A when using prescriptive compliance. However, extensions of existing walls require only R-15 wall insulation in 2x4 constructions, or R-21 wall insulation in 2x6 or larger constructions.

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Roof, Ceiling, Wall, Floor, Attic.
3. Frame Type: Wood or Metal.
4. Frame Depth: Nominal dimensions (in inches) of framing material such as 2x4, 2x6, 2x8, 2x10.
5. Frame Spacing: 16, 24, or 48 (inches on center).

6a. Proposed Cavity R-value: Insulation installed between framing members.

6b. Proposed Continuous Insulation: R-value of rigid or continuous insulation (not interrupted by framing). See applicable table of the Reference Appendices for construction type.

7. Proposed U-factor: The U-factor for the proposed assembly must be less than or equal to column 10 or have an attached Area Weighted Average Calculation Worksheet (CF1R-ENV-02-E) to show that a weighted U-factor for multiple assemblies will meet the maximum value in column 10.
8. Required U-factor or R-value: From Table 150.1-A or B. Value required based on climate zone and assembly type.
9. Comments: Any notes regarding location, unique conditions, or attachments.

C. Opaque Surface Details – Non-Framed

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Assembly Type: Roof, Wall.
3. Assembly Materials: SIP OSB, SIP I-Joist, SIP Single 2x, SIP Double 2x, ICF see JA4 for guidance.
4. Thickness: Thickness in inches.
5. Proposed Core Insulation R-value: Insulation installed within the materials or on the inside. See Reference Appendices, Joint Appendix, JA4 for guidance.
6. Proposed Continuous Insulation R-value: Insulation installed on the exterior. See Reference Appendices, Joint Appendix, JA4 for guidance.
7. Proposed U-factor: Proposed U-factor from Reference Appendices, Joint Appendix, JA4 or CF1R-ENV-02-E. Must be less than or equal to column 10.
8. Required U-factor from Table 150.1-A: Based on assembly type and climate zone.
9. Comments: Any notes regarding location, unique conditions, or attachments.

D. Opaque Surface Details – Masonry/Mass Walls

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Above Grade/Below Grade: Indicate whether the mass wall is installed above grade o below grade.
3. Mass Masonry/Wall Type: Masonry, Clay Brick, Clay Hollow Unit, Concrete Masonry Unit (CMU) Light Weight, CMU Medium Weight, CMU Normal Weight, Concrete. See Reference Appendices, Joint Appendix, JA4 for guidance.
4. Mass Masonry Wall Thickness: Thickness (in inches) of mass.

5-6. Proposed Exterior Insulation R-value or U-factor: Enter the R-value or U-factor of proposed insulation on the outside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

7-8. Proposed Interior Insulation R-value or U-factor: Enter the R-value or U-factor) of proposed insulation on the inside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

9-10. Required Exterior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 7 or 8) for exterior insulation will be completed based on the Table 150.1-A requirements for the wall type.

11-12. Required Interior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 9 or 10) for interior insulation will be completed based on the Table 150.1-A requirements for the wall type.

E. Slab On Grade/Concrete Raised Floor Insulation

Slab edge performance specifications and installation criteria are found in Sections 150.0(l) and 150.1(c)1D (Table 150.1-A). Requirements vary by climate zone and slab conditions.

1. Floor Type: Types include slab-on-grade or raised slab.
    - Unheated slab-on-grade floors require slab edge insulation in climate zone 16 only.
    - Raised slab must be insulated to R-8 in climate zones 1, 2, 11, 13, 14 and 16, R-4 in climate zones 12 and 15, and no insulation is required in climate zones 3-10.
2. Proposed Insulation R-value: When required, insulation can be specified by either R-value or U-factor. When specifying an R-value complete column 2. Use the same descriptor (R-value or U-factor) throughout Table E.
3. Proposed Insulation U-Factor: When required, specify the U-factor of proposed insulation in column 3. Use the same descriptor (R-value or U-factor) throughout Table E.
4. Required Insulation R-value: Specify the value required, which will vary by climate zone and type of slab. Values are from Table 150.1-A.
5. Required Insulation U-factor: Specify the value required, which will vary by climate zone and type of slab. Values are from Table 150.1-A.
6. Comments: Any notes regarding location, unique conditions, or attachments.

    NOTE: There is a mandatory slab edge insulation requirement for heated slab floors. Since mandatory requirements are not listed on the Certificate of Compliance, this is provided for information purposes only. The specific requirements are in Sections 110.8(g) and Table 110.8-A.

F. Radiant Barrier

1. Radiant Barrier installed below the roof deck and on all gable end walls: Yes or No.
2. Comments: Any notes regarding location, unique conditions, or attachments.

    NOTE: Radiant barrier performance specifications and installation criteria are found in Sections 110.8(j) and 150.1(c)2, and in Reference Appendices, Residential Appendix RA4.2.1.

G. Roofing Products (Cool Roof)

Roofing requirements are found in Section 110.8(i) and 150.1(c)11. Depending on the climate zone and roof slope, a cool roof (defined as a minimum aged solar reflectance and thermal emittance, or a minimum SRI) may be required by Table 150.1-A.

NOTE: Exceptions include (1) additions of 300 square feet (ft^2) or less, (2) low-slope roofs (pitch less than 2:12) in climate zones 1-12, 14 and 16; (3) steep slope roof (pitch greater than or equal to 2:12) in climate zones 1-9 and 16; (4) roof constructions that have thermal mass over the roof membrane with at least 25 pounds per square foot (lb/ft^2); and (5) any roof area covered by building integrated photovoltaic (PV) panels and solar thermal panels (the area of roof not covered by PV panels would still need to meet any applicable cool roof requirements).

1. Tag/ID: A label (if any) from the plans, such as R1.
2. Exception: User indicates any exceptions. Mass roofs are not required to have a cool roof even if the climate zone specifies minimum performance requirements.
3. Roof Pitch: Expressed as 4:12, for example, which means the roof rises 4 foot within a span of 12 feet. When roofs have multiple pitches the requirements are based on the pitch of 50 percent or more of the roof.
4. Method of Compliance: Indicate if the method of compliance is going to be based on Aged Solar Reflectance and Thermal Emittance or if it is going to be based on the Solar Reflectance Index (SRI).
5. Product Type: See Cool Roof Rating Council's directory. Generally, product types include single-ply roof, wood shingles, asphalt roof, metal roof, tile roof.
6. Cool Roof Rating Council (CRRC) Product ID Number: The CRRC Product ID Number is obtained from the Cool Roof Rating Council's Rated Product Directory. Products are listed by manufacturer, brand, type of installation, roofing material, and color, as well as product performance.
7. Proposed Initial Solar Reflectance: Based on the product chosen from the Cool Roof Rating Council's Rated Product Directory. If using default assumption indicate NA since the Aged solar reflectance is available.
8. Proposed Aged Solar Reflectance: Value is from the Cool Roof Rating Council's Rated Product Directory. If the aged value is not available, calculate the Aged Solar Reflectance using the Solar Reflectance Index (SRI) Calculator located on the California Energy Commission website or the aging equation $\rho_{aged}=[0.2+\beta[\rho_{initial}-0.2]$, where $\rho_{initial}$ = the initial solar reflectance and soiling resistance β is listed by product type below.

VALUES OF SOILING RESISTANCE β BY PRODUCT TYPE

Product Type	CRRC Product Category	β
Field-Applied Coating	Field-Applied Coating	0.65
Other	Not A Field-Applied Coating	0.70

9. Proposed Thermal Emittance: From the product specification default value. If using a calculated SRI, enter the Thermal Emittance used to calculate SRI.
10. Proposed Solar Reflectance Index (SRI): It is optional to meet the SRI but if chosen to do so, use the Solar Reflectance Index (SRI) Calculator found on the California Energy Commission website.
11. Required Aged Solar Reflectance: Based on climate zone and roof slope.
12. Required Thermal Emittance: Based on climate zone and roof slope.
13. Required SRI: Based on climate zone and roof slope.

If the cool roofing requirements will be met by a liquid field applied coating, Section 110.8(i)4 requires the coating be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the manufacturer.

H. Fenestration/Glazing Allowed Areas and Efficiencies

Fenestration areas are expressed in square feet, not square inches. The climate zone and size of the addition will affect the area of fenestration (also known as glazing) allowed. If limited to 20%, for example, this is calculated as Conditioned Floor Area (CFA) of the addition x 0.20 =total square footage (ft^2) of fenestration allowed.

For additions that are 1000 square feet (ft^2) or less, but greater than 700 ft^2, the limit of total fenestration is the greater of 175 ft^2 or 20 percent of the conditioned floor area (CFA) of the addition.
For additions that are 700 ft^2 or less, but greater than 400 ft^2, the limit of total fenestration is the greater of 120 ft^2 or 25 percent of the CFA of the addition.
For additions that are 400 ft^2 or less, the limit of total fenestration is the greater of 75 ft^2 or 30 percent of the CFA of the addition.
For additions that are 1,000 ft^2 or less, when west-facing fenestration is limited (in climate zones 2, 4, and 6-15), it is limited to either 70 ft^2 or 5 percent of the CFA (for additions greater than 700 ft^2) or 60 ft^2 (for additions that are 700 ft^2 or less).

1. Addition Type ft^2: Based on "Project Scope." The addition's area in square feet: less than or equal to 400 ft^2, greater than400 ft^2 to less than or equal to 700 ft^2, or greater than 700 ft^2 to less than or equal to 1,000 ft^2.

2. - 9. These fields will be completed based on conditioned floor area of the addition and/or climate zone. The values in these fields will be entered into Section I.

Maximum allowed fenestration area for all orientations is the greater of the values in columns 2 or 3:

2. Maximum Calculated based on Allowed %: The addition's conditioned floor area (CFA) multiplied by the allowed percentage. The maximum total fenestration area is 30 percent for additions up to 400 square feet (ft^2), 25 percent for additions greater than 400 ft^2 but no greater than 700 ft^2, and 20 percent for additions greater than 700 ft^2.
3. Maximum Calculated Allowed ft^2: The maximum total fenestration area is 75 square feet (ft^2) for additions up to 400 ft^2, 120 ft^2 for additions greater than 400 ft^2 but no greater than 700 ft^2, and 175 ft^2 for additions greater than 700 ft^2.

Maximum allowed west-facing area is the greater of the values in columns 4 or 5:

4. Maximum Calculated based on Allowed %: The maximum west-facing fenestration area (in climate zones 2, 4, and 6-15) is 5 percent for additions greater than 700 ft^2.
5. Maximum Calculated Allowed ft^2: The maximum west-facing fenestration area (in climate zones 2, 4, and 6-15) is 60 square feet (ft^2) for additions no greater than 700 ft^2, and 70 ft^2 for additions greater than 700 ft^2.

Addition CFA:	**≤ 400 ft^2**		**> 400 ft^2 to ≤ 700 ft^2**		**> 700 ft^2 to ≤ 1,000 ft^2**	
	The Greater Of:		**The Greater Of:**		**The Greater Of:**	
Orientation	**Percentage**	**Area (ft^2)**	**Percentage**	**Area (ft^2)**	**Percentage**	**Area (ft^2)**
West-facing (CZs 2, 4, 6-15)	-	60	-	60	5%	70
All Orientations	30%	75	25%	120	20%	175

NOTE: West includes any vertical fenestration oriented to within 45 degrees of true west (in either direction), including 45 degrees north of west, any skylights oriented west, and skylights facing any direction with a pitch of less than 1:12.

6. Maximum Allowed U-factor (Windows): Maximum area-weighted average of 0.30 for climate zones 6-10 and 15, and 0.27 for climate zones 1-5, 11-14 and 16.
7. Maximum Allowed U-factor (Skylights): Maximum area-weighted average of 0.30 climate zones 6-10 and 15, and 0.27 for climate zones 1-5, 11-14 and 16, unless meeting one of the Exceptions to 150.1(c)3A. If meeting one of Exceptions, enter 0.40.
8. Maximum Allowed SHGC (Windows): Maximum area-weighted average of 0.23 for climate zones 2, 4, and 6-14 and 0.20 for climate zone 15; otherwise N/A.
9. Maximum Allowed SHGC (Skylights): Maximum area-weighted average of 0.23 for climate zones 2, 4, 6 through 15, unless meeting one of the Exceptions to 150.1(c)3A. If meeting one of the Exceptions, enter 0.30; otherwise, N/A
10. Comments: Any notes regarding location, unique conditions, or attachments.

I. Fenestration Proposed Areas and Efficiencies

1. Tag/ID: Provide a name or designator for each unique type of fenestration surface. This designator should be used consistently throughout the plan set (elevations, finish schedules, etc.) such as Window-1, Skylight-1, etc. to identify each surface. It should also be consistently used on the other compliance documents.
2. Fenestration Type: Indicate the type of fenestration construction e.g., Fixed Window, Operable Window, Skylight, Tubular Skylight, or Glass in Door.
   NOTE: Doors with glazing are counted in one of two ways. The entire area of a door with 25 percent or more glazing is considered a glazed door and is treated as fenestration. A door with less than 25 percent glazing can be considered an opaque swinging door, or can be calculated as the actual glass area with a 2-inch (0.17 ft) frame all around.
3. Frame Type: Metal, Metal Thermal Break, or Non-metal.
4. Dynamic Glazing: Indicate whether the fenestration has an integrated shading device, chromogenic glazing, or none for no dynamic glazing.
   NOTE: Chromogenic glazing shall be considered separately from other fenestration types.
5. Orientation: Orientation can be North, East, South, West, or degrees. If documentation is for a building that may be built in any direction, in a climate zone that limits west-facing fenestration, complete this section assuming the side of the building with the most fenestration faces west.
   NOTE: West includes any vertical fenestration oriented to within 45 degrees of true west, excluding 45 degrees south of west; any skylights oriented west; and skylights facing any direction with a pitch of less than 1:12.
6. Number of Panes: Indicate the number of panes for each Tag/ID; is it a single, double, or triple pane window? Enter either: 1, 2, or 3 to represent the panes.
7. Proposed Fenestration Area ft^2: The size of any windows, doors with glass, or skylights within the floor area of the addition (combine windows with the same characteristics). Indicate the area in square feet (ft^2) of each exterior fenestration type, including west-facing fenestration.
8. Proposed West Facing Fenestration Area ft^2: In climate zones 2, 4, and 6-15, enter the size of any west-facing windows, doors with glass, or skylights within the floor area of the addition. Indicate the area in square feet (ft^2) of each exterior west-facing fenestration type separately.
9. Proposed U-factor: Enter
   (a) the National Fenestration Rating Council (NFRC) U-factor based on the proposed brand and type of fenestration using NFRC certified values; or
   (b) the default value from Table 110.6-A; or
   (c) the NA6.2 alternate default U-factor (for non-rated site-built fenestration only); or
   (d) the area-weighted average from CF1R-ENV-02-E.

   If any products (other than the exceptions noted below) have a higher U-factor than 0.30, first complete a CF1R-ENV-02-E to calculate the area-weighted average U-factor, which must be 0.30 or less, and attach it to the CF1R-ADD-02-E.

NOTES:
(1) If meeting Exception 1 to 150.1(c)3A, New dwelling units with a conditioned floor area of 500 square feet or less in Climate Zone 5 may comply with a maximum U-factor of 0.30.
(2) For the exception – up to 3 square feet (ft^2) of glass in door, enter 0.30 for climate zones 6 through 10 and 15 and enter 0.27 for climate zones 1 through 5, 11 through 14 and 16.
(3) For the exceptions - up to 3 square feet (ft^2) of tubular skylights and up to 16 square feet (ft^2) of skylight area, enter 0.40.
(4) Dynamic glazing is a glazing system that changes its performance U-factor and SHGC based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and solar heat gain coefficient (SHGC) in Columns 9 and 11.

10. Proposed U-factor Source: The source of the U-factor data for the fenestration product – indicate whether NFRC, Tables 110.6-A, Equations NA6-1, or Area-weighted Average Worksheet (ENV-02).
11. Proposed SHGC: In climate zones 2, 4, and 6-16, enter
    (a) the National Fenestration Rating Council (NFRC) solar heat gain coefficient (SHGC) based on the proposed brand and type of fenestration using NFRC certified values; or
    (b) the default value from Table 110.6-B; or
    (c) the NA6.3 alternate default SHGC) (for non-rated site-built fenestration only); or
    (d) the area-weighted average from CF1R-ENV-02-E.

    If any products (other than the exceptions noted below) have a higher solar heat gain coefficient (SHGC) than 0.23 in a climate zone with a maximum SHGC value, first complete a CF1R-ENV-02-E to calculate the area-weighted average SHGC, which must be 0.23 or less, and attach it to the CF1R-ADD-02-E.

    NOTES:
    (1) For the exceptions - up to 3 square feet (ft^2) of tubular skylights and up to 16 square feet (ft^2) of skylight area, enter 0.30.
    (2) For the exception – up to 3 square feet (ft^2) of glass in door, enter 0.23 for climate zones 2, 4, and 6-15; otherwise N/A .

12. Source: The source of the U-factor and solar heat gain coefficient (SHGC) data for the fenestration product—indicate whether National Fenestration Rating Council (NFRC), Tables 110.6-B, Equations NA6-2, or the Area-weighted Average Worksheet (CF1R-ENV-02).
13. Exterior Shading Device: If exterior shading devices are used to meet the solar heat gain coefficient (SHGC) requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03-E Solar Heat Gain Coefficient Worksheet) and attach the CF1R-ENV-03-E.

    NOTES: (1) An exterior shading device is not used for products with a National Fenestration Rating Council (NFRC) rated U-factor and solar heat gain coefficient (SHGC); based on a factory integrated shading device.
    (2) Chromogenic glazing shall be considered separately from other fenestration.

14. Combined SHGC from CF1R-ENV-03: If exterior shading devices are combined with the solar heat gain coefficient (SHGC) value of the fenestration to meet the prescriptive SHGC requirements (as indicated in column I. 13), indicate the SHGC calculated on form CF1R-ENV-03 and attach the form for each window with an exterior shading device.

To determine compliance with allowable fenestration areas and efficiencies, complete rows 15-32.

15. Total Proposed Fenestration Area: The sum of column I.07 plus I.08.
16. Maximum Allowed Fenestration Area: From Section H., report the greater value of column 02 or 03.
17. Compliance Statement: Verify whether I.15 is less than or equal to I.16. Indicate Yes or No. If No, the project fails prescriptive compliance—specified fenestration areas must be reduced, or compliance may be attempted using the performance approach.
18. Total Proposed West-Facing Fenestration Area: The sum of column I.08.
19. Maximum Allowed West-Facing Fenestration Area: From Section H., report the greater value of column 04 or 05.
20. Compliance Statement: Verify whether I. 18 is less than or equal to I. 19. Indicate Yes or No. If No, the project fails prescriptive compliance—specified west-facing fenestration areas must be reduced, or compliance may be attempted using the performance approach.
21. Proposed Fenestration U-factor (Windows): If necessary, report the area-weighted average U-factor from the completed CF1R-ENV-02-E. Otherwise, report the largest value from column I.09.
22. Required Fenestration U-factor (Windows): From Section H., report the value of column 6.
23. Compliance Statement: Verify whether I. 21 is less than or equal to I. 22. Indicate Yes or No. If No, the project fails prescriptive compliance—specified fenestration U-factors must be reduced, or compliance may be attempted using the performance approach.
24. Proposed Fenestration SHGC (Windows): If necessary, report the area-weighted average SHGC from the completed CF1R-ENV-02-E. Otherwise, report the largest value from column I.11 or I.14.
25. Required Fenestration SHGC (Windows): From Section H., report the value of column 08.
26. Compliance Statement: Verify whether I. 24 is less than or equal to I.25. Indicate Yes or No. If No, the project fails prescriptive compliance—specified fenestration SHGC must be reduced, or compliance may be attempted using the performance approach.
27. Proposed Fenestration U-factor (Skylights): If necessary, report the area-weighted average U-factor from the completed CF1R-ENV-02-E. Otherwise, report the single largest associated value from column I.09.
28. Required Fenestration U-factor (Skylights): From Section H., report the value of column 07.
29. Compliance Statement: Verify whether I. 27 is less than or equal to I. 28. Indicate Yes or No. If No, the project fails prescriptive compliance – specified fenestration U-factor must be reduced, or compliance may be attempted using the performance approach.
30. Proposed Fenestration SHGC (Skylights): If necessary, report the area-weighted average SHGC from the completed CF1R-ENV-02-E. Otherwise report the single largest associated value from column I.11 or I.14.
31. Required Fenestration SHGC (Skylights): From Section H., report the value from column 09.
32. Compliance Statement: Verify whether I. 30 is less than or equal to I. 31. Indicate Yes or No. If No, the project fails prescriptive compliance – specified fenestration SHGC must be reduced, or compliance may be attempted using the performance approach.

J. Opaque Swinging Doors to Exterior

1. Tag/ID: Provide a name or designator for each unique door. This designator should be used consistently throughout the plan set (elevations, door schedules, etc.)
2. Area: Calculated area in square feet (ft^2) for each unique door.
3. Proposed U-factor: Enter the proposed U-factor. If value is greater than 0.20, column 06 will autocomplete as Yes.
4. Source: National Fenestration Rating Council (NFRC) or Reference Appendices, Joint Appendix, Table 4.5.1, 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02).
5. Required Maximum U-factor. This field will always be 0.20.
6. Weighted Average: If column 03 is greater than 0.20 U-factor, attach form CF1R-ENV-02-E:
7. Comments: Any notes regarding location, unique conditions, or attachments.

