

CALIFORNIA ENERGY COMMISSION

CEC-CF2R-PLB-22-H

SAMPLE FORM – NOT VALID FOR SUBMISSION TO BUILDING DEPARTMENTS

CERTIFICATE OF INSTALLATION

Note: This table completed by ECC Registry.

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

A. Design Verified Dwelling Unit Water Heating Systems Information (other than HPWH)

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

01	02	03	04	05	06	07	08	09	10	11
	Water	Water		# of Like (or				Dwelling Unit		
Dwelling	Heating	Heating	Water	Identical)		Rated	Rated	DHW System		Drain
Unit	System ID	System	Heater	Water Heaters	Fuel	Input	Input	Distribution	Compact	Water Heat
Name	or Name	Type	Туре	in System	Type	Туре	Value	Туре	Distrib.	Recovery

A2. Design Verified Dwelling Unit HPWH System Information

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

01	02	03	04	05	06	06a	07	08	09	10	11
			# of Like								
	Water		(or								
	Heating		Identical)				Dwelling				
	System	Modeled	Water		Exterior		Unit DHW		Drain	Simulated	
Dwelling	ID	Equipment	Heaters		Tank		System		Water	Equipment	
Unit	or	Make and	in	Tank	Insulation	Tank	Distribution	Compact	Heat	Make and	JA13
Name	Name	Model	System	Location	R-value	Volume	Type	Distribution	Recovery	Model	Compliant

B. Installed Verified Dwelling Unit Water Heating Systems Information

This table reports features the water heating system other than HPWH systems installed in this project

01	02	03	04	05	06	07	08	09	10	11
Dwelling Unit Name	Water Heating System ID or Name	Water Heating System Type	Water Heater Type	# of Like (or Identical) Water Heaters in System	Fuel Type	Rated Input Type	Rated Input Value	Dwelling Unit DHW System Distribution Type	Compact Distrib.	Drain Water Heat Recovery

ECC Provider: Registration Number: Registration Date/Time: January 1, 2026



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B2. Installed Verified Dwelling Unit HPWH System Information

This table reports the water heating system(s) installed in this project.

01	02	03	04	05	06	06a	07	08	09	10
	Water		# of Like							
	Heating		(or							
	System	Modeled	Identical)		Exterior		Dwelling Unit		Drain	
Dwelling	ID	Equipment	Water		Tank		DHW System		Water	
Unit	or	Make and	Heaters in	Tank	Insulation	Tank	Distribution	Compact	Heat	JA13
Name	Name	Model	System	Location	R-value	Volume	Type	Distribution	Recovery	Compliant

C. Design Verified Dwelling Unit Water Heating Efficiency Information

This table reports the water heater(s) efficiency features specified on the registered CF1R compliance document for this project. (Not needed for central systems)

01	02	03	04	05	06	07
Water Heating	Heating	Heating	Standby	Exterior	Water Heater	
System ID or	Efficiency	Efficiency	Loss	Insulation	Storage	
Name	Туре	Value	(%)	R-Value	Volume (gal)	Tank Location
					7, 0/	

D. Installed Verified Dwelling Unit Water Heating Efficiency Information

This table reports the water heater(s) efficiency features installed in this project. (Not needed for central systems)

01	02	03	04	05	06	07
Water Heating	Heating	Heating	Standby	Exterior	Water Heater	
System ID or	Efficiency	Efficiency	Loss	Insulation	Storage	
Name	Туре	Value	(%)	R-Value	Volume (gal)	Tank Location

E. Installed Water Heater Manufacturer Information

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

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F. Mandatory Measures for Single Dwelling Systems

