

R-O4 Residential Solar Water Heater

THIS REBATE IS AVAILABLE TO ELECTRIC HOT WATER HEATING CUSTOMERS ONLY.

Measure Description: Solar water heating or solar hot water is water heated by the use of solar energy. Solar heating systems are generally composed of solar thermal collectors, a water storage tank or another point of usage, interconnecting pipes and a fluid system to move the heat from the collector to the tank. This thermodynamic approach is distinct from semiconductor photovoltaic (PV) cells that generate electricity from light; solar water heating deals with the direct heating of liquids by the sun where no electricity is directly generated.

A solar domestic hot water heating system is a reliable and efficient alternative for heating your hot water. It can provide a significant portion of your home's water-heating needs, using electric water heating as a backup to the solar water heating system.¹

Incentives: Duquesne Light will provide a rebate of \$300 to residential customers that purchase and install a qualifying Solar Water Heater in homes with an existing electric water heater. Upon completion of the solar hot water system installation, you will complete an application which you will submit, along with copies of the contractor installation invoice and equipment specifications, so that we may process your incentive rebate.

Solar Water Heater Rebate Application Instructions/Terms and Conditions

Customers applying for a rebate should read the following program requirements and instructions for providing necessary information on the attached rebate forms.

1. You must be a current Duquesne Light residential customer.
2. Rebates are available for replacement/retrofit installation in existing homes.
3. Abide by the rules and rebate levels in effect at the date of purchase.
4. Applications must be postmarked by 3/31/2013.
5. To qualify for the Solar Water Heater rebate, the new unit must be installed in a dwelling with an existing electric water heater.
6. Solar hot water systems must either replace or retrofit an existing electric hot water system in single family homes.
7. System and components (tanks and collectors) must be new components, OG-300 certified by SRCC, the Solar Rating and Certification Corporation, a rating program developed to improve the performance and reliability of solar products and backed by a manufacturer's warranty of 10 years for the solar collector and 6 years for the storage tank.
8. Completed systems must carry at least a 1 year comprehensive labor warranty from the date of installation.
9. The contractor must provide customers with frost protection assurances and fail-safe freeze and overheat protection, which will help with extreme weather conditions.
10. Installed systems must meet all state and local plumbing, electric, and building codes, as well as local ordinances.

¹ Solar Domestic Hot Water Systems do not generate Solar Renewable Energy Certificates (SRECs) and will not be registered on the SREC tracking system.

11. In addition to meeting the system requirements listed above the system must be an ENERGY STAR qualified solar Hot Water heater. View the list of ENERGY STAR Qualified Solar Water Heaters at the end of the document or visit:
http://www.energystar.gov/index.cfm?fuseaction=solar_wheat.display_products_html
12. Keep copies of all above required documents. If contractor is submitting the rebate documents for you, we suggest you request your set of copies to be mailed to you simultaneously.
13. It is the responsibility of the customer to assure that all requirements for the rebate are met and that all required documentation is provided.
14. Proof of purchase invoice documentation accompanying this application must itemize the products purchased and/or work performed. This proof of purchase must show: (1) the date of purchase and itemized price paid, (2) the size, type, make, model or part number of the products, (3) a description of any installation or other labor charges, and (4) the invoice is paid in full.
15. Failure to provide any of the required information will prevent processing of your application.
16. Funds for incentives are limited and available on a first-come, first-serve basis.
17. Duquesne Light reserves the right to inspect all installations in order to ensure compliance with all program requirements. Participant's home may also be selected for a quality control post-installation inspection. No warranty is implied by this inspection. Participant agrees to provide reasonable access to the property for the purposes described herein.
18. Program procedures, requirements and rebate levels are subject to change or cancellation without notice. Duquesne Light reserves the right to modify or withdraw this program.
19. Duquesne Light does not provide oversight or control over any contractor services related to this program. Responsibility for proper sizing of equipment, as well as delivery and workmanship related to any equipment or services the customer procures, rests exclusively with the contractor selected by the customer. Duquesne Light assumes no responsibility for oversight of contractor services.
20. Duquesne Light does not endorse any particular manufacturer, contractor, or product in promoting its programs.
21. Duquesne Light audits its rebate programs as a protection against consumer and/or contractor fraud. Any attempt to defraud Duquesne Light will result in automatic rejection of the rebate application and possible legal action.
22. Contractors are required to either be certified by the North American Board of Certified Energy Practitioners or have prior industry experience with Solar Domestic Hot Water (SDHW) installations and have completed either an Interstate Renewable Energy Council accredited of manufacturer SDHW training.
23. Installations must be completed in accordance with all laws, codes and other requirements applicable under federal state and local authority.
24. The system must be installed in accordance with the manufacturer requirements.
25. You are urged to seek appropriate consultation concerning any tax liabilities that could be associated with the receipt of the rebate. Duquesne Light is not responsible for any tax liability, which may be imposed on the participant as a result of payment of program rebates or incentives.

