DOMESTIC WATER HEATING SYSTEM

CERTIFICATE OF COMPLIANCE

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

A. GENERAL INFORMATION

01	Project Location (city)					02	Climate Zone				
03	Occupancy Types Within Project (select all that apply):										
☐	Office	☐	High-Rise Residential Multifamily >= 4 stories	☐	Relocatable	☐	School	☐	Restaurant/ Commercial Kitchen	☐	Religious Facility
☐	State Building	☐	Healthcare Facility	☐	Hotel/ Motel	☐	All Others	☐	Convention Center	☐	Medical Clinic
☐	Auditorium	☐	Parking Garage	☐	Warehouse	☐	Retail	☐	Sports Arena	☐	Gymnasium
☐	Classroom	☐	Library	☐	Theater	☐	Data Center	☐	Support Areas	☐	Financial Institution
☐	Commercial/ Industrial	☐	School	☐	Grocery Store						

DOMESTIC WATER HEATING SYSTEM

B. PROJECT SCOPE

This table identifies any domestic water heating systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive paths outlined in §140.5/ §170.2(d), and §141.0(a)/ §180.1, or §141.0(b)2N/ §180.2 for additions or alterations. Solar water heating systems should be documented on the NRCC-SAB compliance document. Combined hydronic water heating systems should be documented on the NRCC-MCH compliance document.

01		02	03		
My project consists of (check all that apply):		System Type[1,2]	System Components		
☐	New System (DHW system being installed for the first time in newly constructed building)		☐ Equipment	☐ Distribution	☐ Controls
☐	System Alteration (equipment, distribution, or controls)		☐ Equipment	☐ Distribution	☐ Controls

ALERT! Gas or propane central water heating systems serving multiple dwelling units require a solar water heating system per §170.2(d)3. Solar water heating systems are documented on the NRCC-SAB compliance document. If solar water heating systems are used in conjunction with non-solar systems to meet the water heating needs of the building, document the non-solar systems on this compliance document.

ALERT! Combined domestic and hydronic water heating systems are documented on the NRCC-MCH compliance document. If combined hydronic water heating systems are used in conjunction with domestic only systems to meet the water heating needs of the building, document the domestic only systems on this compliance document.

[1] FOOTNOTE: Point of use water heaters, or other non-central systems used to serve nonresidential spaces, are considered individual systems.
[2] Dwelling units refers to hotel/ motel guest rooms and units in a multifamily residential occupancy.
[3] DHW systems serving 2 or more dwelling units are considered "Central Systems" for multifamily occupancies.

C. COMPLIANCE RESULTS

Table Instructions: Table C will indicate if the project data input into the compliance document is compliant with water heating requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D., or the table indicated as not compliant for guidance.

01	02	03	04
Domestic Hot Water Equipment	Distribution Systems	Controls	**Compliance Results**
Table F	Table G	Table H	
YES/NO	YES/NO	YES/NO	**COMPLIES, COMPLIES with Exceptional Conditions or DOES NOT COMPLY**

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the installer to the Authority Having Jurisdiction.

F. DOMESTIC HOT WATER EQUIPMENT

Table Instructions: Complete the following table to demonstrate compliance with mandatory equipment requirements in §110.1 and §110.3. Compliance with prescriptive requirements in §140.5(c)/§170.2(d) must also be demonstrated and with §141.0/§180.1/§180.2 for addition and alteration scopes.

Equipment Schedule

03		04						05		06	
System Name:		Exception to §140.5(c)/§170.2(d)3:						☐	Capacity-weight efficiencies for gas systems >= 1MMBtu/h[1]	Capacity-weighted Average Efficiency (%)	
07	08	09	10		11	12	13			14	15
Name or Item Tag	Equipment Type	Volume (gal)	Rated Input Capacity (Btu/h)	Max GPM/ First Hour Rating (FHR)	Rated Efficiency	Minimum Efficiency Required	Efficiency Unit			Designed Standby Loss	Maximum Standby Loss

[1] FOOTNOTE: In systems >= 1MMBtu/h with multiple units, gas water heaters with input capacity > 100,000 Btu/h may meet the 90% Et requirement via an input capacity-weighted average.