K. Space Conditioning (SC) Systems – Heating/Cooling

If an existing space conditioning system will condition an addition, the prescriptive requirements do not apply to that system (Exception 4 to Section 150.2(a)). The enforcement agencies may require verification that the capacity of the existing heating system is adequate to meet the added load of the additional conditioned floor area. Since there is no health and safety code requirement to provide cooling, the enforcement agency will not ask for verification that the capacity of the existing cooling system is adequate to meet the added load of the additional conditioned floor area.

If a new system is installed complete a Certificate of Compliance for Alterations to Space Conditioning Systems (CF1R-ALT-02).

1. Space Conditioning (SC) System Identification or Name: Name of the Space Condition (SC) System or any other identifying name.
2. Space Conditioning (SC) System Location or Area Served: Zone, or area, served by the Space Conditioning (SC) System.
3. Exemption from Field Verification: Section 150.2(b)1E
    a. Space Conditioning (SC) System was not altered.
    b. Duct systems with less than 25 linear feet in unconditioned spaces as determined by visual inspection.
    c. Existing duct systems constructed, insulated or sealed with asbestos.
    d. Duct systems that have been documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Appendices, Residential Appendix, RA3.1

L. Water Heating Systems

Water heating compliance for an addition is described in Section 150.2(a)1D. When a water heater is added as part of an addition in a single dwelling the Prescriptive Standards allow three options under Section 150.2(a)1D.

1. Water Heating System Identification or Name: Name of the Water Heating System or any other identifying name.
2. System Option (from §150.2(a)1D): Indicate the prescriptive system option: 1, 2, 3,.
    1. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has an ANSI/CTA-2045-B communication port; or
    2. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
    3. For addition that are 500 square feet or less, an instantaneous electric water heater with point of use distribution as specified in the Reference Appendices, Residential Appendix, RA4.4.5
3. Water Heater Type: Electric water heater, Heat pump water heater, or NEEA Tier 3 or higher heat pump water heater
4. Number of Water Heaters/Compressors in System: Enter the total number of water heaters or compressors for each system.
5. Fuel Type: Electricity.
6. Tank Location: For heat pump water heaters, indicated whether the storage tank is located in the garage or conditioned space. Otherwise, enter ‘n/a’.
7. Distribution Type: If pursuing Option 3, then this will be ‘point of use distribution’. Otherwise, enter ‘Standard’.

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature.
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature

PRESCRIPTIVE RESIDENTIAL ALTERATIONS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. General Information

Note: If Kitchen Range Hood installation (new or replacement) is selected in A13, ECC verification and a CF2R/3R-MCH-32 is required.

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg or cardinal):	
05	CA City:		06	Number of Altered Dwelling Units:	
07	Zip Code:		08	Fuel Type:	
09	Climate Zone:		10	Total Conditioned Floor Area (ft^2):	
11	Building Type:		12	Slab Area (ft^2):	
13	Project Scope:				

B. Opaque Surface Details – Framed (Section 150.2(b)1)

Note:

Where insulation is installed above the roofing membrane, or above the layer used to seal the roof from water penetration, the insulation shall have a maximum water absorption of 0.3 percent by volume when tested according to American Society for Testing and Materials (ASTM) Standard C272.

01	02	03	04	05	06a	06b	07	08	09
					Proposed			**Required**	
Tag/ID	Assembly Type	Frame Type	Frame Depth (inches)	Frame Spacing (inches)	Cavity R-value	Continuous Insulation R-value	U-factor	U-Factor or R-value	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

C. Opaque Surface Details – Nonframed

01	02	03	04	05	06	07	08	09
Tag/ID	Assembly Type	Assembly Materials	Thickness (inches)	**Proposed**			**Required**	Comments
				Core Insulation R-value	Continuous Insulation R-value	U-factor	Required U-factor or R-value	

D. Opaque Surface Details – Masonry/Mass Walls

Note:

When insulation is added to the outside of a mass wall and/or when the inside is furred and insulated, the performance data may be adjusted using Equation 4-4 in the Joint Appendices.

01	02	03	04	05	06	07	08	09	10	11	12
		Proposed						**Required**			
	Above or Below Grade?	Masonry/Mass Type	Masonry/Mass Thickness (inches)	Exterior Insulation		Interior Insulation		Exterior Insulation		Interior Insulation	
Tag/ID				R-value	U-factor	R-value	U-factor	R-value	U-factor	R-value	U-factor

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

E. Roof Replacement (Section 150.2(b)1I)

Note:

- Roof area covered by building integrated photovoltaic panels and solar thermal panels are exempt from the above Cool Roof requirements.
- Liquid field applied coatings must comply with installation criteria from Section 110.8(i)4.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
							Proposed				**Minimum Required**		
Tag/ ID	Method of Compliance	Roof Pitch	Exception	CRRC Product ID Number	Product Type	R-value Deck Insulation	Initial Solar Reflectance	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)

F. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.2(b)1A)

01	02	03	04		05		06		07
Alteration Type	Maximum Allowed Fenestration Area for All Orientations (ft^2)	Maximum Allowed West-Facing Fenestration Area Only (ft^2)	Existing Fenestration Area for All Orientations (ft^2)	Existing West-Facing Fenestration Area (ft^2)	Maximum Allowed U-factor (Windows)	Maximum Allowed U-factor (Skylights)	Maximum Allowed SHGC (Windows)	Maximum Allowed SHGC (Skylights)	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

G. Fenestration/Glazing Proposed Areas and Efficiencies – Add (Section 150.2(b)1A)

Note: Doors with greater than or equal to 25 percent glazed area are considered glazed doors and are treated as fenestration products.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Tag/ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation N, S, W, E	Number of Panes	Proposed Fenestration Area (ft^2)	Proposed West Facing Fenestration Area (ft^2)	Proposed U-factor	Proposed U-factor Source	Proposed SHGC	Proposed SHGC Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03

15	Existing + Proposed Fenestration Area	
16	Maximum Allowed Fenestration Area	
17	Compliance Statement:	
18	Existing + Proposed West-Facing Fenestration Area	
19	Maximum Allowed West Fenestration Area	
20	Compliance Statement:	
21	Proposed Fenestration U-factor (Windows)	
22	Required Fenestration U-factor (Windows)	
23	Compliance Statement:	
24	Proposed Fenestration SHGC (Windows)	
25	Required Fenestration SHGC (Windows)	
26	Compliance Statement:	
27	Proposed Fenestration U-factor (Skylights)	
28	Required Fenestration U-factor (Skylights)	
29	Compliance Statement:	
30	Proposed Fenestration SHGC (Skylights)	
31	Required Fenestration SHGC (Skylights)	
32	Compliance Statement:	

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

H. Fenestration/Glazing Proposed Areas and Efficiencies – Replace (Section 150.2(b)1B)

Note: Doors with greater than or equal to 25 percent glazed area are considered glazed doors and are treated as fenestration products.

01	02	03	04	05	06	07	08	9	10	11	12	13	14
Tag/ ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation N, S, W, E	Area Removed (ft^2)	Area Added (ft^2)	Net Added Area (ft^2)	Proposed U-factor	Proposed U-factor Source	Proposed SHGC	Proposed SHGC Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03

15	Net Added West-facing Fenestration Area	
16	Is Net Added Fenestration Area ≤ 0 for West-Facing Fenestration?	
17	Net Added Fenestration Area (all orientations)	
18	Is Net Added Fenestration Area ≤ 0 for All Orientations?	
19	Proposed Fenestration U-factor (Windows)	
20	Required Fenestration U-factor (Windows)	
21	Compliance Statement:	
22	Proposed Fenestration SHGC (Windows)	
23	Required Fenestration SHGC (Windows)	
24	Compliance Statement:	
25	Proposed Fenestration U-factor (Skylights)	
26	Required Fenestration U-factor (Skylights)	
27	Compliance Statement:	
28	Proposed Fenestration SHGC (Skylights)	
29	Required Fenestration U-factor (Skylights)	
30	Compliance Statement:	

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

I. Opaque Swinging Doors to Exterior (Section 150.1(c)5)

Notes:

- Any door with 25 percent or more glass is counted as a fenestration product in Tables F,G and H.
- Do not include fire-rated doors between garage or unconditioned space and conditioned space.
- If using weighted average to achieve required maximum U-factor, attach CF1R-ENV-02-E.

01	02	03	04	05	06	07
Tag/ID	Area	Proposed U-factor	Proposed U-factor Source	Required Maximum U-factor	Weighted Average (Yes/No)	Comments

J. Space Conditioning (SC) Systems - Heating/Cooling (Section 150.2(b))

01	02	03
Dwelling Unit Name	Dwelling Unit Total CFA (ft^2)	Comments

K. Water Heating Systems (Section 150.2(b)1H)

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.

Options:

1. Gas or propane water heating system; or
2. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has a ANSI/CTA-2045-B communication port; or
3. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
4. If no natural gas is connected to the existing water heater location, a consumer electric water heater(Heat Pump Water Heater or Electric Resistance).

01	Is natural gas connected to the existing water heater?			
02	03	04	05	06
Water Heating System ID or Name	System Option (from §150.2(b)1Hiii)	Water Heater Type	Fuel Type	# of Water Heaters in System

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

CF1R-ALT-01-E User Instructions

Minimum requirements for prescriptive alteration compliance can be found in Building Energy Efficiency Standards Section 150.2(b)1.

Completing these forms will require that you have the Reference Appendices for the 2025 Building Energy Efficiency Standards. This document contains the Joint Appendices which are used to determine climate zone and to complete the section for opaque surfaces. When the term CF1R is used it means the CF1R-ALT-01.

Instructions for sections with column numbers and row numbers are given separately.

If any part of the alteration does not comply, prescriptive compliance fails, in which case the performance compliance approach must be used in an attempt to achieve compliance.

A. General Information

1. Project Name: Identifying information, such as owner's name.
2. Date: Date of document preparation.
3. Project Location: Legal street address of property or other applicable identifying information.
4. Building Front Orientation: Building front expressed in degrees, where North = 0, East = 90, South = 180, and West = 270. Indicate cardinal if it is a subdivision built in multiple orientations. The standards (section 100.1) include the following additional details for determining orientation:
    - Cardinal covers all orientations (for buildings that will be built in multiple orientations);
    - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
    - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
    - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
    - West is oriented to within 45 degrees of true west, including 45 degrees south of west.
5. CA City: Legal city/town of property.
6. Number of Altered Dwelling Units: this field will automatically default to 1 for single family.
7. Zip Code: 5-digit zip code for the project location (used to determine climate zone).
8. Fuel Type: this field will automatically default to Electricity.
9. Climate Zone: From Reference Appendices, Joint Appendix, JA2.1.1.
10. Total Conditioned Floor Area: Enter the new conditioned floor area in square feet (ft^2), as measured from the outside of exterior walls of the dwelling unit or building being altered.
11. Building Type: this field will automatically default to Single Family (includes duplex).
12. Slab Area: Area of the first floor slab (if any) in square feet (ft^2).

13. Project Scope: Check all that apply – insulation, roof replacement > 50%, kitchen remodel, space heating system, space cooling system, duct system, water heating, adding fenestration/glazing, replacing fenestration/glazing, adding fenestration/glazing less than or equal to 75 ft^2 windows, replacing fenestration/glazing less than or equal to 75 ft^2 window, adding fenestration/glazing less than or equal to 16 ft^2 skylight and or replacing fenestration/glazing skylights

B. Opaque Surface Details - Framed (Section 150.2(b)1)

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Ceiling, Wall, Floor.
3. Frame Type: Wood or Metal.
4. Frame Depth: Nominal dimensions (in inches) of framing material such as 2x4 or 2x6.
5. Frame Spacing: 16, 24 or 48 inches on center.

6a. Proposed Cavity R-value: Insulation installed between framing.

NOTE: Section 110.8(d) specifies that if adding insulation to an existing attic, the resulting attic insulation must total R-30. However, the amount of insulation required is limited to the amount of room available for insulation without conflicting with Building Code Section 1203.2.

6b. Proposed Continuous Insulation R-value: Insulation installed on the exterior. See Reference Appendices, Joint Appendix, JA4 for guidance.

7. Proposed U-factor: The U-factor for the entire wall, roof, or floor assembly.
8. Required U-factor: From mandatory requirements in Sections 110.0 and 150.0.
9. Comments: Any notes regarding location or unique conditions.

C. Opaque Surface Details – Non-framed

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Roof or Wall.
3. Assembly Material: SIP OSB, SIP I-Joist, SIP Single 2x, SIP Double 2x, see JA4 for guidance.
4. Thickness: Thickness in inches.
5. Proposed Core Insulation R-value: Insulation installed within the materials or on the inside. See Reference Appendices, Joint Appendix, JA4 for guidance.
6. Proposed Continuous Insulation R-value: Insulation installed on the exterior. See Reference Appendices, Joint Appendix, JA4 for guidance.
7. Proposed U-factor: Assembly U-factor from Reference Appendices, Joint Appendix, JA4 or CF1R-ENV-02. Must be less than or equal to Column 10.
8. Required U-factor from Table 150.1-A: Based on assembly type and climate zone.
9. Comments: Any notes regarding location, unique conditions, or attachments.

D. Opaque Surface Details – Mansory/Mass Walls

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Walls Above Grade: Yes or No.
3. Masonry/Mass Type: Clay Brick, Clay Hollow Unit, Concrete Masonry Unit (CMU) Light Weight, Concrete Masonry Unit (CMU) Medium Weight, Concrete Masonry Unit (CMU) Normal Weight, Concrete, Insulating Concrete Form (ICF). See Reference Appendices, Joint Appendix, JA4 for guidance.
4. Masonry/Mass Thickness: Thickness (in inches) of mass.

5-6. Proposed Exterior Insulation R-value or U-factor: Enter the R-value or U-factor of proposed insulation on the outside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

7-8. Proposed Interior Insulation R-value or U-factor: Enter the R-value or U-factor of proposed insulation on the inside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

.

9-10. Required Exterior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 5 or 6) for exterior insulation will be completed based on the Table 150.1-A requirements for the wall type.

11-12. Required Interior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 7 or) for interior insulation will be completed based on the Table 150.1-A requirements for the wall type.

E. Roof Replacement (Section 150.2(b)1I)

When 50% or more of the roof is being replaced the roofing requirements are triggered. Any areas of roof covered by building integrated photovoltaic panels and solar thermal panels are exempt; however, the area of roof not covered by photovoltaic panels would still need to meet any applicable cool roof requirements. Additionally, there are many alternatives/exceptions when a cool roof is required.

When the roof is steep-sloped (pitch greater than or equal to 2:12) the roof requirements include a cool roof in climate zones 4 and 8-15. The minimum requirement is 0.20 Aged Solar Reflectance, 0.75 Thermal Emittance, or a minimum SRI of 16.

1. Tag/ID: A label, if any, from the plans, for example R-1.
2. Method of Compliance: Indicate if the method of compliance is going to be based on Aged Solar Reflectance and Thermal Emittance, the Solar Reflectance Index (SRI), or an Exception.
3. Roof Pitch: Expressed as 4:12, for example, which means the roof rises 4 feet within a span of 12 feet. When roofs have multiple pitches the requirements are based on the pitch of 50% or more of the roof.
4. Exception: If meeting one of the exceptions. Indicate which exception is, or will be, met.
   NOTE: Exceptions and alternatives for steep slope roofs:
   (a) Mass roof 25 pounds per square foot (lbs/ft^2) or greater (such as sod roof);
   (b) Roof has ceiling assemblies with a U-factor less than or equal to 0.025 or R-38 insulation;
   (c) Roof has a radiant barrier not installed directly above spaced sheathing meeting 150.1(c)2;

(d) R-2 continuous insulation above or below the roof deck.

In climate zones 4 and 6-15, when there is a low-sloped roof (pitch less than 2:12) the cool roof requirements are for a minimum Aged Solar Reflectance of 0.63, a minimum 0.75 Thermal Emittance, or a minimum SRI of 75.

NOTE: Exceptions and alternatives for low slope roofs:

(a) Mass roof 25 pounds per square foot (lbs/ft^2) or greater (uncommon situation such as sod roof);

(b) Roof deck installation trade off—by installing roof deck insulation, a lower aged solar reflectance is required: In Climate Zones 6 and 7 R-2 (0.60), R-4 (0.55), R-6 (0.50), R-8 (0.45), R-10 (no requirement); In Climate Zones 2, 4 and 8-15 R-16 (0.60), R-18 (0.55), R-20 (0.50), R-24 (no requirement).

NOTE: If one of the exceptions above has been selected then the rest of Section E is not required.

5. The CRRC Product ID Number is obtained from the Cool Roof Rating Council's Rated Product Directory. Products are listed by manufacturer, brand, type of installation, roofing material, and color, as well as product performance.
6. Product Type: See Cool Roof Rating Council's directory. Generally product types include single-ply roof, wood shingles, asphalt roof, metal roof, tile roof.
7. R-value Deck Insulation: If one of the exceptions selected includes adding roof deck insulation, indicate the R-value of insulation.
8. Proposed Initial Solar Reflectance: Based on the product chosen from the Cool Roof Rating Council's Rated Product Directory. If using default assumption indicate NA since the Aged Solar Reflectance is available.
9. Proposed Aged Solar Reflectance: Value is from the Cool Roof Rating Council's Rated Product Directory. If the aged value is not available, calculate the calculated Aged Solar Reflectance using the Solar Reflectance Index (SRI) Calculation worksheet located on the California Energy Commission website or the aging equation $\rho_{aged}=[0.2+\beta[\rho_{initial}-0.2]$, where $\rho_{initial}$ = the initial solar reflectance and soiling resistance β is listed by product type below.

VALUES OF SOILING RESISTANCE β BY PRODUCT TYPE

Product Type	CRRC Product Category	β
Field-Applied Coating	Field-Applied Coating	0.65
Other	Not A Field-Applied Coating	0.70

10. Proposed Thermal Emittance: From the product specification default value. If using a calculated Solar Reflectance Index (SRI) place the Thermal Emittance used to calculate SRI.
11. Proposed Solar Reflectance Index (SRI): It is optional to meet the SRI but if chosen to do so, use the Solar Reflectance Index (SRI) Calculation Worksheet found on the California Energy Commission website.
12. Minimum Required Aged Solar Reflectance: Based on climate zone and roof slope.
13. Minimum Required Thermal Emittance: Based on climate zone and roof slope.

14. Minimum Required Solar Reflectance Index (SRI): Based on climate zone and roof slope.

NOTE: If the cool roofing requirements will be met by a liquid field applied coating, Section 110.8(i)4 requires the coating be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the manufacturer.

F. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.2(b)1)

The climate zone and scope of the alteration will affect the amount of fenestration (also known as glazing) allowed. If limited to 20 percent, this is calculated as Conditioned Floor Area x 0.20 = total square footage (ft^2) of fenestration allowed (20 percent). Fenestration areas are expressed in feet, not inches. When west-facing fenestration is limited (in climate zones 2, 4, and 6-15), it is limited to a maximum of 5 percent. Additions of 1,000 square feet (ft^2) or less have alternate requirements. For example, the limit may be 120 square feet (ft^2) of fenestration or 25 percent. While west-facing fenestration may be limited, if there is no west fenestration the upper limit remains at 120 square feet (ft^2) or 25 percent (or the values shown in columns 2 and 3).

1. Alteration Type: Auto-filled with the project scope in A13: adding fenestration/glazing, replacing fenestration/glazing, replacing fenestration/glazing less than or equal to 75 square feet (ft^2) window, adding fenestration/glazing less than or equal to 16 square feet (ft^2) skylight and or replacing fenestration/glazing skylights.
2. Maximum Allowed Fenestration Area for All Orientations (ft^2): The maximum total fenestration area is 20 percent. Depending on the type of fenestration and the alteration type, this field may show values such as 75 square feet (ft^2).
3. Maximum Allowed West-Facing Fenestration Area Only: Calculated value based on Conditioned Floor Area multiplied by 5 percent (Used in climate zones 2, 4, and 6-16)

   NOTE: (1) If adding fenestration/glazing less than or equal to 16 square feet (ft^2) skylight, enter NA
   (2) West includes any vertical fenestration oriented to within 45 degrees of true west, including 45 degrees south of west. For skylights, west also includes any skylight area facing any direction with a pitch of less than 1:12
4. Existing Fenestration Area for All Orientations: Enter the area, in square feet (ft^2), of the existing fenestration/glazing.

Existing West-Facing Fenestration Area: Enter the area, in square feet (ft^2), of the existing west-facing fenestration/glazing. If project has no existing west-facing fenestration then enter "0".

5. Maximum Allowed U-factor: Maximum U-factor from Package A or Table 150.1-A.

   NOTE: (1) If meeting Exception 1 to Section 150.2(b)1B (replacing less than or equal to 75 square feet (ft2) windows), enter 0.40.
   (2) If meeting Exception 2 to Section 150.2(b)1B (replacing skylights), enter 0.40.
6. Maximum Allowed SHGC: Maximum SHGC from Package A or Table 150.1-A.

   NOTE:

(1) If meeting Exception 1 to Section 150.2(b)1B, (replacing less than or equal to 75 square feet (ft^2) windows), enter 0.35 in Climate Zones 2, 4, and 6- through 15.
(2) If meeting Exception 2 to Section 150.2(b)1B (replacing skylights), enter 0.30.
(3) If meeting Exception 3 to Section 150.2(b)1B (Climate Zone 15), enter no greater than 0.23.

