ENERGY FORM
FOR NEW RESIDENTIAL BUILDINGS
Prescriptive Compliance Package D
(Include CF-1R)

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

Project Address_____

Existing SQ.FT._____ **ADDITION SQ.FT.**_____

Permit number: BD-_____

INSULATION MINIMUMS:

- R-38 Ceiling/Roof
- R-19 Walls
- R-19 Raised floor
- Radiant barrier required in attic

GLAZING:

- Maximum 20% of the conditioned floor area (CFA) including west facing fenestration
- Maximum 5% of conditioned floor area (CFA) on 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 unit 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.

INDOOR AIR QUALITY & MECHANICAL VENTILATION (New Mandatory measure)

All new residential buildings must meet the requirements of ANSI/ASHRAE Standards 62.2 for indoor air quality and Mechanical ventilation. Two mechanical ventilation requirements to meet:

- Local Exhaust Ventilation: For bathroom and kitchen
- Whole-Building Ventilation

ASHRAE Standards 62.2 provides a couple of approaches to meet these requirements.

*Exceptions for cool roof requirements for newly constructed Buildings:

- Roofing area with integrated photovoltaic panels and integrated solar thermal panels.
- Roof constructions that have a thermal mass over the roof membrane with a weight of at least 25lb/ft2.

** 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: Residential		CF-1R
Newly Constructed Buildings and Additions Greater Than 1,000 ft²		(Page 1 of 5)
Project Name:	**Climate Zone #**	**# of Stories**

General Information		
Site Address:	**Enforcement Agency:**	**Date:**
Building Type ☐ Single Family ☐ Multi Family	Conditioned Floor Area[1] (CFA):	
Circle the Front Orientation: N, E, S, W, or Degrees_____	Project Type: ☐ New Building Construction ☐ New Addition[1] greater than 1,000 ft² *1. Additions greater than 1,000 ft² must comply with Component Package D.*	
Component Package: (Check one) C _____ D _____ E (_____ E Alternative) in Climate zone 1 and 16 only. See footnotes to Table 151-D for alternative optional requirements.		

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

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.*

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

FENESTRATION: PROPOSED AREAS

Fenestration Type and Frame (Window, Glass Door or Skylight)	Orientation (North, East, South, West)	Proposed Area[1] (ft^2)	Maximum Allowed U-factor[2, 3]	Maximum Allowed 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" "frame" around the glass.*
2. *Enter value from Component Package Requirements from either Table 151-B, 151-C, or 151-D.*
3. *Actual fenestration efficiencies installed shall be indicated on the installation form, CF-6R-ENV. The efficiencies should be equivalent to or less than that listed on the CF-1R Form Page 1. Otherwise, revise the CF-1R and resubmit for plan check review.*
4. *Submit a completed WS-3R Form if a reduced SHGC is calculated with exterior shading or overhangs.*
5. *If applicable at this stage enter "NFRC" Certified windows or are CEC "Default" values found in Table 116-A or B.*

FENESTRATION PROPOSED AREA CALCULATION

	CFA ft^2	**Allowed %** of CFA	**Allowed Area** (CFA x Allowed %)	**Total Proposed Area** (From Table Above)
Total Fenestration Area[1]				
West Fenestration Area[2] (Required only in Climate Zones 2, 4 & 7 -15)		.05		
		Total Area[3]		≥

1. *For Component Package C, see Table 151-B for Climate Zone Maximum Total Area Allowance. Enter 20% for all other Component Packages.*
2. *The Proposed West Fenestration Area includes west-sloping skylights and any skylights with a pitch less than 1:12.*
3. *To meet energy compliance the Total Proposed Area must be less than or equal to the Allowed Area.*

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

Check applicable box below if the newly installed roof is exempted 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.

☐ 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/ft².

Other Exceptions

☐ 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/ft² 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/ft²	Product Weight ≥ 5lb/ft²	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, Hydronic, 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 Form for additional requirements and check applicable boxes.

4. Indicate Type or Location (Ducts, Hydronic in Floor, Radiators, etc.)

Project Name:	Climate Zone #	# of Stories

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 Type (A/C, Heat pump, Evaporative Cooling, etc)
2. Refer to the HERS Verification section on Pages 3 and 4 of the CF-1R 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 use recirculation pumps. 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 in Component Packages C, D and E.

Slab Edge (Perimeter) Insulation ☐ **YES** ☐ **NO**
YES: In all Climate Zones using Component Package C, and in Climate Zone 16 under Component Packages D and E, R-7 insulation is required.

Heated Slab Insulation ☐ **YES** ☐ **NO**
YES: Slab edge insulation required for heated slabs in all Component Packages 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 Packages D and E. Raised slab insulation is not required in Component Package C.

Thermal Mass ☐ **YES** ☐ **NO**
YES: In Component Package C for all Climate Zones, a Minimum Interior Mass Capacity (IMC) must be achieved per Table 151-A of the standards. If Yes, submit a completed WS-1R Form.

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 ☐ YES ☐ NO

YES: New ducted systems are to be sealed and duct leakage shall be less than 6% **per** §151(f)10 in all Component Packages in all Climate Zones.
HERS verification is required for this measure.

Refrigerant Charge - Split System ☐ YES ☐ NO

YES: In Climate Zones 2 and 8-15 in all Component Packages, when a newly ducted split A/C or heat pump is installed, a refrigerant charge measurement shall be verified per §151(f)7A.
HERS verification is required for this measure.

Central Forced Air Handlers: Integrated Ventilation System Watt Draw ☐ YES ☐ NO

YES: In all Component Packages and in all Climate Zones, when a central fan integrated ventilation system is installed to meet the ventilation requirements of §150(o), the central forced air system fans must draw less than 0.58 watts per CFM per §151(f)11.
HERS verification is required for this measure.

Ducted Split Central Air Conditioners and Heat Pumps: Airflow and Watt Draw ☐ YES ☐ NO

YES: In all Component Packages in Climate Zones 10 through 15, when a newly ducted split A/C or heat pump system is installed, the airflow and fan watt draw shall be verified per §151(f)7B.
HERS verification is required for this measure.

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.