

**DOCKETED**

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**HERS VERIFIED MULTIFAMILY CENTRAL HOT WATER SYSTEM DISTRIBUTION**



<b>CERTIFICATE OF INSTALLATION</b>		<b>CF2R-PLB-21-H</b>
<b>HERS Verified Multifamily Central Hot Water System Distribution</b>		
(Page 1 of 3)		
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

<b>A. General Information</b>	
01	Building Name

<b>B. Design HERS Verified Central Water Heating Systems Information</b>											
This table reports the water heating system features that were specified on the registered CF1R compliance document for this project.											
01	02	03	04	05	06	07	08	09	10	11	12
Water Heating System ID or Name	Water Heating System Type	Water Heater Type	# of Water Heaters in System	Water Heater Storage Volume (gal)	Fuel Type	Rated Input Type	Rated Input Value	Heating Efficiency Type	Heating Efficiency Value	Standby Loss (%)	Exterior Insul. R-Value

<b>C. Installed HERS Verified Central Water Heating Systems Information</b>											
This table reports the water heating system features that were specified on the registered CF1R compliance document for this project.											
01	02	03	04	05	06	07	08	09	10	11	12
Water Heating System ID or Name	Water Heating System Type	Water Heater Type	# of Water Heaters in System	Water Heater Storage Volume (gal)	Fuel Type	Rated Input Type	Rated Input Value	Heating Efficiency Type	Heating Efficiency Value	Standby Loss (%)	Exterior Insul. R-Value

<b>D. Design HERS Verified Central Water Heating Distribution Systems Information</b>		
This table reports the water heating distribution types specified on the registered CF1R compliance document for this project.		
01	02	03
Water Heating System ID or Name	Central DHW System Distribution Type	Dwelling Unit DHW System Distribution Type

<b>E. Installed HERS Verified Central Water Heating Distribution Systems Information</b>		
This table reports the water heating distribution types specified on the registered CF1R compliance document for this project.		
01	02	03
Water Heating System ID or Name	Central DHW System Distribution Type	Dwelling Unit DHW System Distribution Type

<b>F. Installed HERS Verified Water Heater Manufacturer Information</b>		
01	02	03
Water Heating System ID or Name	Manufacturer	Model Number

<b>G. Mandatory Requirements for All Central Domestic Hot Water Systems</b>	
01	On systems that have a total capacity greater than 167,000 Btu/hr, outlets that require higher than service water temperatures as listed in the ASHRAE Handbook have separate remote heaters, heat exchangers, or boosters to supply the outlet with the higher temperature. (Section 110.3 (c)1)



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02	Systems with circulating pumps or with electrical heat trace systems shall be capable of automatically turning off the system. (Section 110.3(c)2).
03	Unfired storage tanks are insulated with an external R-12 or combination of R-16 internal and external Insulation. (Section 110.3(c)4).
04	<p>Recirculation loops shall meet the following requirements:</p> <ul style="list-style-type: none"> <li>The recirculation pump is mounted on a vertical section of the return line, OR an automatic air release valve is installed on a riser at least 12 inches in length, on the inlet side of the recirculation pump, no more than 4 feet from the pump. (Section 110.3(c) 4A).</li> <li>A check valve is located between the recirculation pump and the water heater. (Section 110.3(c) 4B).</li> <li>A hose bib is installed between the pump and the water heating equipment with an isolation valve between the hose bib and the water heating equipment. (Section 110.3(c) 4C).</li> <li>Isolation valves shall be installed on both sides of the pump, of which the valve required in 110.3(c)4C can be one. (Section 110.3(c)4D).</li> <li>The cold water piping and the recirculation loop piping shall not be connected to the hot water storage tank drain port. (Section 110.3(c)4E).</li> <li>A check valve shall be installed on the cold water supply line between the hot water system and the next closest tee on the cold water supply line. (Section 110.3(c) 4F).</li> </ul>
05	Instantaneous water heaters with an input greater than 6.8 kBTU/hr. (2kW) shall have isolation valves on both the cold water supply and the hot water line. (110.3 (c) 6).
06	<p>All domestic hot water piping shall be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions shall have a minimum insulation wall thickness of 1 inch or a minimum insulation R-value of 7.7 (RA4.4.1)</p> <ul style="list-style-type: none"> <li>The first 5 feet (1.5 meters) of cold water pipes from the storage tank.</li> <li>All piping with a nominal diameter of 3/4 inch (19 millimeter) and less than 1 inch.</li> <li>All hot water piping from the heating source to the kitchen fixtures.</li> <li>Piping from the heating source to storage tank or between tanks.</li> <li>All piping associated with a recirculation system</li> <li>All underground piping.</li> </ul> <ul style="list-style-type: none"> <li>Insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.</li> <li>Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration. Piping that penetrates metal framing shall use grommets, plugs, wrapping or other insulating material to assure that no contact is made with the metal framing. Insulation shall butt securely against all framing members.</li> <li>Piping installed in interior or exterior walls that is surrounded on all sides by at least 1 inch (5 cm) of insulation.</li> <li>Piping installed in crawlspace with a minimum of 1 inches (5 cm) of crawlspace insulation above and below.</li> <li>Piping installed in attics with a minimum of 4 inches (10 cm) of attic insulation on top.</li> <li>Pipe insulation shall fit tightly and all elbows and tees shall be fully insulated.</li> </ul>
<b>The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.</b>	