7. Comments: Note any special location or comment here.

G. Fenestration/Glazing Proposed Areas and Efficiencies – Add (Section 150.2(b)1A)

1. Tag/ID: A label (if any) from the plans, such as W1.
2. Fenestration Type: Indicate the type of fenestration construction (e.g., Fixed Window, Operable Window, or Skylight).
   NOTE: Doors with glazing are counted in one of two ways. A door with 25 percent or more glazing is counted as the entire door area. A door with less than 25 percent glazing can be counted as the entire door area or can be calculated as the actual glass area with a 2-inch frame all around.
3. Frame type: Metal, metal thermal break, or non-metal.
4. Dynamic Glazing: Indicate if the fenestration has integrated shading device, chromogenic glazing, or none for no dynamic glazing. Chromogenic glazing shall be considered separately from other fenestration types.
5. Orientation (North, East, South, West). In climate zones where the West-facing glazing is limited, list west-facing individually. The definitions in the Energy Standards include these specific details:
   - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
   - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
   - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
   - West is oriented to within 45 degrees of true west, including 45 degrees north of west.

   NOTE: Skylights in a roof pitch greater than 1:12 can be included as facing the same orientation as that portion of the roof angle. If the skylight is in a roof with a pitch less than 1:12, the skylight is assumed to face west.
6. Number of Panes: Indicate the number of panes for each Tag/ID; is it single, double, or triple pane window?
7. Proposed Fenestration Area (ft^2): Indicate the area in square feet (ft^2) of each exterior fenestration type, excluding west-facing fenestration.
8. Proposed West Facing Fenestration Area (ft^2): In climate zones 2, 4, 6-15, indicate the area (in ft^2) of each exterior west-facing fenestration type separately.
   NOTE: Skylights installed in a roof with pitch less than 1:12 are considered to face west.
9. Proposed U-factor: Enter
   (a) the National Fenestration Rating Council (NFRC) U-factor based on the proposed brand and type of fenestration using NFRC certified values; or
   (b) the default value from Table 110.6-A; or
   (c) the NA6.2 alternate default U-factor (for non-rated site-built fenestration only); or
   (d) the Area-weighted Average from CF1R-ENV-02.

If any products (other than skylights) have a higher U-factor than required by Package A, first complete a CF1R-ENV-02 to calculate the Area-Weighted Average U-factor, and attach it to the CF1R-ALT-01.

NOTE: Dynamic glazing is a glazing system that changes its performance U-factor and SHGC based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and SHGC in Columns 9 and 11.

10. Source: National Fenestration Rating Council (NFRC), Table 100.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02). The source of the U-factor data for the fenestration product.
11. Proposed SHGC: In climate zones 2, 4, 6-15 enter
    (a) the National Fenestration Rating Council (NFRC)- solar heat gain coefficient (SHGC) based on the proposed brand and type of fenestration using NFRC certified values; or
    (b) the default value Table 110.6-B; or
    (c) the NA6.3 alternate default solar heat gain coefficient (SHGC) (for non-rated site-built fenestration only); or
    (d) the Area-weighted Average from CF1R-ENV-02.

    If any products (other than skylights) have a higher solar heat gain coefficient (SHGC) than required by Package A, first complete a form CF1R-ENV-02 to calculate the Area-Weighted Average SHGC and attach it to the CF1R-ALT-01.
12. Source: National Fenestration Rating Council (NFRC), Table 100.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02). The source of the solar heat gain coefficient (SHGC) data for the fenestration product.
13. Exterior Shading Device: If exterior shading devices are used to meet the solar heat gain coefficient (SHGC) requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03 Solar Heat Gain Coefficient Worksheet) and attach an ENV-03.

    NOTES:(1) An exterior shading device is not used for products with a National Fenestration Rating Council (NFRC) rated U-factor and solar heat gain coefficient (SHGC) based on a factory integrated shading device.
    (2) Chromogenic glazing shall be considered separately from other fenestration.
    (3) If using an overhang for south-facing glazing, the glazing must be fully shaded at solar noon on August 21 and substantially exposed to direct sunlight at solar noon on December 21 (see Residential Compliance Manual, Section 3.5.5).
14. Combined SHGC from CF1R-ENV-03: If exterior shading devices are combined with the solar heat gain coefficient (SHGC) value of the fenestration to meet the prescriptive SHGC requirements (as indicated by a value in Column E. 13), indicate the SHGC calculated on compliance document CF1R-ENV-03 and attach the one for each window with an exterior shading device.

15.-32. Automatically completed entries; no user input required.

H. Fenestration/Glazing Proposed Areas and Efficiencies – Replace (Section 150.2(b)1B)

1. Tag/ID: A label (if any) from the plans, such as W1.
2. Fenestration Type: Indicate the type of fenestration construction (e.g., Fixed Window, Operable Window, or Skylight).

   NOTE: Doors with glazing are counted in one of two ways. A door with 25 percent or more glazing is counted as the entire door area. A door with less than 25 percent glazing can be counted as the entire door area or can be calculated as the actual glass area with a 2-inch frame all around.

3. Frame type: Metal, metal thermal break, or non-metal.
4. Dynamic Glazing: Indicate if the fenestration has integrated shading device, chromogenic glazing, or none for no dynamic Glazing. Chromogenic glazing shall be considered separately from other fenestration types.
5. Orientation (North, East, South, West). In climate zones where the West-facing glazing is limited, list west-facing individually. The definitions in the Energy Standards include these specific details:
   - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
   - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
   - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
   - West is oriented to within 45 degrees of true west, including 45 degrees north of west.

   NOTE: Skylights in a roof pitch greater than 1:12 can be included as facing the same orientation as that portion of the roof angle. If the skylight is in a roof with a pitch less than 1:12, the skylight is assumed to face west.

6. Area Removed (ft^2): Enter the area, in square feet (ft^2), of the fenestration/glazing being removed.
7. Area Added (ft^2): Enter the area, in square feet (ft^2), of the fenestration/glazing being added.
8. Net Added Area (ft^2): The difference between the Area Added and the Area Removed.
9. Proposed U-factor: Enter
   (a) the National Fenestration Rating Council (NFRC) U-factor based on the proposed brand and type of fenestration using NFRC certified values; or
   (b) the default value from Table 110.6-A; or
   (c) the NA6.2 alternate default U-factor (for non-rated site-built fenestration only); or
   (d) the Area-Weighted Average from CF1R-ENV-02.

   If any products (other than skylights) have a higher U-factor than required by Package A, first complete a CF1R-ENV-02 to calculate the Area-Weighted Average U-factor and attach it to the CF1R-ALT-01.

NOTE: Dynamic glazing is a glazing system that changes its performance U-factor and SHGC based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and SHGC in Columns 9 and 11.

10. Source: National Fenestration Rating Council (NFRC), Table 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-weighted Average Worksheet (ENV-02). The source of the U-factor data for the fenestration product.
11. Proposed Solar Heat Gain Coefficient (SHGC): In climate zones 2, 4, 6 through 15 enter
    (e) the National Fenestration Rating Council (NFRC)- solar heat gain coefficient (SHGC) based on the proposed brand and type of fenestration using NFRC certified values, or
    (f) the default value Table 110.6-B, or
    (g) the NA6.3 alternate default solar heat gain coefficient (SHGC) (for non-rated site-built fenestration only), or
    (h) the Area-weighted Average from CF1R-ENV-02.

    If any products (other than skylights) have a higher SHGC than required by Package A, first complete a form CF1R-ENV-02 to calculate the area-weighted average SHGC and attach it to the CF1R-ALT-01.

12. Source: National Fenestration Rating Council (NFRC), Table 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-weighted Average Worksheet (ENV-02). The source of the SHGC data for the fenestration product.
13. Exterior Shading Device: If exterior shading devices are used to meet the SHGC requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03 Solar Heat Gain Coefficient Worksheet) and attach an ENV-03.

    NOTES: (1) An exterior shading device is not used for products with a National Fenestration Rating Council (NFRC) rated U-factor and SHGC based on a factory integrated shading device.
    (2) Chromogenic glazing shall be considered separately from other fenestration.
    (3) If using an overhang for south-facing glazing, the glazing must be fully shaded at solar noon on August 21 and substantially exposed to direct sunlight at solar noon on December 21 (see Residential Compliance Manual, Section 3.5.5).

14. Combined Solar Heat Gain Coefficient (SHGC) from CF1R-ENV-03: If exterior shading devices are combined with the SHGC value of the fenestration to meet the prescriptive SHGC requirements (as indicated by a value in column F. 13), indicate the SHGC calculated on compliance document CF1R-ENV-03 and attach the form for each window with an exterior shading device.

15.-30. Automatically completed entries; no user input required.

I. Opaque Swinging Doors to Exterior

1. Tag/ID: Provide a name or designator for each unique door. This designator should be used consistently throughout the plan set (elevations, door schedules, etc.)
2. Area: Calculated area in square feet (ft^2) for each unique door.
3. Proposed U-factor: Enter the proposed U-factor. If value is greater than 0.20, column 06 will autocomplete as Yes.
4. Source: National Fenestration Rating Council (NFRC) or Reference Appendices, Joint Appendix, Table 4.5.1s, 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02).
5. Required Maximum U-factor. This field will always be 0.20.
6. Weighted Average: If column 03 is greater than 0.20 U-factor, attach form CF1R-ENV-02-E.
7. Comments: Any notes regarding location, unique conditions, or attachments.

J. Space Conditioning (SC) Systems – Heating/Cooling (Section 150.2(b))

Requirements of the standards apply to a heating and cooling system alteration based on the type of alteration and the system type (Section 150.2(b)1). A completely new system will meet all mandatory and prescriptive requirements, which vary by climate zone (based on Section 150.2(b)1C).

NOTE: Computer performance compliance can be used to trade-off any requirements that are not mandatory. When parts of a system are replaced, it may trigger some of the same requirements that apply to new systems and duct alterations. A Certificate of Compliance for Alterations to Space Conditioning Systems (CF1R-ALT-02) is required for each dwelling unit with a space conditioning system alteration.

1. Dwelling Unit Name: Name of dwelling unit or any other identifying name.
2. Dwelling Unit Total CFA (ft^2): Conditioned Floor Area in square feet (ft^2), as measured from the outside of exterior walls of the dwelling unit or building being altered.
3. Comments: Any notes regarding location or unique conditions.

K. Water Heating Systems (Section 150.2(b)1H)

Water heating compliance for an alteration is described in Section 150.2(b)1H.

1. Is natural gas connected to the existing water heater?? Yes or No
2. Water Heating System Identification or Name: Provide a unique name for each unique water heating system type in the building. If the same water heating system type is used in more than one location in the building, it is sufficient to list the unique water heating system type only once.
3. System option:
    1. A natural gas or propane water heating system.

2. A single heat pump water heater, storage tank shall not be located outdoors and placed on a incompressible, rigid insulated surface with a minimum thermal resistance of R-10
3. A single Tier 3 or higher heater (as rated by Northwest Energy Efficiency Alliance (NEEA).
4. If no natural gas is connected to the existing water heater location, a consumer electric water heater (Heat Pump Water Heater or Electric Resistance)
5. If the existing water heater is electric resistance, a consumer electric water heater

4. Water heater Type: Consumer instantaneous, consumer storage, NEEA Tier 3 or higher heat pump water heater
5. Fuel Type: Gas, Propane. heat pump, electricity.
6. Number of water heaters in system: No more than 1 per dwelling unit allowed.

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature.
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature.

Registration

1. The CF1R must be registered with an ECC-provider prior to submitting for a building permit. See Single-Family Compliance Manual.

ALTERATIONS TO SPACE CONDITIONING SYSTEMS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. General Information

CF1R-ALT-02 is applicable to multiple space conditioning systems contained within a single dwelling unit.

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Type:	
05	CA City:		06	Dwelling Unit Name:	
07	Zip Code:		08	Dwelling Unit CFA (ft^2):	
09	Climate Zone:		10	Number of Space Conditioning (SC) Systems in this Dwelling Unit:	

B. Space Conditioning (SC) System Information

01	02	03	04	05	06	07	08	09	10
SC System ID/Name	SC System Description of Area Served	CFA served by this SC System (ft^2):	Is the SC system a ducted system?	Installing a refrigerant containing component?	Installing new SC system components?	Installing more than 25 feet of ducts?	Installing entirely new duct system?	Installing entirely new SC system?	Alteration Type:

ALTERATIONS TO SPACE CONDITIONING SYSTEMS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

C. Extension of Existing Duct System, Greater Than 25 Feet (Section 150.2(b)1Diib)

Required Documentation:

CF2R-MCH-01-E - Space Conditioning Systems

-Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ 3, 5-7and R-8 (CZ1,2,4, 8-16).

CF2R & CF3R-MCH-20-H – Duct Leakage Test

-Leakage rate compliance: less than or equal to 10%, or less than or equal to 7% leakage to outside, or seal all accessible leaks

Exceptions:

Existing duct systems constructed, insulated, or sealed with asbestos are exempt from MCH-20 duct leakage testing requirements

01	02	03
SC System ID/Name	SC System Description of Area Served	Required New Duct R-Value

ALTERATIONS TO SPACE CONDITIONING SYSTEMS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

D. Altered Space Conditioning System (Sections 150.2(b)1E and F)

Required Documentation:

CF2R-MCH-01-E - Space Conditioning Systems

-Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ3, 5-7) and R-8 (CZ1,2,4, 8-16)

CF2R & CF3R-MCH-20-H – Duct Leakage Test required when heating or cooling components are installed in ducted systems, or when more than 25 ft of duct length is replaced.

-Leakage rate compliance: less than or equal to 10%, or less than or equal to 7% leakage to outside, or seal all accessible leaks.

CF2R & CF3R-MCH-25-H Refrigerant Charge verification required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).

CF2R & CF3R-MCH-23 Airflow Rate greater than or equal to 300 CFM/ton required when MCH-25 is required.

Exceptions:

-Duct systems registered with an ECC-provider as previously sealed are exempt from MCH-20 Duct Leakage Testing requirements.

-Existing duct systems constructed, insulated, or sealed with asbestos are exempt from MCH-20 Duct Leakage Testing requirements.

01	02	03	04	05	06	07	08	09	10	10b	11	12	13
SC System ID/Name	SC System Description of Area Served	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Components	Cooling Efficiency Type	Cooling Minimum Efficiency Value SEER/SEER2	Cooling Minimum Efficiency Value EER/EER2/ CEER	Required Thermostat Type	New or Replaced Duct Length	New Duct R-Value

ALTERATIONS TO SPACE CONDITIONING SYSTEMS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

E. Entirely New or Complete Replacement Duct System, with or without Equipment Changeout (Sections 150.2(b)1Diia and 150.2(b)1E, F)

Required Documentation:

CF2R-MCH-01-E - Space Conditioning Systems

-Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ3,5-7) and R-8 (CZ1,2,4, 8-16)

CF2R & CF3R-MCH-20-H Duct Leakage Test required.

-Leakage rate compliance: less than or equal to 5 percent.

CF2R & CF3R-MCH-22 Fan Efficacy

CF2R & CF3R-MCH-23 Airflow Rate

-Compliance: Fan Efficacy less than or equal to 0.58 W/cfm for non-gas furnaces and System Airflow greater than or equal to 350 cfm/ton.

-Alternative Compliance: CF2R & CF3R-MCH-28 Return Duct Design verification is an alternative to MCH-22 and MCH-23 verification.

CF2R & CF3R-MCH-25-H Refrigerant Charge verification required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).

Note:

An "entirely new or complete replacement duct system" means at least 75 percent of the duct system is new duct material, and up to 25 percent may consist of reused parts from the dwelling unit's existing duct system (e.g., registers, grilles, boots, air handler, coil, plenums, duct material) if the reused parts are accessible and can be sealed to prevent leakage.

01	02	03	04	05	06	07	08	09	10	10b	11	12
SC System Identification or ID/Name	SC System Description of Area Served	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Components	Cooling Efficiency Type	Cooling Minimum Efficiency Value SEER/SEER2	Cooling Minimum Efficiency Value EER/EER2/ CEER	Required Thermostat Type	New Duct R-Value

ALTERATIONS TO SPACE CONDITIONING SYSTEMS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

F. Entirely New or Complete Replacement Space Conditioning System (Section 150.2(b)1C)

Required Documentation:

CF2R-MCH-01-E - Space Conditioning Systems

-Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ3, 5-7) and R-8 (CZ1,2,4, 8-16)

CF2R & CF3R-MCH-20-H Duct Leakage Test required.

-Leakage rate compliance: less than or equal to 5 percent.

CF2R & CF3R-MCH-22 Fan Efficacy

CF2R & CF3R-MCH-23 Airflow Rate

-Compliance: Fan Efficacy less than or equal to 0.58 W/cfm for non-gas furnaces and System Airflow greater than or equal to 350 cfm/ton.

- Alternative Compliance: CF2R & CF3R-MCH-28 Return Duct Design verification is an alternative to MCH-22 and MCH-23 verification.

CF2R & CF3R-MCH-25-H Refrigerant Charge verification required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).

Note:

An "entirely new or complete replacement duct system" means at least 75 percent of the duct system is new duct material, and up to 25 percent may consist of reused parts from the dwelling unit's existing duct system (e.g., registers, grilles, boots, air handler, coil, plenums, duct material) if the reused parts are accessible and can be sealed to prevent leakage

01	02	03	04	05	06	07	08	09	10	10b	11	12
SC System ID/Name	SC System Description of Area Served	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Components	Cooling Efficiency Type	Cooling Minimum Efficiency Value SEER/SEER2	Cooling Minimum Efficiency Value EER/EER2/ CEER	Required Thermostat Type	New Duct R-Value

ALTERATIONS TO SPACE CONDITIONING SYSTEMS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300

CF1R-ALT-02-E User Instructions

Minimum requirements for prescriptive HVAC alteration compliance can be found in Building Energy Efficiency Standards Section 150.2(b)1C.

Completing these forms will require that you have the 2025 Reference Appendices for the 2025 Building Energy Efficiency Standards.

When the term CF1R is used, it is referencing the CF1R-ALT-02. Worksheets are identified by their entire name, and subsequently by only the worksheet number, such as CF1R-ENV-02.

Instructions for sections with column numbers and row numbers are given separately.

If any part of the alteration does not comply with the prescriptive requirements, prescriptive compliance fails and the performance compliance approach must be used.

A. General Information

1. Project Name: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter a unique project identifier such as the house number and street name or example: "Jones' Furnace Change out."
2. Date Prepared: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the date of document preparation.
3. Project Location: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the legal street address of property or other applicable identifying information.
4. Building Type: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. this field will automatically default to Single Family.
5. CA City: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the legal city/town of property.
6. Dwelling Unit Name: Enter a unique dwelling unit name or any other identifying name that would readily distinguish this dwelling unit from others in this project.
7. Zip Code: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the 5-digit zip code for the project location (used to determine climate zone).
8. Dwelling Unit CFA (ft^2): If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. For one-dwelling projects, this field will equal the conditioned floor area (CFA) on that document. For multi-dwelling projects, this field will sum with other dwelling units to equal the total CFA on that document. If this project does not utilize a CF1R-ALT-01 (or CF1R-ADD-01), enter the conditioned floor area in ft^2 of the project. If multiple systems are being affected, a CFA value will be assigned to each

system in Section B. Those must sum to this total for the project. For projects NOT involving all systems in the dwelling, this is the CFA of only the portion of the dwelling unit affected.

9. Climate Zone: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, select the correct climate zone for the project. From the Reference Appendices, Joint Appendix, JA2.1.1.
10. Number of Space Conditioning (SC) Systems in this Dwelling Unit: Enter the number of space conditioning systems in the dwelling unit.

B. Space Conditioning (SC) System Information (Section 150.2(b)1C)

1. SC System Identification or Name: Enter a unique identifier for this system that will readily distinguish it from other systems in the dwelling unit, such as "HVAC1," "upstairs system," etc. It is recommended to mark the system with this identifier using a permanent marker for ease of identification in the field. For single-system dwelling units, enter a simple name such as "HVAC."
2. SC System Description of Area Served: Enter a unique description of the portion of dwelling unit served by this system, such as "entire second floor," "bedroom wing," etc. For single-system dwelling units, enter a simple description such as "entire house."
3. CFA served by this SC System (ft^2): Enter the CFA served by this system.
4. Is the altered or installed system a ducted system? Select "**YES"** if the system has a central air handler (package or split) that is connected to one or more supply air outlets via ducting of any shape or material. Select "**NO**" for nonducted systems such as ductless mini-splits, through-the-wall systems, package terminal air conditioners, etc.
5. Altering or installing a refrigerant containing component? Select "**YES**" if the project includes installing or replacing a component that contains refrigerant; otherwise select "**NO**." Refrigerant containing components include compressors, condensing coils, evaporator coils, refrigerant metering devices or refrigerating lines.
6. Installing new components? Select "**YES"** if new HVAC components such as a packaged unit, condensing unit, cooling/heating coil, or air-handling unit (e.g., furnace), etc. are being installed in the system; otherwise select "**NO**."
7. Installing more than 25 linear feet of new or replacement ducts? Select "**YES**" if the project involves installing more than 25 linear feet of new or replacement ducts; otherwise select "**NO**."
8. Is the entire duct system accessible for sealing and is more than 75 percent of the duct system new or replaced? Select "**YES**" when, upon completion of the project, more than 75 percent of the ducts will be new ducts and/or replaced ducts, AND if at any time during the project all of the ducts are accessible for duct sealing; otherwise select "**NO**." "Accessible" is defined in the Reference Appendices, Joint Appendix, JA1.
9. Are all of the system's components and ducts new (entirely new system) or replaced? Select "**YES**" if the duct system meets the definition of an "Entirely New or Replacement Duct System" and all of the heating and cooling components (furnace, condenser, coil, etc.) are all new or replaced; otherwise select "**NO**."
10. Alteration Type: This field is calculated automatically based on the information entered in previous fields. Alteration types are defined in the Reference Appendices, Joint Appendix, JA1. The alteration type will determine which of the following sections are required by this document.

