

**Prescriptive Residential Alterations That Do Not Require HERS Field Verification**

CEC-CF1R-ALT-05-E (Revised 01/20)

CALIFORNIA ENERGY COMMISSION



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|---|----------------|----------------------|
| <b>CERTIFICATE OF COMPLIANCE</b>  |                | <b>CF1R-ALT-05-E</b> |
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| Project Name:   | Date Prepared: |                      |

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

*Alterations to Space Conditioning Systems that are exempt from HERS verification requirements may use the CF1R-ALT-05 and CF2R-ALT-05 Compliance Documents. Possible exemptions from duct leakage testing include: less than 40 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 a HERS Rater. If space conditioning systems are altered and are not exempt from HERS verification, then a CF1R-ALT-02 must be completed and registered with a HERS Provider Data Registry.*

*Alterations that utilize close 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 a HERS 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.*

| <b>A. General Information</b>  |                   |  |    |  |  |
|--|-------------------|--|----|--|--|
| 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 <sup>2</sup> ): |  |
| 11   | Building Type:    |  | 12 | Slab Area (ft <sup>2</sup> )                     |  |
| <b>13 Project Scope (Select all that apply):</b><br><div style="display: flex; flex-wrap: wrap; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> B. Insulation         </div> <div style="width: 45%;"> <input type="checkbox"/> D. &amp; E. Fenestration/Glazing - ADD         </div> <div style="width: 45%;"> <input checked="" type="checkbox"/> G. Space Conditioning System (Heating, Cooling, Duct system)         </div> <div style="width: 45%;"> <input type="checkbox"/> Lighting         </div> <div style="width: 45%;"> <input type="checkbox"/> C. Roof Replacement         </div> <div style="width: 45%;"> <input type="checkbox"/> D. &amp; F. Fenestration/Glazing - REPLACE         </div> <div style="width: 45%;"> <input type="checkbox"/> H. Water Heating System         </div> <div style="width: 45%;"> <input checked="" type="checkbox"/> Include Mandatory Measures?         </div> </div> |                   |  |    |  |  |

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

Alterations to Space Conditioning Systems shall be exempt from HERS verification 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 HERS verification, then a CF1R-ADD-01 shall be completed and registered with a HERS Provider Data Registry. In each row below for each dwelling unit in the building, check the box that indicates the exemption from HERS verification compliance:

- ☐ a: space conditioning system was not altered;
- ☐ b: less than 40 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 a HERS Rater.

| 01                 | 02                               | 03                                | 04  |
|--------------------|----------------------------------|-----------------------------------|---|
| Dwelling Unit Name | SC System Identification or Name | SC System Location or Area Served | Exemption from HERS Verification  |
|                    |                                  |                                   | a. <input type="checkbox"/> b. <input type="checkbox"/> c. <input type="checkbox"/> d. <input type="checkbox"/> |

|         |            |
|---------|------------|
| Add Row | Delete Row |
|---------|------------|

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|  |   |
|--|---|
| <b>DOCUMENTATION AUTHOR'S DECLARATION STATEMENT</b>  |   |
| 1. I certify that this Certificate of Compliance documentation is accurate and complete.   |   |
| Documentation Author Name:   | Documentation Author Signature:                         |
| Company:   | Signature Date:   |
| Address:   | CEA/ HERS Certification Identification (if applicable): |
| City/State/Zip:  | Phone:  |
| <b>RESPONSIBLE PERSON'S DECLARATION STATEMENT</b>  |   |
| I certify the following under penalty of perjury, under the laws of the State of California:   |   |
| <ol style="list-style-type: none"> <li>1. The information provided on this Certificate of Compliance is true and correct.</li> <li>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).</li> <li>3. That 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.</li> <li>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.</li> <li>5. I will ensure that a registered copy of this Certificate of Compliance shall be 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 registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.</li> </ol> |   |
| 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.**

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**Building Envelope Measures:**

