An Overview of Water Heater Options

Heating water constitutes the second highest residential energy cost behind heating and cooling the home. Considering the importance of water heating and the money it requires, selecting an appropriate water heater is an important decision.

Types of High-Efficiency Water Heaters
Most homes use inefficient conventional water heaters despite the progress in recent years of developing high-efficiency devices that can save energy now and money over time. The US Environmental Protection Agency and Department of Energy, through the ENERGY STAR program, recommend five types of water heaters:

- Gas Condensing
- Heat Pump
- High-Efficiency Gas Storage
- Solar
- Whole Home Gas Tankless

These water heaters vary in appearance, installation, method of heating, price, and savings. With so many options and varying qualities, selecting a high efficiency water heater can be a dizzying process. The ENERGY STAR program recommends researching and selecting your next water heater while your current heater is still functioning. Don't wait until an emergency or there won't be time to make a well researched and educated decision.

Recommendations
The following table describes the five water heaters recommended by the ENERGY STAR program. Their savings are compared to conventional gas water heaters. While there are many more water heating options, these five are the most efficient and should be given the strongest consideration. For example, electric tankless heaters are often perceived as a "green" alternative, but are actually highly energy inefficient in comparison to the ENERGY STAR options.

The following table compares the water heater types recommended by the ENERGY STAR program. This information is meant as an overview, and further research may be necessary before selecting a specific water heater.

Type of Water Heater	Description	Pros, Cons and Considerations	Estimated Installed Price	Estimated Average Savings
Gas Condensing	Look similar to conventional water heaters. Rather than venting combustion gases, they are captured and reused to further heat the water.	Approximate 13 year lifetime.	$2,000	$110 per year $1,430 lifetime
Heat Pump	A condenser coil carrying heated refrigerant passes through the water tank, heating the water.	Approximate 13 year lifetime. One of the most efficient options available. New technology.	$1,660	$290 per year $3,770 lifetime
High Efficiency Gas Storage	Similar appearance & technology to conventional gas storage. Better insulation, heat traps & more efficient burners.	Approximate 13 year lifetime.	$1,025	$30 per year $390 lifetime
Solar	Usually installed on the roof. Liquid is heated by sun and passes through heat exchanger in tank to heat the water.	Approximate 20 year lifetime. Uses a renewable energy sources. Incentives & rebates will subsidize the cost.	$4,800 (without subsidies)	$220 per year $4,400 lifetime
Whole Home Gas Tankless	Cold water passes through the tankless heater only when it is needed. No storage necessary, saving cost of maintaining heated water.	Approximate 20 year lifetime. Much more efficient than electric tankless heaters.	$1,600	$115 per year $2,300 lifetime

Source:
(1) ENERGY STAR. "Residential Water Heaters." Resource available on-line at http://www.energystar.gov/index.cfm?c=water_heat.pr_water_heaters;
(2) Center on Globalization, Governance & Competitiveness, Duke University (2009). "Manufacturing Climate Solutions, Chapter 6" pp2. Resource available online at http://www.cggc.duke.edu/environment/climatesolutions/greeneconomy_Ch6_HeatPumpWaterHeaters.pdf