C. Extension of Existing Duct System, Greater Than 25 Feet (Section 150.2(b)1Diib)

1. System Identification or Name: This field is automatically filled from entries in Section B.
2. SC System Location or Description of Area Served. This field is automatically filled from entries in Section B.
3. Required New Duct R-value: This field is automatically calculated based on the climate zone selected in Section A. It represents the minimum R-value required. The installed R-value shown on the installation certificate (CF2R) must meet or exceed this value.

D. Altered Space Conditioning System (Sections 150.2(b)1E and F)

1. System Identification or Name: This field is automatically filled from entries in Section B.
2. SC System Location or Description of Area Served. This field is automatically filled from entries in Section B.
3. Heating System Type: Select the most appropriate heating system type from the list. If the type of system to be installed does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
4. Altered Heating Component: Select the most appropriate heating system components from the list that are being added or replaced as part of this project. You can select multiple choices if needed. If the type of component being altered does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
5. Heating Efficiency Type: Select the heating efficiency type from the list that is appropriate to the type of system being altered or installed.
6. Heating Minimum Efficiency Value: This field is filled automatically based on selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum efficiency value.
7. Cooling System Type: Select the most appropriate cooling system type from the list. If the type of system to be installed does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
8. Altered Cooling Components: User chooses as many as are applicable: Select the most appropriate cooling system components from the list that are being added or replaced as part of this project. You can select multiple choices if needed. If the type of component being altered does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
9. Cooling Efficiency Type: Select the cooling efficiency type from the list that is appropriate to the type of system being altered or installed.
10. Cooling Minimum Efficiency Value: This field is filled automatically based on CF1R-ALT-02 selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum.

10b. Cooling Minimum Efficiency Value: This field is filled automatically based on CF1R-ALT-02 selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum.

11. Required Thermostat Type: This field is filled automatically based on selections in previous fields. If “setback” appears here, a setback thermostat meeting the minimum requirements of Section 150.0(i) is required to be installed as part of this project.
12. New or Replaced Duct Length: Select the descriptor that describes the amount of duct, at the completion of the project that is added or replaced as part of this project.

13. New Duct R-value: This field is filled automatically based on the entries in previous fields and the climate zone of the project.

E. Entirely New or Complete Replacement Duct System, with or without Equipment Changeout (Sections 150.2(b)1Diia and 150.2(b)1E, F)

1. System Identification or Name: This field is automatically filled from entries in Section B.
2. SC System Location or Description of Area Served. This field is automatically filled from entries in Section B.
3. Heating System Type: Select the most appropriate heating system type from the list. If the type of system to be installed does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
4. Altered Heating Component: Select the most appropriate heating system components from the list that are being added or replaced as part of this project. You can select multiple choices, if needed. If the type of component being altered does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300
5. Heating Efficiency Type: Select the heating efficiency type from the list that is appropriate to the type of system being altered or installed.
6. Heating Minimum Efficiency Value: This field is filled automatically based on selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum.
7. Cooling System Type: Select the most appropriate cooling system type from the list. If the type of system to be installed does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
8. Altered Cooling Components: User chooses as many as that are applicable: Select the most appropriate cooling system components from the list that are being added or replaced as part of this project. You can select multiple choices, if needed. If the type of component being altered does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300
9. Cooling Efficiency Type: Select the cooling efficiency type from the list that is appropriate to the type of system being altered or installed.
10. Cooling Minimum Efficiency Value: This field is filled automatically based on selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum.
11. Required Thermostat Type: This field is filled automatically based on selections in previous fields. If “setback” appears here, a setback thermostat meeting the minimum requirements is required to be installed as part of this project.
12. New Duct R-value: This field is filled automatically based on the entries in previous fields and the climate zone of the project.

F. Entirely New or Complete Replacement Space Conditioning System (Section 150.2(b)1C)

1. System Identification or Name: This field is automatically filled from entries in Section B.
2. SC System Location or Description of Area Served. This field is automatically filled from entries in Section B
3. Heating System Type: Select the most appropriate heating system type from the list. If the type of system to be installed does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
4. Altered Heating Component: This field is automatically filled.
5. Heating Efficiency Type: Select the heating efficiency type from the list that is appropriate to the type of system being altered or installed.
6. Heating Minimum Efficiency Value: This field is filled automatically based on selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum.
7. Cooling System Type: Select the most appropriate cooling system type from the list. If the type of system to be installed does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
8. Altered Cooling Components (user chooses as many as that are applicable): Select the most appropriate cooling system components from the list that are being added or replaced as part of this project. You can select multiple choices, if needed. If the type of component being altered does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
9. Cooling Efficiency Type: Select the cooling efficiency type from the list that is appropriate to the type of system being altered or installed.
10. Cooling Minimum Efficiency Value: This field is filled automatically based on selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum.
11. Required Thermostat Type: This field is filled automatically based on selections in previous fields. If “setback” appears here, a setback thermostat meeting the minimum requirements is required to be installed as part of this project.
12. New Duct R-value: This field is filled automatically based on the entries in previous fields and the climate zone of the project.

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

Registration

1. The CF1R must be registered with an ECC-provider prior to submitting for a building permit. See Single-Family Compliance Manual.

PRESCRIPTIVE RESIDENTIAL ALTERATIONS THAT DO NOT REQUIRE FIELD VERIFICATION

CALIFORNIA ENERGY COMMISSION

CEC-CF1R-ALT-05-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

This compliance document is only applicable to simple alterations that do not require field verification for compliance. When field verification is required, a CF1R-ALT-01 shall first be registered with an ECC-Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from field verification requirements may use the CF1R-ALT-05 and CF2R- ALT-05 Compliance Documents. Possible exemptions from duct leakage testing include: less than 25 feet (ft) of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by an ECC-Rater. If space conditioning systems are altered and are not exempt from field verification, then a CF1R-ALT-02 must be completed and registered with an ECC-Provider Data Registry.

Alterations that utilize closed cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value greater than 5.8 per inch, or open cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R-ALT-01 with an ECC-Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

PRESCRIPTIVE RESIDENTIAL ALTERATIONS THAT DO NOT REQUIRE FIELD VERIFICATION

CALIFORNIA ENERGY COMMISSION

CEC-CF1R-ALT-05-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

A. General Information

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg or cardinal):	
05	CA City:		06	Number of Altered Dwelling Units:	
07	Zip Code:		08	Fuel Type:	
09	Climate Zone:		10	Total Conditioned Floor Area (ft^2):	
11	Building Type:		12	Slab Area (ft^2):	
13	Project Scope:				

B. Opaque Surface Details - Framed (Section 150.2(b)1)

Note:

Where insulation is installed above the roofing membrane, or above the layer used to seal the roof from water penetration, the insulation shall have a maximum water absorption of 0.3 percent by volume when tested according to American Society for Testing and Materials (ASTM) Standard C272.

01	02	03	04	05	06a	06b	07	08	09
					Proposed			**Required**	
Tag/ID	Assembly Type	Frame Type	Frame Depth (inches)	Frame Spacing (inches)	Cavity R-value	Continuous Insulation R-value	U-factor	U-Factor or R-value from Table 150.1-A	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

C. Opaque Surface Details – Nonframed

01	02	03	04	05	06	07	08	09
Tag/ID	Assembly Type	Assembly Materials	Thickness (inches)	**Proposed**			**Required**	Comments
				Core Insulation R-value	Continuous Insulation R-value	U-factor	Required U-factor or R-value	

D. Opaque Surface Details – Masonry/Mass Walls

Note:

When insulation is added to the outside of a mass wall and/or when the inside is furred and insulated, the performance data may be adjusted using Equation 4-4 in the Reference Appendices, Joint Appendix, JA4.

01	02	03	04	05	06	07	08	09	10	11	12
		Proposed						**Required**			
	Above or Below Grade?	Masonry/Mass Wall Type	Mass Thickness (inches)	Exterior Insulation		Interior Insulation		Exterior Insulation		Interior Insulation	
Tag/ID				R-value	U-factor	R-value	U-factor	R-value	U-factor	R-value	U-factor

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

E. Roof Replacement (Section 150.2(b)1I)

Notes:

- Roof area covered by building integrated photovoltaic (PV) panels and solar thermal panels are exempt from the above Cool Roof requirements.
- Liquid field applied coatings must comply with installation criteria from Section 110.8(i)4.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
							Proposed				**Minimum Required**		
Tag/ ID	Method of Compliance	Roof Pitch	Exception	CRRC Product ID Number	Product Type	R-value Deck Insulation	Initial Solar Reflectance	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)

F. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.2(b)1A)

01	02	03	04		05		06		07
Alteration Type	Maximum Allowed Fenestration Area for All Orientations (ft^2)	Maximum Allowed West-Facing Fenestration Area Only (ft^2)	Existing Fenestration Area for All Orientations (ft^2)	Existing West-Facing Fenestration Area (ft^2)	Maximum Allowed U-factor (Windows)	Maximum Allowed U-factor (Skylights)	Maximum Allowed SHGC (Windows)	Maximum Allowed SHGC (Skylights)	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

G. Fenestration Proposed Areas and Efficiencies – Add (Section 150.2(b)1A)

Note: Doors with greater than or equal to 25 percent glazed area are considered glazed doors and are treated as fenestration products.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Tag/ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation N, S, W, E	Number of Panes	Proposed Fenestration Area (ft^2)	Proposed West Facing Fenestration Area (ft^2)	Proposed U-factor	Proposed U-factor Source	Proposed SHGC	Proposed SHGC Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03

15	Existing + Proposed Fenestration Area	
16	Maximum Allowed Fenestration Area	
17	Compliance Statement:	
18	Existing + Proposed West-Facing Fenestration Area	
19	Maximum Allowed West Fenestration Area	
20	Compliance Statement:	
21	Proposed Fenestration U-factor (Windows)	
22	Required Fenestration U-factor (Windows)	
23	Compliance Statement:	
24	Proposed Fenestration SHGC (Windows)	
25	Required Fenestration SHGC (Windows)	
26	Compliance Statement:	
27	Proposed Fenestration U-factor (Skylights)	
28	Required Fenestration U-factor (Skylights)	
29	Compliance Statement:	
30	Proposed Fenestration SHGC (Skylights)	
31	Required Fenestration SHGC (Skylights)	
32	Compliance Statement:	

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

H. Fenestration/Glazing Proposed Areas and Efficiencies – Replace (Section 150.2(b)1B)

Note: Doors with greater than or equal to 25 percent glazed area are considered glazed doors and are treated as fenestration products.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Tag/ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation N, S, W, E	Area Removed (ft^2)	Area Added (ft^2)	Net Added Area (ft^2)	Proposed U-factor	Proposed U-factor Source	Proposed SHGC	Proposed SHGC Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03

15	Net Added West-facing Fenestration Area	
16	Is Net Added Fenestration Area ≤ 0 for West-Facing Fenestration?	
17	Net Added Fenestration Area (all orientations)	
18	Is Net Added Fenestration Area ≤ 0 for All Orientations?	
19	Proposed Fenestration U-factor (Windows)	
20	Required Fenestration U-factor (Windows)	
21	Compliance Statement:	
22	Proposed Fenestration SHGC (Windows)	
23	Required Fenestration SHGC (Windows)	
24	Compliance Statement:	
25	Proposed Fenestration U-factor (Skylights)	
26	Required Fenestration U-factor (Skylights)	
27	Compliance Statement:	
28	Proposed Fenestration SHGC (Skylights)	
29	Required Fenestration U-factor (Skylights)	
30	Compliance Statement:	

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

I. Opaque Swinging Doors to Exterior (Section 150.1(c)5)

Notes:

- Any door with 25 percent or more glass is counted as a fenestration product in Tables F,G and H.
- Do not include fire-rated doors between garage or unconditioned space and conditioned space.
- If using weighted average to achieve required maximum U-factor, attach CF1R-ENV-02-E.

01	02	03	04	05	06	07
Tag/ID	Area	Proposed U-factor	Proposed U-factor Source	Required Maximum U-factor	Weighted Average (Yes/No)	Comments

J. Space Conditioning (SC) Systems – Heating/Cooling (Prescriptive Section 150.2(b))

Alterations to Space Conditioning Systems shall be exempt from field verification requirements as prerequisite for use of the CF1R-ALT-05 and CF2R- ALT-05 compliance documents. If new space conditioning systems are installed or existing systems are altered and are not exempt from filed verification, then a CF1R-ALT-02 shall be completed and registered with an ECC-Provider Data Registry. In each row below for each dwelling unit in the building, check the box that indicates the exemption from field verification compliance:

☐ a: space conditioning system was not altered;
☐ b: less than 25 ft of ducts were added or replaced;
☐ c: (exempt from duct leakage testing) if: the existing duct system was insulated with asbestos;
☐ d: (exempt from duct leakage testing) if: the existing duct system was previously tested and passed by an ECC-Rater.

01	02	03
SC System Identification or Name	SC System Location or Area Served	Exemption from Field Verification
		☐ a ☐ b ☐ c ☐ d
		☐ a ☐ b ☐ c ☐ d

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

K. Water Heating Systems (Section 150.2(b)1H)

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.

Options:

1. Gas or propane water heating system; or
2. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has a ANSI/CTA-2045-B communication port; or
3. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
4. If no natural gas is connected to the existing water heater location, a consumer electric water heater (Heat Pump Water Heater or Electric Resistance)

01	Is natural gas connected to the existing water heater?			
02	03	04	05	06
Water Heating System ID or Name	System Option (from §150.2(b)1Hiii)	Water Heater Type	Fuel Type	# of Water Heaters in System

PRESCRIPTIVE RESIDENTIAL ALTERATIONS THAT DO NOT REQUIRE FIELD VERIFICATION

CALIFORNIA ENERGY COMMISSION

CEC-CF1R-ALT-05-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to fulfill this requirement.
6. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to fulfill this requirement.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

CF1R-ALT-05-E User Instructions

NOTE: If more space is needed, print a duplicate page and fill in.

Minimum requirements for prescriptive alteration compliance can be found in Building Energy Efficiency Standards Section 150.2(b)1.

Completing these forms will require that you have the Reference Appendices for the 2025 Building Energy Efficiency Standards. This document contains the Joint Appendices which are used to determine climate zone and to complete the section for opaque surfaces. When the term CF1R is used it means the CF1R-ALT-05. Worksheets are identified by their entire name and subsequently by only the worksheet number, such as ENV-02.

Instructions for sections with column numbers and row letters are given separately.

If any part of the alteration does not comply, prescriptive compliance fails, in which case the performance compliance approach must be used in an attempt to achieve compliance.

A. General Information

1. Project Name: Identifying information, such as owner's name.
2. Date Prepared: Date of document preparation.
3. Project Location: Legal street address of property or other applicable identifying information.
4. Building Front Orientation: Building front orientation expressed in degrees, where North = 0, East = 90, South = 180, and West = 270. Indicate cardinal if it is a subdivision project built in multiple orientations. The standards (section 100.1) include the following additional details for determining orientation:
    - Cardinal covers all orientations (for buildings that will be built in multiple orientations);
    - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
    - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
    - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
    - West is oriented to within 45 degrees of true west, including 45 degrees north of west.
5. CA City: Legal city/town of property.
6. Number of Altered Dwelling Units: 1 for single-family
7. Zip Code: 5-digit zip code for the project location (used to determine climate zone).
8. Fuel Type: Natural Gas, Liquefied Propane Gas, or Electricity.

9. Climate Zone: From Reference Appendices, Joint Appendix, JA2.1.1.

10. Total Conditioned Floor Area: Enter the new conditioned floor area in square feet (ft^2), as measured from the outside of exterior walls of the dwelling unit or building being altered.
11. Building Type: Single Family (includes duplex), or Multi-Family (a building that shares common walls and common floors or ceilings).
12. Slab Area: Area of the first floor slab (if any) in square feet (ft^2).
13. Project Scope: Insulation, Roof Replacement, Fenestration/Glazing, Heating System, Cooling System, Duct System, and/or Water Heating System alteration.

B. Opaque Surface Details (Section 150.2(b)1)

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Roof, Ceiling, Wall, or Floor.
3. Frame Type: Wood or Metal.
4. Frame Depth: Nominal dimensions of framing material in inches such as 2x4, 2x6, 2x8, 2x10.
5. Frame Spacing: 16,24, or 48 inches on center.

6a. Proposed Cavity R-value: Insulation installed between framing.

6b. Proposed Continuous Insulation R-value: R-value of rigid or continuous insulation (not interrupted by framing). See Table 4.3.4. of Reference Appendices, Joint Appendix, for metal frame construction.

NOTE: Section 110.8(d) specifies that if adding insulation to an existing attic, the resulting attic insulation must total R-22. However, the amount of insulation required is limited to the amount of room available for insulation without conflicting with Building Code Section 1203.2.

7. Proposed U-factor: The U-factor for the entire assembly.
8. Required U-factor: From the requirements in Sections 110.8 and 150.0.
9. Comments: Any notes regarding location, unique conditions, or attachments.

C. Opaque Surface Details – Non-framed

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Roof or Wall.
3. Assembly Material: SIP OSB, SIP I-Joist, SIP Single 2x, SIP Double 2x, see JA4 for guidance.
4. Thickness: Thickness in inches.
5. Proposed Core Insulation R-value: Insulation installed within the materials or on the inside. See Reference Appendices, Joint Appendix, JA4 for guidance.
6. Proposed Continuous Insulation R-value: Insulation installed on the exterior. See Reference Appendices, Joint Appendix, JA4 for guidance.
7. Proposed U-factor: Assembly U-factor from Reference Appendices, Joint Appendix, JA4 or CF1R-ENV-02. Must be less than or equal to Column 10.
8. Required U-factor from Table 150.1-A: Based on assembly type and climate zone.
9. Comments: Any notes regarding location, unique conditions, or attachments.

D. Opaque Surface Details – Mansory/Mass Walls

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Above or Below Grade?: Indicate whether the mass wall is installed above grade o below grade.
3. Masonry/Mass Wall Type: Clay Brick, Clay Hollow Unit, Concrete Masonry Unit (CMU) Light Weight, Concrete Masonry Unit (CMU) Medium Weight, Concrete Masonry Unit (CMU) Normal Weight, Concrete, Insulating Concrete Form (ICF). See Reference Appendices, Joint Appendix, JA4 for guidance.
4. Masonry/Mass Wall Thickness: Thickness (in inches) of mass.

5-6. Proposed Exterior Insulation R-value or U-factor: Enter the R-value or U-factor of proposed insulation on the outside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

7-8. Proposed Interior Insulation R-value or U-factor: Enter the R-value or U-factor of proposed insulation on the inside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

9-10. Required Exterior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 7 or 8) for exterior insulation will be completed based on the Table 150.1-A requirements for the wall type.

11-12. Required Interior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 9 or 10) for interior insulation will be completed based on the Table 150.1-A requirements for the wall type.

E. Roof Replacement (Section 150.2(b)1I)

When 50% or more of the roof is being replaced the roofing requirements are triggered. Any areas of roof covered by building integrated photovoltaic panels and solar thermal panels are exempt, but the area of roof not covered by photovoltaic panels would still need to meet any applicable cool roof requirements. Additionally, there are many alternatives/exceptions to when a cool roof is required.

When the roof is steep-sloped (pitch greater than or equal to 2:12) the roof requirements include a cool roof in climate zones 4 and 8-15. The minimum requirement is 0.20 Aged Solar Reflectance, 0.75 Thermal Emittance, or a minimum SRI of 16.

1. Tag/ID: A label, if any, from the plans, for example R-1.
2. Method of Compliance: Indicate if the method of compliance is going to be based on Aged Solar Reflectance and Thermal Emittance, the Solar Reflectance Index (SRI), or an Exception.
3. Roof Pitch: Expressed as 4:12, for example, which means the roof rises 4 foot within a span of 12 feet. When roofs have multiple pitches the requirements are based on the pitch of 50 percent or more of the roof.
4. Exception: If meeting one of the exceptions. Indicate which exception is, or will be, met.

EXCEPTIONS AND ALTERNATIVES FOR STEEP SLOPE ROOFS:

(a) Mass roof 25 pounds per square foot (lbs/ft^2) or greater (such as sod roof);
(b) Roof has ceiling assemblies with a U-factor less than or equal to 0.025 or R-38 insulation;
(c) Roof has a radiant barrier not installed directly above spaced sheathing meeting 150.1(c)2;
(d) R-2 continuous insulation above the roof deck.

In climate zones 4 and 6-15, when there is a low-sloped roof (pitch less than 2:12) the cool roof requirements are for a minimum Aged Solar Reflectance of 0.63, a minimum 0.75 Thermal Emittance, or a minimum SRI of 75.

