Public Works
Building Inspection
311 Vernon Street
Roseville, California 95678-2649
916.774.5332 fax 916.774.5394

ENERGY FORM
FOR RESIDENTIAL ADDITIONS
EQUAL OR LESS THAN 1000 SQ.FT
Prescriptive Compliance Package D

(Include CF-1R ADD)

PROJECT ADDRESS:_____

EXISTING SQ.FT._____ **ADDITION SQ.FT.**_____

Permit Number BD:_____

INSULATION MINIMUMS:

- R-38 Ceiling/roof
- R-13 Walls
- R-19 Raised floor
- Radiant barrier required in addition's attic

GLAZING:

- Maximum 20% of new conditioned floor area (CFA) including 5% on the west facing area plus existing area removed
- Maximum 5% of the new conditioned floor area (CFA) on the West facing area
- Dual pane with a maximum 0.40 U-factor
- Solar heat gain coefficient (SHGC) 0.40 maximum

ROOFING PRODUCTS:

- Low sloped (less than or equal to 2:12 pitch) : No requirements
- Steep sloped (greater than 2:12 pitch**).** *

Steep sloped	Aged solar reflectance	Thermal Emittance
Less than 5 lb/sq.ft	0.20	0.75
Equal or greater than 5 lb/sq.ft	0.15	0.75

LIGHTING:

- BATHROOM, GARAGE, LAUNDRY ROOMS, UTILITY ROOMS AND CLOSETS: Must be all high efficacy or controlled by a manual-on occupancy sensor. Closets less than 70 sq.ft are exempt.
- KITCHEN: Minimum 50% of total rated wattage must be high efficacy. Allowed additional kitchen lighting up to 50 watts for dwelling units less than 2,500 sq.ft or 100 watts for dwelling units larger than 2,500 sq.ft when all lighting in the kitchen are controlled by a manual-on occupancy sensor or a dimmer, and all permanently installed lighting in the garages, laundry rooms, closets and utility rooms to be high efficacy and controlled by a manual-on occupant sensor.******
- OTHER ROOMS: Must be all high efficacy or controlled by a Manual-on occupancy sensor or dimmer switch.
- OUTDOOR LIGHTING: Mounted to the building on the same lot to be high efficacy or controlled by a motion sensor not having an override or by pass switch that disables the motion sensor, in combination with one of the following methods: Photocontrol, astronomical time clock or energy management control systems (EMCS).
- All low efficacy to be separately switched from high efficacy lighting

SMALL WATER HEATERS:

- Gas storage water heater less than or equal to 75,000 Btu/hr to have an efficiency (EF) equal or greater than the following formula {0.67-(0.0019 X V)} where V is tank volume (gal).

- Gas instantaneous water heater less than or equal to 200,000 Btu/hr to have an efficiency (EF) equal or greater than the following formula {0.62-(0.0019 X V)} where V is tank volume (gal).
- Electric storage water heater less than or equal to 12KW to have an efficiency (EF) equal or greater than the following formula {0.97-(0.00132 X V)}. Only applicable if no gas is available to the home.
- Electric instantaneous water heater less than or equal to 12 KW to have an efficiency (EF) equal or greater than the following formula {0.93-(0.00132 X V)}. Only applicable if no gas is available to the home.

NEW HVAC OR REPLACEMENT OR ALTERED SPLIT SYSTEMS:

- Duct sealing verified by HERS rater. Minimum duct insulation R-6.
- Split system air conditioner & heat pumps: Refrigerant charge measurement verified by a HERS rater. As an alternative a charge indicator display can be installed.
- Central forced air handlers: Cooling airflow and fan watt draw and saturation temperature sensors to be verified by a HERS rater.

* Exceptions for cool roof requirements for additions:

1. Roof covered by building integrated photovoltaic panels & building integrated solar thermal panels; or
2. Roof construction that have a thermal mass over the roof membrane with a weight of at least 25 lb/ft2; or
3. Building can show compliance using performance approach.

Exceptions for cool roof requirements for alterations:

4. Building with no ducts in the attic; or
5. Building with a radiant barrier in the attic meeting the requirements of sec.151 (f) 2; or
6. Building with at least R-30 ceiling insulation; or
7. R-3 or greater roof deck insulation above vented attic; or
8. Existing ducts in the attic are insulated and sealed according to sec.151 (f) 10; or
9. Insulation with a thermal resistance of at least 0.85 hr.ft2.°F/Btu or at least ¾ inch air-space is added to the roof deck over an attic; or
10. Roof covered by building integrated photovoltaic panels & building integrated solar thermal panels and
11. Existing roof areas that have a thermal mass over the roof membrane with a weight of at least 25 lb/ft2; or
12. Building can show compliance using performance approach.

** lighting internal to cabinets shall use no more than 20 Watts per linear foot of illuminated cabinet and should not be considered in the 50% of the permanently installed lighting in the kitchen.

THE ADDITION MUST ALSO COMPLY WITH ALL CALIFORNIA ENERGY COMMISSION MANDATORY MEASURES.

