

## How it works: Direct Open Loop Photovoltaic Operated System

The direct pumped system has one or more solar energy collectors installed on the roof and a storage tank somewhere below, usually in a garage or utility room. A pump circulates the water from the tank up to the collector and back again. This is called a direct (or open loop) system because the sun's heat is transferred directly to the potable water circulating through the collector tubing and storage tank; no anti-freeze solution or heat exchanger is involved.

This system has a photovoltaic cell that senses when there is enough solar insolation available to heat the home's hot water. The PV cell powers a DC pump which circulates the water from the storage tank to the solar collector.

A flush-type freeze protection valve installed near the collector provides freeze protection. Whenever temperatures approach freezing, the valve opens to let warm water flow through the collector. The collector also allows for manual draining by closing the isolation valves (located above the storage tank) and opening the drain valves.

