

**DOCKETED**

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CERTIFICATE OF COMPLIANCE	CF1R-ALT-02-E
Alterations to Space Conditioning Systems	
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Project Name:	Date Prepared:

<b>A. General Information</b>			
CF1R-ALT-02 is applicable to multiple space conditioning systems contained within a single dwelling unit. When multiple dwelling units must be documented, use one CF1R-ALT-02 document for each dwelling unit.			
01	Project Name:	02	Date Prepared:
03	Project Location:	04	Building Type:
05	CA City:	06	Dwelling Unit Name:
07	Zip Code:	08	Dwelling Unit CFA (ft <sup>2</sup> ):
09	Climate Zone:	10	Number of Space Conditioning (SC) Systems in this Dwelling Unit:

B. Space Conditioning (SC) System Information									
01	02	03	04	05	06	07	08	09	10
SC System Identification or Name	SC System Location or Area Served	CFA served by this SC System (ft <sup>2</sup> ):	Is the SC system a ducted system?	Installing a refrigerant containing component?	Installing new SC System components?	Installing more than 40 feet of ducts?	Installing entirely new duct system?	Installing entirely new SC system?	Alteration Type:

C. Extension of Existing Duct System, Greater Than 40 Feet (Section 150.2(b)1Diib)	
01	02
System Identification or Name	New Duct R-Value
<p><b>Required Documentation:</b></p> <p>CF2R-MCH-01-E - Space Conditioning Systems</p> <p>-Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ 1-10, 12 &amp; 13) and R-8 (CZ 11 &amp; 14-16)</p> <p>CF2R &amp; CF3R-MCH-20-H – Duct Leakage Test</p> <p>-Leakage rate compliance: ≤ 15%, or ≤ 10% leakage to outside, or seal all accessible leaks</p> <p><b>Exceptions:</b></p> <p>Existing duct systems constructed, insulated or sealed with asbestos are exempt from MCH-20 duct leakage testing requirements</p>	



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D. Altered Space Conditioning System (Sections 150.2(b)1E and F)											
01	02	03	04	05	06	07	08	09	10	11	12
System Identification or Name	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Components	Cooling Efficiency Type	Cooling Minimum Efficiency Value	Required Thermostat Type	New or Replaced Duct Length	New Duct R-Value

**Required Documentation:**

CF2R-MCH-01-E - Space Conditioning Systems

- Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ 1-10, 12 & 13) and R-8 (CZ 11 & 14-16)
- CF2R & CF3R-MCH-20-H – Duct Leakage Test required when heating or cooling components are installed in ducted systems, or when more than 40 ft of duct length is replaced.
- Leakage rate compliance:  $\leq 15\%$ , or  $\leq 10\%$  leakage to outside, or seal all accessible leaks.
- CF2R & CF3R-MCH-25-H Refrigerant Charge required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).
- CF2R & CF3R-MCH-23 Airflow Rate  $\geq 300$  CFM/ton required when MCH-25 is required.

**Exceptions:**

- Duct systems registered with HERS provider as previously sealed are exempt from MCH-20 Duct Leakage Testing requirements.
- Heating-only systems and Air Handler/Furnace changes do not require verification of Air Flow MCH-23, or Refrigerant Charge MCH-25.
- Existing duct systems constructed, insulated or sealed with asbestos are exempt from MCH-20 Duct Leakage Testing requirements.



