PLUMBING PERMIT APPLICATION

SITE ADDRESS: _____

APN:_____ — _____ — _____

Please attach plumbing drawing and a plot plan indicating locations of trenches, piping or other elements not completely located with-in the building structure or attached to the building. Include piping schematics where appropriate.

OWNER: _____

ADDRESS:_____

_____

PHONE NUMBER: _____

PROJECT VALUE: $ _____

NUMBER OF TOILET FIXTURES: _____ NUMBER OF TUB/SHOWER FIXTURES:_____

NUMBER OF NEW LAVATORY FIXTURES:_____ KITCHEN SINK/LAUNDRY FIXTURES:_____

DISHWASHER? ☐ YES ☐ NO FLOOR DRAINS? ☐ YES ☐ NO HOW MANY? _____

WATER HEATER MANUFACTURER/MODEL: _____ BTU OUTPUT:_____

WATER HEATER FUEL TYPE? ☐ Natural Gas ☐ Propane ☐ Elect. ENERGY FACTOR: _____

***** NOTE: Replacement of a tank water heater with an instantaneous water heater may require a larger gas line. *****

Include CF-1R ALT form with this permit application if proposed water heater energy factor (EF) varies from minimum federal standards.

NEW GAS LINE? ☐ YES ☐ NO NUMBER OF CONNECTIONS: _____

NEW WATER PIPING? ☐ YES ☐ NO TYPE: ☐ PEX ☐ COPPER ☐ GALV ☐ CPVC

Other Project Information: _____

_____

INSTALLER NAME:_____

INSTALLER ADDRESS: _____

_____

PHONE NUMBER: _____

LICENSE NUMBER:_____

_____ _____

SIGNATURE DATE

Mandatory Measures Summary MF-1R

Residential

Site Address:	Enforcement Agency:	Date:

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

DESCRIPTION

Building Envelope Measures:

§116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.

§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).

§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed.

§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.

§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on the CF-1R Form.

*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.

§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.

*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.

*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.

§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form.

§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

§150(l): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.

Fireplaces, Decorative Gas Appliances and Gas Log Measures:

§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox.

§150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device.

§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.

Space Conditioning, Water Heating and Plumbing System Measures:

§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission.

§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.

§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.

§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA.

§150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c).

§150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.

§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.

§150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B.

§150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.

§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

§150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space.

Site Address:	Enforcement Agency:	Date:

§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

Ducts and Fans Measures:

§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used

§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.

§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.

§150(m)7: Exhaust fan systems have back draft or automatic dampers.

§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.

§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.

§150(m)10: Flexible ducts cannot have porous inner cores.

§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures:

§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light.

§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating

§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover.

§114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.

§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters, and valve requirements of §150(p).

Residential Lighting Measures:

§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.

§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).

§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.

§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.

§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).

§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.

§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy.
EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft^2 or 100 watts for dwelling units larger than 2,500 ft^2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.

§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.

§150(k)10: Permanently installed luminaires in bathrooms, attached and detached garages, laundry rooms, closets and utility rooms shall be high efficacy.

Site Address:	Enforcement Agency:	Date:

	EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by a manual-on occupant sensor certified to comply with the applicable requirements of §119. EXCEPTION 2: Permanently installed low efficacy luminaires in closets less than 70 square feet are not required to be controlled by a manual-on occupant sensor.
§150(k)11:	Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.
§150(k)12:	Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.
§150(k)13:	Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.
§150(k)14:	Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).
§150(k)15:	Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146
§150(k)16:	Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Prescriptive Certificate of Compliance: Residential		CF-1R-ALT
Residential Alterations		(Page 1 of 5)
Project Name:	**Climate Zone #**	**# of Stories**

General Information		
Site Address:	**Enforcement Agency:**	**Date:**
Building Type ☐ Single Family ☐ Multi Family	Circle the Front Orientation: N, E, S, W, or degrees _____	
Conditioned Floor Area (CFA): _____	Project Type: ☐ Alterations ☐ Envelope ☐ Fenestration ☐ Roof ☐ HVAC Replacement or Change Out ☐ Duct Replacement ☐ Water Heater	

***NOTE*: This form is not to be used for Newly Constructed Buildings or Additions**

Insulation Values For Opaque Surfaces *(for Furring use the Mass and Furring Strips Construction table below)*

Assembly Alteration

☐ **Opening of framed cavity alone** – *Alterations that involve the opening of the framed cavity of a wall, ceiling, or floor must install the mandatory minimum insulation value per §150 for the altered assembly. Fill in Columns A –C and enter mandatory insulation value in Column H.*

☐ **Replacement of entire assembly** – *Replacement of an entire wall, ceiling, or floor assembly requires the installation of Component Package- D insulation values in Table 151-C. Fill in Columns A – J.*

Opaque Surface Details For the furred portioned of Mass Walls see Furring Strips Construction Table below.

