

RESIDENTIAL PROPANE APPLICATIONS: STORAGE TANK WATER HEATERS

FACT SHEET

Equipped with leading features like electronic ignition and highly insulated tanks, Energy Star qualified propane tank water heaters offer superior value to comfort-seeking homeowners.

Propane storage water heaters are a versatile, efficient, and reliable hot water solution for homeowners. Propane storage water heaters offer superior hot water delivery and energy costs compared with traditional electrical storage tank units, and come in a wide range of capacities to meet the hot water demands in any home.

Propane storage water heaters are well suited for both new construction and as simple replacements for electric or gas water heaters in existing homes. Propane storage tank water heaters work well in both applications for three important reasons.

First, power-vent designs fan-force the exhaust gasses outdoors through a horizontal plastic duct routed out through a wall or at the edge of the basement ceiling. Direct-vent models also fan-force the exhaust gasses outdoors, as well as draw the external combustion air directly in via a separate duct. In both cases, the plastic sidewall venting makes the installation simpler, allows for flexible water heater location, and avoids the need to run a vertical flue chase going up through the home. The sidewall venting options — some of which allow for vent runs of up to 40 feet — are especially useful in electric-to-propane water heater replacements where a new vent is added.

The second reason is flexible corrugated stainless steel tubing [CSST] gas lines can supply propane to the water heater in

both new construction and replacement applications. CSST lines are bendable and easily routed to the water heater location, expediting the installation.

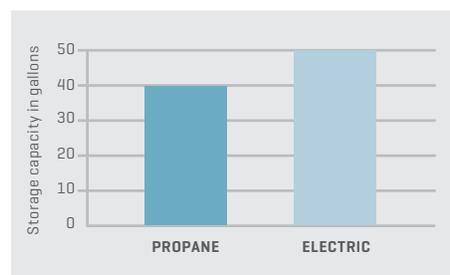
And finally, a wide variety of propane water heaters are available in varying designs, capacities, and efficiency levels, including Energy Star qualified units.

Propane storage water heaters can serve many domestic functions. “Combi” systems utilize a single source, which can be a storage water heater, to provide both hot water and space heating in the home.

PERFORMANCE

A propane storage water heater delivers the same amount of hot water as an electric tank, which is much larger and takes up more space in the home. For example, to deliver about 70 gallons of hot water in the first hour, a home would need a 40-gallon propane unit or an 50-gallon electric unit [see CHART 1].¹

CHART 1 STORAGE TANK SIZE NEEDED FOR 70 GALLON FIRST HOUR DELIVERY



APPLICATIONS FOR USE

- New Construction
- Replacement/Retrofits

AT A GLANCE

- Compact size frees up more space.
- 40-gallon propane unit delivers the same amount of hot water as a 50-gallon electric unit.
- Eligible for Energy Star qualification — electric resistance units and heating oil units are not.
- Energy Star propane units save about 13-20 percent in annual energy costs, compared with standard electric and heating oil units³.
- CO₂ emissions reductions of 1,700 pounds per year, compared with standard electric units.

Further, the larger electric tank will experience greater standby losses (thermal losses to the surrounding area) due to its greater surface area.

High efficiency propane storage water heaters, including Energy Star qualified units, also offer features such as electronic ignition, highly insulated and corrosion resistant tanks, and automatic flue dampers.

ENERGY EFFICIENCY

Propane storage water heaters are eligible for Energy Star qualification, whereas electric resistance units and heating oil units are not. Based on the Energy Star product listing, there are about 270 certified propane storage water heaters.² These units have a minimum Energy Factor of 0.67, and tank sizes ranging from 29–65 gallons. The First Hour Rating for these units — meaning the amount of hot water that the unit can supply per hour when starting with a tank full of hot water — ranges from 67 to 120 gallons.

It is important to note that the Energy Factor rating for water heaters is useful for comparing units with the same energy source, but it is *not* useful in comparing products with different energy sources — such as propane and electric units. Instead, metrics such as \$/year, hot water flow rate,

and Energy Star qualification provide a more accurate comparison of models with different energy sources.

ENERGY CONSUMPTION & COSTS

With features such as electronic ignition and highly insulated tanks, Energy Star qualified propane storage water heaters offer significant energy savings. As CHART 2 indicates, an Energy Star qualified propane unit will save between 13 and 20 percent in annual energy costs, compared with standard electric and heating oil water heaters, respectively.

CHART 2 ANNUAL ENERGY COSTS FOR WATER HEATING — 3BR, 2.5 BA TYPICAL HOME



The amount of annual propane consumption for a storage tank water heater will depend on hot water use and the water heater’s efficiency, among other factors. An approximate range is about 190–290 gallons/year.

ENVIRONMENTAL

Except for water heaters powered by renewable energy, any system will have some environmental impact linked to its operations in the form of CO₂ emissions. In the case of electric systems, the upstream electric power generation creates CO₂ emissions. Based on an energy and environmental analysis of different energy sources, an Energy Star propane storage water heater offers:

- CO₂ emissions reductions of 1,700 pounds per year, compared with a standard electric storage tank system. The propane system’s emissions are nearly half those of the electric unit.³
- A 19 percent reduction in CO₂ emissions [about 600 pounds/year] compared with heating oil storage tank systems in the Northeast.³

1. First Hour Rating data taken from the Air-Conditioning, Heating, and Refrigeration (AHRI) Directory of Certified Product Performance, for a 50 gallon storage tank propane water heater and an 80 gallon electric storage tank water heater. ahridirectory.org.

2. Energy Star Program Website, energystar.gov.

3. PERC “Comparing Residential Water Heaters for Energy Use, Economics, and Emissions – 2015.” buildwithpropane.com/pdf/Water-Heating-3E-Analysis.pdf.

FOR MORE INFORMATION

To learn more about storage tank water heaters and the Propane Education & Research Council, visit buildwithpropane.com.

Propane Education & Research Council / 1140 Connecticut Ave. NW, Suite 1075 / Washington, DC 20036
P 202-452-8975 / F 202-452-9054 / propanecouncil.org

The Propane Education & Research Council was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.