[2] Compliant equipment may be found in the Modernized Appliance Efficiency Database System (MAEDBS) on the Energy Commission website: https://cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx

Water Heating Equipment in Individual Dwelling Units1

Equipment Type (select all that apply):

16	☐	Gas/propane instantaneous water heater with input rating ≤ 200,000 BTUH and no storage tank. Note: Cannot comply using the prescriptive path with a storage tank per §170.2(d)1C (New Construction and Additions Only)		
	☐	A single 240-volt heat pump water heater serving the dwelling unit. (New Construction and Additions Only)		
	☐	A single heat pump water heater that meets the requirements of NEEA Advanced Water Heater Specification Tier 3 or higher.		
	☐	A single heat pump water heater with storage tank located in the garage or conditioned space and be placed on an incompressible, rigid insulated surface with minimum R-10. The water heater shall be installed with a communication interface that meets either the requirements of 110.12(a) or has an ANSI/CTA-2045-B communication port. (Alterations Only)		
	☐	If the existing water heater is an electric resistance water heater, a consumer electric water heater. (Alterations only)		
	☐	Replacement or altered gas or propane water heater (Alterations only)		
17	Yes	No	Not Applicable	Requirement
	☐	☐	☐	For gas or propane water heaters serving individual dwelling units, the follow components are included in the design per §160.4: (New Construction and Additions only) - Dedicated 125V, 20-amp electrical receptacle that is connected to the panel with a 120/240V 3 conductor, 10 AWG copper branch circuit within 3 ft from the water heater that's accessible and with both ends of the unused conductor labeled with the word "spare" and be electrically isolated. A single pole circuit breaker space in the panel adjacent to the circuit breaker for the branch circuit is provided labeled with the word "future 240V use"; and - Category III or IV vent, or Type B vent with straight pipe between the outside termination and where the water heater is installed; and - Condensate drain that is no more than 2in higher than the base of the water heater and drains without pump assistance; and - Gas supply line with a capacity of at least 200,000 BTUH

[1] FOOTNOTE: Dwelling units refers to hotel/ motel guest rooms and units in a multifamily residential occupancy.

Water Heating Equipment All Occupanies

	Yes	No	NA	Requirement
18	☐	☐	☐	Unfired storage tank insulation shall have Internal + External ≥ R-16 OR External ≥ R-3.5. Label required per §110.3(c)3
19	☐	☐	☐	New state buildings 60% of energy for service water heating from site solar energy or recovered energy per §110.3(c)5
20	☐	☐	☐	Isolation valves for instantaneous water heater with input rating > 6.8 kBTUH or 2 kW has been specified per §110.3(c)6
21	☐	☐	☐	School buildings < 25,000ft^2 and < 4 stories must install a heat pump water heating system per §140.5(a)1. Water heating systems serving an individual bathroom space may be an instantaneous electric water heater.

Water Heating Equipment for Central Systems Serving Dwelling Units §170.2(d)2&3

Equipment Type (select all that apply):

22	☐		Heat pump Water Heater (New Construction and Additions Only)
		☐	For systems with single pass primary heat pump water heater, the primary thermal storage tanks shall be piped in series if multiple tanks are used. For systems with multi-pass primary heat pump water heater, the primary thermal storage tanks shall be piped in parallel if multiple tanks are used.
		☐	The primary storage tank temperature setpoint shall be at least 135°F.
		☐	The recirculation loop tank temperature setpoint shall be at least 10°F lower than the primary thermal storage tank temperature setpoint such that hot water from the recirculation loop tank is used for the temperature maintenance load before engaging the recirculation loop tank heater.
		☐	The minimum heat pump water heater compressor cut-off temperature shall be equal to or lower than 40°F ambient air temperature.
		☐	Design documentation shall specify the operating conditions at which the primary heat pump water heater can supply hot water at design outlet water temperature without engaging auxiliary heating mechanism.
	☐		Gas/propane water heater (New Construction and Additions Only)
		☐	A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and with a minimum solar savings fraction of 0.20 in Climate Zones 1 through 9 or a minimum solar savings fraction of 0.35 in Climate Zones 10 through 16. This system should be documented on the NRCC-SAB form OR;
		☐	A solar water-heating system meeting the installation criteria specified in Reference Residential Appendix RA4 and with a minimum solar savings fraction of 0.30 in Climate Zones 10 through 16. This system should be documented on the NRCC-SAB form. AND a drain water heat recovery system that is field verified as specified in the Reference Appendix RA3.6.9.

G. DOMESTIC HOT WATER DISTRIBUTION SYSTEM

Table Instructions: Complete the following table to demonstrate compliance for nonresidential occupancies with distribution requirements in §120.3 and §140.5.] For multifamily and hotel/motel occupancies, compliance is demonstrated with requirements in §110.3(c), §160.4 and §170.2(d).

