



Install a Solar Water Heater

Island Grantee Job Aid

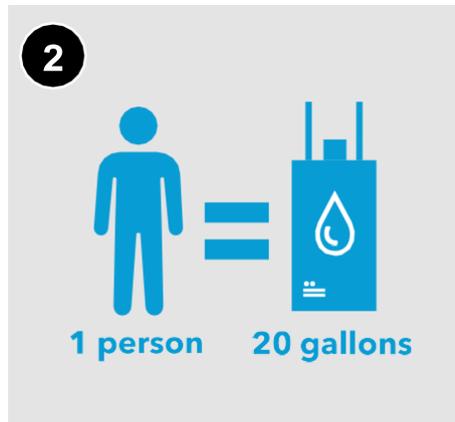
Aligns With Standard Work Specification 7.0302.6

Priority List Optional:

Use the DOE-approved Water Heater Savings Calculator to determine allowable cost and SIRs for replacing the existing system with either a hybrid heat pump water heater or solar water heater. The replacement system showing the highest SIR must be installed.



Verify the plumbing infrastructure is leak-free and sufficient to support a solar hot water installation. If mounting the solar collector on the roof, verify the roof will adequately support the installation (dead load and wind load) and that the roof has more than 10 years of useful life remaining. Consider using **Weatherization Readiness Funds (WRF)** if this is not the case. **7.0302.6a.**



Installations must be sized according to “*Residential Solar System Sizing Verification*,” which uses a 20 gal/person standard.



Locate solar collectors to minimize shading and maximize solar gain without interfering with other appliance operations (e.g., chimneys, vents, and exhaust terminations). **7.0302.6c.**

Install a Solar Water Heater



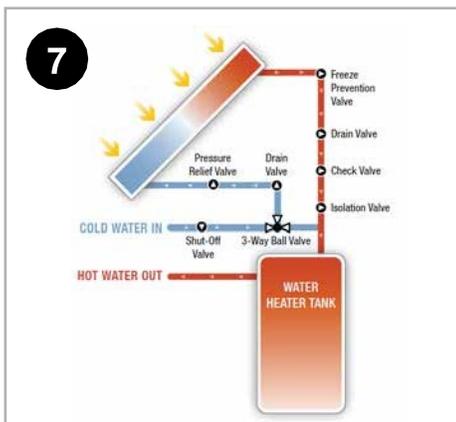
Install the solar collector in compliance with applicable code and manufacturer specifications. If conflict exists between code and manufacturer specifications, apply the more restrictive requirement. [7.0302.6d](#).



Select a storage tank/backup water heater that is ENERGY STAR® certified, equivalent, or better; fits in the installation space with required clearances; provides sufficient hot water for the home and occupants; and is insulated to R-12.5 or greater. [7.0302.6b](#).



If the storage tank will be installed in or above conditioned space or in a location where water damage could occur, install a drain pan according to IRC requirements. Drain the pan to the exterior of the building. [7.0302.6g](#).



Install the storage tank in compliance with applicable code and manufacturer specifications. If conflict exists between code and manufacturer specifications, apply the more restrictive requirement (e.g., seismic straps may be required in some areas). [7.0302.6d](#).



Double check clearance in front of the storage tank to allow for inspection, maintenance, and replacement of components (including replacement of the anode rod). [7.0302.6e](#).



Install a Temperature and Pressure (T&P) relief valve per IRC and manufacturer specifications. Pipe the valve to within 6" of the floor or drain pan, or directly to the outdoors in an observable location. Piping material must meet IRC requirements. [7.0302.6h](#).