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

this to	ble have been met.
01	Equipment shall meet the applicable requirements of the Appliance Efficiency Regulations (Section 110.3(b)1).
02	Unfired storage tanks are insulated with an external R-3.5 or combination of R-16 internal and external Insulation. (Section 110.3(c)3).
	Domestic hot water piping insulation requirements (Section 150(J)):
	All domestic hot water piping shall be insulated as specified in Section 609.12 of the California Plumbing Code. Insulation buried
	below grade must be installed in a waterproof and non-crushable casing or sleeve.
	Pipe insulation shall fit tightly and all elbows and tees shall be fully insulated.
03	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 surrounded with a minimum of 1 inch of wall insulation, 2 inches of crawlspace insulation, or 4 inches of attic insulation shall
	not be required to have pipe insulation.
	For Gas or Propane Water Heaters: Ensure either a or b are installed (Section 150.0(n))
	a) designated space at least 2.5 feet by 2.5 feet and 7 feet tall within 3 feet from the water heater
	 A dedicated 125V, 20A electrical receptacle connected to the electric panel with a 120/240V 3 conductor, branch circuit rated
	at 30 amps minimum, within 3 feet from the water heater and is accessible with no obstructions;
	The conductor shall be labeled with the word "Spare" on both ends; and A reserved single pole girsuit breaker space post to the girsuit breaker post to the breaker post to the discretization.
	 A reserved single pole circuit breaker space next to the circuit breaker next to the branch circuit labeled "Future 240V use" shall be provided.
	A condensate drain no more than 2 inches higher than the base of the water heater, and allows natural draining without
	pump assistance.
	b) A designated space at least 2.5 feet by 2.5 feet and 7 feet tall more than 3 feet from the water heater
04	A dedicated 240 volt branch circuit shall be installed within 3 feet from the designated space. The
04	 branch circuit shall be rated at 30 amps minimum. The blank cover shall be identified as "240V ready"; and
	The main electrical service panel shall have a reserved space to allow for the installation of a double pole circuit breaker for a
	future HPWH installation. The reserved space shall be permanently marked as "For Future 240V use"; and
	Either a dedicated cold water supply, or the cold water supply shall pass through the designated HPWH location just before
	reaching the gas or propane water heater; and The hot water supply pipe coming out of the gas or propane water heater shall be routed first through the designated HPWH
	location before serving any fixtures; and
	The hot and cold water piping at the designated HPWH location shall be exposed and readily accessible for future installation
	of a HPWH; and
	 A condensate drain no more than 2 inches higher than the base of the installed water heater, and allows natural draining
	without pump assistance.
	For Air-Source Heat Pump Water Heaters (HPWH), the following shall be met (Section 110.3(c)7)
	A. Backup heat is required when inlet air is unconditioned, unless the compressor cutout cut-off temperature is below the Heating
	Winter Median of Extreme. Backup heat may be internal or external to the HPWH
	B. Meet one of the ventilation requirements below. Minimum volume and opening size requirements shall be the sum of all HPWHs
	installed within the same space. Compressor capacity shall be determined using AHRI 540 Table 4 reference conditions for refrigeration with the "High" rating test point:
	a. Installed using a method provided by the manufacturer to meet or exceed the level of performance provided by the ventilation
	requirements of Section 110.3(c)782 through Section 110.3(c)84.
	b. For HPWH installation without ducts, the installation space shall have a volume not less than the greater of 100 cubic feet per
	kBtu per hour of compressor capacity, or the minimum volume provided by the manufacturer for this method; or
05	c. For HPWH installation without ducts, the installation space shall be vented to a communicating space via permanent openings,
	according to the following requirements:
	i. Communicating space shall meet the minimum volume of Section 110.3(c)7B12 above, minus the volume of the HPWH
	installation space; and
	ii. Permanent openings shall consist of a single layer of fixed flat slat louvers or grilles, with a total minimum Net Free Area
	(NFA) the larger of 125 square inches plus 25 square inches per kBtu per hour of compressor capacity, or the minimum
	provided by the manufacturer for this method. The permanent openings shall be fully louvered doors or two openings of
	equal area, one in the upper half of the enclosure and one in the bottom half of the enclosure. The top of the upper
	opening must be 12 inches or less from the enclosure top and the bottom of the lower vent must be 12 inches or less from
	the enclosure bottom; or