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E. Entirely New or Complete Replacement Duct System, with or without Equipment Changeout (Sections 150.2(b)1Diia and 150.2(b)1E, F)										
01	02	03	04	05	06	07	08	09	10	11
System Identification or Name	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Components	Cooling Efficiency Type	Cooling Minimum Efficiency Value	Required Thermostat Type	New Duct R-Value

**Required Documentation:**  
 CF2R-MCH-01-E - Space Conditioning Systems  
 -Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ 1-10, 12 & 13) and R-8 (CZ 11 & 14-16)  
 CF2R & CF3R-MCH-20-H Duct Leakage Test required.  
 -Leakage rate compliance:  $\leq 5\%$ .  
 CF2R & CF3R-MCH-22 Fan Efficacy  
 CF2R & CF3R-MCH-23 Airflow Rate  
 -Compliance: Fan Efficacy  $\leq 0.58$  W/cfm and System Airflow  $\geq 350$  cfm/ton.  
 -Alternative Compliance: CF2R & CF3R-MCH-28 Return Duct Design is an alternative to MCH-22 and MCH-23 verification.  
 CF2R & CF3R-MCH-25-H Refrigerant Charge required when refrigerant containing components are installed or altered (applicable in CZ 2, 8-15).

**Exceptions:**  
 Heating-only systems are exempt from the 0.58 W/cfm and 350 cfm/ton requirements.

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



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F. Entirely New or Complete Replacement Space Conditioning System (Section 150.2(b)1C)										
01	02	03	04	05	06	07	08	09	10	11
System Identification or Name	Heating System Type	Altered Heating Component	Heating Efficiency Type	Heating Minimum Efficiency Value	Cooling System Type	Altered Cooling Components	Cooling Efficiency Type	Cooling Minimum Efficiency Value	Required Thermostat Type	New Duct R-Value

**Required Documentation:**

CF2R-MCH-01-E - Space Conditioning Systems

-Duct insulation requirement for the new portions of supply-air and return-air ducts or plenums: R-6 (CZ 1-10, 12 & 13) and R-8 (CZ 11 & 14-16)

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

-Leakage rate compliance:  $\leq 5\%$ .

CF2R & CF3R-MCH-22 Fan Efficacy

CF2R & CF3R-MCH-23 Airflow Rate Verification

-Compliance: Fan Efficacy  $\leq 0.58$  W/cfm and System Airflow  $\geq 350$  cfm/ton.

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

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

**Exceptions:**

Heating-only systems are exempt from the 0.58 W/cfm and 350 cfm/ton requirements.

**Note:**

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



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Project Name:	Date Prepared:	

<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>The information provided on this Certificate of Compliance is true and correct.</li> <li>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>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>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>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:

**CF1R-ALT-02-E User Instructions**

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

Completing these forms will require that you have the 2016 Reference Appendices for the 2016 Building Energy Efficiency Standards.

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

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

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

**A. General Information**

1. Project Name: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter a unique project identifier such as the house number and street name or example: "Jones' Furnace Change out."
2. Date Prepared: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the date of document preparation.
3. Project Location: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the legal street address of property or other applicable identifying information.
4. Building Type: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the building type from the list: Single Family (includes duplex), or Multi-family (a building that shares common walls and common floors or ceilings).
5. CA City: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the legal city/town of property.
6. Dwelling Unit Name: Enter a unique dwelling unit name or any other identifying name that would readily distinguish this dwelling unit from others in this project. Primarily needed for multi-family dwellings. For one-dwelling projects, use project name or another logical identifier.
7. Zip Code: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, enter the 5-digit zip code for the project location (used to determine climate zone).
8. Dwelling Unit CFA (ft<sup>2</sup>): If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. For one-dwelling projects, this field will equal the conditioned floor area (CFA) on that document. For multi-dwelling projects, this field will sum with other dwelling units to equal the total CFA on that document. If this project does not utilize a CF1R-ALT-01 (or CF1R-ADD-01), enter the conditioned floor area in ft<sup>2</sup> of the project. If multiple systems are being affected, a CFA value will be assigned to each system in Section B. Those must sum to this total for the project. For projects NOT involving all systems in the dwelling, this is the CFA of only the portion of the dwelling unit affected.
9. Climate Zone: If the project utilizes a CF1R-ALT-01 (or CF1R-ADD-01), this field will reference the same field on that document for consistency. If not, select the correct climate zone for the project. From Joint Appendix JA2.1.1 of the 2016 Reference Appendices.
10. Number of Space Conditioning (SC) Systems in this Dwelling Unit: Enter the number of space conditioning systems in the dwelling unit.