<b>H. HERS-Verified Multiple Recirculation Loops for DHW Systems Serving Multiple Dwelling Units Requirements</b>	
All distribution systems listed on this compliance document shall comply with these requirements.	
01	All buildings with 8 or more dwelling units have a <b>minimum</b> of 2 recirculation loops.
02	Each loop roughly serves the same number of dwellings.
<b>The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.</b>	

**HERS VERIFIED MULTIFAMILY CENTRAL HOT WATER SYSTEM DISTRIBUTION**

CEC-CF2R-PLB-21-H (Revised 01/19)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF INSTALLATION		CF2R-PLB-21-H
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Project Name:	Enforcement Agency:	Permit Number:
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<b>DOCUMENTATION AUTHOR'S DECLARATION STATEMENT</b>		
1. I certify that this Certificate of Installation documentation is accurate and complete.		
Documentation Author Name:	Documentation Author Signature:	
Documentation Author Company Name:	Date Signed:	
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:		
1. The information provided on this Certificate of Installation is true and correct.		
2. I am either: a) a responsible person eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction, or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Installation and attest to the declarations in this statement, or b) I am an authorized representative of the responsible person and attest to the declarations in this statement on the responsible person's behalf.		
3. The constructed or installed features, materials, components or manufactured devices (the installation) identified on this Certificate of Installation conforms to all applicable codes and regulations and the installation conforms to the requirements given on the Certificate of Compliance, plans, and specifications approved by the enforcement agency.		
4. I understand that a HERS rater will check the installation to verify compliance and if such checking determines the installation fails to comply, I am required to offer any necessary corrective action at no charge to the building owner.		
5. I will ensure that a registered copy of this Certificate of Installation 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 registered copy of this Certificate of Installation is required to be included with the documentation the builder provides to the building owner at occupancy.		
Responsible Builder/Installer Name:	Responsible Builder/Installer Signature:	
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)	Position With Company (Title):	
Address:	CSLB License:	
City/State/Zip:	Phone:	Date Signed:
Third Party Quality Control Program (TPQCP) Status:	Name of TPQCP (if applicable):	

**A. General Information**

This table reports the building name as specified on the Registered CF1R.

**B. Design HERS Verified Central Water Heating Systems Information**

This table reports the water heating system features that were specified on the registered CF1R compliance document for this project. This section is for information/verification purposes only and requires no user input.

**C. Installed HERS Verified Central Water Heating Systems Information**

This table reports the water heating system information that is being installed. Require one line for each central system.

01 Water Heating System ID or Name – Reference information from CF1R.

02 Water Heating System Type – Reference information from CF1R. The different kinds of water heating system type are DHW or Combined Hydronic.

03 Water Heater Type – Information from CF1R. The different kinds of water heaters are Large/Commercial Storage, Small/Consumer Storage, Residential-Duty Commercial Storage, Heat Pump, Boiler, Large/Commercial Instantaneous, Small/Consumer Instantaneous, Residential-Duty Commercial Instantaneous or Indirect.

04 # of Water Heaters in system – Reference information from CF1R.

05 Water Heater Storage Volume (gal) – User input. Value may be N/A if water heater type is instantaneous with zero storage.

06 Fuel Type – Reference information from CF1R. The different kinds of fuel types are natural gas, propane, oil, or electricity.

07 Rated Input Type – Reference information from CF1R. For natural gas, propane and oil fuel type the input type is Btu/Hr. For electric the input type is kW.

08 Rated Input Value – User input. Numerical value of the rated input. Must be equal to or less than value indicated on the CF1R.

09 Heating Efficiency Type – Reference information from CF1R. Different efficiency types are Energy Factor, AFUE, UEF and Thermal Efficiency.

10 Heating Efficiency Value – User input. Numerical value of the Heating Efficiency. Must be equal to or higher efficiency than value indicated on the CF1R.

11 Standby Loss – User input. Must be equal to or less than value indicated on the CF1R. Value may be N/A if CF1R value is N/A.

12 Exterior Insul. R-Value – User input. Must be equal to or higher than value indicated on the CF1R. Value may be N/A if CF1R value is N/A.

**D. Design HERS Verified Central Water Heating Distribution Systems Information**

This table reports the water heating distribution types specified on the registered CF1R compliance document for this project.

**E. Installed HERS Verified Central Water Heating Distribution Systems Information**

01 Water Heating System ID or Name – Reference information from CF1R.

02 Central DHW System Distribution Type = Reference information from CF1R.

03 Dwelling Unit DHW System Distribution Type = Reference information from CF1R.

**F. Installed HERS Verified Central Water Heater Manufacturer Information**

This table reports the manufacturer information of the installed water heater(s). Require one line for each installed water heater.

01 Water Heating System ID or Name – Reference information from CF1R.

02 Manufacturer – User input. Enter the name of the water heater manufacturer.

03 Model Number – User input. Enter the model number of the water heater.

**G. Mandatory Requirements for All Central Domestic Hot Water Recirculation Systems**

This table lists the requirements for all central recirculation systems. HERS rater must ensure all the requirements in this table are met.

**H. HERS-Verified Multiple Recirculation Loops for DHW Systems Serving Multiple Dwelling Units Requirements**

This table lists the requirements for HERS Verified multiple recirculation loop credit for central recirculation systems.