

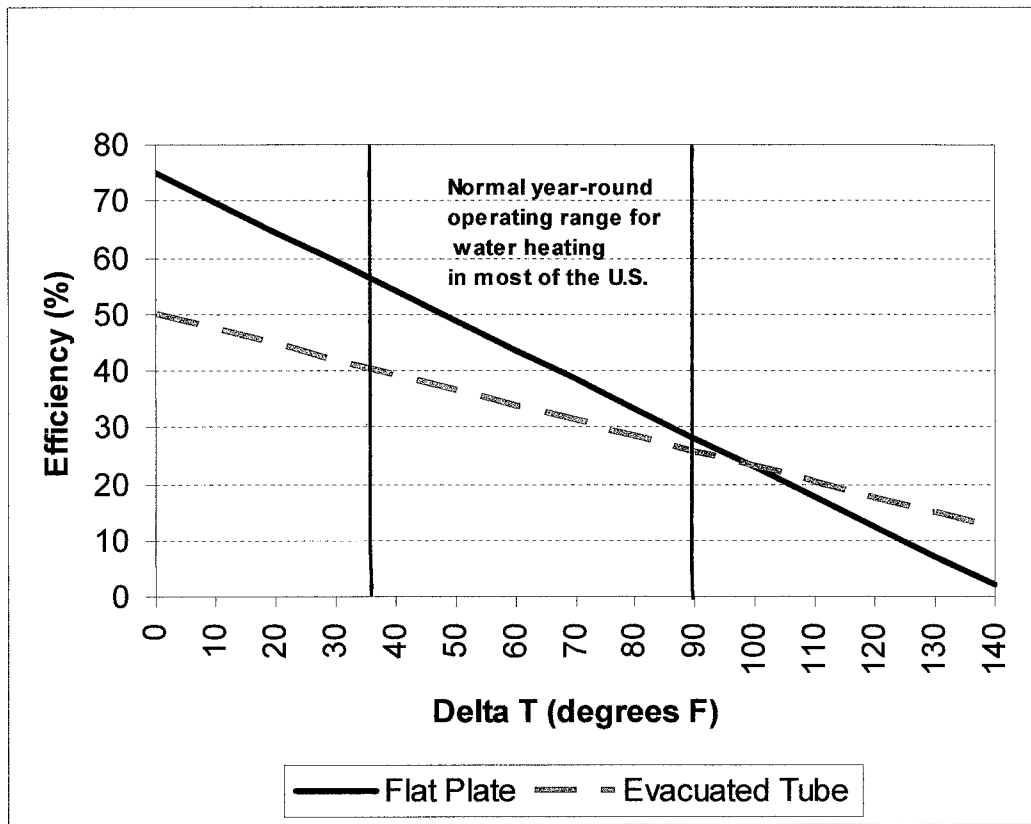
Which type of collector – flat plate or evacuated tube?

There are two main types of hot water collectors – flat plate and evacuated tube. Manufacturers claims aside, the basis for purchasing any collector should be durability and the Btus of heat produced per dollar invested. Fortunately, reliable data on the performance of almost all collectors is available through the SRCC, whose certification is required for receiving federal tax credits.

The graph below is based on SRCC performance data for a variety of collectors. Delta T on the graph represents the difference between the outside temperature and the fluid temperature entering the collector inlet. The steepness of the slope indicates how quickly the collector loses heat as delta T increases. The efficiency of heat gain of evacuated tubes lags far behind that of selective-surface flat plate collectors over a range of delta T covering most climates in the U.S. Also, if evacuated tubes lose their vacuum they are like driving a car with flat tires.

“For heating domestic water to 130 degrees F, flat plate collectors can produce more heat than evacuated tube collectors of similar size, during most of the year, in almost all the contiguous United States.” * Evacuated tubes can perform better in very cold climates such as Canada or the Arctic where delta T reaches 100 degrees F.

Not only do flat plate collectors out-perform evacuated tubes, their cost per Btu output is half that of evacuated tubes. Thus, for both efficiency and cost, flat plate solar collectors are the right choice for your hot water needs.



*Marken, Chuck and Puffer, Doug. 2008. Home Power Magazine. Vol. 123, Feb/Mar, pp. 66-74.