A	B	C	D	E	F	G	H	I	J
Proposed See Note				**Standard**	Values From JA4 Table				
Tag/ ID[1]	Assembly Name or Type[1]	Framing Material and Size[2]	Thickness, Spacing, or Other[3]	U-factor[4]	JA4 Table Number[5]	Framed Cavity R-value[6]	Continuous Insulation R-Value[7]	JA4 Assembly Cell Value[8]	Proposed Assembly U-factor[9]

Note: For furred assemblies, accounting for Continuous Insulation R-value, see Page JA4-3 and Equation 4-1. For calculating furred walls use the Mass and Furring Construction table below.

1. *For Tag/ID indicate the identification name that matches the building plans.*
2. *Indicate the Assembly Name or type: Roof/Ceiling, Walls, Floors, Slabs, Crawl Space, Doors and etc…Indicate the Frame type and Size: For Wood, Metal, Metal Buildings, Mass, enter 2x4, 2x6, or etc… see JA4 for other possible frame type assemblies.*
3. *Enter the thickness for mass in inches or Spacing between framing members enter; 16"or 24"OC; or Other for all other assembly description such as Concrete Sandwich Panel, Spandrel Panel, Logs, Straw Bale Panel and etc….*
4. *Based on the Climate Zone; enter the Standard U-factor from Table 151-B, C or D for each different assembly Name or type.*
5. *Enter the Table number that closely resembles the proposed assembly.*
6. *Enter the R-value that is being installed in the wall cavity or between the framing; otherwise, enter "0".*
7. *Enter the Continuous Insulation R-value for the proposed assembly; otherwise, enter "0".*
8. *Enter the row and column of the U-factor value based on Column F Table Number and enter the Assembly U-factor in Column J*
9. *The **Proposed** Assembly U-factor, Column J, must be equal to or less than the **Standard** U-factor in Column E to comply.*

Furring Strips Construction Table for Mass Walls Only

A	B	C	D	E	F	G	H	I	J	K	L	M
Proposed Properties of Masonry and Concrete Walls From Reference Joint Appendix Table 4.3.5, 4.3.6, 4.3.7					**Added Interior or Exterior Insulation in Furring Space from Reference Joint Appendix Table 4.3.13**							
Mass Thickness[1]	Assembly Name or Type[2]	JA4 Table Number[3]	JA4 -Mass Cell Value[4]	Mass U-Factor[5]	Interior or Exterior of Insulation Layer	Frame Thickness	Frame Type Wood or Metal	Furring Cavity R-value[3]	JA4 -Mass Cell Value[4]	Effective R-value[5]	Final Assembly U-factor[6,7]	Comment

Registration Number: _____ *Registration Date/Time:* _____ *HERS Provider:* _____

Project Name:	**Climate Zone #**	**# of Stories**

Mass and Furring Strips Construction (footnotes)

1. Indicate the type of assembly to include; Hollow Unit Masonry Walls, Solid Unit Masonry, Solid Concrete Walls, Etc. Additional assemblies can be found Reference Joint Appendix JA4.
2. This is the U-Factor based on the thickness of the assembly in inches.
3. The R-value of the insulation to be added on the interior or exterior of the assembly.
4. The Calculated R-Value is the R-value of the furred out section of the assembly.
5.-6.The Final Assembly is calculated using Equation 4-2 or Equation 4-4of the Reference Joint Appendix JA4. The equation is the inverse of Column D added to Column I. Column K is the inverse from column J.
7. Insert the calculated U-factor value on to the Opaque Surface Details in Column J

FENESTRATION PROPOSED AREAS

☐ **Replacing window alone** – *Replacement windows shall meet the U-Factor and SHGC Value requirements of Component Package D in Table 151-C. The Total Fenestration and West-facing Area requirements are not applicable.*