R-04: SOLAR WATER HEATING SELF-INSPECTION SYSTEM CHECKLIST

Project Information

Contractor		Date of Inspection	
Participant			
Site Address		City	Zip
Ambient Temp. (°C)	Solar Radiation (w/m²)	Solar Tank Water Temp (°C)	Time of Measurement

*If measurements cannot be taken, please explain why:

System Checklist

A. General Requirements	
<input type="checkbox"/>	1. Back-up water heater is an electric water heater
<input type="checkbox"/>	2. Roof has more than 15 years useful life remaining, if system is located on roof
<input type="checkbox"/>	3. Jurisdiction inspections(s) have been passed Permit# _____ Date: _____
B. General System Requirements & Hardware Installation	
Collector Siting, Orientation and Mounting	
<input type="checkbox"/>	1. Collector tilt, orientation and shading amount consistent with project plans
<input type="checkbox"/>	2. Total TSRF losses do not reduce annual output by more than 25% of optimal output
<input type="checkbox"/>	3. Collector mounting is per manufacturer's specifications and framework will resist deterioration
<input type="checkbox"/>	4. Solar collectors are raised off roof surface or properly flashed to the roof
<input type="checkbox"/>	5. All roof and building penetrations are permanently sealed using appropriate materials and techniques
General Equipment and Installation	
<input type="checkbox"/>	1. System is of workmanlike quality and complies with local code
<input type="checkbox"/>	2. All components are new
<input type="checkbox"/>	3. Any building insulation disturbed due to system installation is restored to previous condition
<input type="checkbox"/>	4. All valves, gauges and instruments are installed properly and labeled per program specifications

<input type="checkbox"/>	5. A thermometer is present that gives the temperature of the solar heated water
<input type="checkbox"/>	6. Corrosion between dissimilar metals has been avoided in all structural components
Plumbing/Piping	
<input type="checkbox"/>	1. There are no leaks in the system plumbing
<input type="checkbox"/>	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
<input type="checkbox"/>	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
<input type="checkbox"/>	4. Potable pressurized plumbing in unheated overhead spaces is cross-linked polyethylene type
<input type="checkbox"/>	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
<input type="checkbox"/>	7. High temperature rated closed cell foam pipe insulation with a minimum $\frac{3}{4}$ inch thickness is installed on all pipes in the system and first 5' of exposed cold water inlet piping
<input type="checkbox"/>	8. Pipe insulation is properly sized to fit pipe and continuously closed and sealed
<input type="checkbox"/>	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
<input type="checkbox"/>	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
Freeze Protection	
<input type="checkbox"/>	1. If an antifreeze system: a vented, double wall or approved heat exchanger has been installed
<input type="checkbox"/>	2. High temperature propylene glycol antifreeze solution has been used
Valves	
<input type="checkbox"/>	1. Fully ported isolation valves are installed, enabling bypass of solar system.
<input type="checkbox"/>	2. Anti-scald, pressure compensating tempering valve(s) are installed and a) On the downstream side of the backup electric water heater(s), b) Located after anti-convective plumbing, and c) at or below 140°F
<input type="checkbox"/>	3. Temperature & pressure relief valve is installed on solar storage tank
<input type="checkbox"/>	4. Valves are supplied for filling, flushing, and draining collector loop and potable water piping
Backup Water Heater	
<input type="checkbox"/>	1. Auxiliary heater thermostat(s) is set to 120°F (or not to exceed 140°F)