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

1. SC System Identification or Name: Enter a unique identifier for this system that will readily distinguish it from other systems in the dwelling unit, such as “HVAC1,” “upstairs system,” etc. It is recommended to mark the system with this identifier using a permanent marker for ease of identification in the field. For single-system dwelling units, enter a simple name such as “HVAC.”
2. SC System Location or Area Served: Enter a unique description of the portion of dwelling unit served by this system, such as “entire second floor,” “bedroom wing,” etc. For single-system dwelling units, enter a simple description such as “entire house.”
3. CFA served by this SC System (ft<sup>2</sup>): Enter the CFA served by this system.
4. Is the altered or installed system a ducted system? Select “YES” if the system has a central air handler (package or split) that is connected to one or more supply air outlets via ducting of any shape or material. Select “NO” for nonducted systems such as ductless mini-splits, through-the-wall systems, package terminal air conditioners, etc.
5. Altering or installing a refrigerant containing component? Select “YES” if the project includes installing or replacing a component that contains refrigerant; otherwise select “NO.” Refrigerant containing components include compressors, condensing coils, evaporator coils, refrigerant metering devices or refrigerating lines.
6. Installing new components? Select “YES” if new HVAC components such as a packaged unit, condensing unit, cooling/heating coil, or air-handling unit (e.g. furnace), etc. are being installed in the system; otherwise select “NO.”
7. Installing more than 40 linear feet of new or replacement ducts? Select “YES” if the project involves installing more than 40 linear feet of new or replacement ducts; otherwise select “NO.”
8. Is the entire duct system accessible for sealing and is more than 75% of the duct system new or replaced? Select “YES” when, upon completion of the project, more than 75% of the ducts will be new ducts and/or replaced ducts, AND if at any time during the project all of the ducts are accessible for duct sealing; otherwise select “NO.” “Accessible” is defined in Joint Appendix JA1 of the 2016 Reference Appendices (glossary).
9. Are all of the system’s components and ducts new (entirely new system) or replaced? Select “YES” if the duct system meets the definition of an “Entirely New or Replacement Duct System” and all of the heating and cooling components (furnace, condenser, coil, etc.) are all new or replaced; otherwise select “NO.”
10. Alteration Type: This field is calculated automatically based on the information entered in previous fields. Alteration types are defined in Joint Appendix JA1 of the 2016 Reference Appendices. The alteration type will determine which of the following sections are required by this document.

**C. Extension of Existing Duct System, Greater Than 40 Feet (Section 150.2(b)1Diib)**

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

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

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



6. Cooling System Type: Select the most appropriate cooling system type from the list. If the type of system to be installed does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
7. Altered Cooling Components: User chooses as many as are applicable: Select the most appropriate cooling system components from the list that are being added or replaced as part of this project. You can select multiple choices if needed. If the type of component being altered does not appear on the list, please contact the California Energy Commission Hotline at 800-772-3300.
8. Cooling Efficiency Type: Select the cooling efficiency type from the list that is appropriate to the type of system being altered or installed.
9. Cooling Minimum Efficiency Value: This field is filled automatically based on selections in previous fields. This field represents the minimum efficiency to be installed. The actual installed efficiency may be higher and will be recorded on the Installation Certificate (CF2R). Optional: the user may enter a higher-than-default value for situations where local codes or programs require a higher minimum.
10. Required Thermostat Type: This field is filled automatically based on selections in previous fields. If “setback” appears here, a setback thermostat meeting the minimum requirements of Section 150.0(i) is required to be installed as part of this project.
11. New or Replaced Duct Length: Select the descriptor that describes the amount of duct, at the completion of the project that is added or replaced as part of this project.
12. New Duct R-value: This field is filled automatically based on the entries in previous fields and the climate zone of the project.

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

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

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

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