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- d. For HPWH installations with ducts, the following requirements shall be met:
 - i. The space joined to the installation space via ducts shall meet the minimum volume of Section 110.3(c)7B2 above, minus the volume of the HPWH installation space; and
 - ii. All duct connections and building penetrations shall be sealed; and
 - iii. Exhaust air ducts and all ducts which cross pressure boundaries shall be insulated to minimum of R-6; and
 - iv. Where only the HPWH inlet or outlet is ducted, installation space shall include permanent openings which consist of a single layer of fixed flat slat louvers or grilles in the bottom half of the room, and/or a door undercut. With a ducted inlet, the minimum NFA shall be equal to the cross-sectional area of the duct. With a ducted exhaust, the minimum NFA shall be the larger of 20 square inches or the minimum NFA provided by the manufacturer for this method; and
 - v. Where the inlet and outlet ducts both terminate within the same pressure boundary, airflow from the termination points shall be diverted away from each other.

G. Verified Compact Hot Water Distribution Expanded Credit (CHWDS-H-EX) (RA3.6.5)

For dwelling units with multiple systems, enter the master bath distance and kitchen distance to the closest water heater, and enter the average of the furthest fixture to each water heater.

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

01	02	03	04	05	06	07	08	09	
				Furthest Third			9.		
				furthest					
		Master Bath		fixture to					
		distance of	Kitchen	Water Heater					
		furthest	distance from	in feet (Avg					
		fixture to	furthest fixture	for multiple			Design	Calculated	
Dwelli	ng Number of	Water Heater	to Water	water	Weighted	Qualification	Compactness	Compactness	
Nam	me Stories in feet Heater in feet heaters) Distance Distance Factor Factor							Factor	
10	No hot water pi	ping >1 inch dia	meter is allowed						
11	Length of 1 inch	diameter pipin	g is limited to 8 f	eet or less.					
12	Two and three story buildings cannot have hot water distribution piping in the attic, unless the water heater is also located								
	in the attic.								
13	Eligible recircula	ating systems m	ust be Verified D	emand Recircul	ation: Manual	Control conforn	ning to RA4.4.17	7.	

H. Compact Hot Water Distribution (RA4.4.6)

For dwelling units with multiple systems, enter the master bath distance and kitchen distance to the closest water heater, and enter the average of the furthest fixture to each water heater.

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

01	02	03	04	05	06	07	08	09
		Master Bath						
		distance of		Furthest Third				
		furthest	Kitchen	furthest fixture				
		fixture to	distance from	to Water Heater				
		Water	furthest fixture	in feet (Avg for			Design	Calculated
Dwelling	Number of	Heater in	to Water	multiple water	Weighted	Qualification	Compactness	Compactness
Name	Stories	feet	Heater in feet	heaters)	Distance	Distance	Factor	Factor

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I. Verified Drain Water Heat Recovery System (DWHR-H) (RA3.6.9)

DWHR devices shall comply with these requirements.

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

Design DWHR System Information

01	02	03	04
System ID/Name	Rated Effectiveness	Installation Configuration	Percent of shower served by the DWHR device

Installed DWHR System Information

05	06	07	08	09	10	11
					Percent of	
					shower served	DWHR System
			Rated	Installation	by the DWHR	Certified by CEC
System ID/Name	Manufacturer	Model Number	Effectiveness	Configuration	device	(Yes/No)
12	For water heating system serving a single dwelling, the DWHR system shall, at the minimum, recover heat from the master					
	bathroom shower and must transfer that heat either back to the respective shower(s) or the water heater.					
13	For central water heating system serving multiple dwellings, the DWHR system shall, at the minimum, recover heat from					
	half the showers located above the first floor and must transfer that heat either back to all the respective showers or the					
	water heater.					
14	The DWHR unit(s) shall be installed within 1 degree of the rated slope. Sloped DWHR shall have a minimum lengthwise					
	slope of 1 degree. The lateral level tolerance shall be within plus or minus 1 degree.					

J. Verified Pipe Insulation for Single Dwelling Systems (RA3.6.2)

Systems that utilize this distribution type shall comply with these requirements.