EXCEPTIONS AND ALTERNATIVES FOR LOW SLOPE ROOFS:

(a) Mass roof 25 pounds per square foot (lbs/ft^2) or greater (uncommon situation such as sod roof);
(b) Roof deck installation trade off—by installing roof deck insulation, a lower aged solar reflectance is required: In Climate Zones 6 and 7 R-2 (0.60), R-4 (0.55), R-6 (0.50), R-8 (0.45), R-10 (no requirement); In Climate Zones 2, 4 and 8-15 R-16 (0.60), R-18 (0.55), R-20 (0.50), R-24 (no requirement).

NOTE: If one of the exceptions above has been selected then the rest of Section C. is not required.

5. CRRC Product ID Number: The CRRC Product ID Number is obtained from the Cool Roof Rating Council's Rated Product Directory. Products are listed by manufacturer, brand, type of installation, roofing material, and color, as well as product performance.
6. Product type: See Cool Roof Rating Council's directory. Generally product types include single-ply roof, wood shingles, asphalt roof, metal roof, tile roof.
7. R-value Deck Insulation: If one of the exceptions selected includes adding roof deck insulation, indicate the R-value of the insulation.
8. Proposed Initial Solar Reflectance: Based on the product chosen from the Cool Roof Rating Council's Rated Product Directory. If using default assumption indicate N/A since the Aged Solar Reflectance is available.
9. Proposed Aged Solar Reflectance: Value is from the Cool Roof Rating Council's Rated Product Directory. If the aged value is not available, calculate the Aged Solar Reflectance using the Solar Reflectance Index (SRI) Calculator located on the California Energy Commission website

or the aging equation $\rho_{aged}=[0.2+\beta[\rho_{initial}-0.2]$, where $\rho_{initial}$ = the initial solar reflectance and soiling resistance β is listed by product type below.

VALUES OF SOILING RESISTANCE β BY PRODUCT TYPE

Product Type	CRRC Product Category	β
Field-Applied Coating	Field-Applied Coating	0.65
Other	Not A Field-Applied Coating	0.70

10. Proposed Thermal Emittance: From the product specification default value. If using a calculated Solar Reflectance Index (SRI) place the Thermal Emittance used to calculate SRI.
11. Proposed Solar Reflectance Index (SRI): It is optional to meet the SRI but if chosen to do so, use the Solar Reflectance Index (SRI) Calculator found on the California Energy Commission website.
12. Minimum Required Aged Solar Reflectance: Based on climate zone and roof slope.
13. Minimum Required Thermal Emittance: Based on climate zone and roof slope.
14. Minimum Required SRI: Based on climate zone and roof slope.

NOTE: If the cool roofing requirements will be met by a liquid field applied coating, Section 110.8(i)4 requires the coating be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the manufacturer.

F. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.2(b)1)

The Alteration and Fenestration Type will affect how the standards apply and whether the fenestration area is limited. Percentages are determined as Conditioned Floor Area (CFA) x 0.20 = total square footage (ft^2) of fenestration allowed (20 percent). Depending on the climate zone, if west-facing fenestration is limited (in climate zones 2, 4, 6-15), it is limited to a maximum of 5 percent. The overall total fenestration area is limited to 20 percent, not 25 percent. Fenestration areas are expressed in square feet, not square inches.

1. Alteration Type: Indicate the type of fenestration alteration - adding fenestration/glazing, replacing fenestration/glazing, replacing fenestration/glazing less than or equal to 75 ft^2 window, adding fenestration/glazing less than or equal to 16 ft^2 skylight and or replacing fenestration/glazing skylights
2. Maximum Allowed Fenestration Area for All Orientations (ft^2): The maximum allowed fenestration area is 20 percent. Depending on the type of fenestration and the alteration type, this field may have values such as 75 square feet (ft^2) or 16 ft^2.
3. Maximum Allowed West-Facing Fenestration Area Only: The Maximum Allowed West-Facing Fenestration Area is 5 percent of the conditioned floor area (used in climate zones 2, 4, and 6-15).

NOTE: (1) If adding fenestration/glazing less than or equal to 16 ft^2 skylight, enter NA
(2) West includes any vertical fenestration oriented to within 45 degrees of true west, including 45 degrees south of west. For skylights, west also includes any skylight area facing any direction with a pitch of less than 1:12

4. Existing Fenestration Area for All Orientations: Enter the area, in square feet, of the existing fenestration/glazing.
   Existing West-Facing Fenestration Area: Enter the area, in square feet (ft^2), of the existing west-facing fenestration/glazing. If project has no existing west-facing fenestration then enter "0".
5. Maximum Allowed U-factor: Maximum U-factor from Table 150.1-A, Package A.
   NOTE:
   (1) If meeting Exception 1 to Section 150.2(b)1B (replacing less than or equal to 75 square feet (ft^2) windows), enter 0.40.
   (2) If meeting Exception 2 to Section 150.2(b)1B (replacing skylights), enter 0.40.
6. Maximum Allowed SHGC: Maximum solar heat gain coefficient (SHGC) from Table 150.1-A.
   NOTE:
   (1) If meeting Exception 1 to Section 150.2(b)1B, (replacing less than or equal to 75 square feet (ft^2) windows), enter 0.35 in Climate Zones 2, 4, and 6- through 15.
   (2) If meeting Exception 2 to Section 150.2(b)1B (replacing skylights), enter 0.30.
   (3) If meeting Exception 3 to Section 150.2(b)1B (~~vertical fenestration shall have a maximum SHGC value no greater than 0.23 in~~ Climate Zone 15.), enter no greater than 0.23.

7. Comments: Note any special location or comment here.

G. Fenestration/Glazing Proposed Areas and Efficiencies - Add (Section 150.2(b)1A)

1. Tag/ID: A label (if any) from the plans, such as W1.
2. Fenestration Type: Indicate the type of fenestration construction e.g., Fixed Window, Operable Window, or Skylight.
   NOTE: Doors with glazing are counted in one of two ways. A door with 25 percent or more glazing is considered a glazed door and is counted as the entire door area. A door with less than 25 percent glazing can be counted as the entire door area or can be calculated as the actual glass area with a 2-inch (0.17 ft^2) frame all around.

3. Frame type: Metal, metal thermal break, or nonmetal.
4. Dynamic Glazing: Indicate if the fenestration has integrated shading device, chromogenic glazing or none for no dynamic glazing. Chromogenic glazing shall be considered separately from other fenestration types.
5. Orientation (North, East, South, West): The definitions in the Energy Standards include these specific details -
   - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
   - East is oriented to within 45 degrees of true east, including 45 degrees south of east;

- South is oriented to within 45 degrees of true south, including 45 degrees west of south;
- West is oriented to within 45 degrees of true west, including 45 degrees north of west.

NOTE: Skylights in a roof pitch greater than 1:12 can be included as facing the same orientation as that portion of the roof angle. If the skylight is in a roof with a pitch less than 1:12, the skylight is assumed to face west.

6. Number of Panes: Indicate the number of panes for each Tag/ID; is it single, double, or triple pane window?
7. Proposed Fenestration Area (ft^2): Indicate the area in square feet (ft^2) of each exterior fenestration type, excluding west-facing fenestration.
8. Proposed West Facing Fenestration Area (ft^2): In climate zones 2, 4, 6-15, indicate the area in square feet (ft^2) of each exterior west-facing fenestration type separately.
9. Proposed U-factor: Enter (a) the National Fenestration Rating Council (NFRC) U-factor based on the proposed brand and type of fenestration using NFRC certified values, (b) the default value from Table 110.6-A or Equation NA6-1, or (c) the weighted average U-factor calculated on form CF1R-ENV-02-E.

   For the exceptions, up to 3 square feet (ft^2) of tubular skylights and up to 3 ft^2 of glazing in a door enter N/A, and for up to 16 ft^2 of skylight, enter 0.40. If any products (other than the exceptions) have a higher U-factor than required by Package A, first complete a form CF1R-ENV-02 to calculate the area-weighted average U-factor and attach it to this CF1R.

   NOTE: Dynamic glazing is a glazing system that changes its performance U-factor and SHGC based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and solar heat gain coefficient (SHGC) in Columns 9 and 11.

10. Proposed U-factor Source: National Fenestration Rating Council (NFRC), Table 110.6-A, Equations NA6-1, or Area-Weighted Average Worksheet (ENV-02). The source of the U-factor data for the fenestration product.
11. Proposed SHGC: In climate zones 2, 4, 6-15 enter the solar heat gain coefficient (SHGC) from (a) National Fenestration Rating Council (NFRC), or (b) default value from Table 110.6-B or Equation NA6-2, or (c) the weighted average SHGC calculated on form CF1R-ENV-02.

    For the exceptions – up to 3 square feet (ft^2) of tubular skylights and up to 3ft^2 of glazing in a door, enter N/A. If any products (other than the exceptions) have a higher SHGC than required by Table 150.1-A, first complete a form CF1R-ENV-02 to calculate the area-weighted average SHGC and attach it to this CF1R.

12. Proposed SHGC Source: National Fenestration Rating Council (NFRC), Table 110.6-A, Equations NA6-1, or Area-Weighted Average Worksheet (ENV-02). The source of the U-factor data for the fenestration product.

13. Exterior Shading Device: If exterior shading devices are used to meet the SHGC requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03 Solar Heat Gain Coefficient Worksheet) and attach an ENV-03.

    NOTES:
    (1) An exterior shading device is not used for products with an NFRC rated U-factor and SHGC; based on a factory integrated shading device.
    (2) If using an overhang for south-facing glazing, the glazing must be fully shaded at solar noon on August 21 and substantially exposed to direct sunlight at solar noon on December 21 (see Residential Compliance Manual, Section 3.3.6.3).

14. Combined SHGC from CF1R-ENV-03: If exterior shading devices are combined with the solar heat gain coefficient (SHGC) value of the fenestration to meet the prescriptive SHGC requirements (as indicated by a value in column E. 13), indicate the SHGC calculated on form CF1R-ENV-03 and attach the form for each window with an exterior shading device.

To determine compliance with allowable fenestrations areas and efficiencies, complete rows 15-32.

15. Total Proposed Fenestration Area: Enter the sum of the existing (D04a) and proposed fenestration areas for all orientations (E07 + E08). For project scopes: Add Fenestration/Glazing less than or equal to 16 ft^2, enter NA.
16. Maximum Allowed Fenestration Area: Enter the maximum allowed fenestration area for all orientations, from D02.
17. Is the Total Proposed Fenestration Area less than or equal to the Maximum Allowed Fenestration Area: Indicate Yes if the Total Proposed Fenestration Area is less than or equal to the Maximum Allowed Fenestration Area. If No, the project fails prescriptive compliance – specified fenestration areas must be reduced, or compliance may be attempted using the performance approach.

    NOTE: If Total Proposed Fenestration Area equals NA, Design Complies - Indicate Yes.

18. Total Proposed West-Facing Fenestration Area: Enter the sum of the existing (D04b) and proposed west-facing fenestration areas (E08). For project scope: Add Fenestration/Glazing less than or equal to 16 ft^2, enter NA.
19. Maximum Allowed West-Facing Fenestration Area: Enter the maximum allowed west-facing fenestration area only, from D03.
20. Is the Total Proposed Fenestration Area less than or equal to the Maximum Allowed West-Facing Fenestration Area: Indicate Yes if the Total Proposed West-Facing Fenestration Area is less than or equal to the Maximum Allowed West-Facing Fenestration Area. If No, the project fails prescriptive compliance – specified west-facing fenestration areas must be reduced, or compliance may be attempted using the performance approach.

    NOTE: If Total Proposed West-Facing Fenestration Area equals NA, Design Complies - Indicate Yes.

21. Proposed Fenestration U-factor (Windows): If necessary, report the area-weighted average U-factor from the completed CF1R-ENV-02. Otherwise, report the single largest associated value from column E09.
22. Required Fenestration U-factor (Windows): Enter the Maximum Allowed U-factor (D05a).
23. Is the Proposed Fenestration U-factor less than or equal to the Required Fenestration U-factor: Indicate Yes if the Proposed Fenestration U-factor is less than or equal to the Required Fenestration U-factor. If No, the project fails prescriptive compliance – specified fenestration U-factor must be reduced, or compliance may be attempted using the performance approach.
24. Proposed Fenestration SHGC (Windows): If necessary, report the area-weighted average SHGC from the completed CF1R-ENV-02. Otherwise, report the single largest associated value from column E11 or E14.
25. Required Fenestration SHGC (Windows): Enter the Maximum Allowed solar heat gain coefficient (SHGC) (D06a).
26. Is the Proposed Fenestration SHGC less than or equal to the Required Fenestration SHGC: Indicate Yes if the Proposed Fenestration SHGC is less than or equal to the Required Fenestration SHGC. If No, the project fails prescriptive compliance – specified fenestration SHGC must be reduced, or compliance may be attempted using the performance approach.
27. Proposed Fenestration U-factor (Skylights): If necessary, report the area-weighted average U-factor from the completed CF1R-ENV-02. Otherwise, report the single largest associated value from column E09.
28. Required Fenestration U-factor (Skylights): Enter the Maximum Allowed U-factor (D05b).
29. Is the Proposed Fenestration U-factor less than or equal to the Required Fenestration U-factor: Indicate Yes if the Proposed Fenestration U-factor is less than or equal to the Required Fenestration U-factor. If No, the project fails prescriptive compliance – specified fenestration U-factor must be reduced, or compliance may be attempted using the performance approach.
30. Proposed Fenestration SHGC (Skylights): If necessary, report the area-weighted average solar heat gain coefficient (SHGC) from the completed CF1R-ENV-02. Otherwise, report the single largest associated value from column E11 or E14.
31. Required Fenestration SHGC (Skylights): Enter the Maximum Allowed solar heat gain coefficient (SHGC) (D06b).
32. Is the Proposed Fenestration SHGC less than or equal to the Required Fenestration SHGC: Indicate Yes if the Proposed Fenestration solar heat gain coefficient (SHGC) is less than or equal to the Required Fenestration SHGC. If No, the project fails prescriptive compliance – specified fenestration SHGC must be reduced, or compliance may be attempted using the performance approach.

H. Fenestration/Glazing Proposed Areas and Efficiencies – Replace (Section 150.2(b)1B)

1. Tag/ID: A label (if any) from the plans, such as W1.
2. Fenestration Type: Indicate the type of fenestration construction (e.g., Fixed Window, Operable Window, or Skylight).

   NOTE: Doors with glazing are counted in one of two ways. A door with 25 percent or more glazing is considered a glazed door and is counted as the entire door area. A door with less than 25 percent glazing can be counted as the entire door area or can be calculated as the actual glass area with a 2-inch (0.17 ft^2) frame all around.

3. Frame Type: Metal, metal thermal break, or nonmetal.
4. Dynamic Glazing: Indicate if the fenestration has integrated shading device, chromogenic glazing or none for no dynamic Glazing.

   NOTE: Chromogenic glazing shall be considered separately from other fenestration types.

5. Orientation (North, East, South, West): The definitions in the Energy Standards include these specific details -
   - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
   - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
   - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
   - West is oriented to within 45 degrees of true west, including 45 degrees north of west.

   NOTE: Skylights in a roof pitch greater than 1:12 can be included as facing the same orientation as that portion of the roof angle. If the skylight is in a roof with a pitch less than 1:12, the skylight is assumed to face west.

6. Area Removed (ft^2): Enter the area, in square feet (ft^2), of the fenestration/glazing being removed.
7. Area Added (ft^2): Enter the area, in square feet (ft^2), of the fenestration/glazing being added.
8. Net Added Area (ft^2): The difference between the Area Added and the Area Removed.
9. Proposed U-factor: Enter (a) the National Fenestration Rating Council (NFRC) U-factor based on the proposed brand and type of fenestration using NFRC certified values, (b) the default value from Table 110.6-A, (c) Equation NA6-1, or (d) the area-weighted average U-factor calculated on form CF1R-ENV-02-E, Area-Weighted Average Calculation Worksheet.

   For the exceptions, up to 3 square feet (ft^2) of tubular skylights and up to 3 ft^2 of glazing in a door enter N/A, and for up to 16 ft^2 of skylight, enter 0.40. If any products (other than the exceptions) have a higher U-factor than required by Package A, first complete an ENV-02 to calculate a weighted average U-factor and attach it to this CF1R.

NOTE: Dynamic glazing is a glazing system that changes its performance U-factor and solar heat gain coefficient (SHGC) based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and SHGC in Columns 9 and 11.

10. Proposed U-factor Source: National Fenestration Rating Council (NFRC), Table 110.6-A, Equations NA6-1, or Area-Weighted Average Worksheet (ENV-02). The source of the U-factor data for the fenestration product.
11. Proposed SHGC: In climate zones 2, 4, 6-15 enter the solar heat gain coefficient (SHGC) from (a) National Fenestration Rating Council (NFRC), (b) default value from Table 110.6-B, (c) Equation NA6-2, or (d) the weighted average SHGC calculated on form CF1R-ENV-02.

    For the exceptions – up to 3 square feet (ft^2) of tubular skylights and up to $3ft^2$ of glazing in a door, enter N/A; up to $16ft^2$ of skylight, enter 0.30. If any products (other than the exceptions) have a higher SHGC than required by Table 150.1-A or Table 150.1-B, first complete a form CF1R-ENV-02 to calculate the area-weighted average SHGC and attach it to this CF1R.

12. Proposed SHGC Source: National Fenestration Rating Council (NFRC), Table 110.6-B, Equations NA6-2, or Area-Weighted Average Worksheet (ENV-02). The source of the solar heat gain coefficient (SHGC) data for the fenestration product.
13. Exterior Shading Device: If exterior shading devices are used to meet the solar heat gain coefficient (SHGC) requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03 Solar Heat Gain Coefficient Worksheet) and attach an ENV-03.

    NOTES: (1)An exterior shading device is not used for products with a National Fenestration Rating Council (NFRC) rated U-factor and solar heat gain coefficient (SHGC); based on a factory integrated shading device.
    (2)If using an overhang for south-facing glazing, the glazing must be fully shaded at solar noon on August 21 and substantially exposed to direct sunlight at solar noon on December 21 (see Residential Manual, Section 3.5.5).

14. Combined SHGC from CF1R-ENV-03: If exterior shading devices are combined with the solar heat gain coefficient (SHGC) value of the fenestration to meet the prescriptive SHGC requirements (as indicated by a value in column F. 13), indicate the SHGC calculated on form CF-1R-ENV-03 and attach the form for each window with an exterior shading device.

To determine compliance with allowable fenestration areas, complete rows 15-30.

15. Net Added West-facing Fenestration Area: If limited, enter the total amount of west-facing fenestration ONLY that will be added to the dwelling unit when alterations are complete.
16. Is Net Added Fenestration Area less than or equal to 0 for west-facing fenestration? Indicate Yes or No. If No, the project fails prescriptive compliance – specified west-facing fenestration areas must be reduced, or compliance may be attempted using the performance approach.

17. Net Added Fenestration Area (all orientations): This field is to show the net area of added fenestration for all orientations.
18. Is Net Added Fenestration Area less than or equal to 0 for all orientations? Indicate Yes or No. If No, the project fails prescriptive compliance – specified fenestration areas must be reduced, or compliance may be attempted using the performance approach.
19. Proposed Fenestration U-factor (Windows): If necessary, enter the area-weighted average U-factor from the completed CF1R-ENV-02. Otherwise, report the single largest associated value from F09.
20. Required Fenestration U-factor (Windows): From Section D., report the value of column 05a.
21. Is the Proposed Fenestration U-factor less than or equal to the Required Fenestration U-factor? Indicate Yes or No. If No, the project fails prescriptive compliance – specified fenestration U-factor must be reduced, or compliance may be attempted using the performance approach.
22. Proposed Fenestration SHGC (Windows): If necessary, enter the area-weighted average solar heat gain coefficient (SHGC) from the complete CF1R-ENV-02. Otherwise, report the single largest associated value from columns F11 or F14.
23. Required Fenestration SHGC (Windows): From Section D., report the value of column 06a.
24. Is the Proposed Fenestration SHGC less than or equal to the Required Fenestration SHGC? Indicate Yes or No. If No, the project fails prescriptive compliance – specified fenestration SHGC must be reduced, or compliance may be attempted using the performance approach.
25. Proposed Fenestration U-factor (Skylights): If necessary, enter the area-weighted average U-factor from the completed CF1R-ENV-02. Otherwise, report the single largest associated value from F09.
26. Required Fenestration U-factor (Skylights): From Section D., report the value of column 05b.
27. Is the Proposed Fenestration U-factor less than or equal to the Required Fenestration U-factor? Indicate Yes or No. If No, the project fails prescriptive compliance – specified fenestration U-factors must be reduced, or compliance may be attempted using the performance approach.
28. Proposed Fenestration SHGC (Skylights): If necessary, enter the area-weighted average solar heat gain coefficient (SHGC) from the completed CF1R-ENV-02. Otherwise, report the single largest associated value from columns F11 or F14.
29. Required Fenestration SHGC (Skylights): From Section D., report the value of column 06b.
30. Is the Proposed Fenestration SHGC less than or equal to the Required Fenestration SHGC? Indicate Yes or No. If No, the project fails prescriptive compliance – specified fenestration SHGC must be reduced, or compliance may be attempted using the performance approach.

I. Opaque Swinging Doors to Exterior

1. Tag/ID: Provide a name or designator for each unique door. This designator should be used consistently throughout the plan set (elevations, door schedules, etc.)
2. Area: Calculated area in square feet (ft^2) for each unique door.
3. Proposed U-factor: Enter the proposed U-factor. If value is greater than 0.20, column 06 will autocomplete as Yes.
4. Source: National Fenestration Rating Council (NFRC) or Reference Appendices, Joint Appendix, Table 4.5.1s, 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02).