☐ **Adding 50ft^2 or less of window area** – *Newly installed windows shall meet the U-Factor and SHGC Value requirements of Component Package D in Table 151-C.*

☐ **Adding more than 50ft^2 of window area** – *Newly installed windows shall meet the U-Factor and SHGC Value and the Fenestration Area requirements of Component Package D in Table 151-C. Complete the Altered Fenestration Allowed Area Table on Page 2 of the CF-1R-ALT*

Fenestration Type and Frame (Window, Glass Door or Skylight)	Orientation (North, East, South, West)	PropsedArea[1] (ft^2)	Maximum U-factor[2, 3]	Maximum SHGC[2, 3, 4]	NFRC or Default Value[5]

1. Fenestration area is the area of total glazed product (i.e. glass plus frame). Exception: When a door is less than 50% glass, the fenestration area may be the glass area plus a "2 inch frame" around the glass.
2. Enter value from Component Package D Requirements in Table 151-C.
3. Actual fenestration products installed and as indicated in CF-6R-ENV Form shall be equivalent to or have a lower U-factor and/or a lower SHGC value than that specified on the CF-1R ALT Form.
4. Submit a completed WS-3R Form if a reduced SHGC is calculated with exterior shading.
5.If applicable at this stage enter "NFRC" for NFRC Certified windows or are CEC "Default" values found in Table 116-A or B.

ALTERED FENESTRATION ALLOWED AREAS *(Complete if more than 50ft^2 of fenestration is added)*

	A	B	C	D	E	F		G
	CFA of Entire Dwelling	Allowed % of CFA	Existing Fenestration Area	Fenestration Area Removed	Fenestration Area Added	Total Area Allowed (A x B)		Proposed Area[2] (E-D) + C
Total Fenestration Area (ft^2)		.20					≥	
West Fenestration Area[1] (Required In CZ's 2, 4 & 7 -15)		.05					≥	

1. West Fenestration Area includes west-sloping skylights and any skylights with a pitch less than 1:12.
2. West facing glazing area removed cannot be "counted" twice." In order to distribute the west glazing area removed to the other orientations, input the west glazing area removed in the Total Fenestration Area row, column D.
3. Include the Proposed Area of the West facing fenestration in both Area columns below.
4. To meet compliance, the Proposed Area must be less than or equal to the Total Allowed Area for BOTH the Total and West Fenestration Areas.

Project Name:	**Climate Zone #**	**# of Stories**

ROOFING PRODUCTS (COOL ROOFS) *§151(f)12*

When the area of exterior roof surface to be replaced exceeds more than 50% of the existing roof area, or more than 1,000 ft^2, whichever is less, the new roofing area must meet the roofing product "Cool Roof" requirements of §152(b)1Hi, 152(b)1Hii, or 152(b)1Hiii.

*Check applicable **alternative** or **exception** below if the roof alteration is exempt from the roofing product "Cool Roof" requirements. Note: If any one of the alternatives or exception below is checked, the Aged Solar Reflectance and Thermal Emittance requirements for roofing products in §118(i) are not applicable. Do not fill table below.*

☐ Cool Roofs Not Required in Climate Zones 1-12, 14, and 16 with a Low Sloped. Less or 2:12 pitch.
☐Cool Roofs Not Required in Climate Zones 1 through 9 and 16 with a Steep-Sloped Roofs (pitch greater than 2:12) and product unit weight less than 5lb/ft^2.

Alternatives to §152(b)1Hi and §152(b)Hii, Steep-slope roof *(pitch > 2:12)*

- ☐ Insulation with a thermal resistance of at least 0.85 hr·ft^2·°F/Btu or at least a 3/4 inch air-space is added to the roof deck over an attic; or
- ☐ Existing ducts in the attic are insulated and sealed according to §151(f)10; or
- ☐ In climate zones 10, 12 and 13, with 1 ft^2 of free ventilation area of attic ventilation for every 150 ft^2 of attic floor area, and where at least 30 percent of the free ventilation area is within 2 feet vertical distance of the roof ridge; or
- ☐ Building has at least R-30 ceiling insulation; or
- ☐ Building has radiant barrier in the attic meeting the requirements of §151(f)2; or
- ☐ Building has no ducts in the attic; or
- ☐ In climate zones 10, 11, 13 and 14, R-3 or greater roof deck insulation above vented attic.