Install a Solar Water Heater



If not already present, install a separate water cut-off valve for each incoming water line at the storage tank, and between each additional component of the system (e.g., mixing valves, solar collector, additional storage tank). [7.0302.6k.](#)



If the cold-water supply passes through a check valve, pressure reducing valve (PRV), or backflow preventer, install an expansion tank on the cold-water supply line at a point that is downstream of all those valves. Size the expansion tank in accordance with manufacturer specifications and applicable code. [7.0302.6l.](#)



Support the expansion tank so that it does not move or sag using rigid support material that is able to support twice its weight when filled with water. [7.0303.5d.](#)



Image from RHA Job Aids for the Retrofit Installation of Heat Pump Water Heaters (10/23 California version)

Set the pressure in the expansion tank to match incoming water pressure. [7.0303.5e.](#)



Install dielectric unions when connecting copper to galvanized steel piping in accordance with IRC and manufacturer specifications. [7.0302.6i.](#)



If not provided by the manufacturer, install heat traps on the inlet and outlet piping. [7.0302.6j.](#)

Install a Solar Water Heater



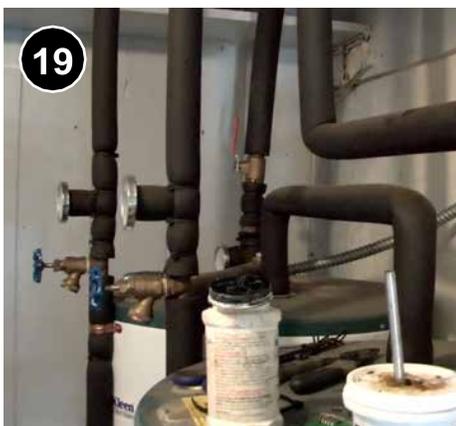
Set the discharge temperature to 120°F. Install temperature-indicating device at the discharge outlet of the thermostatic mixing valve. [7.0302.6n](#).



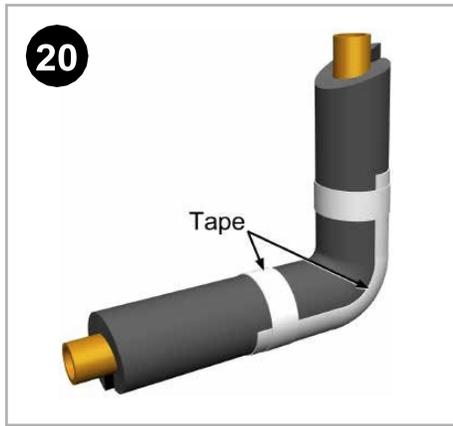
If the storage tank and/or other electrical devices are hardwired, a certified electrician will need to make the final electrical connections.



Turn water back on and ensure there are no leaks.



On all accessible pipes carrying hot water, install pipe insulation of R-3 or better that is a vapor retarder and sized for the correct diameter of the pipes. [7.0302.6m](#).



Seal all insulation seams, joints, and connections with tape, tie straps, or other independent means. [7.0301.1c](#).

Turn the system on and ensure proper operation.



Provide the occupant/owner with the user's manual for the system, warranty information, installation instructions, and installer contact information. [7.0302.6q](#).



Checklist

Install a Solar Water Heater

DESIRED OUTCOME

Adequate hot water supplied by a leak-free, safe, durable, efficient, and accessible water heater.

- Verify solar unit is leak-free and mounted solidly based on local code.
- Verify unit is sized to 20 gal/person.
- Verify drain pan if present for interior storage (if in area where water damage may occur) and plumbed to the outside of the building.
- Verify shut-offs on hot and cold water.
- Verify presence of T&P valve.
- Verify appropriate installation of expansion tank (if required).
- Verify adequate maintenance clearance surrounding all interior and exterior units.
- Verify presence of heat traps on inlet and outlet piping.
- Verify all hot-water pipes are insulated to a minimum of R-3 and seams/joints sealed with independent means.
- Verify temp set at 120°F.

ACKNOWLEDGEMENTS

Developed for the U.S. Department of Energy by Simonson Management Services (SMS) under contract #89243422FEE400259, with input from Weatherization trainers and providers throughout the country and the generous assistance of Catkins Solutions, Guam Energy Office, National Renewable Energy Laboratory, Richard Heath & Associates, and WxTV.