PRINT OWNER'S NAME:_____

OWNER'S SIGNATURE:_____**Date:**_____

Prescriptive Certificate of Compliance:		**CF-1R ADD**
Residential *Additions*		**(Page 1 of 5)**
Site Address:	**Enforcement Agency:**	**Date:**

General Information		
Project Name	Climate Zone #	# of Stories
Building Type ☐ Single Family ☐ Multi Family	Circle the Front Orientation: N, E, S, W or Degrees _____	
Conditioned Floor Area of Addition (CFA):	**New Addition Size:** ☐ Less than or equal to 100 ft^2 ☐ Less than or equal to 1000 ft^2 *(Do not use this form for additions greater than 1000 ft^2)*	

NOTE: For Alterations to an existing home, submit a completed CF-1R-ALT Form.
Exception: Existing HVAC systems that are replaced or altered to serve the addition may be included on the CF-1R -ADD Form.

Prescriptive Envelope Requirements for Additions

Option 1: Use Option 1 for standard wood and assemblies meeting the **Cavity R-value only**. For all other use Option 2.

- *For 100 ft^2 additions; the Proposed values must be equal or greater than the Standard column or when indicated when using Package D, "Pkg D". Enter all values in the Proposed Columns.*
- *For less than 1,000 ft^2 additions must comply with "Pkg D" requirements unless indicated in the Standard Column. To meet "Pkg D" minimum energy compliance requirements, see RCM Appendix B, Table 151-C. Or §151(b) in the RCM. Enter all values in the Proposed Columns.*

Size of Addition	**100 ft^2 or less**					**Less than 1,000 ft^2**				
Component	**Standard**		**Proposed**		**Comment**	**Standard**		**Proposed**		**Comment**
Ceiling Insulation	R-19				Minimum	Pkg D				Table 151-C
Wall Insulation	R-13				Minimum	R-13				Minimum
Floor Insulation	R-13				Minimum	Pkg D				Table 151-C
Fenestration	**U-factor**	**SHGC**	**U-factor**	**SHGC**	Enter Proposed values then **Skip Over** *To Roofing Products* Below	**U-factor**	**SHGC**	**U-factor**	**SHGC**	**Fill out** *Fenestration Proposed Areas* Below
	0.40	Pkg D				0.40	Pkg D			
Maximum Glazing Area	50 ft^2		ft^2			**Package D (20% of CFA) + Glass Removed**		ft^2		**Fill out** *Additional Allowed Fenestration Areas* Below
Radiant Barrier	N/A					Pkg D		Table 151-C		
Roofing	Pkg D		See Roofing Products Below			Pkg D		See Roofing Products Below		

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- C 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.*

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

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

1. Indicate the Mass Thickness from Reference Joint Appendix JA.
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 Table number that closely resembles the proposed assembly.
4. Enter the row and column of the U-factor value.
5. Enter the Effective R-value listed in the JA4 Table Number.
6. The Final Assembly is calculated by using Equation 4-1 or Equation 4-4 of the Reference Joint Appendix JA4. Enter the value in Column L.
7. Insert the Final Assembly U-factor value back on to the Opaque Surface Details table in Column J.

FENESTRATION PROPOSED AREAS

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 Values[5]
	Total				

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 ADD 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 CEC "Default" values found in Table 116-A or B.

ADDITION ALLOWED FENESTRATION AREAS

	A	B	C	D	E		F
	CFA of Addition ft^2	Allowed % of CFA	Allowed Area (A x B)	Area Removed[2] ft^2	Total Area Allowed (C + D)		Proposed Area[3, 4] (Table Above)
Total Fenestration Area						≥	
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.

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

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

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

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

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 _____

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 Pages 3 and 4 of the CF-1R-ADD 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 Pages 3 and 4 of the CF-1R-ADD 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 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.

Radiant Barrier (Roof) ☐ **YES** ☐ **NO**
YES: Required in Climate Zones 2, 4, and 8-15 for additions larger than 100 ft^2.

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

Heated Slab Insulation ☐ **YES** ☐ **NO**
YES: Slab edge insulation required for 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, and in Climate Zones 12 & 15 R-4 insulation is required under Component Package D.

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

Site Address:	Enforcement Agency:	Date:

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 all Climate Zones, if a new space-conditioning system (HVAC equipment and ducting) is installed to serve the addition alone, the ducts are to be sealed and tested per §151(f)10.

☐ 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 to serve the addition, the ducts are to be sealed and tested per §152(b)1D.

☐ **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 HVAC equipment is replaced (including replacement of the air handler, outdoor condensing unit of a split system, cooling or heating coil, or the furnace heat exchanger) and will serve the addition, the ducts are to be sealed and tested 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, if a newly ducted split A/C or heat pump is installed to serve the addition alone, a refrigerant charge measurement shall be verified per §151(f)7A.

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

Central Fan Integrated Ventilation System – Airflow and Fan Watt Draw - do not apply for additions 1,000 ft^2 or less.

Ducted Split Systems - Air Conditioners and Heat Pumps: Airflow and Fan Watt Draw *HERS verification is required.*

☐ YES ☐ NO **YES**: In Climate Zones 10 through 15, if a new space-conditioning system (HVAC equipment and ducting) is installed to serve the addition alone, the airflow and fan watt draw shall be verified per §151(f)7B.

☐ YES ☐ NO **YES**: In Climate Zones 10 through 15, if the existing space-conditioning system (HVAC equipment and ducting) is replaced and will serve the addition, the airflow and fan watt draw shall be verified per §152(b)1F.

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:* _____