5. Required Maximum U-factor. This field will always be 0.20.
6. Weighted Average: If column 03 is greater than 0.20 U-factor, attach form CF1R-ENV-02-E.
7. Comments: Any notes regarding location, unique conditions, or attachments.

J. Space Conditioning (SC) Systems – Heating/Cooling

Requirements of the Standards apply to a heating and cooling system alteration based on the type of alteration and the system type (Section 150.2(b)1). A completely new system will meet all mandatory and prescriptive requirements, which vary by climate zone (based on Section 150.2(b)1C).

When parts of a system are replaced, it may trigger some of the same requirements that apply to new systems and duct alterations. A Certificate of Compliance for Alterations to Space Conditioning Systems (CF1R-ALT-02) is required for each dwelling unit with a space conditioning system alteration.

1. Space Conditioning (SC) System Identification or Name: Name of the space conditioning (SC) system or any other identifying name.
2. Space Conditioning (SC) System Location or Area Served: Zone, or area, served by the space conditioning (SC) system.
3. Exemption from field Verification: Section 150.2(b)1E
    a. Space Conditioning (SC) System was not altered.
    b. Duct systems with less than 25 linear feet in unconditioned spaces as determined by visual inspection.
    c. Existing duct systems constructed, insulated or sealed with asbestos
    d. Duct systems that have been documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Appendices, Residential Appendix, RA3.1.

K. Water Heating Systems

Water heating compliance for an alteration is described in Section 150.2(b)1H.
Options:

1. Gas or propane water heating system; or
2. A single heat pump water heater. The storage tank shall not be located outdoors and shall be placed on an incompressible, rigid insulated surface with a minimum thermal resistance of R-10. The water heater shall be installed with a communication interface that meets either the requirements of Section 110.12(a) or has a ANSI/CTA-2045-B communication port; or
3. A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher; or
4. If no natural gas is connected to the existing water heater location, a consumer electric water heater

1. Is natural gas connected to the existing water heater? Yes or No.
2. Water Heating System Identification or Name: Name of the Water Heating System or any other identifying name.

3. System Option (from §150.2(b)1Hiii): Indicate the prescriptive option: 1, 2, 3, or 4.
4. Water Heater Type: =Gas or propane water heater (Storage or instantaneous), Heat pump water heater, NEEA Tier 3 heat pump, Consumer electric water heater (Heat Pump Water Heater or Electric Resistance)

5. Fuel Type: Natural Gas, Propane, Heat Pump, Electricity.
6. Number of Water Heaters in System: Enter the total number of water heaters for each system.

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature.
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature.

AREA WEIGHTED AVERAGE CALCULATION WORKSHEET

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. Area-Weighted Average - General Information

01	Project Name:	
02	Dwelling Name or Number:	
03	Feature Being Area Weighted Averaged:	
04	Property Being Averaged:	

B. U-factor Area-Weighted Average Calculation

01	02	03
Tag /Identification	Surface Feature Area (ft^2)	U-Factor Value
04	U-Factor Area-Weighted Average:	

C. SHGC Area-Weighted Average Calculation

01	02	03
Tag /Identification	Surface Feature Area (ft^2)	SHGC Value
04	SHGC Area-Weighted Average:	

AREA WEIGHTED AVERAGE CALCULATION WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC-CF1R-ENV-02-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300

CF1R-ENV-02-E User Instructions

This worksheet is used to calculate the area-weighted average U-factors for building envelope features such as walls, roofs, floors, mass, and fenestration/glazing U-factors or Solar Heat Gain Coefficient (SHGC) values for prescriptive compliance. R-values are not used for area-weighing; only U-factors or SHGC values are allowed.

The area weighted averaging calculation is done when there is more than one level of insulation, window U-factor or SHGC used in a building to meet prescriptive compliance requirements. Each fenestration type (e.g., vertical windows, skylights, dynamic glazing, and window films) is treated independently and cannot be combined. Submit the ENV-02 with the energy compliance documents.

If exterior shading devices are used to meet an SHGC requirement, first complete a CF1R-ENV-03 form (Solar Heat Gain Coefficient (SHGC) Worksheet). If the SHGC exceeds 0.23, then use the weighted-average of other like windows to determine overall compliance with prescriptive SHGC requirements.

A. Area Weighted Average – General Information

1. Project Name: From the CF1R
2. Dwelling Name or Number: From the CF1R
3. Feature Being Area-Weighted Averaged: Indicate what is being area weighted: Fenestration, Wall, Roof, Ceiling or Floors.
4. Property Being Averaged: Indicate if the area-weighted average is for a U-factor, SHGC or Both.

B. U-factor Area Weighted Average Calculation

1. Tag/ID: Same data given on CF1Rs; provides an identification tag or identification name that uniquely identifies the features being area-weighted.
2. Surface Feature Area: Total area of each occurrence of the feature being area-weighted.
3. U-Factor Value: U-factor of the area described in this row. Values can come from the Reference Appendices, manufacturer's data, or specification sheets.
4. Calculated value: not a user input.

C. SHGC Area Weighted Average Calculation

1. Tag/ID: Same data given on CF1R's; provides an identification tag or identification name that uniquely identifies the features being area-weighted.
2. Surface Feature Area: Total area of each fenestration being area-weighted.
3. Property being averaged: Value: SHGC of the area being described in this row. Values can come from the Reference Appendices, manufacturer's data, or specification sheet.
4. Calculated value: not a user input.

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

SOLAR HEAT GAIN COEFFICIENT (SHGC) WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ENV-03-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. Product Information

01	02	03	04	05	06	07
Tag/ Identification	Orientation	Fenestration has a Temporary or Site-Built NFRC Label Certificate	SHGC Value from NFRC Label	Non-NFRC Labeled SHGC Information	Exterior Shading Device Type	Exterior Shading SHGC

B. Default Solar Heat Gain Coefficient Using Table 110.6-B

01	02	03	04	05	06	07
Tag/ Identification	Orientation	Frame Type	Product	Glazing	Number of Panes	Default Fenestration SHGC

C. Non-Rated Site-built Solar Heat Gain Coefficient Calculation Using Equation NA6-2 from Reference Appendices, Nonresidential Appendix NA6.3

01	Conditioned Floor Area	
02	5% of the Condition Floor Area	
03	Total Allowed Non-Rated Site-Built Fenestration Area	
04	Proposed Area of Site-Built Fenestration	

05	06	07	08
Tag/ Identification	Glass Area	Center of Glass (COG) Solar Heat Gain Coefficient	Total Allowed SHGC of the Non-Rated Site-Built Fenestration

D. Combined Solar Heat Gain Coefficient Calculation and Shading Device Calculation

01	02	03	04
Tag/ Identification	$SHGC_{max}$ =	$SHGC_{min}$ =	Total Combined Adjusted SHGC with Exterior Shading Device ($SHGC_{total}$)

SOLAR HEAT GAIN COEFFICIENT (SHGC) WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ENV-03-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300

CF1R-ENV-03-E Instructions

This worksheet is to be used to determine the total Solar Heat Gain Coefficient (SHGC) value of fenestration in combination with an exterior shading device. This worksheet is to be completed for each different fenestration and exterior shading combination. Total $SHGC_{total}$ value in subsection D4 is calculated by choosing the larger of A4, A7, B7 or C7 for $SHGC_{max}$ and the smaller of A4, A7, B7 or C7 for $SHGC_{min}$.

The following rules apply when selecting exterior shading devices:

1. If using this worksheet, a standard bug screen must be assumed for all vertical fenestration unless replaced by another exterior shading device as listed in A6 (and Table S-1 below); only one exterior shading device may be applied to a vertical window.
2. The listed SHGC for bug screens is an area-weighted value that assumes that the screens are only on operable windows. If no exterior shade is selected, then assume a SHGC of 0.76 for standard bug screens for all windows.
3. This requirement does not apply to skylights. For skylights the exterior shading SHGC is assumed to be 1.00.
4. When exterior shading devices are applied and the combined total SHGC values do not meet the prescriptive efficiencies for windows or skylights then these windows and skylight must be area-weighted using the CF1R-ENV-02-E. Different shading conditions may also be modeled explicitly using the computer performance method.

The target value for Total $SHGC_{total}$ is 0.23 for Climate Zones 2, 4 and 6-14 and 0.20 for Climate Zones 15. However, not being able to meet the target value will require calculating the area weighted average (CF1R-ENV-02-E compliance document) with other more efficient windows and skylights.
The resultant Total $SHGC_{total}$ value shall be documented prescriptively on the CF1R-NCB-01-E, CF1R-ADD-01-E or CF1R-ALT-01-E in the Fenestration section—attach a completed CF1R-ENV-03-E with submittal. When using the Performance Approach, the program will generate its own CF1R and will include the Total $SHGC_{total}$ values.

A. Product Information

1. Tag/Identification: User entered value which should equal data given on the other CF1Rs for the same fenestration; provides an identification name or tag name that uniquely identifies the window system. If there is a window schedule the tag name may be given on the plans.
2. Orientation: The direction the fenestration faces.
3. Fenestration has a Temporary or Site-Built NFRC Label Certificate: Indicate Yes or No.
4. SHGC value from NFRC label: Provide the SHGC from the NFRC Label.
5. User selects from list: Table 110.6-B of the Energy Standards if default SHGC are specified; Reference Appendices, Nonresidential Appendix NA6, Equation NA6-2 if site-built center of glass SHGC are specified.
6. User selects from list: Standard Bug Screens, Exterior Sunscreens with Weave 53 x 16/inch, Sunscreens w/Louvers as Wide as Window Openings, Low Sun Angle Louvered Sunscreens, Vertical Roller Shades or Retractable Drop Arm/Combination/Marquisolette and Operable Awnings, Roll Down Blinds or Slats or None (for skylights only).
   Note: Default is Standard Bug Screens.
7. Exterior Shade SHGC: This value is auto filled based on the selection in A06 and the referenced value found in Table S-1.

B. Default Solar Heat Gain Coefficient Using Table 110.6-B

1. Tag/Identification: Auto-filled from Section A.
2. Orientation: User selects orientation from list: North, East, South or West.
3. Frame Type: User selects fenestration frame type from list: Metal, Non-metal (such as wood or vinyl), or Metal w/Thermal Break.
4. Product: User selects from list: Fixed or Operable.
5. Glazing: User selects from list: Clear (not visibly tinted) or Tinted (visibly tinted).
6. Number of Panes: User selects from list: Single, Double or Glass Block.
7. Default Fenestration SHGC: This value is auto filled based on the selections in B03, B04, B05 and B06 and the referenced values found in Table 110.6-B. of the Energy Standards

C. Non-Rated Site-Built Solar Heat Gain Coefficient Calculation Using Equation NA6-2 from Reference Appendices, Nonresidential Appendix NA6.3

1. Conditioned Floor Area: User entered Conditioned Floor Area: Indicate the Conditioned Floor Area of the building. This should be the same value found on the CF1R-NCB-01-E, CF1R-ADD-01-E orCF1R-ALT-01-E.
2. 5% of the Condition Floor Area: This value is auto filled based on a calculated value.
3. Total Allowed Non-Rated Site-Built Fenestration Area: This value is auto filled based on a calculated value.
4. Proposed Area of Site-Built Fenestration: User entered value equal to the total area of the site-built fenestration; Note: must be 250 square feet (ft^2) or less.
5. Tag/Identification: Auto-filled from Section A.
6. Glass Area: User entered Fenestration Area.
7. Center of Glass Solar Heat Gain Coefficient: User entered Center of Glass (COG) Solar Heat Gain Coefficient: Indicate the $SHGC_c$ value calculated in accordance with NFRC 200, Section 4.5.1.1 https://cmast.nfrc.org/?Aspx.
8. Total Allowed SHGC of the Non-Rated Site-Built Fenestration: This value is auto filled based on the equation ((Center of glass SHGC x 0.86) + 0.08).

D. Combined Solar Heat Gain Coefficient Calculation and Shading Device Calculation

1. Tag/Identification: Auto-filled from Section A.
2. $SHGC_{max}$: This value is auto filled based on the maximum SHGC listed in A04, A07, B07 or C07.
3. $SHGC_{min}$: This value is auto filled based on the minimum SHGC listed in A04, A07, B07 or C07.
4. Total Combined Adjusted SHGC with Exterior Shading Device: This value is auto filled based on the equation $(((SHGC_{max} \times 0.2875) + 0.75) \times SHGC_{min})$

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

SOLAR REFLECTANCE INDEX CALCULATION WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ENV-04-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. Product Information

01	Tag/ID	
02	Cool Roof Rating Council (CRRC) Product ID Number	
03	Manufacturer	
04	Brand	
05	Model	
06	Product Type	
07	Roof Pitch	

B. SRI Calculations

01	Is Aged Reflectance Listed with Cool Roof Rating Council (CRRC)? (Yes or No)	
02	Cool Roof Rating Council (CRRC) Listed Aged Solar Reflectance	
03	Initial Solar Reflectance	
04	Calculated Aged Solar Reflectance	
05	Thermal Emittance	

C. Results

01	Solar Reflectance Index	

SOLAR REFLECTANCE INDEX CALCULATION WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ENV-04-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300

CF1R-ENV-04-E User Instructions

Calculate the Solar Reflectance Index (SRI) value by using SRI Calculation Worksheet found on the California Energy Commission website at: https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2025-building-energy-efficiency.

A. Product Information

1-6. Tag/ID, Cool Roof Rating Council (CRRC) Product ID Number, Manufacturer, Brand, Model and Product Type should be based on product information from the Cool Roof Rating Council's website. The product directory is located at https://coolroofs.org/directory/roof and may be browsed either by viewing all products or by using the search function to find a specific product. Keep in mind that inclusion in the directory does not guarantee that a product will meet the energy code requirements.

7. Roof Pitch: Designate the roof slope as either "less than 2:12"(<2:12) or "greater than or equal to 2:12"(≥2:12). A ratio of 2:12 is approximately 9.5 degree slope. The SRI requirement is based partly on the slope of the roof; low-sloped vs. steep-sloped

B. SRI Calculations

1. Aged Reflectance Listed with Cool Roof Rating Council (CRRC)?: Indicate whether or not the product's 3-year Aged Solar Reflectance is listed on the CRRC website by selecting either "yes" or "no" from the drop-down list. Depending on your selection, the boxes that you will not need should become blacked out.
2. Cool Roof Rating Council (CRRC) Listed Aged Solar Reflectance: If you selected "yes" to box 1, input the CRRC listed 3-year Aged Solar Reflectance.
3. Initial Solar Reflectance: If you selected "no" in B01, input the CRRC listed Initial Solar Reflectance value as a decimal between 0 and 1.
4. Calculated Aged Solar Reflectance: No input required. The calculator will calculate the Aged Solar Reflectance using the Initial Solar Reflectance once you hit enter or click outside the box.
5. Thermal Emittance: Input the value for Thermal Emittance obtained from the CRRC. This value can be either the Initial Thermal Emittance or the 3-year aged value. Note that it also must be a decimal between 0 and 1.

C. Results

1. Solar Reflectance Index: If you have entered values for both Solar Reflectance and Thermal Emittance, once you press enter or click outside the box, the calculator will calculate the final SRI value. It may take a few moments to obtain a value for the SRI depending on the values you inputted for Reflectance and Emittance. Transfer the proposed SRI value to the "SRI (Optional)" column of the appropriate CF1R-NCB, -ADD, or -ALT certificate of compliance.

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

ALTERNATIVE DEFAULT FENESTRATION PROCEDURE (NA6) WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ENV-05-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. General Information

01	Conditioned Floor Area	
02	5% of the Conditioned Floor Area	
03	Total Allowed Non-Rated Site-built Fenestration Area	
04	Proposed Area of Site-built Fenestration	

B. Fenestration/Glazing Area

01	02
Tag/Identification	Area (ft^2)

C. Default U-factor Using Reference Appendices, Nonresidential Appendix NA6, Equation NA6-1

Equation NA6-1: $U_T = C_1 + (C_2 \times U_C)$

01	02	03	04	05	06	07	08
Tag/Identification	Product Type	Frame Type	C_1 from Table NA6-5	C_2 from Table NA6-5	Center of Glass U-factor (U_C)	Source	Total Performance U-factor (U_T)

Table NA6-5 – U-factor Coefficients from Reference Appendices, Nonresidential Appendix NA6

Product Type	Frame Type	C_1	C_2
Site-built Vertical Fenestration	Metal	0.311	0.872
	Metal Thermal Break	0.202	0.867
	Nonmetal	0.202	0.867
Skylights with a Curb	Metal	0.711	1.065
	Metal Thermal Break	0.437	1.229
	Nonmetal	0.437	1.229
Skylights with no Curb	Metal	0.195	0.882
	Metal Thermal Break	0.310	0.878
	Nonmetal	0.310	0.878

D. Default Solar Heat Gain Coefficient (SHGC) Using Reference Appendices, Nonresidential Appendix NA6, Equation NA6-2

Equation NA6-2: $SHGC_T = 0.08 + (0.86 \times SHGC_C)$

01	02	03	04
Tag/Identification	Center of Glass SHGC ($SHGC_C$)	Source	Total Performance SHGC ($SHGC_T$)

ALTERNATIVE DEFAULT FENESTRATION PROCEDURE (NA6) WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ENV-05-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300

CF1R-ENV-05-E Instructions

The Alternative Default Fenestration Procedure (ADFP) option is available only when nonrated site-built fenestration is being installed in a residential dwelling. For residential site-built fenestration up to 250 square feet (ft^2) or 5% time the conditioned floor area (CFA), whichever is greater shall meet sections §110.6(a)2 and §110.6(a)3 of the Energy Standards.

This worksheet is used to calculate U-factor and solar heat gain coefficient (SHGC) for site-built fenestration/glazing.

A. General Information

1. Conditioned Floor Area: The total conditioned floor area (CFA) in square feet (ft^2), as measured from the outside of the exterior walls.
2. 5% of the Conditioned Floor Area: This value is auto-filled based on the following equation (CFA x 0.05).
3. Total Allowed Non-Rated Site-built Fenestration Area: This is the greater of 250 ft^2 or 5% of the conditioned floor area.
4. Proposed Area of Site-built Fenestration: This value is auto-filled with the sum total of column B02.

B. Fenestration/Glazing Area

1. Tag/Identification: Auto-filled from CF1R.
2. Area (ft^2): Auto-filled from CF1R.

C. Default U-factor Using Reference Appendices, Nonresidential Appendix NA6, Equation NA6-1

1. Tag/Identification: Auto-filled from Section B.
2. Product Type: Using the drop down menu, indicate the type of product (e.g., Site-Built Vertical Fenestration, Skylights with Curb, or Skylight with no Curb).
3. Frame Type: Using the drop down menu, indicate the type of frame (e.g., Metal, Metal Thermal Break, or Nonmetal).
4. Coefficient 1 (C_1) from Table NA6-5: Based on the Product and Frame Type selected, enter the corresponding coefficient from Table NA6-5.
5. Coefficient 2 (C_2) from Table NA6-5: Based on the Product and Frame Type selected, enter the corresponding coefficient from Table NA6-5.
6. Center of Glass U-factor: Enter the *Center of Glass U-factor*.
7. Source: Using the drop down menu, indicate where the *Center of Glass U-factor* information was derived from (e.g., Manufacturer's spec sheet or National Fenestration Rating Council's (NFRC) Computer Modeling Approach Software Tool (CMAST)).
8. Total Performance U-factor: This value is auto-filled based on Equation NA6-1 [$U_T = C_1 + (C_2 \times U_C)$].

D. Default Solar Heat Gain Coefficient (SHGC) Using Reference Appendices, Nonresidential Appendix NA6, Equation N6-2

1. Tag/Identification: Auto-filled from Section B.
2. Center of Glass SHGC: Enter the *Center of Glass SHGC*.
3. Source: Using the drop down menu, indicate where the *Center of Glass SHGC* information was derived from (e.g., Manufacturer's spec sheet or National Fenestration Rating Council's (NFRC) Computer Modeling Approach Software Tool (CMAST))

4. Total Performance SHGC: This value is auto-filled based on Equation NA6-2 [$SHGC_T = 0.08 + (0.86 \times SHGC_C)$].

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

Registration

1. The CF1R must be registered with an ECC-provider prior to submitting for a building permit. See Single-Family Compliance Manual.

INTERIOR AND EXTERIOR INSULATION LAYERS WORKSHEET

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. Masonry/Mass Wall Information

01	02	03	04	05			06
Tag/ID	Masonry/Mass Type	Above or Below Grade?	Area (ft^2)	Masonry/Mass Thickness (inches)			U-factor from Joint Appendix JA4

B. Interior and Exterior Insulation Layers

01	02	03	04	05			06	07
Tag/ID	Exterior/Frame Type	Furring Thickness (inches)	Installed R-value of Insulation	Exterior or Interior Insulation?			Adjusted Exterior R-value	Adjusted Interior R-value

C. U-factor Calculation

Equation 4-4 of the Reference Appendices, Joint Appendix JA4: $U_{Total} = 1/(R_{Outside} + (1/U_{Mass}) + R_{Inside})$

01	02	03	04	05
Tag/ID	Mass Wall U-factor (U_{Mass})	Adjusted Exterior R-value ($R_{Outside}$)	Adjusted Interior R-value (R_{Inside})	Total Performance U-factor (U_{Total})

INTERIOR AND EXTERIOR INSULATION LAYERS WORKSHEET

CALIFORNIA ENERGY COMMISSION

CEC- CF1R-ENV-06-E

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300

CF1R-ENV-06-E Instructions

This worksheet is used to calculate the total performance U-factor for mass walls with either interior, or exterior insulation layers based on Equation 4-4 in the Reference Appendices, Joint Appendix JA4.