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

01 ECC rater shall perform a visual inspection that all hot water piping complies with the insulation requirements in 150.0(j).

K. Verified Central Parallel Piping Requirements (PP-H) (RA3.6.4)

Systems that utilize this distribution type shall comply with these requirements.

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

•			
01	Each central manifold has 5 feet or less of pipe between manifold and water heater.		
02	For manifolds that include valves, the manifold must be readily accessible in accordance with the plumbing code.		
03	Hot water distribution system piping from the manifold to the fixtures and appliances must take the most direct path. For example, piping from a second story manifold cannot supply the first floor.		
04	The hot water distribution piping must be separated by at least 2 inches from any other hot water supply piping, and at least 6 inches from any cold water supply piping. Alternatively, the hot water supply piping must be insulated to the thicknesses shown in Table 120.3-A-1.		

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L. Central Parallel Piping Requirements (RA4.4.4)

Systems that utilize this distribution type shall comply with these requirements.

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

01	Each central manifold has 15 feet or less of pipe between manifold and water heater.		
02	For manifolds that include valves, the manifold must be readily accessible in accordance with the plumbing code.		
03	Hot water distribution system piping from the manifold to the fixtures and appliances must take the most direct path. For instance, piping from a second story manifold cannot supply the first floor.		
04	The hot water distribution piping must be separated by at least 2 inches from any other hot water supply piping, and at least 6 inches from any cold water supply piping. Alternatively, the hot water supply piping must be insulated to the thicknesses shown in Table 120.3-A-1.		

M. Point of Use Requirements (POU) (RA4.4.5)

Systems that utilize this distribution type shall comply with these requirements.

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

	All hot water supply pipe run lengths are equal to or less than the maximum values shown below, based on the pipe diameter. If a combination of piping is used in a single run, then one half the allowed length of each size is the maximum installed length. The maximum allowed length of piping for the longest run terminating in:
01	3/8 inch - For only one pipe size - max length allowed is 15 feet For combination pipe sizes the max allowed length of 3/8-inch piping is 7.5 feet, of 1/2 inch piping is 5 feet, and 3/4 inch piping is 2.5 feet.
	1/2 inch - For only one pipe size – max length allowed is 10 feet For combination pipe sizes the allowed length of 1/2inch piping is 5 feet, and 3/4 inch piping is 2.5 feet.
	3/4 inch - For only one pipe size = 5 feet

N. Mandatory Requirements for all Recirculation Systems (RA4.4.7)

Systems that utilize a recirculation system shall comply with these requirements.

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

01	A check valve located between the recirculation pump and the water heater to prevent unintentional recirculation.
02	Piping must take the most direct path between water heater and fixtures.
03	Insulation is not required on the cold water line when it is used as the return.

O. Recirculation Non-Demand Controls Requirements (RA4.4.8)

Systems that utilize this distribution type shall comply with these requirements.

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

01	The active control shall be either: timer, temperature, or time and temperature. Timers shall be set to less than 24 hours. The
UI	temperature sensor shall be connected to the piping and to the controls for the pump.

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P. Demand Recirculation; Manual Control (RA4.4.9)/Sensor Control (RA4.4.10) Requirements

Systems that utilize either of these distribution types shall comply with these requirements.

