

**SOLAR WATER HEATING  
SELF-INSPECTION CHECKLIST**  
SOLAR DOMESTIC HOT WATER HEATING PROGRAM



New Jersey's Clean Energy Program™  
c/o Honeywell  
145 Route 46 West  
Wayne, New Jersey 07470

**Project Information**

\*If measurements cannot be taken, please explain why:

Contractor/Installer company name		Date of self inspection	
Residential Customer Name		Inspector's name	
Installation Address		City	Zip
Ambient Temperature (°C)	Solar Radiation (w/m <sup>2</sup> )	Solar Tank Water Temp. (°C)	Time of Measurement

**System Checklist**

♦ Check off each inspected item below.

<b>A. General Requirements</b>	
1. Back-up water heater is electric or gas and served by one of the following suppliers: Atlantic City Electric, Jersey Central Power & Light, PSE&G, Rockland Electric Company, New Jersey Natural Gas Elizabethtown Gas, South Jersey Gas, Oil, Propane, or Municipal Electric.	
2. For roof installation, roof must have significant (more than 10 years) useful life remaining.	
3. Jurisdictional inspection(s) have been passed	
Permit Type: _____	Permit #: _____ Date: _____
Permit Type: _____	Permit #: _____ Date: _____
Permit Type: _____	Permit #: _____ Date: _____
<b>B. General System Requirements &amp; Hardware Installation</b>	
<b>Collector Siting, Orientation, Mounting, and Shading</b>	
1. Any site limitations (tilt, orientation, shading, etc.) do not reduce calculated annual output by more than 25% of optimal output.	
2. Collector mounting is per manufacturer's specifications and framework will resist deterioration.	
3. Solar collectors are raised off roof surface or properly flashed to the roof.	
4. All roof and building penetrations are permanently sealed using appropriate materials and techniques.	
<b>General Equipment and Installation</b>	
1. System is of workmanlike quality and complies with local codes.	
2. All components are new.	
3. Any building insulation disturbed due to system installation is restored to previous condition.	
4. All valves, gauges and instruments are installed properly and labeled per manufacturer specifications.	
5. A thermometer is present that gives the temperature of the solar heated water.	
6. Corrosion between dissimilar metals has been avoided in all structural components.	
<b>Plumbing/Piping</b>	
1. There are no leaks in the system plumbing.	
2. Anti-convective piping with sweat fittings or threaded fittings (with flexible copper piping) with high temp. gaskets are installed at all hot water outlets and cold water inlets.	
3. All piping in the system is copper or cross-linked polyethylene type, and all fittings are either copper or brass; cross-linked polyethylene piping connections are made with compression fittings.	
4. Potable pressurized plumbing in unheated overhead spaces is cross-linked polyethylene type.	
5. Cross-linked polyethylene piping underground or in unheated overhead spaces is continuous with no connections along the buried lengths or within the unheated overhead space.	
6. Piping runs are adequately and appropriately supported.	
7. High temperature rated closed cell foam pipe insulation with a minimum ¾ inch thickness is installed on all pipes in the system and first 5' of exposed cold water inlet piping.	

	8. Pipe insulation is properly sized to fit pipe and continuously closed and sealed.
	9. Pipe insulation exposed to the outside is adequately protected and R-12 minimum insulation is installed on potable water piping exposed to outdoor temperature or in unheated spaces.

