

DOCKETED

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HERS VERIFIED MULTIFAMILY CENTRAL HOT WATER SYSTEM DISTRIBUTION

CEC-CF3R-PLB-21-H (Revised 01/19)

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF VERIFICATION		CF3R-PLB-21-H
HERS Verified Multifamily Central Hot Water System Distribution		(Page 1 of 4)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

A. General Information

01	Building Name	
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B. Design HERS Verified Water Heater System Information

This table reports the water heating system(s) specified on the registered CF1R compliance document for this project.

01	02	03	04	05
Water Heating System ID or Name	Modeled Equipment Make and Model	Number of Water Heaters	Tank Location	Exterior Tank Insulation R-value

C. Installed HERS Verified Water Heater System Information

This table reports the water heating system(s) specified on the registered CF1R compliance document for this project.

01	02	03	04	05
Water Heating System ID or Name	Modeled Equipment Make and Model	Number of Water Heaters	Tank Location	Exterior Tank Insulation R-value

D. Design HERS Verified Water Heating Distribution Systems Information

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

E. Installed HERS Verified Water Heating Distribution Systems Information

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

F. Mandatory Requirements for All Central Domestic Hot Water Systems

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)
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:

Registration Number:

Registration Date/Time:

HERS Provider:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

January 2019

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	<ul style="list-style-type: none"> External insulation of R-12, or Internal insulation of R-16, or <p>The heat loss of the tank surface based on an 80°F water-air temperature difference shall be less than 6.5 Btuh/ft². (Section 110.3(c)3).</p>
04	<p>Recirculation loop shall meet the following requirements:</p> <ul style="list-style-type: none"> 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). A check valve is located between the recirculation pump and the water heater. (Section 110.3(c)4B). A hose bibb is installed between the pump and the water heating equipment with an isolation valve between the hose bibb and the water heating equipment. 110.3(c)4C). Isolation valves shall be installed on both sides of the pump, of which the item C valve can be one. 110.3(c)4D The cold water piping and the recirculation loop piping shall not be connected to the hot water storage tank drain port. 110.3(c)4E 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. 110.3(c)4F.
05	<p>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).</p>
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"> The first 5 feet (1.5 meters) of cold water pipes from the storage tank. All piping with a nominal diameter of 3/4 inch (19 millimeter) and less than 1 inch. All hot water piping from the heating source to the kitchen fixtures. Piping from the heating source to storage tank or between tanks. All piping associated with a recirculation system All underground piping. <ul style="list-style-type: none"> Insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve. 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. Piping installed in interior or exterior walls that is surrounded on all sides by at least 1 inch (5 cm) of insulation. Piping installed in crawlspace with a minimum of 1 inches (5 cm) of crawlspace insulation above and below. Piping installed in attics with a minimum of 4 inches (10 cm) of attic insulation on top. Pipe insulation shall fit tightly and all elbows and tees shall be fully insulated
07	<p>Verification Status:</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Pass</u> - all applicable requirements are met; or <input type="checkbox"/> <u>Fail</u> - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or <input type="checkbox"/> All N/A - This entire table is not applicable
08	Correction Notes:
<p>The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met unless otherwise noted in the Verification Status and the Corrections Notes in this table.</p>	

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

All distribution systems listed on this form shall comply with these requirements.

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CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF VERIFICATION		CF3R-PLB-21-H
HERS Verified Multifamily Central Hot Water system Distribution		(Page 3 of 4)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

01	All buildings with 8 or more dwelling units have a minimum of 2 recirculation loops.	
02	Each loop roughly serves the same number of dwellings.	
03	Verification Status:	<input type="checkbox"/> <u>Pass</u> - all applicable requirements are met; or <input type="checkbox"/> <u>Fail</u> - one or more applicable requirements are not met. Enter reason for failure in corrections notes field below; or <input type="checkbox"/> <u>All N/A</u> - This entire table is not applicable
04	Correction Notes:	
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met unless otherwise noted in the Verification Status and the Corrections Notes in this table.		

H. Determination of HERS Verification Compliance	
All applicable sections of this document shall indicate compliance with the specified verification protocol requirements in order for this Certificate of Verification as a whole to be determined to be in compliance.	
01	



CERTIFICATE OF VERIFICATION		CF3R-PLB-21-H
HERS Verified Multifamily Central Hot Water system Distribution		(Page 4 of 4)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City:	Zip Code:

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Verification documentation is accurate and complete.	
Documentation Author Name:	Documentation Author Signature:
Company:	Date Signed:
Address:	CEA/HERS Certification Information (if applicable):
City/State/Zip:	Phone:
RESPONSIBLE PERSON'S DECLARATION STATEMENT	
I certify the following under penalty of perjury, under the laws of the State of California:	
<ol style="list-style-type: none"> The information provided on this Certificate of Verification is true and correct. I am the certified HERS Rater who performed the verification identified and reported on this Certificate of Verification (responsible rater). The installed features, materials, components, manufactured devices, or system performance diagnostic results that require HERS verification identified on this Certificate of Verification comply with the applicable requirements in Reference Appendices RA2, RA3, and the requirements specified on the Certificate of Compliance for the building approved by the enforcement agency. The information reported on applicable sections of the Certificate(s) of Installation (CF2R) signed and submitted by the person(s) responsible for the construction or installation conforms to the requirements specified on the Certificate(s) of Compliance (CF1R) approved by the enforcement agency. I will ensure that a registered copy of this Certificate of Verification 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 Verification is required to be included with the documentation the builder provides to the building owner at occupancy. 	
BUILDER OR INSTALLER INFORMATION AS SHOWN ON THE CERTIFICATE OF INSTALLATION	
Company Name (Installing Subcontractor, General Contractor, or Builder/Owner):	
Responsible Builder or Installer Name:	CSLB License:
HERS PROVIDER DATA REGISTRY INFORMATION	
Sample Group Number (if applicable):	Dwelling Test Status in Sample Group (if applicable):
HERS RATER INFORMATION	
HERS Rater Company Name:	
Responsible Rater Name:	Responsible Rater Signature:
Responsible Rater Certification Number w/ this HERS Provider:	Date Signed:

A. General Information

This table reports the building location 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. For information only and requires no user input.

C. Installed HERS Verified Central Water Heating Systems Information (for performance compliance with heat pumps only)

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 Manufacturer/Model – User Input must be equal to or equivalent to Reference information from CF1R.

03 # of Water Heaters in System – Reference information from CF1R.

04 Tank Location – User Input must be equal to Reference

05 Exterior Insulation, 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 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 Water Heating Distribution Systems Information

01 Central DHW System Distribution Type - Reference information from CF1R.

02 Dwelling Unit DHW System Distribution Type - Reference information from CF1R.

F. Mandatory Requirements for All Central Domestic Hot Water Recirculation Systems

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

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

All distribution systems listed on this form shall comply with these requirements

01 All buildings with 8 or more dwelling units have a minimum of 2 recirculation loops