Exception to §152(b)1Hiii, Low-slope roof *(pitch ≤ 2:12)*

- ☐ Building has no ducts in the attic.

Other Exceptions

☐ Roofing area covered by building integrated; photovoltaic panels and solar thermal panels are exempt from the below Cool Roof criteria.
☐ Roof constructions that have thermal mass over the roof membrane with at least 25 lb/ft^2 is exempt from the below Cool Roof criteria.

Note: If no CRRC-1 label is available, this compliance method cannot be used, use the Performance Approach to show compliance, otherwise, Check the applicable box below if Exempt from the Roofing Products "Cool Roof" Requirement:

CRRC Product ID Number[1]	Roof Slope ≤ 2:12	Roof Slope > 2:12	Product Weight < 5lb/ft^2	Product Weight ≥ 5lb/ft^2	Product Type[2]	Aged Solar Reflectance[3,4]		Thermal Emittance	SRI[5]
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			

1. The CRRC Product ID Number can be obtained from the Cool Roof Rating Council's Rated Product Directory at www.coolroofs.org/products/search.php
2. Indicate the type of product is being used for the roof top, i.e. single-ply roof, asphalt roof, metal roof, etc.
3. If the Aged Reflectance is not available in the Cool Roof Rating Council's Rated Product Directory then use the Initial Reflectance value from the same directory and use the equation $(0.2+0.7(\rho_{initial} - 0.2)$ to obtain a calculated aged value. Where ρ is the Initial Solar Reflectance.
4. Check box if the Aged Reflectance is a calculated value using the equation above.
5. Calculate the SRI value by using the SRI- Worksheet at http://www.energy.ca.gov/title24/ and enter the resulting value in the SRI Column above and attach acopy of the SRI- Worksheet to the CF-1R.

To apply **Liquid Field Applied Coatings,** the coating must be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the coatings manufacturer and meet minimum performance requirements listed in §118(i)4. Select the applicable coating:

☐ Aluminum-Pigmented Asphalt Roof Coating	☐ Cement-Based Roof Coating	☐ Other _____

Project Name:	**Climate Zone #**	**# of Stories**

HVAC SYSTEMS - HEATING

Heating Equipment Type and Capacity[1,2,3]	Minimum Efficiency (AFUE or HSPF)	Distribution Type and Location[4]	Duct or Piping Insulation R-Value	Thermostat Type	Configuration (Central, Split, Space, Package or Hydronic)

1. Indicate Heating Type (Central Furnace, Wall Furnace, Heat pump, Boiler, Electric Resistance, etc.)
2. Electric resistance heating is allowed only in Component Package C, or except where electric heating is supplemental (i.e., if total capacity ≤ 2 KW or 7,000 Btu/hr electric heating is controlled by a time-limiting device not exceeding 30 minutes). See §151(b)3 exception.
3. Refer to the HERS Verification section on Page 4 of the CF-1R-ALT Form for additional requirements and check applicable boxes.
4. Indicate Type or Location (Ducts, Hydronic in Floor, Radiators, etc.)

HVAC SYSTEMS - COOLING

Cooling Equipment Type and Capacity[1,2]	Minimum Efficiency (SEER/EER or COP)	Distribution Type and Location[3]	Duct or Piping Insulation R-Value	Thermostat Type	Configuration (Central, Split, Space, Package or Hydronic)

1. Indicate Cooling Type (A/C, Heat pump, Evap. Cooling, etc)
2. Refer to the HERS Verification section on Page 4 of the CF-1R-ALT Form for additional requirements and check applicable boxes.
3. Indicate Type or Location (Ducts, Hydronic in Floor, Radiators, etc.)

WATER HEATING

List water heaters and boilers for both domestic hot water (DHW) heaters and hydronic space heating. Individual dwelling DHW heaters must be gas or propane fired, and may not exceed 50 gallons. Hot water pipe insulation from the DHW heater to the kitchen(s) and on all underground hot water pipes is required in all component packages in all climate zones.

