



# Solar Water Heater Program

## System Completion Form

### CERTIFICATE OF INSTALLATION

Site Address \_\_\_\_\_ Customer Name \_\_\_\_\_

The solar water heater described below and installed at the above address is complete and meets all requirements of [UTILITY NAME]'s Solar Water Heater Program. I, the undersigned, certify the information on this form is true and correct.

_____	_____
Company Name	Signature
_____	_____
Name (Printed)	Date

### SYSTEM DATA

System Name & Model # \_\_\_\_\_  
Total Collector Area \_\_\_\_\_ ft<sup>2</sup> (net/gross) Tilt \_\_\_\_\_ degrees Orientation \_\_\_\_\_ degrees E or W of true south

### PRESSURE INFORMATION

Initial Incoming Water Supply Pressure: \_\_\_\_\_ psi Corrected Incoming Water Supply Pressure: \_\_\_\_\_ psi  
Existing or Installed Backflow Preventer, Check Valve, or Pressure Reducer? yes / no

### TYPE OF SOLAR WATER HEATER INSTALLED

\_\_\_ Single tank \_\_\_ Two Tank \_\_\_ Three Tank  
\_\_\_ Antifreeze \_\_\_ Drainback \_\_\_ Self Pumping \_\_\_ I.C.S \_\_\_ Thermosiphon \_\_\_ Other \_\_\_\_\_

### SOLAR STORAGE TANK

Heat exchanger tank \_\_\_\_\_ Y/N If yes, then \_\_\_ wrap-around \_\_\_ internal \_\_\_ external  
Manufacturer \_\_\_\_\_ Model # \_\_\_\_\_ Wattage \_\_\_\_\_ kW  
Tank size \_\_\_\_\_ gallons Insulation R-value: Tank \_\_\_\_\_ Jacket \_\_\_\_\_ Total \_\_\_\_\_  
Solar Storage Capacity \_\_\_\_\_ gallons Location \_\_\_\_\_

### BACKUP ELECTRIC WATER HEATER (If two-tank system)

Tank size \_\_\_\_\_ gallons Insulation R-value: Tank \_\_\_\_\_ Jacket \_\_\_\_\_ Total \_\_\_\_\_  
Thermostat settings: Upper \_\_\_\_\_ (degrees) Lower \_\_\_\_\_ (degrees) Location \_\_\_\_\_

### COLLECTOR INFORMATION

Collector manufacturer \_\_\_\_\_ Model # \_\_\_\_\_ # Collectors \_\_\_\_\_

### DIFFERENTIAL CONTROLLER (Active Systems Only)

Manufacturer \_\_\_\_\_ Model # \_\_\_\_\_

### PIPE INSULATION

Brand/Type \_\_\_\_\_ Length of pipe runs (one way, storage tank to collectors) \_\_\_\_\_ feet

**Company Inspecting:**

**Inspected by:**

**Date:**

_____	_____	_____
_____	_____	_____
_____	_____	_____

[UTILITY NAME] Participating Contractor \_\_\_\_\_ Building Permit \_\_\_\_\_ [NAME OF JURISDICTION GRANTING PERMIT]

New Construction \_\_\_ Yes \_\_\_ No Permit # \_\_\_\_\_ # of Bedrooms \_\_\_\_\_ # of People in Home \_\_\_\_\_



- \_\_\_ \_\_\_ \_\_\_ 18. High temperature rated closed cell foam pipe insulation with a minimum ¾-inch wall thickness is installed on all pipes in the system. R-12 minimum insulation is installed on potable water piping exposed to outdoor temperature or in unheated spaces.
- \_\_\_ \_\_\_ \_\_\_ 19. Pipe insulation is properly sized to fit pipe and continuously closed and sealed.
- \_\_\_ \_\_\_ \_\_\_ 20. Pipe insulation exposed to the outside is adequately protected.
- \_\_\_ \_\_\_ \_\_\_ 21. Underground piping is of the appropriate type and is fully enclosed with appropriately water proofed R-6 insulation designed for underground application, is protected from sharp objects, and is below frost line.
- \_\_\_ \_\_\_ \_\_\_ 22. Underground cross-linked polyethylene piping is continuous with no connections along the lengths to be buried.

**Freeze Protection**

- \_\_\_ \_\_\_ \_\_\_ 23. Approved freeze protection is provided.
- \_\_\_ \_\_\_ \_\_\_ 24. If an antifreeze system: a vented, double wall or approved heat exchanger has been installed.
- \_\_\_ \_\_\_ \_\_\_ 25. High temperature propylene glycol antifreeze solution has been used.

