



# Understanding Solar Water Heating for **COMMERCIAL CUSTOMERS**

---

California Solar Initiative (CSI)-  
Thermal Program

## What is

### **SOLAR WATER HEATING?**

A solar water heating system captures the warmth of the sun, transfers that heat to water, and works with your conventional water heater or boiler to help it use less energy.

Unlike solar power systems (photovoltaics or “PV”) that collect light energy (photons) from the sun and convert it into electricity, solar water heating systems absorb the heat energy of the sun and use it to heat water. Since it involves heat energy, the technology is referred to as solar thermal.

### What are its **BENEFITS?**

Solar water heating can have a number of benefits for commercial customers. They include:

- Reducing the amount of energy used to heat your water;
- Lowering the cost of heating your water;
- Reducing harmful greenhouse gas emissions; and,
- Helping your business become more sustainable.

The more hot water you use in your business, the more energy savings you can achieve. Your solar water heating system can be scaled to meet your needs by installing a tank with sufficient hot water storage capacity and adjusting the number of solar collectors installed.

### California Solar Initiative (CSI)- **THERMAL PROGRAM**

The CSI-Thermal Program offers cash rebates to business owners who: 1) heat their water with electricity, natural gas or propane; 2) install a qualifying solar water heating system; and, 3) are customers of one of the four investor-owned utilities in the state\*:

- Southern California Gas Company (SoCalGas®)
- Pacific Gas and Electric Company® (PG&E)
- Southern California Edison® (SCE)
- San Diego Gas & Electric Company® (SDG&E®)- California Center for Sustainable Energy® (CCSE) is the Program Administrator in the SDG&E® service territory

To be eligible, businesses must directly consume their solar-heated water rather than use it to carry heat for some other end use. Eligible commercial hot water end uses include drinking, laundry, dishwashing, cleaning and sanitation. Commercial laundries, laundromats, gyms, hotels/motels, restaurants, agricultural processes, hospitals, convalescent homes, food processors and car washes are among eligible commercial hot water end users.

\*Restrictions, requirements and qualifications apply.

## How Do Solar Water Heating Systems **WORK?**

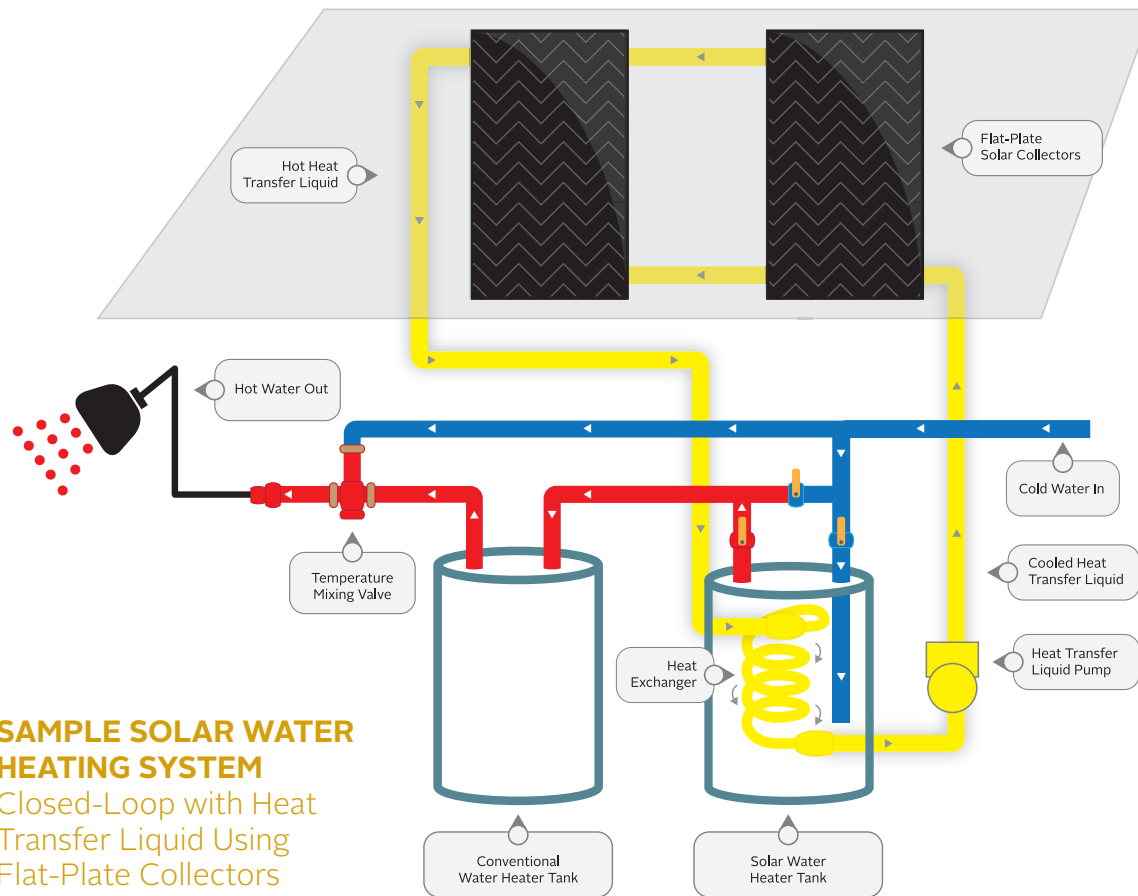
While there are several types of solar water heating systems available, closed-loop systems with flat-plate solar collectors are the most commonly used in California. Here is an explanation of that type of system as an example.