Recirculation Loops in Central Systems Serving Dwelling Units or Nonresidential Spaces

	Yes	No	Not Applicable	Requirement
01				Air release valve or vertical pump installation per §110.3(c)4A
02				Check valve or similar located between recirculation pump and water heating equipment to prevent backflow per §110.3(c)4B
03				Hose bibb installed between pump and equipment and isolation valve between hose bibb and equipment per §110.3(c)4C
04				Isolation valves on both sides of the pump per §110.3(c)4D
05				Cold water and recirculation loop piping shall not be connected to the hot water storage tank drain port per §110.3(c)4E
06				Check valve installed on cold water supply between hot water system and next closest tee on cold water supply per §110.3(c)4F
07				DWELLING UNITS ONLY: For central systems serving multiple dwelling units, design includes a recirculation system serving separate dwelling units per §170.2(d) unless building has ≤ 8 dwelling units.
08				DWELLING UNITS ONLY: For heat pump water heating systems, the hot water return from the recirculation loop shall connect to a recirculation loop tank and shall not directly connect to the primary heat pump water heater inlet or the primary thermal storage tanks per §170.2(d)2A.
09				DWELLING UNITS ONLY: For heat pump water heating systems, the fuel source for the recirculation loop tank shall be electricity if auxiliary heating is needed. The recirculation loop heater shall be capable of multi-pass water heating operation per §170.2(d)2B.

Distribution of Individual System(s) serving Dwelling Units

	Yes	No	Not Applicable	Requirement	
10				Single 240-volt heat pump water heaters serving dwelling units must also include systems with:	
				☐	Compact hot water distribution system as specified in Reference Appendix RA4.4.16 in climate zone 1 & 16; AND
				☐	A drain water heat recovery system that is field verified by a HERS Rater per Reference Appendix RA3.6.9 in climate zone 16.
11				A drain water heat recovery system that is field verified by a HERS Rater per Reference Appendix RA3.6.9 in climate zone 16.	
12				For recirculation distribution systems serving individual dwelling units, only Demand Recirculation Systems with manual on/off control as specified in the Reference Appendix RA4.4.9 shall be used.	

Mandatory Pipe Insulation All Occupancies

13	☐	For systems serving dwelling units and common areas, pipe insulation must meet the minimum insulation requirements in Table 160.4-A (see below) except: - 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 abut securely against all framing members. - Piping installed in interior or exterior walls shall not be required to have pipe insulation if all of the requirements are met for compliance with Quality Insulation Installation (QII) as specified in the Reference Residential Appendix RA3.5. - 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.
14	☐	For systems serving nonresidential spaces, pipe insulation for the following applications is specified to comply with Table 120.3-A (see below) per §120.3: - Recirculating system piping, including supply and return piping of the water heater - The first 8 ft of hot and cold outlet piping, including between storage tank and heat trap, for a nonrecirculating storage system - Pipes that are externally heated
15	☐	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service per §120.3(b)/ §160.4(f). ~~and §150.0(j)3~~ Pipe insulation buried below grade must be installed in a water-proof and non-crushable casing or sleeve.

TABLE 120.3-A/160.4-A PIPE INSULATION THICKNESS

Fluid Temperature Range (°F)	Conductivity Range (Btu-in per hour per ft^2 per °F)	Insulation Mean Rating Temp (°F)	Nominal Pipe Diameter (in)			
			< 1	1 to < 1.5	1.5 to < 4	1.5 to < 4 Multifamily & Hotel/Motel
			Minimum Insulation Required			
105-140	0.22-0.28	100	1.0 in or R-7.7	1.5 in or R-12.5	1.5 in or R-11	2 in or R-16

H. DOMESTIC HOT WATER SYSTEM CONTROLS

Table Instructions: Complete the following table to demonstrate compliance with controls requirements in §110.3 for all occupancies. For multifamily residential and hotel/motel occupancies, compliance is demonstrated with requirements in §160.4(e) and §170.2(d).