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| § 110.6(a)1: | <b>Air Leakage.</b> Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 cfm/ft <sup>2</sup> or less when tested per NFRC-400 or ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.   |
| § 110.6(a)5: | <b>Labeling.</b> Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).  |
| § 110.6(b):  | <b>Field fabricated exterior doors and fenestration</b> products must use U-factors and solar heat gain coefficient (SHGC) values from TABLES 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather stripped.  |
| § 110.7:     | <b>Air Leakage.</b> All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.   |
| § 110.8(a):  | <b>Insulation Certification by Manufacturers.</b> Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).  |
| § 110.8(g):  | <b>Insulation Requirements for Heated Slab Floors.</b> Heated slab floors must be insulated per the requirements of § 110.8(g).   |
| § 110.8(i):  | <b>Roofing Products Solar Reflectance and Thermal Emittance.</b> The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R.   |
| § 110.8(j):  | <b>Radiant Barrier.</b> A radiant barrier must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.  |
| § 150.0(a):  | <b>Ceiling and Rafter Roof Insulation.</b> Minimum R-22 insulation in wood-frame ceiling; or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling. |
| § 150.0(b):  | <b>Loose-fill Insulation.</b> Loose fill insulation must meet the manufacturer's required density for the labeled R-value.  |
| § 150.0(c):  | <b>Wall Insulation.</b> Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. (R-19 in 2x6 or U-factor of 0.074 or less). Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102, equivalent to an installed value of R-13 in a wood framed assembly. Masonry walls must meet TABLE 150.1-A or B.   |
| § 150.0(d):  | <b>Raised-floor Insulation.</b> Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.  |
| § 150.0(f):  | <b>Slab Edge Insulation.</b> Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3%; have a water vapor permeance no greater than 2.0 perm/inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).   |
| § 150.0(g)1: | <b>Vapor Retarder.</b> In Climate Zones 1-16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d).  |
| § 150.0(g)2: | <b>Vapor Retarder.</b> In Climate Zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.  |
| § 150.0(q):  | <b>Fenestration Products.</b> Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.   |

**Fireplaces, Decorative Gas Appliances, and Gas Log Measures:**

|              |  |
|--------------|--|
| § 150.0(e):  | <b>Pilot Light.</b> 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.   |
| § 150.0(e)1: | <b>Closable Doors.</b> Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.  |
| § 150.0(e)2: | <b>Combustion Intake.</b> Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device. |
| § 150.0(e)3: | <b>Flue Damper.</b> Masonry or factory-built fireplaces must have a flue damper with a readily accessible control  |

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| <b>Space Conditioning, Ducts, and Fans Measures:</b> |   |
| § 110.0-§ 110.3:                                     | <b>Certification.</b> Heating, ventilation and air conditioning (HVAC) equipment must be certified by the manufacturer to the Energy Commission.  |
| § 110.2(a):  | <b>HVAC Efficiency.</b> Equipment must meet the applicable efficiency requirements in TABLE 110.2-A through TABLE 110.2-K.  |
| § 110.2(b):  | <b>Controls for Heat Pumps with Supplementary Electric Resistance Heaters.</b> Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.   |
| § 110.2(c):  | <b>Thermostats.</b> All unitary heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.  |
| § 110.8(d)3:   | <b>Ducts.</b> Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.   |
| § 150.0(h)1:   | <b>Building Cooling and Heating Loads.</b> Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.  |
| § 150.0(h)3A:  | <b>Clearances.</b> Air conditioner and heat pump outdoor condensing units must have a clearance of at least 5 feet from the outlet of any dryer vent.   |
| § 150.0(h)3B:  | <b>Liquid Line Drier.</b> Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.  |
| § 150.0(m)1:   | <b>CMC Compliance.</b> All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must 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 ¼ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area. |
| § 150.0(m)2:   | <b>Factory-Fabricated Duct Systems.</b> Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.  |
| § 150.0(m)3:   | <b>Field-Fabricated Duct Systems.</b> Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.  |
| § 150.0(m)7:   | <b>Backdraft Dampers.</b> All fan systems that exchange air between the conditioned space and the outside of the building must have backdraft or automatic dampers.   |
| § 150.0(m)8:   | <b>Gravity Ventilation Dampers.</b> Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.   |
| § 150.0(m)9:   | <b>Protection of Insulation.</b> Insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.   |
| § 150.0(m)10:  | <b>Porous Inner Core Flex Duct.</b> Porous inner core flex duct must have a non-porous layer between the inner core and outer vapor barrier.  |
| § 150.0(m)11:  | <b>Duct System Sealing and Leakage Test.</b> When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3.  |
| § 150.0(m)12:  | <b>Air Filtration.</b> Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a 2 inch depth or can be 1 inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.   |

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| § 150.0(m)13: | <b>Space Conditioning System Airflow Rate and Fan Efficacy.</b> Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe (HSPP), or a permanently installed static pressure probe (PSPP) in the supply plenum. Airflow must be $\geq 350$ CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy $\leq 0.45$ W/CFM for gas furnace air handlers and $\leq 0.58$ W/CFM for all others. Small duct high velocity systems must provide an airflow $\geq 250$ CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy $\leq 0.62$ W/CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3. |
|---------------|--|