Flat-plate solar collectors are typically installed on rooftops. They contain tubing covered by a black panel under a plate of glass inside an aluminum frame.

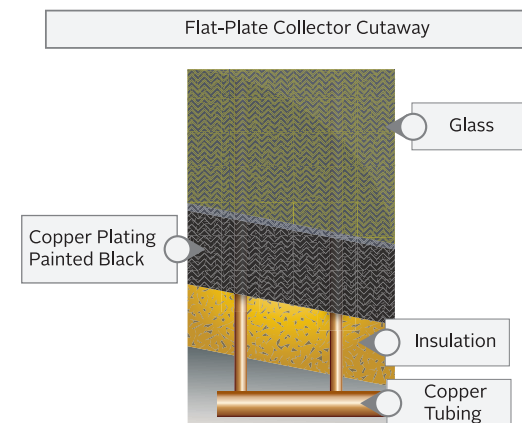
In a closed-loop system, a heat transfer liquid with a higher boiling-point and lower freezing-point than water circulates through the solar collector tubing. The heat transfer liquid helps protect the system from damage.

- The heat transfer liquid in the collector gets heated by the sun and is pumped down through pipes into a tubing coil in the solar water heater tank.
- The heated heat transfer liquid heats the tubing coil, which in turn heats the tap water in the tank that surrounds it. For this reason, the tubing coil is called a heat exchanger.
- When you turn on the hot water in your business, the hot water flows out of your conventional water heater tank and is replaced with hot water from your solar water heater tank.
- That means you use less energy to heat your water in the conventional tank, since it was already delivered hot from the solar water heater tank.
- Cold water flows into your solar water heater tank to be heated by the hot heat transfer liquid through the heat exchanger.
- When the heat transfer liquid cools, it is pumped back up to the solar collectors to get reheated by the sun. The heat transfer liquid never comes into direct contact with the water you use in your business.

On those rainy days when the solar collectors absorb less heat, your conventional water heater or boiler will supply your business with hot water.



**SAMPLE SOLAR WATER HEATING SYSTEM**  
Closed-Loop with Heat Transfer Liquid Using Flat-Plate Collectors



## What are the **REBATES**?

The rebates provided by the CSI-Thermal Program can make installing a solar water heating system more affordable. Rebates are based on how much energy the solar water heating system is expected to displace annually.

- ▶ Eligible businesses can receive rebates of up to \$500,000 for natural gas-displacing systems, and up to \$250,000 for electric- or propane-displacing systems.

---

To learn more about solar water heating and the CSI-Thermal Program, visit:

[waterheatedbythesun.com](http://waterheatedbythesun.com)



The CSI-Thermal Program is funded by California investor-owned utility customers and is administered by regional Program Administrators under the auspices of the California Public Utilities Commission.

© 2012 California Center for Sustainable Energy, Pacific Gas and Electric Company, Southern California Edison and Southern California Gas Company. Copyright and trademarks belong to their respective owners. All rights reserved.

CDG-0412-1319  
NR-385-V1-0612