Water Heater Type/Fuel Type[1]	Distribution Type (Standard, Recirculating)[2]	Number In System	Tank Capacity (gal)	Energy Factor or Thermal Efficiency	External Tank Insulation R-Value[3]

1. Indicate Type (Storage Gas, Heat Pump, Instantaneous, etc.)
2. Recirculating systems serving multiple dwelling units shall meet the recirculation requirements of §150(n). The Prescriptive requirements do not allow the installation of a recirculating water heating system for single dwelling units.
3. The external water heating tank and pipes shall be insulated to meet the requirements of §150(j).

SPECIAL FEATURES

The *enforcement agency should pay special attention to the Special Features specified in this checklist below. These items may require written justification and documentation and special verification.*

NEW ROOF ASSEMBLY - Radiant Barrier
The radiant barrier requirement of §151(f)2 does not apply to roof alterations.

Slab Edge (Perimeter) Insulation ☐ **YES** ☐ **NO**
YES: In Climate Zone 16 in Component Packages D, R-7 insulation is required.

Heated Slab Insulation ☐ **YES** ☐ **NO**
YES: Slab edge insulation required for all heated slabs in all Climate Zones. See details in Table 118-A of the standards.

Raised Slab Insulation ☐ **YES** ☐ **NO**
YES: In Climate Zones 1, 2, 11, 13, 14 & 16, R-8 insulation is required; in Climate Zones 12 & 15, R-4 is required under component Package D.

Thermal Mass
To obtain Compliance Credit for the installation of thermal mass, use the Performance Approach.

Project Name:	**Climate Zone #**	**# of Stories**

HERS VERIFICATION SUMMARY *The enforcement agency should pay special attention to the HERS Measures specified in this checklist below. A completed and signed CF-4R Form for all the measures specified shall be submitted to the building inspector before final inspection.*

Duct Sealing & Testing *HERS verification is required for this measure.*

☐ **YES** ☐ **NO** **YES**: In Climate Zones 2 and 9-16, if more than 40 linear feet of new or replacement ducts are installed in unconditioned space, the ducts are to be sealed per §152(b)1Dii and the newly installed ducts are to be insulated per §151(f)10.

☐ **EXCEPTION: Existing duct systems that are extended, which are constructed, insulated or sealed with asbestos.**

☐ **YES** ☐ **NO** **YES**: In Climate Zones 2 and 9-16, if the existing space-conditioning system (HVAC equipment and ducting) is replaced, the ducts are to be sealed per §152(b)1Di.

☐ **YES** ☐ **NO** **YES**: In Climate Zones 2 and 9-16, if the existing HVAC equipment is replaced (including the replacement of the air handler, outdoor condensing unit of a split system, cooling or heating coil, or the furnace heat exchanger) the ducts are to be sealed per §152(b)1E.

☐ **EXCEPTION: Duct systems that are documented to have been previously sealed confirmed through HERS verification in accordance with procedures in the Reference Residential Appendix RA3.**

☐ **EXCEPTION: Duct systems with less than 40 linear feet in unconditioned space.**

☐ **EXCEPTION: Existing duct systems constructed, insulated or sealed with asbestos.**

Refrigerant Charge - Split System *HERS verification is required for this measure.*

☐ **YES** ☐ **NO** **YES**: In Climate Zones 2 and 8-15, when the existing HVAC equipment is replaced (including the replacement of the air handler, outdoor condensing unit of a split system A/C or heat pump, cooling or heating coil, or the furnace heat exchanger) a refrigerant charge measurement shall be verified per §152(b)1F.

Central Fan Integrated (CFI) Ventilation System and Fan Watt Draw

The ventilation requirements of §150(o) do not apply to existing residential homes.

Ducted Split Systems - Air Conditioners and Heat Pumps: Airflow *HERS verification is required for this measure.*

☐ **YES** ☐ **NO** **YES**: In Climate Zones 10 through 15, when the existing space-conditioning system (HVAC equipment and ducting) is replaced, the airflow and fan watt draw shall be verified per §152(b)1Ci to meet the requirements of §151(f)7B.