A. Masonry/Mass Wall Information

1. Tag/Id: This information is auto-filled from the CF1R.
2. Masonry/Mass Type: This information is auto-filled from the CF1R.
3. Above or Below Grade?: This information is auto-filled from the CF1R.
4. Area (ft^2): Enter the area of the mass wall in square feet.
5. Masonry/Mass Thickness (inches): This information is auto-filled from the CF1R.
6. U-factor from JA4: Enter the U-factor of the mass wall from Reference Appendices, Joint Appendix JA4.

B. Interior and Exterior Insulation Layers

1. Tag/Id: This information is auto-filled from the CF1R.
2. Exterior/Frame Type: Using the drop down menu, indicate the exterior or frame type (e.g., EIFS, Wood, or Metal).
3. Furring Thickness (inches): Enter the furring thickness in inches.
4. Installed R-value of Insulation: Enter the R-value of the insulation installed in the furring space.
5. Adjusted Exterior R-value: This information is auto-filled from the CF1R.
6. Adjusted Interior R-value: This information is auto-filled from the CF1R.

C. U-factor Calculation

1. Tag/Id: This information is auto-filled from Section A.
2. Mass Wall U-factor: This information is auto-filled from Section A.
3. Adjusted Exterior R-value: This information is auto-filled from Section B.
4. Adjusted Interior R-value: This information is auto-filled from Section B.
5. Total Performance U-factor: This value is auto-filled based on Equation 4-4 of the Reference Appendices, Joint Appendix JA4 [$U_{Total} = 1/(R_{Outside} + (1/U_{Mass}) + R_{Inside})$].

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

Registration

1. The CF1R must be registered with an ECC-provider prior to submitting for a building permit. See Single-Family Compliance Manual.

PRESCRIPTIVE NEWLY CONSTRUCTED BUILDINGS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF COMPLIANCE

Note: This table completed by ECC Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Date Permit Issued:

A. General Information

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg or cardinal):	
05	CA City:		06	Number of Dwelling Units:	
07	Zip Code:		08	Fuel Type:	
09	Climate Zone:		10	Total Conditioned Floor Area (ft^2):	
11	Building Type:		12	Slab Area (ft^2):	
13	Project Scope:		14	Fenestration Exceptions:	

B. Opaque Surface Details – Framed (Section 150.1(c)1)

01	02	03	04	05	06	07	08	09	10
					Proposed			**Required**	Comments
Tag/ID	Assembly Type	Frame Type	Frame Depth (inches)	Frame Spacing (inches)	Cavity R-value	Continuous Insulation R-value	U-Factor	U-Factor from Table 150.1-A	

C. Opaque Surface Details – Nonframed (Section 150.1(c)1)

01	02	03	04	05	06	07	08
			Proposed			**Required**	
Tag/ID	Assembly Materials	Thickness (inches)	Core Insulation R-value	Continuous Insulation R-value	U-Factor	U-Factor from Table 150.1-A	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

D. Opaque Surface Details – Masonry/Mass Walls (150.1(c)1Bii)

Note: When insulation is added to the outside of a mass wall and/or when the inside is furred and insulated, the performance data may be adjusted using Equation 4-4 in the Reference Appendices, Joint Appendix, JA4.

01	02	03	04			05	06	07	08	09	10	11	12
		Proposed								**Required**			
						Exterior Insulation		Interior Insulation		Exterior Insulation		Interior Insulation	
Tag/ID	Above or Below Grade?	Masonry/ Mass Type	Masonry/Mass Thickness (inches)			R-value	U-factor	R-value	U-factor	R-value	U-factor	R-value	U-factor

E. Slab On Grade/Concrete Raised Floor Insulation (Table 150.1-A)

Note: Heated slab floors require mandatory slab insulation (see Table 110.8-A).

01	02	03	04	05	06
	Proposed		**Required**		
Floor Type	Insulation R-value	Insulation U-factor	Insulation R-value	Insulation U-factor	Comments

F. Ceiling/Roof Insulation (Section 150.1(c)1A)

- Option A - reserved.
- Option B requires below deck insulation in climate zones 4 and 8-16. An air space is required if below deck insulation is required.
- Option C requires heating and cooling ducts be located inside the conditioned space below the ceiling separating the occupiable space from the attic or within a cathedral ceiling assembly.

01	02	03	04	05	06	07	08	09
			Proposed		**Required**			
Option (B or C)	Configuration	Air Space Required?	Below Roof Deck R-value	Ceiling Insulation R-value	Below Roof Deck R-value	Ceiling Insulation R-value	Radiant Barrier Required?	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

G. Roofing Products (Cool Roof) (Section 150.1(c)11)

Notes:

- Exception : Any roof area covered by building integrated photovoltaic (PV) panels or solar thermal panels is not required to comply with the above Cool Roof requirements.
- Exception 2: Roof constructions with a weight of 25 pounds per square foot (lb/ft^2) or greater are also not required to comply with the above Cool Roof requirements..
- Liquid field applied coatings must comply with installation criteria from Section 110.8(i)4.

01	02	03	04	05	06	07	08	09	10	11	12	13
						Proposed				**Minimum Required**		
Tag/ID	Exception	Roof Pitch	Method of Compliance	Product Type	CRRC Product ID Number	Initial Solar Reflectance	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)

H. Opaque Swinging Doors to Exterior (Section 150.1(c)5)

Notes:Any door with 25 percent or more glass is counted as a fenestration product in Tables I and J.

- Do not include fire-rated doors between garage or unconditioned space and conditioned space.
- If using weighted average to achieve required maximum U-factor, attach CF1R-ENV-02-E.

01	02	03	04	05	06	07
Tag/ID	Area	Proposed U-factor	Proposed U-factor Source	Required Maximum U-factor	Weighted Average (Yes/No)	Comments

I. Fenestration/Glazing Allowed Areas and Efficiencies (Section 150.1(c)3)

01	02	03	04	05	06	07
Maximum Allowed Fenestration Area for All Orientations (ft^2)	Maximum Allowed West-Facing Fenestration Area Only (ft^2)	Maximum Allowed U-factor (Windows)	Maximum Allowed U-factor (Skylights)	Maximum Allowed SHGC (Windows)	Maximum Allowed SHGC (Skylights)	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

J. Fenestration Proposed Areas and Efficiencies (Section 150.1(c)3)

Note: If meeting Exception 1 to 150.1(c)3A, New dwelling units with a conditioned floor area of 500 square feet or less in Climate Zone 5 may comply with a maximum U-factor of 0.30.

If meeting Exception 2 to 150.1(c)3A, Installing less than or equal to 3 square feet (ft2) glass in door, or less than or equal to 3 square feet (ft^2) tubular skylight it is assumed to meet the minimum required U-factor is 0. 27 for climate zones 1 through 5, 11 through 14 and 16, and 0.30 for climate zones 6 through 10 and 15 & SHGC of 0.23 for climate zones 2, 4, 6, through 14 and 0.20 for climate zone 15.

If meeting Exception 3 to 150.1(c)3A, Installing less than or equal to 3 square feet (ft2) tubular skylight, or Installing less than or equal to 16 square feet (ft^2) tubular skylight, it is assumed to meet the minimum required U-factor or (.40 & SHGC of 0.30. In Climate Zones 1, 3, 5, and 16 there is no SHGC requirement. Doors with greater than or equal to 25 percent glazing area are treated as a fenestration product.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Tag/ID	Fenestration Type	Frame Type	Dynamic Glazing	Orientation N, S, W, E	Number of Panes	Proposed Fenestration Area (ft^2)	Proposed West Facing Fenestration Area (ft^2)	Proposed U-factor	Proposed U-factor Source	Proposed SHGC	Proposed SHCG Source	Exterior Shading Device	Combined SHGC from CF1R-ENV-03
15	Total Proposed Fenestration Area												
16	Maximum Allowed Fenestration Area												
17	Compliance Statement:												
18	Total Proposed West-Facing Fenestration Area												
19	Maximum Allowed West-Facing Fenestration Area												
20	Compliance Statement:												
21	Proposed Fenestration U-factor (Windows)												
22	Required Fenestration U-factor (Windows)												
23	Compliance Statement:												
24	Proposed Fenestration SHGC (Windows)												
25	Required Fenestration SHGC (Windows)												
26	Compliance Statement:												
27	Proposed Fenestration U-factor (Skylights)												
28	Required Fenestration U-factor (Skylights)												
29	Compliance Statement:												
30	Proposed Fenestration SHGC (Skylights)												
31	Required Fenestration SHGC (Skylights)												
32	Compliance Statement:												

K. Space Conditioning (SC) Systems – Heating/Cooling/Ducts (Section 150.1(c)7)

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

Notes:

- Any heat pump appliance sold in California will meet the minimum appliance efficiency standard. Models can be checked at https://cacertappliances.energy.ca.gov/Pages/ApplianceSearch.aspx

01	02	03	04	05	06	07	07b	08	09	10	11	12
SC System Identification or Name	Heating System Type	Heating Efficiency Type	Proposed Heating Efficiency	Cooling System Type	Cooling Efficiency Type	Proposed Cooling Efficiency SEER/SEER2	Proposed Cooling Efficiency EER/EER2/ CEER	Distribution System Type	Duct Location	Duct R-value	Thermost at Type	Comments

L. Ventilation Cooling in Climate Zones 8-14 (Section 150.1(c)12)

01	02	03	04	05	06	07	08
Proposed					**Required**		
Air Flow Rate (in CFM) for Certified Whole House Fan (CFM)	Number of Fans	Total CFM	Directly Vented to Outside	Attic Free Vent Area (in ft^2)	Airflow Rate (CFM)	Minimum Attic Vent Free Area (in^2)	Location/Comments

M. Water Heating Systems (Section 150.1(c)8)

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating.

Options:

1. A single 240 volt heat pump water heater (HPWH). Installed in conditioned space or garage.
   A. In climate zone 1, compact hot water distribution is required.
   B. In climate zone 16, compact hot water distribution and a drain water heat recovery system (ECC) is required.
2. A single 240 volt HPWH rated Tier 3 or higher by Northwest Energy Efficiency Alliance (NEEA). Installed in conditioned space or garage.
   a. In climate zone 16, a drain water heat recovery (ECC) is also required.
3. A solar water-heating system with a minimum annual solar savings fraction of 0.7 and an electric backup meeting the installation criteria specified in Reference RA4.
4. In new dwelling units that are 500 square feet or less, an electric water heater with point of use distribution.

Note:

- A single 120V HPWH may be installed in place of a 240V HPWH for new dwelling units with 1 bedroom or less.

01	02	03	04	05	06	07	08
Water Heating System ID or Name	System Option (from §150.1(c)8)	# of Water Heaters/ Compressors in System	Water Heater Type	Fuel Type	Tank Location	Distribution Type	Minimum Solar Savings Fraction

N. Photovoltaic (PV) Requirements (Section 150.1(c)14)

Exceptions:

1. Solar Access Roof Area (SARA) is less than 80 contiguous square feet.
2. No PV system is required when the minimum PV system size specified by Section 150.1c(14) is less than 1.8 kWdc.
3. Enforcement authority determines it is not possible for PV system to meet the requirements of the American Society of Civil Engineers, Standard 7-16, Chapter 7, Snow loads.
4. Buildings approved prior to January 1, 2020
5. PV system size is reduced by 25% when installed with a BESS meeting the Joint Appendix JA12 requirements with a minimum cycling capacity of 7.5 kWh.

01	02	03	04	05	06	07	08	09	10
PV Array ID or Name	Value A from Table 150.1-C	Value B from Table 150.1-C	Minimum PV Size from Equation 150.1-C	PV System Sizing Exception Applies	Adjusted PV System Size from Exception	Solar Access Roof Area (SARA)	Roof Slope Type	Adjusted PV System Size	Comments

O. Indoor Air Quality (IAQ) Fan Information

01	02	03
Fan Name	IAQ Type	Comments

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

P. Field Verification Summary The enforcement agency shall pay special attention to the ECC Measures specified in this checklist below. A registered Certificate of Verification for all the measures specified shall be submitted to the building inspector before final inspection.

Quality Insulation Installation – Section 150.1(c)1E The dwelling unit shall meet all requirements of Quality Insulation Installation (QII) as specified in Reference Appendices, Residential Appendix, RA3.5 as verified by an ECC-Rater.

Duct Leakage Verification – Section 150.0(m)11

- Duct leakage testing is required (Reference Appendices, Residential Appendix, RA3.1) in all climate zones for ducted heating and cooling systems.

Zonally Controlled Systems – Bypass Dampers - Section 150.1(c)13

- If system is zonally controlled, no bypass ducts are allowed, as confirmed by field verification (Reference Appendices, Residential Appendix, RA 3.4.1.6).

Refrigerant Charge Verification – Section 150.1(c)7a

- Refrigerant charge testing is required (Reference Appendices, Residential Appendix, RA3.2) in climate zones 2 and 8-15 for all air-cooled air conditioners and air source heat pumps.
- Some exceptions apply to factory charged package systems.

Central System Air Handlers – Air Flow and Fan Efficacy Verification – Section 150.0(m)13

- Airflow (minimum 350 cfm/ton) and Fan Efficacy (max 0.58 Watts/cfm for air handlers that are not gas furnaces) on systems with ducted air conditioning as field verified by an ECC-Rater or Return Duct and Filter System Design according to Tables 150.0-B/C will be ECC verified
- Heat-only systems with Central Fan Integrated (CFI) ventilation are required to have less than 0.45 Watts/cfm as verified by an ECC-Rater.
- Small duct high velocity systems: airflow (minimum 250 cfm/ton) and fan efficacy (max 0.62 Watts/cfm) as verified by an ECC-Rater.

Indoor Air Quality (IAQ) Mechanical Ventilation – Section 150.0(o)

- Mechanical ventilation airflow rate according to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 62.2 is required to be verified by an ECC-Rater (Reference Appendices, Residential Appendix, RA3.7).

Ventilation System Fault Indicator Display (FID) – Section 150.1 (c)15

- All HRV/ERV systems serving individual dwelling units shall have a Fault Indicator Display (FID) as confirmed by field verification (Reference Appendices, Joint Appendix, JA17).

PRESCRIPTIVE NEWLY CONSTRUCTED BUILDINGS

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/AEA/ECC Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy. I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company:	Date Signed:
Address:	License:
City/State/Zip:	Phone:

CF1R-NCB-01-E User Instructions

Minimum requirements for prescriptive compliance can be found in Building Energy Efficiency Standards Section 150.1(c), and Table 150.1-A (Package A). Completing these compliance documents will require that you have the Reference Appendices for the 2025 Building Energy Efficiency Standards, which contains the Joint Appendices used to determine climate zone and to complete the table for opaque surfaces. When the term CF1R is used it means the CF1R-NCB-01. Worksheets are identified by their entire name and subsequently by only the worksheet number, such as CF1R-ENV-02.

Instructions for tables with column numbers and row letters are given separately.

A. General Information

1. Project Name: Identifying information, such as owner's name.
2. Date: Date of document preparation.
3. Project Location: Legal street address of property or other applicable location identifying information.
4. Building Front Orientation: Building front expressed in degrees, where North = 0, East = 90, South = 180, and West = 270. Indicate cardinal if it is a subdivision or multifamily project that will be built in multiple orientations. The Standards (Section 100.1) include the following additional details for determining orientation:
    - Cardinal covers all orientations (for buildings that will be built in multiple orientations);
    - North is oriented to within 45 degrees of true north, including 45 degrees east of north;
    - East is oriented to within 45 degrees of true east, including 45 degrees south of east;
    - South is oriented to within 45 degrees of true south, including 45 degrees west of south;
    - West is oriented to within 45 degrees of true west, including 45 degrees south of west.
5. CA City: Legal city/town of property.
6. Number of Dwelling Units: this field will automatically default to 1 for single family (including duplexes and townhomes),. NOTE: Duplexes and townhomes are single family and require a single CF1R for each dwelling unit.
7. Zip Code: 5-digit zip code for the project location (used to determine climate zone).
8. Fuel Type: This field will automatically default to Electricity.
9. Climate zone: Use the EZ Building Climate Zone search tool http://caenergy.maps.arcgis.com/apps/webappviewer/index.html.
10. Total Conditioned Floor Area: Enter the total new conditioned floor area in ft^2, as measured from the outside of exterior walls. If the project is an addition, this form is used only for additions that are greater than 1,000 ft^2.
11. Building Type: this field will automatically default to Single Family (includes duplex),.
12. Slab Area: Area of the first floor slab (if any) in ft^2.
13. Project Scope: Newly constructed building, or new addition greater than 1,000 ft^2.

14. Fenestration Exceptions: Conditioned floor area less than or equal 500 square feet (ft2), Installing less than or equal to 3 square feet (ft^2) glass in door, Installing less than or equal to 3 ft^2 tubular skylight, Installing less than or equal to 16 ft^2 skylight, or Not Applicable.

B. Opaque Surface Details – Framed Walls/Framed Floors

1. Tag/ID: A label (if any) from the plans, such as A1.4 or wall.
2. Assembly Type: Wall or Floor (NOTE: ceilings, structural insulated panels (SIP) walls, mass walls and concrete raised floors are entered in different tables).
3. Frame type: Enter wood or metal. If the assembly is a concrete raised floors enter N/A.
4. Frame Depth: Nominal dimensions (in inches) of framing material; such as 2x4 or 2x6.
5. Frame Spacing: 16, 24, or 48 (inches on center).
6. Proposed Cavity R-value: Cavity R-value of insulation installed between framing members.
7. Proposed Continuous Insulation R-value: R-value of rigid or continuous insulation (not interrupted by framing).
8. Proposed U-factor: The U-factor for the proposed assembly from either Reference Appendices, Joint Appendix, JA4 or CF1R ENV-02-E if calculating a weighted average. Must be less than or equal to Column 09 or have an attached CF1R-ENV-02-E to show that a weighted U-factor for multiple assemblies will meet the maximum value.
9. Required U-factor from Table 150.1-A (single family)): Value required based on climate zone and assembly type.
10. Comments: Any notes regarding location, unique conditions, or attachments.

C. Opaque Surface Details – Nonframed

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Assembly materials: Structural insulated panel (SIP) oriented strand board (OSB), SIP I-Joist, SIP Single 2x, SIP Double 2x, ICF see Reference Appendices, Joint Appendix, JA4 for guidance.
3. Thickness: Thickness in inches.
4. Proposed Core Insulation R-value: Insulation installed within the materials or on the inside. See Reference Appendices, Joint Appendix, JA4 for guidance.
5. Proposed Continuous Insulation R-value: Insulation installed on the exterior. See Reference Appendices, Joint Appendix, JA4 for guidance.
6. Proposed U-factor: Assembly U-factor from Reference Appendices, Joint Appendix, JA4 or CF1R-ENV-02. Must be less than or equal to Column 9 or have an attached CF1R-ENV-02-E to show that a weighted U-factor for multiple assemblies will meet the maximum value in Column 9.
7. Required U-factor from Table 150.1-A: Based on assembly type and climate zone.
8. Comments: Any notes regarding location, unique conditions, or attachments.

D. Opaque Surface Details – Masonry/Mass Walls

1. Tag/ID: A label (if any) from the plans, for example, A1.4 or wall.
2. Walls Above Grade: Yes or No.
3. Masonry/Mass Type: Clay Brick, Clay Hollow Unit, concrete masonry unit (CMU) Light Weight, CMU Medium Weight, CMU Normal Weight, Concrete. See Reference Appendices, Joint Appendix, JA4 for guidance.
4. Masonry/Mass Thickness: Thickness (in inches) of mass.

5-6. Proposed Exterior Insulation R-value or U-factor: Enter the R-value or U-factor of proposed insulation on the outside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

7-8. Proposed Interior Insulation R-value or U-factor: Enter the R-value or U-facto) of proposed insulation on the inside surface of the mass wall. See Reference Appendices, Joint Appendix, JA4 for guidance. Use the same descriptor (R-value or U-factor) throughout Table D.

9-10. Required Exterior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 7 or 8) for exterior insulation will be completed based on the Table 150.1-A requirements for the wall type.

11-12. Required Interior Insulation R-value or U-factor: The required R-value or U-factor (whichever descriptor was selected in Column 9 or 10) for interior insulation will be completed based on the Table 150.1-A requirements for the wall type.

E. Slab On Grade/Concrete Raised Floor Insulation

This section is for insulation requirements for slab on grade, heated slab and concrete raised floors. Slab edge performance specifications and installation criteria are found in Sections 150.0(l) and 150.1(c)1D (Table 150.1-A). Requirements vary by climate zone and slab conditions. Heated slab insulation requirements are from Table 110.8-A.

1. Floor type: Types include slab-on-grade, concrete raised floor, or heated slab.
   - Slab-on-grade floors require slab edge insulation in climate zone 16 only.
   - Concrete raised floors must be insulated to R8 in climate zones 1, 2, 11, 13, 14 and 16, R-4 in climate zones 12 and 15, and no insulation is required in climate zones 3-10.
2. Proposed R-value: When required, insulation can be specified by either R-value or U-factor. If specifying an R-value complete column 2.
3. Proposed U-Factor: When required, specify the U-factor of the proposed insulation in Column 3.
4. Required Insulation R-value: Auto input.
5. Required Insulation U-factor: Auto input.
6. Comments: Any notes regarding location, unique conditions, or attachments.