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

The system operates "on-demand", meaning that the pump begins to operate shortly before or immediately after hot water draw begins, and stops when the return water temperature reaches a certain threshold value. For Demand Recirculation Manual Control, the pump shall be turned on using a manual switch system. For Demand Recirculation Sensor Control, the pump shall be turned on using a sensor system. 102 The controls shall be located in the kitchen, bathroom, and any hot water fixture location that is at least 20 feet from the water heater. 103 Manual controls may be activated by wired or wireless mechanisms. Each control shall have standby power of 1 Watt or less. 104 Sensor controls may be activated by wired or wireless mechanisms, including buttons, motion sensors, door switches and flow switches. Each control shall have standby power of 1 Watt or less. 105 Pump and control placement shall meet one of the following criteria: 106 • When a dedicated return line has been installed the pump, controls and thermo-sensor are installed at the end of the supply portion of the recirculation loop; or 105 • The pump and controls are installed on the dedicated return line near the water heater and the thermo-sensor is installed in an accessible location as close to the end of the supply portion of the recirculation loop as possible; or 106 • When the cold water line is used as the return, the pump, demand controls and thermo-sensor shall be installed in an accessible location at the end of supply portion of the hot water distribution line (typically under a sink). 107 After the pump has been activated, the controls shall allow the pump to operate until the water temperature at the thermo-sensor rises to one of the following values: 108 • Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or 109 • Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or		
O3 Manual controls may be activated by wired or wireless mechanisms. Each control shall have standby power of 1 Watt or less. O4 Sensor controls may be activated by wired or wireless mechanisms, including buttons, motion sensors, door switches and flow switches. Each control shall have standby power of 1 Watt or less. Pump and control placement shall meet one of the following criteria: • When a dedicated return line has been installed the pump, controls and thermo-sensor are installed at the end of the supply portion of the recirculation loop; or • The pump and controls are installed on the dedicated return line near the water heater and the thermo-sensor is installed in an accessible location as close to the end of the supply portion of the recirculation loop as possible; or • When the cold water line is used as the return, the pump, demand controls and thermo-sensor shall be installed in an accessible location at the end of supply portion of the hot water distribution line (typically under a sink). After the pump has been activated, the controls shall allow the pump to operate until the water temperature at the thermo-sensor rises to one of the following values: • Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or • Not more than 10°F (5.8°C).	01	and stops when the return water temperature reaches a certain threshold value. For Demand Recirculation Manual Control, the pump shall be turned on using a manual switch system. For Demand Recirculation Sensor Control, the pump shall be turned on using a sensor
Sensor controls may be activated by wired or wireless mechanisms, including buttons, motion sensors, door switches and flow switches. Each control shall have standby power of 1 Watt or less. Pump and control placement shall meet one of the following criteria: • When a dedicated return line has been installed the pump, controls and thermo-sensor are installed at the end of the supply portion of the recirculation loop; or • The pump and controls are installed on the dedicated return line near the water heater and the thermo-sensor is installed in an accessible location as close to the end of the supply portion of the recirculation loop as possible; or • When the cold water line is used as the return, the pump, demand controls and thermo-sensor shall be installed in an accessible location at the end of supply portion of the hot water distribution line (typically under a sink). After the pump has been activated, the controls shall allow the pump to operate until the water temperature at the thermo-sensor rises to one of the following values: • Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or • Not more than 102°F (38.9°C).	02	The controls shall be located in the kitchen, bathroom, and any hot water fixture location that is at least 20 feet from the water heater.
Pump and control shall have standby power of 1 Watt or less. Pump and control placement shall meet one of the following criteria: • When a dedicated return line has been installed the pump, controls and thermo-sensor are installed at the end of the supply portion of the recirculation loop; or • The pump and controls are installed on the dedicated return line near the water heater and the thermo-sensor is installed in an accessible location as close to the end of the supply portion of the recirculation loop as possible; or • When the cold water line is used as the return, the pump, demand controls and thermo-sensor shall be installed in an accessible location at the end of supply portion of the hot water distribution line (typically under a sink). After the pump has been activated, the controls shall allow the pump to operate until the water temperature at the thermo-sensor rises to one of the following values: • Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or • Not more than 102°F (38.9°C).	03	Manual controls may be activated by wired or wireless mechanisms. Each control shall have standby power of 1 Watt or less.
 When a dedicated return line has been installed the pump, controls and thermo-sensor are installed at the end of the supply portion of the recirculation loop; or The pump and controls are installed on the dedicated return line near the water heater and the thermo-sensor is installed in an accessible location as close to the end of the supply portion of the recirculation loop as possible; or When the cold water line is used as the return, the pump, demand controls and thermo-sensor shall be installed in an accessible location at the end of supply portion of the hot water distribution line (typically under a sink). After the pump has been activated, the controls shall allow the pump to operate until the water temperature at the thermo-sensor rises to one of the following values: Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or Not more than 102°F (38.9°C). 	04	
to one of the following values: Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or Not more than 102°F (38.9°C).	05	 When a dedicated return line has been installed the pump, controls and thermo-sensor are installed at the end of the supply portion of the recirculation loop; or The pump and controls are installed on the dedicated return line near the water heater and the thermo-sensor is installed in an accessible location as close to the end of the supply portion of the recirculation loop as possible; or When the cold water line is used as the return, the pump, demand controls and thermo-sensor shall be installed in an accessible
07 Controls shall limit operation to no more than 5 minutes following activation.	06	to one of the following values: • Not more than 10°F (5.6°C) above the initial temperature of the water in the pipe; or
	07	Controls shall limit operation to no more than 5 minutes following activation.

