



HERS VERIFIED MULTIFAMILY CENTRAL HOT WATER SYSTEM DISTRIBUTION

CALIFORNIA ENERGY COMMISSION

CEC-LMCI-PLB-21-H

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF INSTALLATION

Note: This table completed by HERS Registry.

Project Name:	Enforcement Agency:
Dwelling Address:	Permit Number:
City and Zip Code:	Permit Application Date:

A. General Information

01	Building Name	
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B. Design HERS Verified Central Water Heating Systems Information (other than CHPWH)

This table reports features of the water heating system other than **CHPWH** system that were specified on the registered LMCC 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

B2. Design HERS Verified CHPWH System Information

This table reports the water heating systems specified on the registered LMCC compliance document for this project.

01	02	03	04	05	06	07	08	09	10	11	12
Water Heating System ID or Name	Modeled Equipment Make and Model	# of Water Heaters Compressors	Primary Tank Location	Primary Tank Volume	Primary Tank Total Insulation	Loop Tank Location	Loop Tank Volume	Loop Tank Total Insulation	Loop Pipe Insulation Thickness	Loop Tank Type	Simulated Equipment Make and Model

Registration Number:

Registration Date/Time:

HERS Provider:



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C. Installed HERS Verified Central Water Heating Systems Information

This table reports features the water heating system other than CHPWH systems that were specified on the registered LMCC 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

C2. Installed HERS Verified CHPWH System Information

This table reports the water heating systems specified on the registered LMCC compliance document for this project.

01	02	03	04	05	06	07	08	09	10	11
Water Heating System ID or Name	Modeled Equipment Make and Model	# of Water Heaters/Compressors	Primary Tank Location	Primary Tank Volume	Primary Tank Insulation	Loop Tank Location	Loop Tank Volume	Loop Tank Insulation	Loop Pipe Insulation Thickness	Loop Tank Type

D. Design HERS Verified Central Water Heating Distribution Systems Information

This table reports the water heating distribution types specified on the registered LMCC 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 Central Water Heating Distribution Systems Information

This table reports the water heating distribution types specified on the registered LMCC 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. Installed HERS Verified Water Heater Manufacturer Information

01	02	03
Water Heating System ID or Name	Manufacturer	Model Number

Registration Number:

Registration Date/Time:

HERS Provider:



G. 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 an external R-3.5 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"> <input type="checkbox"/> 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). <input type="checkbox"/> A check valve is located between the recirculation pump and the water heater. (Section 110.3(c) 4B). <input type="checkbox"/> 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). <input type="checkbox"/> 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). <input type="checkbox"/> 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). <input type="checkbox"/> 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).
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	<ul style="list-style-type: none"> <input type="checkbox"/> All domestic hot water piping shall be insulated as specified in Section 609.11 of the California Plumbing Code. Insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve. <input type="checkbox"/> 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. <input type="checkbox"/> Piping installed in interior or exterior walls that is surrounded on all sides by at least 1 inch (2.5 cm) of insulation. <input type="checkbox"/> Piping installed in crawlspace with a minimum of 1 inches (2.5 cm) of crawlspace insulation above and below. <input type="checkbox"/> Piping installed in attics with a minimum of 4 inches (10 cm) of attic insulation on top. <input type="checkbox"/> Pipe insulation shall fit tightly and all elbows and tees shall be fully insulated.

The responsible person’s signature on this compliance document affirms that all applicable requirements in this table have been met.



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

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

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.

The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.

For information and data collection only. Not valid until registered with a HERS provider

Registration Number:

Registration Date/Time:

HERS Provider:



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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

2. I certify the following under penalty of perjury, under the laws of the State of California:

- The information provided on this certificate of installation is true and correct.
- 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.
- 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.
- 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.
- I understand 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, and I will take the necessary steps to ensure this requirement is accomplished.
- 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, and I will take the necessary steps to ensure this requirement is accomplished.

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):	

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300

CERTIFICATE OF INSTALLATION – USER INSTRUCTIONS	LMCI-PLB-21-H
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LMCI-PLB-21-H User Instructions

A. General Information

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

B. Design HERS Verified Central Water Heating Systems Information

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

B2. Design HERS Verified Dwelling Unit CHPWH System Information

This table reports the water heating system features that were specified on the registered LMCC 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 installed water heater.

1. Water Heating System ID or Name – Reference information from LMCC.
2. Water Heating System Type – Reference information from LMCC. The different kinds of water heating system type are DHW or Combined Hydronic.
3. Water Heater Type – Information from LMCC. The different kinds of water heaters are Large/Commercial Storage, Small/Consumer Storage, Residential-Duty Commercial Storage, Heat Pump, oiler, Large/Commercial Instantaneous, Small/Consumer Instantaneous, Residential-Duty Commercial Instantaneous or Indirect.
4. # of Water Heaters in system – Reference information from LMCC.
5. Water Heater Storage Volume (gal) – User input. Value may be N/A if water heater type is instantaneous with zero storage.
6. Fuel Type – Reference information from LMCC. The different kinds of fuel types are natural gas, propane, oil, or electricity.
7. Rated Input Type – Reference information from LMCC. For natural gas, propane and oil fuel type the input type is Btu/Hr. For electric the input type is kW.
8. Rated Input Value – User input. Numerical value of the rated input. Must be equal to or less than value indicated on the LMCC.
9. Heating Efficiency Type – Reference information from LMCC. 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 LMCC.
11. Standby Loss – User input. Must be equal to or less than value indicated on the LMCC. Value may be N/A if LMCC value is N/A.

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

C2. Installed HERS Verified Dwelling Unit CHPWH System Information

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

1. Water Heating System ID or Name – Reference information from Table B2.
2. Modeled Equipment Make and Model – User input must be equal to the value indicated on Table B2 as default and allow user to override with an equivalent system based on the simulated equipment in Table B2.
3. Number of Water Heaters/ Compressors – User input, must be equal to the value indicated on table B2.
4. Primary Tank Location – Reference information from Table B2.
5. Primary Tank Volume – User input, must be equal to or higher than the value indicated on table B2.
6. 06 Primary Tank Insulation – User input, must be equal to or higher than value indicated on table B2.
7. Loop Tank Location – Reference information from Table B2.
8. Loop Tank Volume – User input, must be equal to or higher than the value indicated on table B2.
9. Loop Tank Insulation – User input, must be equal to or higher than value indicated on table B2.
10. Loop Pipe Insulation Thickness – User input, must be equal to or higher than the value indicated on table B2.
11. Loop Tank – Reference information from Table B2.

D. Design HERS Verified Central Water Heating Distribution Systems Information

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

E. Installed HERS Verified Central Water Heating Distribution Systems Information

1. Water Heating System ID or Name – Reference information from LMCC.
2. Central DHW System Distribution Type = Reference information from LMCC.
3. Dwelling Unit DHW System Distribution Type = Reference information from LMCC.

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.

1. Water Heating System ID or Name – Reference information from LMCC.
2. Manufacturer – User input. Enter the name of the water heater manufacturer.
3. Model Number – User input. Enter the model number of the water heater.

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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.

Documentation Declaration Statements

1. The person who prepared the LMCI will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature.
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature.

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