<input type="checkbox"/>	2. Backup tanks must have a minimum of 40 gal of backup storage and appropriate insulation
<input type="checkbox"/>	3. If tank has added side wrap insulation, access panels to heating elements are left uncovered
Solar Storage Tank	
<input type="checkbox"/>	1. Minimum solar storage tank capacity of 1.25 gallons/sq. foot of collector area is provided
<input type="checkbox"/>	2. Solar tank is not wired (except for wiring to upper element on single tank systems)
<input type="checkbox"/>	3. Solar tank is insulated to program standards. If insulated to OSEIA standards, industry sticker is on tank
<input type="checkbox"/>	4. If water leakage could cause structural damage, drip pan with pipe routed to drain or outside is installed
<input type="checkbox"/>	5. The potable water supplied to the solar storage tank meets minimum quality standards
<input type="checkbox"/>	6. Means for changing the sacrificial anode rod has been provided
C. Specific System Requirements & Installation (complete all sections that apply)	
All Passive Systems (Thermosiphon)	
<input type="checkbox"/>	1. Adequate structural support is present per manufacturer's specifications
<input type="checkbox"/>	2. The potable water inlet and outlet piping is type L copper or brass and piped directly above the roof jack
<input type="checkbox"/>	3. Incoming supply line pressure does not exceed 70psi, and pressure reducing valve is properly located
<input type="checkbox"/>	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
<input type="checkbox"/>	5. A check valve is installed in cold water supply line upstream of the cold water expansion valve
<input type="checkbox"/>	6. Pressure relief valve at temperature/pressure relief valve on solar tank is piped to drain
All Active Systems	
<input type="checkbox"/>	1. Incoming supply line pressure does not exceed 90psi, and pressure reducing valve is properly located
<input type="checkbox"/>	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
<input type="checkbox"/>	3. Fill and drain valves have leak-proof caps
<input type="checkbox"/>	4. Circulation pump is installed with shaft orientated horizontally
<input type="checkbox"/>	5. System has been designed to allow for isolation of the circulation pump
<input type="checkbox"/>	6. Controller has correct settings and is mounted within 6 ft. of solar storage tank
<input type="checkbox"/>	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
<input type="checkbox"/>	8. Flow meter is provided in vertical piping to the collectors
<input type="checkbox"/>	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
<input type="checkbox"/>	10. If PV powered, a high temperature shutoff function is installed and wired through the circulation pump
Active Antifreeze Systems (if applicable)	
<input type="checkbox"/>	1. Fill valve has a label indicating non-toxic heat transfer fluid to be used
<input type="checkbox"/>	2. Pressure gauge is installed in the collector loop and the operating pressure is within 10-45psi
<input type="checkbox"/>	3. A 150psi pressure relief valve piped to drain is installed on the return line from the collectors
<input type="checkbox"/>	4. A check valve is installed on return line from collectors near inlet to heat exchanger
<input type="checkbox"/>	5. A correctly sized and rated expansion tank is installed on supply line to collectors
<input type="checkbox"/>	6. A threaded plug fitting is installed at the high point in the collector loop and is insulated
Active Drainback Systems (if applicable)	
<input type="checkbox"/>	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
<input type="checkbox"/>	2. There are no inverted U-loop piping configurations between the storage tank and the pump
<input type="checkbox"/>	3. 150psi pressure relief valve is installed on drainback tank
<input type="checkbox"/>	4. Drainback tank is insulated to program standards for solar storage tanks
<input type="checkbox"/>	5. Distilled or deionized water and a suitable corrosion inhibitor have been used in the collector loop piping
D. Customer Manual Contents	
<input type="checkbox"/>	1. System Overview page is complete and accurate
<input type="checkbox"/>	2. Copy of Contractor's system warranty
<input type="checkbox"/>	3. Copy of collector and tank manufacturers' warranties and owners' manuals
<input type="checkbox"/>	4. Copy of performance disclosure form (can be proposal or project plans
<input type="checkbox"/>	5. Accurate as-built diagram showing all electrical elements of the system
<input type="checkbox"/>	6. Startup procedure, shutdown procedure and troubleshooting guidelines
<input type="checkbox"/>	7. Recommended maintenance procedures, including specific actions and frequency
<input type="checkbox"/>	8. Mechanical components information, including but not limited to materials, racking system, type of fasteners, and sealant used on roof penetrations

<input type="checkbox"/>	9. Component data sheets for primary components, including but not limited to collector(s), pumps, tank, valves, heat exchangers, thermometers, flow meters etc.
E. Owner Education	
<input type="checkbox"/>	1. Owner understands basic system operation and maintenance
<input type="checkbox"/>	2. Owner can accurately read flow and gauges meter
<input type="checkbox"/>	3. Owner understands potential performance impacts of shading
<input type="checkbox"/>	4. Owner knows who to call in the case of an emergency
<input type="checkbox"/>	5. Owner understands proper start-up and shut-down procedure

Contractor must complete and sign the statement below after performing a self-inspection.

Contractor Self-Inspection Signature

I certify that the system listed on this SOLAR WATER HEATING SELF-INSPECTION SYSTEM CHECKLIST was installed as described in project proposals and plans provided the Duquesne Light Residential Energy Efficiency Rebate Program (REEP) Customer Participant 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 Duquesne Light an amount equal to the incentive funds paid by the REEP for this system.

Contractor Name	Contractor Signature	Date