Q. Verified Demand Recirculation Manual Control (RDRmc-H) (RA3.6.6)/Sensor Control (RDRsc-H) (RA3.6.7) Requirements

Systems that utilize this distribution type shall comply with these requirements.

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

01 ECC - rater shall perform a visual inspection to verify that the demand pump, manual/sensor controls and thermo-sensor are present and operating properly consistent with the applicable requirements of RA4.4.9 and RA4.4.10

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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/AEA/ECC Certification Identification (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:

- 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 an ECC-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 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 shall be made available to the enforcement agency for all applicable inspections. I will take the necessary steps to fulfill this requirement.
- 6. 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. I will take the necessary steps to fulfill this requirement.

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	CF2R-PLB-22-H
Verified Single Dwelling Unit Hot Water System Distribution	(Page 1 of 4)

CF2R-PLB-22-H User Instructions

A. Design Verified Dwelling Unit Water Heating Systems Information

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

A2. Design Verified Dwelling Unit HPWH System 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.

B. Installed Verified Dwelling Unit 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. Dwelling Unit Name Reference information from Table A.
- 2. Water Heating System ID or Name Reference information from Table A.
- 3. Water Heating System Type Reference information from Table A. The different kinds of water heating system type are DHW, or Combined Hydronic.
- 4. Water Heater Type Reference information from Table A. 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.
- 5. # of Like (or Identical) Water Heaters in system Reference information from Table A.
- 6. Fuel Type Reference information from Table A. The different kinds of fuel types are heat pump, electric resistance, natural gas, and propane.
- 7. Rated Input Type Reference information from Table A. For natural gas and propane, the input type is Btu/hr. For heat pump and electric resistance, 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 CF1R.
- 10. Dwelling Unit DHW System Distribution Type Reference information from Table A.
- 11. Compact Distribution Reference information from Table A.
- 12. Drain Water Heat Recovery Reference information from Table A.

B2. Installed Verified Dwelling Unit HPWH System Information

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

- 1. Dwelling Unit Name Reference information from Table A2.
- 2. Water Heating System ID or Name Reference information from Table A2.
- 3. Modeled Equipment Make and Model number User input must be equal to the value indicated on Table A2 as default and allow user to override.
- 4. # of Like (or Identical) Water Heaters in system –Reference information from Table A2.
- 5. Tank Location User input must equal reference information on Table A2.
- 6. Exterior Tank Insulation User Input must be equal to or greater than reference information from Table A2.
- 6a. Tank Volume User input must equal reference information on Table A2.
- 7. Dwelling Unit DHW System Distribution Type –Reference information from Table A2.

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- 8. Compact Distribution Reference information from Table A2.
- 9. Drain Water Heat Recovery Reference information from Table A2.

C. Design Verified Dwelling Unit Water Heating Efficiency 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.

D. Installed Verified Dwelling Unit Water Heating Efficiency 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 Table A.
- 2. Heating Efficiency Type Reference information from Table C. Different efficiency types are Energy Factor, AFUE, UEF and Thermal Efficiency.
- 3. Heating Efficiency Value User input must be equal to or higher efficiency than value indicated on the CF1R.
- 4. Standby Loss User input. Must be equal to or less than value indicated in Table C. Value may be N/A if CF1R value is N/A.
- 5. Exterior Insulation R-Value User input. Must be equal to or higher than value indicated in Table C. Value may be N/A if CF1R value is N/A.
- 6. Water Heater Storage Volume (gal) User input. Value may be N/A if water heater type is instantaneous with zero storage.
- 7. Tank location User input. Must be equal to system type indicated in Table C.