NOTE: A suggestion is provided to highlight that there is a mandatory slab edge insulation requirement for heated slab floors. Since mandatory requirements are not listed on the Certificate of Compliance, this is provided for information purposes only. The specific requirements are in Sections 110.8(g) and Table 110.8-A.

F. Ceiling/Roof Insulation

1. Option (B or C): Option B (may require Below Roof Deck Insulation), or Option C (requires any ducts in conditioned space below the ceiling separating the occupiable space from the attic or within a cathedral ceiling assembly).
2. Configuration: Ventilated attic or cathedral ceiling.
3. Air Space Required: Yes or No. If the climate zone and attic/roof option selected require roof deck insulation, an air space is required.
4. Proposed Below Roof Deck R-value: Whether below roof deck insulation is required will vary depending on climate zone.
5. Proposed Ceiling Insulation R-value: The required insulation R-value will vary depending on the option and climate zone.
6. Required Below Roof Deck R-value: This field will be auto populated. The required below roof deck R-value will vary depending on option and climate zone.
7. Required Ceiling Insulation R-value: This field will be auto populated. The required insulation R-value will vary depending on option and climate zone.
8. Radiant Barrier Required?: This field will be auto populated. The radiant barrier requirement will vary depending on option and climate zone.
9. Comments: Any notes regarding location, unique conditions, or attachments.

G. Roofing Products (Cool Roof)

Roofing requirements are found in Sections 110.8(i) and 150.1(c)11. Depending on the climate zone and roof slope, a cool roof (defined as a minimum aged solar reflectance and thermal emittance, or a minimum SRI) may be required for prescriptive compliance.

Exceptions include (1) low-sloped roofs (pitch less than 2:12) in climate zones 1-12, 14 and 16; (2) steep-sloped roofs (pitch greater than or equal to 2:12) in climate zones 1-9 and 16; (3) roof constructions that have thermal mass over the roof membrane with at least 25 pounds per square foot (lb/ft^2); and (4) any roof area covered by building integrated photovoltaic (PV) panels and/or solar thermal panels (the area of roof not covered would still need to meet any applicable cool roof requirements).

1. Tag/ID: A label (if any) from the plans, such as R1.
2. Exception: Select 1, 2, or none. (1) roof area with photovoltaic (PV) panels or solar thermal panels, (2) roof constructions with 25 pounds per square foot (lb/ft^2) or greater. If exception 1 or 2 exist, the roof is not required to have a cool roof even if the climate zone specifies minimum performance requirements.
3. Roof Pitch: Select from either greater than or equal to 2:12, or pitch is less than 2:12. Typical expressed as 4:12 meaning the roof rises 4 feet in a span of 12 feet. When roofs have multiple pitches, the requirements are based on the pitch of 50 percent or more of the roof.
4. Method of Compliance: Indicate if the method of compliance is based on Aged Solar Reflectance and Thermal Emittance, or on the Solar Reflectance Index (SRI).
5. Product Type: See Cool Roof Rating Council's Directory. Product types include single-ply roof, wood shingles, asphalt roof, metal roof, tile roof.

6. The CRRC Product ID Number is obtained from the Cool Roof Rating Council's Rated Product Directory. Products are listed by manufacturer, brand, type of installation, roofing material, and color, as well as product performance.
7. Proposed Initial Solar reflectance: Based on the product chosen from the Cool Roof Rating Council's Rated Product Directory. If using default assumption indicate NA since the Aged Solar Reflectance is available.
8. Proposed Aged Solar Reflectance: Value is from the Cool Roof Rating Council's Rated Product Directory. If the aged value is not available, calculate the calculated Aged Solar Reflectance using the Solar Reflectance Index (SRI) Calculation worksheet located on the California Energy Commission website or the aging equation ρaged=[0.2+β[ρinitial-0.2], where ρinitial = the initial solar reflectance and soiling resistance β is listed by product type below.

VALUES OF SOILING RESISTANCE β BY PRODUCT TYPE

Product Type	CRRC Product Category	β
Field-Applied Coating	Field-Applied Coating	0.65
Other	Not A Field-Applied Coating	0.70

9. Proposed Thermal Emittance: From the product specification default value. If using a calculated solar reflectance index (SRI) place the Thermal Emittance used to calculate SRI.
10. Proposed SRI (optional): It is optional to meet the solar reflectance index (SRI) but if chosen to do so, use the Solar Reflectance Index (SRI) Calculation Worksheet found on the California Energy Commission website.
11. Minimum Required Aged Solar Reflectance: Based on climate zone and roof slope.
12. Minimum Required Thermal Emittance: Based on climate zone and roof slope.
13. Minimum Required SRI (optional): Based on climate zone and roof slope.

If the cool roofing requirements will be met by a liquid field applied coating, Section 110.8(i)4 requires the coating be applied across the entire roof surface and meet the dry mil thickness, or coverage recommended by the manufacturer.

H. Opaque Swinging Doors to Exterior

1. Tag/ID: Provide a name or designator for each unique door. This designator should be used consistently throughout the plan set (elevations, door schedules, etc.)
2. Area: Calculated area in square feet (ft^2) for each unique door.
3. Proposed U-factor: Enter the proposed U-factor. If value is greater than 0.20, column 06 will autocomplete as Yes.
4. Source: NFRC or Reference Appendices, Joint Appendix, Table 4.5.1s 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02).
5. Required Maximum U-factor. This field will always be 0.20.
6. Weighted Average: If column 03 is greater than 0.20 U-factor, attach form CF1R-ENV-02-E:

7. Comments: Any notes regarding location, unique conditions, or attachments.

I. Fenestration/Glazing Allowed Areas and Efficiencies

1. Maximum Allowed Fenestration Area for All Orientations: Calculated value based on conditioned floor area multiplied by 20 percent for all orientations.
2. Maximum Allowed West-Facing Fenestration Area Only: Calculated value based on conditioned floor area multiplied by 5 percent (Used in climate zones 2, 4, and 6-16 for west-facing fenestration).
3. Maximum Allowed U-factor (Windows): Maximum U-factor from Table 150.1-A. This field will either be 0.27 or 0.30 depending on the climate zone.
4. Maximum Allowed U-factor (Skylights): Maximum U-factor from Table 150.1-A. This field will almost always be 0.30 unless meeting one of the Exceptions to 150.1(c)3A. If meeting one of the Exceptions, this field will be 0.40.
5. Maximum Allowed SHGC (Windows): Maximum SHGC from Table 150.1-A. This field will either be 0.20, 0.23 or N/R, depending on the climate zone. N/R means there is no maximum SHGC required in this climate zone. The SHGC will be the area weighted averaged, CF1R-ENV-02, with other higher fenestration windows.
6. Maximum Allowed SHGC (Skylights): Maximum SHGC from Table 150.1-A. This field will either be 0.20 or 0.23 unless meeting one of the Exceptions to 150.1(c)3A. If meeting one of the Exceptions, this field will be 0.30.
7. Comments: Any notes regarding location, unique conditions, or attachments.

J. Fenestration Proposed Areas and Efficiencies

1. Tag/ID: Provide a name or designator for each unique type of fenestration surface. This designator should be used consistently throughout the plan set (elevations, finish schedules, etc.) such as Window-1, Skylight-1, etc. to identify each surface. It should also be consistently used on the other forms in the compliance documentation.
2. Fenestration Type: Indicate the type of fenestration construction (e.g., Fixed Window, Operable Window, Skylight, Tubular Skylight, or Glass in Door).

   NOTE: Doors with glazing are counted in one of two ways. The entire door area of a door with 25 percent or more glazing is considered fenestration. A door with less than 25 percent glazing can be considered as all fenestration, or can be calculated as the actual glass area with a 2-inch (0.17 ft) frame all around.

3. Frame Type: Indicate the frame type as either metal, metal thermal break, or nonmetal.
4. Dynamic Glazing: Indicate whether the fenestration has an integrated shading device, chromogenic glazing, or none for no dynamic glazing. Chromogenic glazing shall be considered separately from other fenestration types.
5. Orientation: Orientation can be North, East, South, West. If documentation is for a building that may be built in any direction, in a climate zone that limits west-facing fenestration, complete this section assuming the side of the building with the most fenestration faces west.

NOTE: West includes any vertical fenestration oriented to within 45 degrees of true west, excluding 45 degrees south of west; any skylights oriented west; and skylights facing any direction with a pitch of less than 1:12.

6. Number of Panes: Indicate the number of panes for each Tag/ID; is it a single, double, or triple pane window?
7. Proposed Fenestration Area (ft^2): Indicate the area in square feet (ft^2) of each exterior fenestration type, excluding west-facing fenestration.
8. Proposed West Facing Fenestration Area (ft^2): In climate zones 2, 4, and 6-16, indicate the area in square feet (ft^2) of each exterior west-facing fenestration type separately.

   NOTE: Skylights installed in a roof with a pitch less than 1:12 are considered to face west.

9. Proposed U-factor: Enter
   (a) the NFRC U-factor based on the proposed brand and type of fenestration using National Fenestration Rating Council certified values, or
   (b) the default value from Table 110.6-A, or
   (c) the NA6.2 alternate default U-factor (for non-rated site-built fenestration only), or
   (d) the Area-weighted Average from CF1R-ENV-02.

   If any products (other than the exceptions) have a higher U-factor than 0.27 or 0.30 depending on the climate zone, first complete a form CF1R-ENV-02 to calculate the Area-Weighted Average U-factor, which must be 0.30 or less, and attach it to the CF1R-NCB-01.

   NOTE: (1) New dwelling units with a conditioned floor area of 500 square feet or less in Climate Zone 5 , enter 0.30.
   (2) For the exceptions – up to 3 square feet (ft^2) of tubular skylights and up to 16 ft^2 of skylight area, enter 0.40.
   (3) For the exception – up to 3 square feet (ft^2) of glass in door, enter 0.27 or 0.30 depending on the climate zone.
   (4) Dynamic glazing is a glazing system that changes its performance U-factor and solar heat gain coefficient (SHGC) based on the physical environment. Dynamic glazing includes chromogenic glazing or integrated shading systems (this does not include internally or externally mounted shading devices). If using dynamic glazing, use the lowest tested U-factor and SHGC in Columns 9 and 10.

10. Source: National Fenestration Rating Council (NFRC), Tables 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-Weighted Average Worksheet (CF1R-ENV-02). The source of the U-factor data for the fenestration product.
11. Proposed SHGC: In climate zones 2, 4, and 6-15, enter the solar heat gain coefficient (SHGC) from
    (a) National Fenestration Rating Council (NFRC) rated certification information; or
    (b) default Table 110.6-B; or
    (c) the NA6.3 alternate default SHGC (for non-rated site-built fenestration only); or

(d) the Area-weighted Average from CF1R-ENV-02.

If any products (other than the exceptions) have a higher SHGC than required by Package-A, first complete a form CF1R-ENV-02 to calculate the Area-Weighted Average SHGC and attach it to the CF1R-NCB-01.

NOTE: (1) For the exceptions – up to 3 square feet (ft^2) of tubular skylights and up to 16 ft^2 of skylight area, enter 0.30.
(2) For the exception – up to 3 square feet (ft^2) of glass in door, enter 0.20 or 0.23 depending on the climate zone.

12. Source: National Fenestration Rating Council (NFRC), Tables 110.6-A and 110.6-B, Equations NA6-1 and NA6-2, or Area-weighted Average Worksheet (CF1R-ENV-02). The source of the solar heat gain coefficient (SHGC) data for the fenestration product.
13. Exterior Shading Device: If exterior shading devices are used to meet the solar heat gain coefficient (SHGC) requirement, indicate the type of device (from Table S-1 of CF1R-ENV-03-E Solar Heat Gain Coefficient Worksheet) and attach the CF1R-ENV-03-E.

NOTE: An exterior shading device is not used for products with an National Fenestration Rating Council (NFRC) rated U-factor and solar heat gain coefficient (SHGC) based on a factory integrated shading device.
Chromogenic glazing shall be considered separately from other fenestration.

14. Combined SHGC from CF1R-ENV-03: If exterior shading devices are combined with the solar heat gain coefficient (SHGC) value of the fenestration to meet the prescriptive SHGC requirements (as indicated in column I. 13), indicate the SHGC calculated on form CF1R-ENV-03 and attach the form for each window with an exterior shading device.

15.–32. Automatically completed entries; no user input required.

K. Space Conditioning (SC) Systems – Heating/Cooling/Ducts

1. Space Conditioning System Identification or Name: Provide a unique name for each unique space conditioning system type in the building. If the same space conditioning system type is used in more than one location in the building, it is sufficient to list the unique space conditioning system type only once. In order for one space conditioning system type to be considered the same as another, it must have the same description in Columns 2 through 9.
2. Heating System Type: Indicate heating system type as central heat pump room heat pump, or electric resistance.
3. Heating Efficiency Type: HSPF, HSPF2, COP
4. Proposed Heating Efficiency: Equipment must be certified to the California Energy Commission.
5. Cooling System Type: Indicate cooling system type or specify “no cooling system installed.” Categories include heat pump, room heat pump, mini-split heat pump, multi-split heat pump, VRF (variable refrigerant flow) heat pump, small duct high velocity heat pump, or no cooling.
6. Cooling Efficiency Type: Select the cooling efficiency type from the list that is appropriate to the type of system .

7. Proposed Cooling Efficiency: For central cooling systems, the minimum efficiency required by the appliance efficiency standards is 14 SEER, or 13.4 SEER2. Any cooling appliance sold in California is acceptable.
8. Distribution System Type: This could be ducted, radiant floor, piping, or ductless.
9. Duct Location: If the system has ducts, indicate where they will be installed. Locations include attic, garage, conditioned space, radiant floor. In climate zones 4 and 8-16, unless roof deck insulation is included in Table F (roof option B), the ducts must be located inside conditioned space.
10. Duct R-value: This value is from Table 150.1-A. If system is ductless this field will be N/A.
11. Thermostat Type: Select a setback thermostat or an Energy Management System (EMS) for most systems, or N/A if exempt. Controls for most systems can be by a device that allows a person to program up to 4 temperature setpoints within 24 hours.
12. Comments: Include any comments here.

L. Ventilation Cooling in Climate Zones 8-14

One or more whole house fans are required to provide night-time cooling ventilation in climate zones 8-14. The requirement is found in Section 150.1(c)12.

1. Proposed air flow rate for certified whole house fan: Value from appliance directory listing (https://cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx)
2. Proposed number of fans: Number of fans.
3. Proposed total air flow rate: Column 1 x column 2.
4. Directly vented to outside: Default is No. Yes or No to indicate if the fan is directly vented to outside (not typical).
5. Attic free vent area (in ft^2): If column 4 is No, this is the amount of attic venting required for the venting of air from the attic (minimum from column 07
6. Required Whole House Fan Airflow Rate (CFM): 1.5 CFM per square foot (ft^2) of conditioned floor area (auto complete).
7. Required Minimum Attic Free Vent Area (in^2): Minimum attic vent free area = Column 1 multiplied by 144 and divided by 750, which is equivalent to multiplying by 0.192 (auto complete).
8. Location/Comments: Include any comments or fan location.

M. Water Heating Systems for Individual Dwelling Units

1. Water Heating System Identification or Name: Provide a unique name for each unique water heating system type in the building. If the same water heating system type is used in more than one location in the building, it is sufficient to list the unique water heating system type only once.
2. System option:
    1. A single 240 volt heat pump water heater (HPWH). Installed in conditioned space or garage.
        A. In climate zone 1, compact hot water distribution is required.
        B. In climate zone 16, compact hot water distribution and a drain water heat recovery system (ECC) is required.

2. A single 240 volt HPWH rated Tier 3 or higher by Northwest Energy Efficiency Alliance (NEEA). Installed in conditioned space or garage.
    a. In climate zone 16, a drain water heat recovery (ECC) is also required.
3. A solar water-heating system with a minimum annual solar savings fraction of 0.7 and an electric backup meeting the installation criteria specified in Reference RA4.
4 In new dwelling units that are 500 square feet or less, an electric water heater with point of use distribution.

3. # of Water Heaters/Compressors in System: Indicate the number of water heaters/compressors in each system.
4. Water heater Type: Tankless, storage, heat pump.
5. Fuel Type: Gas, Propane, heat pump.
6. Rated Input (Range): Select the maximum input rating
7. Tank Location: List based on which system option was chosen.
8. Distribution Type: Pick Standard, Demand Recirculation – Manual Control, Demand Recirculation – Sensor Control.
9. Minimum Solar Savings Fraction: Field is auto filled based on which system option was chosen.

N. Photovoltaic (PV) Requirements

Tables referenced in this section may be found in either the Energy Code or Chapter 7 of the Residential Compliance Manual.

1. PV Array ID or Name
2. Adjustment Factor (A): Auto-filled look up value from Table 150.1-C.
3. Adjustment Factor (B): Auto-filled look up value from Table 150.1-C.
4. Minimum PV Size: Calculated value for the minimum PV size before any adjustments or exceptions.
5. PV System Sizing Exception Applies: Indicate what, if any, exception is being taken.
6. Adjusted PV System Size from Exception: After adjustments from exceptions made, required PV size from equation 150.1-C.
7. Solar Access Roof Area (SARA): Indicate the roof area satisfying the definition in 150.1(c)148.
8. Roof Slope Type: Indicate whether the roof slope having PV is low-sloped or steep-sloped.
9. Adjusted PV System Size: Required PV size after all adjustments and exceptions made.
10. Comments: Include any comments here.

11. PV Array ID or Name
12. Adjustment Factor (A): Auto-filled look up value from Table 150.1-C.
13. Adjustment Factor (B): Auto-filled look up value from Table 150.1-C.
14. Minimum PV Size: Calculated value for the minimum PV size before any adjustments or exceptions.
15. PV System Sizing Exception Applies: Indicate what, if any, exception is being taken.
16. Adjusted PV System Size from Exception: After adjustments from exceptions made, required PV size from equation 150.1-C.
17. Solar Access Roof Area (SARA): Indicate the roof area satisfying the definition in 150.1(c)148. Roof Slope Type: Indicate whether the roof slope having PV is low-sloped or steep-sloped.
18. Adjusted PV System Size: Required PV size after all adjustments and exceptions made.
19. Comments: Include any comments here.

O. Indoor Air Quality (IAQ) Fan Information

1. Fan Name: User input
2. IAQ Type: User pick from list: Supply, Balanced, Balanced – ERV, Balanced – HRV, Central Fan Integrated (CFI), Central Ventilation System – Supply, Central Ventilation System – Balanced
3. Comments: User input

P. Field Verification Summary

1. Quality Insulation Installation: All buildings must comply with Quality Insulation Installation (QII) criteria. Multiple inspections, starting with a framing inspection, are required by an ECC-Rater. QII criteria is specified in Reference Appendices, Residential Appendix, RA3.5.
2. Duct Leakage verification: All ducted systems must meet maximum duct leakage requirements. Typically, the maximum leakage is 5 percent but varies for when the duct leakage test is performed and the type of building (single family, townhouse,). The only exception is if the heating and cooling systems are ductless.
3. Zonally Controlled Systems - Bypass Dampers: The prescriptive requirements preclude the use of bypass ducts in association with zonally controlled systems. An ECC-Rater will verify that zonally controlled systems have no bypass ducts.
4. Refrigerant Charge Verification: Some type of refrigerant charge verification or Fault Indicator Display (FID) is required in climate zones 2 and 8-15 for most common systems such as ducted split and packaged systems, and mini-split systems. See Section 150.1(c)7A. or Reference Appendices, Residential Appendix, RA3.2. If a building is built in climate zones 1, 3-17 or 16, or has no cooling system, no refrigerant charge verification is required.
5. Central System Air Handlers - Airflow Rate and Fan Efficacy Verification: Unless a building has no cooling system or has a non-ducted cooling system, the system must meet mandatory and prescriptive requirements for airflow and fan efficacy.
    a. A typical central forced air unit is required to have 350 CFM or greater per ton of nominal cooling capacity, and a fan efficacy less than or equal to 0.45 Watts/CFM; or

b. A central ducted heat pump is required to have 350 CFM or greater per ton of nominal cooling capacity and a fan efficacy of less than or equal to 0.58 Watts/CFM; or
c. Small duct high velocity systems must meet an airflow requirement 250 cfm/ton or greater and a fan efficacy of at least 0.62 Watts/cfm.

See 150.0(m)13, 150.1(c)10, and Reference Appendices, Residential Appendix, RA3.

6. Indoor Air Quality Mechanical Ventilation: All new dwellings are required to meet the whole-building mechanical ventilation airflow rate according to ASHRAE 62.2 is required (RA3.7).
7. **Ventilation System Fault Indicator Display (FID) – Section 150.1 (c)15**

All HRV/ERV systems serving individual dwelling units shall have a Fault Indicator Display (FID) as confirmed by ECC field verification (Reference Appendices, Joint Appendix, JA17).

Documentation Declaration Statements

1. The person who prepared the CF1R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature (may be electronic).
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature (may be electronic).

Registration

1. The CF1R must be registered with an ECC-provider prior to submitting for a building permit. See Single-Family Compliance Manual.