## System Checklist (cont'd)

<b>Plumbing/Piping (continued)</b>	
	10. Underground piping is of the appropriate type and is fully enclosed with appropriately water proofed R-6 insulation designed for underground application below frost line.
<b>Freeze Protection</b>	
	1. System must be climate appropriate and must be installed in accordance with the manufacturer requirements.
	2. If an antifreeze system: a vented, double wall or approved heat exchanger has been installed.
	3. High temperature propylene glycol antifreeze solution has been used.
<b>Valves</b>	
	1. Fully ported isolation valves are installed, enabling bypass of solar system.
	2. Anti-scald, pressure compensating tempering valve(s) are installed and a) On the downstream side of the backup water heater(s), b) Located after anti-convective plumbing, and c) at or below 140°F.
	3. Temperature & pressure relief valve is installed on solar storage tank.
	4. Valves are supplied for filling, flushing, and draining collector loop and potable water piping.
<b>Backup Water Heater</b>	
	1. Auxiliary heater thermostat(s) is set to 120°F (or not to exceed 140°F).
	2. Backup tanks must have a minimum of 40 gal of backup storage and appropriate insulation.
	3. If tank has added side wrap insulation, access panels to heating elements or gas burners are left uncovered.
<b>Solar Storage Tank</b>	
	1. Minimum solar storage tank capacity of 1.25 gallons/sq. foot of collector area is provided.
	2. Solar tank is insulated to manufacturer standards. If insulated to OSEIA standards, industry sticker is on tank.
	3. If water leakage could cause structural damage, drip pan with pipe routed to drain or outside is installed.
	4. The potable water supplied to the solar storage tank meets minimum quality standards.
	5. Means for changing the sacrificial anode rod has been provided (if electric).
<b>C. Specific System Requirements &amp; Installation (check-off all sections that apply)</b>	
<b>All Passive Systems (Thermosiphon)</b>	
	1. Adequate structural support is present per manufacturer's specifications.
	2. The potable water inlet and outlet piping is type L copper or brass and piped directly above the roof jack.
	3. Incoming supply line pressure does not exceed 70psi, and pressure reducing valve is properly located.
	4. A 90psi cold water expansion valve is installed downstream of any pressure reducing valve, check valve, or backflow prevention in an area without freeze risk and routed to a positive drain.
	5. A check valve is installed in cold water supply line upstream of the cold water expansion valve.
	6. Pressure relief valve at temperature/pressure relief valve on solar tank is piped to drain.
<b>All Active Systems</b>	
	1. Incoming supply line pressure does not exceed 90psi, and pressure reducing valve is properly located.
	2. If a pressure reducing valve, check valve, and/or back flow prevention is/are on potable supply line to the system, a properly sized and located expansion tank is installed.
	3. Fill and drain valves have leak-proof caps.
	4. Circulation pump is installed with shaft orientated horizontally.
	5. System has been designed to allow for isolation of the circulation pump.
	6. Controller has correct settings and is mounted within 6 ft. of solar storage tank.
	7. Sensor wiring (when outdoor) has a UV-rated exterior jacketing, is continuously attached, and is protected from abrasion, contact with 110V/220V lines/conduit, weather and high temperature.
	8. Flow meter is provided in vertical piping to the collectors.
	9. If PV powered, the PV module is connected to the DC pump with wiring of appropriate gauge and type in a dedicated roof jack with a DC rated on/off switch between the PV module and the circulating pump.
	10. If PV powered, a high temperature shutoff function is installed and wired through the circulation pump.
<b>Active Antifreeze Systems (if applicable)</b>	
	1. Fill valve has a label indicating non-toxic heat transfer fluid to be used.
	2. Pressure gauge is installed in the collector loop and the operating pressure is within 10-45psi.
	3. A 150psi pressure relief valve piped to drain is installed on the return line from the collectors.
	4. A check valve is installed on return line from collectors near inlet to heat exchanger.
	5. A correctly sized and rated expansion tank is installed on supply line to collectors.
	6. A threaded plug fitting is installed at the high point in the collector loop and is insulated.
<b>Active Drainback Systems (if applicable)</b>	
	1. Collectors are pitched a least 1/8" per ft to inlet and piping is continuously pitched between collector and drainback reservoir with a minimum 1/8" per ft.
	2. There are no inverted U-loop piping configurations between the storage tank and the pump.
	3. 150psi pressure relief valve is installed on drainback tank.

4. Drainback tank is insulated to manufacturer standards for solar storage tanks.
5. Distilled or deionized water and a suitable corrosion inhibitor have been used in the collector loop piping.

**System Checklist (cont'd)**

<b>D. Customer Manual Contents</b>
1. Copy of Contractor's system warranty.
2. Copy of collector and tank manufacturers' warranties and owners' manuals.
3. Accurate as-built diagram showing all electrical elements of the system.
4. Startup procedure, shutdown procedure and troubleshooting guidelines.
5. Recommended maintenance procedures, including specific actions and frequency.
6. Mechanical components information, including but not limited to materials, racking system, type of fasteners, and sealant used on roof penetrations.
7. Component data sheets for primary components, including but not limited to collector(s), pumps, tank, valves, heat exchangers, thermometers, flowmeters etc.
<b>E. Owner Education</b>
1. Owner understands basic system operation and maintenance.
2. Owner can accurately read flow and gauges meter.
3. Owner understands potential performance impacts of shading.
4. Owner knows who to call in the case of an emergency.
5. Owner understands proper start-up and shut-down procedure.

**Trade Ally Self-Inspection Signature**

I certify that the system listed on **Solar Water Heating Self- Inspection Checklist** was installed as contracted and that the system complies with the requirements listed on this form. Should a subsequent random inspection of the system identify a non-fatal Program violation, I understand that I will be required to cure the violation within thirty (30) days of the random inspection report. If I do not cure the violation, I will be required to refund to the New Jersey's Clean Energy Program (NJEP) an amount equal to the incentive funds paid by NJCEP for this system.

Inspector's Name	Inspector's Signature	Date
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**Customer Signature**

I certify that the system was installed at the location indicated on the paid sales receipt/invoice and that the installer has provide an Owner's Manual with the appropriate system documentation and instructions as to the proper operation, maintenance and performance of the installed system. I will allow NJCEP inspector access at a mutually agreeable time.

Customer Printed Name	Customer Signature	Date
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