E. Installed 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 CF1R.
- 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.

F. Mandatory Measures for Single Dwelling Systems

This table lists the requirements for Single Dwelling systems. ECC rater must ensure all the requirements in this table are met.

G. Verified Compact Hot Water Distribution Expanded Credit and H. Compact Hot Water Distribution Basic If performance compliance is used, this table lists the values used in the performance calculation and require no user input.

If prescriptive compliance is used, fill out this table.

- 1. Reference information from CF1R
- 2. Enter the master bath distance of furthest fixture to water heater in feet. For multiple water heaters, enter the distance to the closest water heater.
- 3. Enter the kitchen distance from furthest fixture to water heater in feet. For multiple water heaters, enter the distance to the closest water heater.
- 4. Enter furthest third fixtures from fixture to Water Heater in feet. For multiple water heaters, enter the average of the furthest distance of each water heater.

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- 5. Weighted Distance Calculated value no user input required.
- 6. Qualification Distance Calculated value no user input required.

I. Verified Drain Water Heat Recovery System

This table lists the requirements for all drain water heat recovery systems. ECC rater must ensure all the requirements in this table are met.

- 1. Reference information from CF1R.
- 2. Reference information from CF1R.
- 3. Reference information from CF1R.
- 4. Reference information from CF1R.
- 5. Reference information from CF1R.
- 6. Drain Water Heat Recovery Manufacturer's Name- Enter the name of the manufacturer.
- 7. Drain Water Heat Recovery Manufacturer's Model Number Enter the model number.
- 8. Rated Effectiveness Enter the rated effectiveness of the DWHR device.
- 9. Installation Configuration Enter type of configuration. Available options are: Equal flow, unequal to shower, and unequal to water heater
- 10. Percent of showers served by the DWHR device Enter the percent of showers served by this DWHR device.
- 11. DWHR System Certified by CEC Enter "Yes" if certified or else enter "No"

J. Verified Pipe Insulation for Single Dwelling Systems

This table only applies to systems indicated as Verified Pipe Insulation. In addition to the mandatory requirements in Table F, the installer must ensure the requirements in this table are met.

K. Verified Central Parallel Piping Requirements

This table only applies to systems indicated as Verified Central Parallel Piping. In addition to the mandatory requirements in Table F, the installer must ensure the requirements in this table are met.

L. Central Parallel Piping Requirements

This table only applies to systems indicated as Central Parallel Piping. In addition to the mandatory requirements in Table F, the installer must ensure the requirements in this table are met.

M. Point of Use Requirements

This table only applies to systems indicated as Point of Use In addition to the mandatory requirements in Table F, the installer must ensure the requirements in this table are met.

N. Mandatory Requirements for all Recirculation Systems

The requirements of this table apply to all recirculation systems listed below.

O. Recirculation Non-Demand Controls Requirements

This table only applies to systems indicated as Recirculation Non-demand Controls. In addition to the mandatory requirements in Table F and N, the installer must ensure the requirements in this table are met.

P. Demand Recirculation Manual Control/Sensor Control Requirements

This table only applies to systems indicated as Demand Recirculation Manual Control, Demand Recirculation Senor Control, Verified Demand Recirculation Manual Control or Verified Demand Recirculation Senor Control.

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In addition to the mandatory requirements in Table F and N, the installer must ensure the requirements in this table are met.

Q. Verified Demand Recirculation Manual Control/Sensor Control Requirements

This table only applies to systems indicated as Verified Demand Recirculation Manual Control or Verified Demand Recirculation Senor Control. In addition to the mandatory requirements in Table F and N, the installer must ensure the requirements in this table are met.

Documentation Declaration Statements

- 1. The person who prepared the CF2R 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.