

## Marathon Water Heaters

Marathon  
Water Heaters  
The Marathon  
Electric Water Heater offers significant advantages over conventional  
water heaters.

The  
Technologically advanced design of the Marathon is clearly  
differentiated from short lived steel water heaters. It's the most  
durable water heater made, with a warranty to match.

The  
Envirofoam<sup>®</sup> insulation is completely free of CFC and HCFC ozone  
depleting gases. Marathon leads the way in environmental friendly  
manufacturing, design and operation.

See  
how you can save money now by integrating your solar water heating  
needs with your solar thermal heating system.

Website  
Link: [www.marathonheaters.com](http://www.marathonheaters.com)

Subsidiary of:

Solar  
Applications for your Marathon

Best Water  
Heater Under the Sun!

With propane sky high, natural gas at record highs, fuel oil rising and electric rates following suit, there is renewed interest in solar domestic hot water systems. The technology is sound and well proven. Those that invested in this technology back in the early '80s when federal tax credits were available have enjoyed thousands of dollars of savings. The good news is the sun is still there along with a new

30% federal tax credit.

We can help you engineer the best systems available to incorporate your Marathon with both your solar electric and solar thermal systems:

#### Thermosiphon

Systems. These systems heat water or antifreeze fluid and the fluid rises by natural convection from collectors to the storage tank, which is placed at a higher level. Although heat transfer is not as rapid as other systems, no pumps are required. In thermosiphon systems fluid movement, and therefore heat transfer, increases with temperature, so these systems are most efficient in areas with high levels of solar radiation such as the deep south and Caribbean.

#### Direct-Circulation

Systems. These systems pump water from storage to collectors during sunny hours. Freeze protection can be obtained by recirculating hot water from the storage tank, or by draining the water back to a reservoir in the home (drain-down). Since the recirculation system increases energy use while flushing reduces the hours of operation, direct-circulation systems are used only in areas where freezing temperatures are infrequent.

#### Drain-Down

Systems. Treated or untreated water is circulated through a closed loop, and heat is transferred to potable water through a heat exchanger (HEX). When no solar heat is available, the collector fluid is drained into a reservoir by gravity to avoid freezing.

#### Closed

Loop or Indirect Water-Heating Systems. These are some of the most prevalent solar water heaters. They use the sun to heat water or a non-toxic antifreeze solution in the collector. The most commonly used fluid for freeze protection is propylene glycol - the same material used in many of your foods. When the controller senses the collector is hotter than the water in the storage tank, a circulation pump turns on, through a HEX (heat exchanger) then the tank.