	Yes	No	Not Applicable	Requirement
01	☐	☐	☐	Construction documents require manufacturer certification that service water-heating systems are equipped with automatic temperature controls capable of adjusting temperature settings per §110.3(a).
02	☐	☐	☐	Systems with capacity > 167,000 BTUH equipped with outlet temperature controls per §110.3(c)1 unless covered by California Plumbing Code Section 613.0.
03	☐	☐	☐	Controls for circulating pumps or electrical heat trace systems are capable of automatically turning off the system per §110.3(c)2 unless system serves healthcare facility.
04	☐	☐	☐	For recirculation systems serving multiple dwelling units, design includes automatic pump controls per §170.2(d), or §180.1(b)3 for additions.
05	☐	☐	☐	For recirculation systems serving individual dwelling units, design includes manual on/off controls as specified in Reference Appendix RA 4.4.9 per §170.2(d).
06	☐	☐	☐	Combustion air positive shut-off shall be provided per §160.4(e) on all newly installed commercial boilers as follows: - Boiler with input capacity >= 2.5 MMBtu/h, in which the boiler is designed to operate with a nonpositive vent static pressure - Boilers where one stack serves two or more boilers with a total combined input capacity per stack of 2.5 MMBtu/h.
07	☐	☐	☐	Boiler combustion air fans with motors >= 10 hp shall meet one of the following for newly installed boilers: - The fan motor shall be driven by a variable speed drive OR - The fan motor shall include controls that limit the fan motor demand to <= 30% of the total design wattage at 50% of the design air volume.
08	☐	☐	☐	Newly installed boilers with an input capacity >= 5 MMbtu/h and a steady state full-load combustion efficiency < 90% shall maintain excess (stack-gas) oxygen concentrations <= 5% by volume on a dry basis over firing rates of 20-100%. Combustion air volume shall be controlled with respect to firing rate or flue gas oxygen concentration. Use of a common gas and combustion air control linkage or jack shaft is prohibited.

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Nonresidential, Hotel/Motel, and High-rise Multifamily and Multifamily Mixed-use Certificates of Installation

Table Instructions: Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online.

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
●	❍	NRCI-PLB-01-E - Must be submitted for all buildings	☐	☐

J. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no Certificates of Acceptance applicable to service water heating requirements.

DOMESTIC WATER HEATING SYSTEM

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Documentation Author Company Name:	Date Signed:
Address:	CEA 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:
    1. The information provided on this Certificate of Compliance is true and correct.
    2. 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).
    3. 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.
    4. 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.
    5. I understand 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, and I will take the necessary steps to accomplish this requirement.
    6. 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, and I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company :	Date Signed:
Address:	License:
City/State/Zip:	Phone:

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

A. General Information

1. Enter the City the project is located in.
2. Climate Zone: Select from dropdown.
3. Select the applicable Occupancy Types within the project.

B. Project Scope

1. Select whether the project is New or Altered.
2. System Type: Select from dropdown.
3. Select the System Components.

C. Compliance Results

1. Results in this table are automatically calculated from data input and calculations in Tables F through H.

D. Exceptional Conditions

1. This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. Additional Remarks

1. Enter any notes or comments for the AHJ.

F. Domestic Hot Water Equipment

Equipment Schedule: Central Systems

3. Enter the System Name.
4. Exception to §140.5(c)/§170.2(d)3: Select from dropdown.
5. Check the box if the Capacity-weight efficiencies for gas systems >= 1MMBtu/h1.
6. This field is filled out automatically.
7. Enter the Name or Item Tag.
8. Equipment Type: Select from dropdown.
9. Enter the Volume.
10. Enter the Rated Input Capacity.
11. Enter the Rated Efficiency.
12. This field is filled out automatically.
13. This field is filled out automatically.
14. Enter the Designed Standby Loss.
15. This field is filled out automatically.

Water Heating Equipment in Individual Dwelling Units

16. Select the applicable equipment within the project.
17. Select if the project meets the listed requirements.

Water Heating Equipment All Occupancies

18–21. Select if the project meets the listed requirements.

Water Heating Equipment for Central Systems Serving Dwelling Units §170.2(d)2&3

22. Select the applicable equipment within the project.

G. Domestic Hot Water Distribution System

Recirculation Loops in Central Systems Serving Dwelling Units or Nonresidential Spaces

1-9. Select if the project meets the listed requirements.

Distribution of Individual System(s) serving Dwelling Units

10-12. Select if the project meets the listed requirements.

Mandatory Pipe Insulation All Occupancies

13-15. Select if the project meets the listed requirements.

H. Domestic Hot Water System Controls

1-8. Select if the project meets the listed requirements.

I. Declaration of Required Certificates of Installation

Selections have been automatically made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks.

J. Declaration of Required Certificates of Acceptance

Selections have been made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks.

Documentation Declaration Statements

1. The person who prepared the NRCC 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.