**Valves**

- \_\_\_ \_\_\_ \_\_\_ 26. Fully ported isolation valves are installed, enabling bypass of solar system.
- \_\_\_ \_\_\_ \_\_\_ 27. Anti-scald, pressure compensating tempering valve(s) are installed and are:
- a) On the downstream side of the backup electric water heater(s).
  - b) Located after anti-convective plumbing.
  - c) Set no higher than 140° F.
- \_\_\_ \_\_\_ \_\_\_ 28. All valves, gauges and instruments are labeled per Bonneville specifications.
- \_\_\_ \_\_\_ \_\_\_ 29. Temperature & Pressure relief valve is installed on solar storage tank.
- \_\_\_ \_\_\_ \_\_\_ 30. Valves are supplied for filling, flushing, and draining collector loop and potable water piping.

**Solar Storage Tank**

- \_\_\_ \_\_\_ \_\_\_ 31. Minimum solar storage tank capacity of 1.25 gallons/square foot of collector net area is provided.
- \_\_\_ \_\_\_ \_\_\_ 32. Electric power is not connected to a roof-mounted tank or the solar tank (except for wiring to upper element on non-roof-mounted, single tank systems).
- \_\_\_ \_\_\_ \_\_\_ 33. Solar storage tank is insulated to Program standards. If in Oregon, and insulated to OSEIA standards, industry sticker is on the tank.
- \_\_\_ \_\_\_ \_\_\_ 34. If solar storage tank is located in space where water leakage could cause structural damage, drip pan with pipe routed to drain or outside is installed.
- \_\_\_ \_\_\_ \_\_\_ 35. Anti-convective piping with sweat fittings is installed on cold water supply inlet at top of solar storage tank.

**E. Passive Systems (Thermosiphon, ICS, and Hybrid ICS )**

- \_\_\_ \_\_\_ \_\_\_ 1. Roof-mounted solar storage tanks and ICS systems have adequate structural support per manufacturer's specifications.
- \_\_\_ \_\_\_ \_\_\_ 2. The potable water inlet and outlet piping on roof-mounted tanks and ICS systems is type L copper or brass and is piped to directly above the roof jack, where the connection to non-metal piping is made.
- \_\_\_ \_\_\_ \_\_\_ 3. Incoming supply line pressure to the system does not exceed 70 psi, and pressure reducing valve (if required) is properly located.
- \_\_\_ \_\_\_ \_\_\_ 4. A 90psi (150psi for ICS) cold-water expansion valve is installed in the collector/solar storage tank supply piping downstream of any pressure reducing valve, check valve or backflow preventer, and in an area not subject to freezing and routed to a positive drain.
- \_\_\_ \_\_\_ \_\_\_ 5. A check valve is installed in the cold water supply line before the cold water expansion valve for thermosiphon and ICS systems.
- \_\_\_ \_\_\_ \_\_\_ 6. A thermometer is installed between solar storage and auxiliary water heater tank in the inlet piping to and near the top of the auxiliary tank.
- \_\_\_ \_\_\_ \_\_\_ 7. Pressure relief valve at ICS collector outlet or temperature /pressure relief valve on solar tank are piped to drain per manufacturer's guidelines.
- \_\_\_ \_\_\_ \_\_\_ 8. Vacuum Tube Integrated Collector Storage systems include:
- a. Circulation loop for high limit heat transfer with a differential controller, a check valve and pump in the piping from the collector(s).
  - b. Meets Specifications F. 3-7, 11-13, 20, & 31.
  - c. Expansion tank is installed when number of tubes is greater than four.

**F. Active Systems (All)**

- \_\_\_ \_\_\_ \_\_\_ 1. Incoming supply line pressure to the system does not exceed 90psi, and pressure reducing valve (if required) is properly located.
- \_\_\_ \_\_\_ \_\_\_ 2. If a pressure reducing valve, check valve, and/or back flow preventer is/are on potable supply line to the system, a properly sized and located expansion tank is installed.
- \_\_\_ \_\_\_ \_\_\_ 3. Collector loop plumbing has been thoroughly flushed and pressure tested prior to charging with collector fluid and system startup.
- \_\_\_ \_\_\_ \_\_\_ 4. Fluid has an adequate flow rate and circulates in proper direction.