Documentation Author's Declaration Statement

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

Name:	Signature:
Company:	Date:
Address:	If Applicable ☐ CEA or ☐ CEPE (Certification #):
City/State/Zip:	Phone:

Responsible Building Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
- I certify that the energy features and performance specifications for the building design identified on this Certificate of Compliance conform to the requirements of Title 24, Parts 1 and 6 of the California Code of Regulations.
- The building design features identified on this Certificate of Compliance are consistent with the information provided to document this building design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

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

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

Registration Number: _____ *Registration Date/Time:* _____ *HERS Provider:* _____

INSTALLATION CERTIFICATE		CF-6R-MECH-01
Domestic Hot Water (DHW)		**(Page 1 of 2)**
Site Address:	**Enforcement Agency:**	**Permit Number:**

1. WATER HEATING SYSTEMS:

Heater Type	CEC Certified Mfr Name & Model Number	Distribution Type (Std, Point-of-Use, etc)	If Recirculation, Control Type	# of Identical Systems	Rated Input (kW or Btu/hr)[1]	Tank Volume (gallons)	Efficiency (EF, RE)[1]	Standby Loss (%)[1]

*Note 1: For **small gas storage** (rated input less than or equal to 75,000 Btu/hr), **electric resistance** and **heat pump water heaters**, list Energy Factor (EF). For **large gas storage water heaters** (rated input of greater than 75,000 Btu/hr), list Recovery Efficiency (RE), Thermal Efficiency, Standby Loss and Rated Input. For **instantaneous gas water heaters**, list the Thermal Efficiency and Rated Input.*

2. Mandatory Measures

TO COMPLY - ALL BOXES MUST BE CHECKED

☐ §110-§113: Water heaters, showerhead and faucets are certified by the California Energy Commission.

§150(j): Water System Pipe and Tank Insulation. And Cooling Line Insulation

1. Storage tank insulation

☐ A. Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater; and

☐ B. Unfired storage tanks or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.

2. Water piping and cooling system line insulation thickness and conductivity

☐ First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B; and

☐ Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

☐ Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

☐ §151(f)8D: If indicated on the CF-1R, all hot water piping that runs from the hot water source to the kitchen fixtures is insulated per Standards Table 150-B.

3. Central Water Heating in Buildings with Multiple Dwelling Units (required for prescriptive)

TO COMPLY - ALL BOXES MUST BE CHECKED

- ☐ All hot water piping in main circulating loop is insulated to requirements of §150(j)
- ☐ Central hot water systems serving six or fewer dwelling units which have (1) less than 25' of distribution piping outdoors; (2) zero distribution piping underground; (3) no recirculation pump; and (4) insulation on distribution piping that meets the requirements of Section 150(j)
- ☐ Central hot water systems serving more than 6 dwelling units - presence of either a time control or a time/temperature control

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction (responsible person).
- I certify that the installed features, materials, components, or manufactured devices identified on this certificate (the installation) conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency.
- I reviewed a copy of the Certificate of Compliance (CF-1R) form approved by the enforcement agency that identifies the specific requirements for the installation. I certify that the requirements detailed on the CF-1R that apply to the installation have been met.
- **I will ensure that a completed, signed copy of this Installation Certificate shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Installation Certificate is required to be included with the documentation the builder provides to the building owner at occupancy.**

Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:		Responsible Person's Signature:
CSLB License:	Date Signed:	Position With Company (Title):

INSTALLATION CERTIFICATE		CF-6R-MECH-02
Solar Domestic Hot Water Systems (SDHW)		**(Page 1 of 1)**
Site Address:	**Enforcement Agency:**	**Permit Number:**

SOLAR HOT WATER HEATING SYSTEMS:

SRCC Certified Mfr Name & Model Number	Net Solar Fraction (from attached CEC F-Chart)	# of Collectors in System	Collector Size	Solar Tank Volume (gallons)

☐ §150(j)1B: Backup storage tanks for solar water-heating systems have R-12 external insulation or R-16 internal insulation where the internal insulation R-value indicated on the exterior of the tank.

☐ §150(j)2A: All solar piping shall be insulated.

☐ §150(j)4: Solar water-heating system and/or/collectors are certified by the Solar Rating and Certification Corporation.

☐ Solar water-heating systems storage is no less than the value used in the attached solar calculation sheet,

☐ Solar water-heating systems shall be installed at a slope equal to a pitch between 2-12 to 6-12.

☐ A solar water-heating system is installed at an orientation equal to value used in the attached solar calculation sheet, or within 45 degrees of true south.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction (responsible person).
- I certify that the installed features, materials, components, or manufactured devices identified on this certificate (the installation) conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency.
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Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:		Responsible Person's Signature:
CSLB License:	Date Signed:	Position With Company (Title):