PROPANE
CLEAN AMERICAN ENERGY™

NEW 2015 NAECA STANDARDS:

RESIDENTIAL WATER HEATERS

COLD CLIMATE ZONE

FACT SHEET

An analysis of energy, economics, and emissions in a cold climate zone.

Water heaters are the second largest energy user in the home, and one of the most important for reasons of economics and comfort. The U.S. water heater market is currently undergoing major product changes, due to increased water heater efficiency standards from the U.S. Department of Energy as part of the National Appliance Energy Conservation Act. Because of the new standards, homeowners can no longer simply go with the cheapest system or a similar replacement. Rather, they must now consider a water heater's long-term value, whether or not it will fit into the available space (new units' higher efficiency means a larger size), noise and temperature impacts (considerations with heat pump water heaters), and performance characteristics. Fortunately, the new requirements also come with a range of technology solutions.

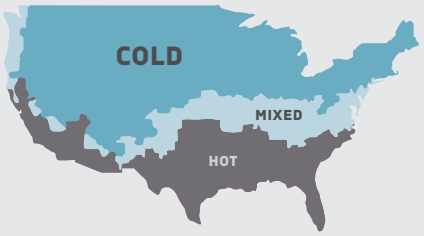
To aid the decision-making process, a 2015 study by Newport Partners, LLC analyzed the energy, economic, and environmental impact of 14 residential water heating systems across three climate regions, with a special focus on the performance of propane-powered systems versus electric and heating oil alternatives. This fact sheet presents the analysis findings for the cold climate zone. This zone includes the Northeast U.S., where heating oil systems were analyzed, as well as three other cold climate locations. The results are broken out by moderate-demand and high-demand homes (which use a greater volume of hot water daily).

ENERGY EFFICIENCY THAT ADDS UP

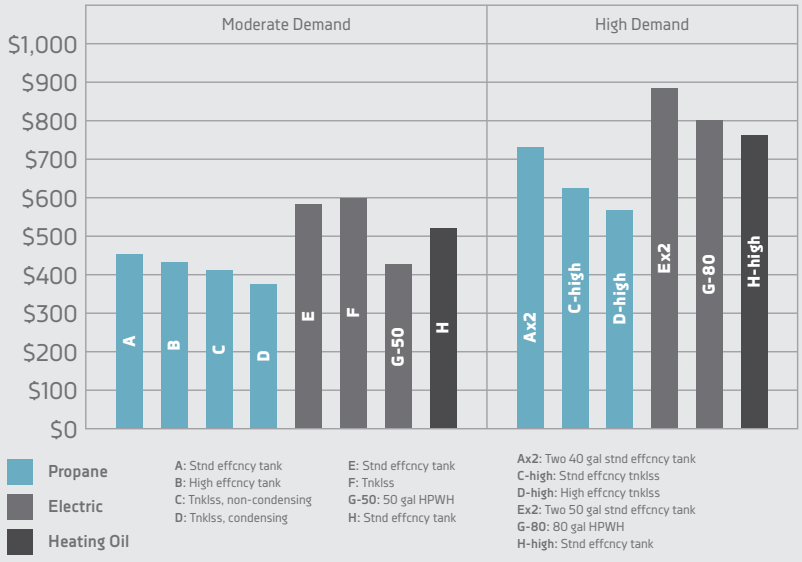
In moderate-demand homes, the **50-gallon electric water heater** (System E) **has annual energy costs $208 higher than the propane-powered tankless water heater** (System D). This is an important consideration during replacement, when homeowners often default to a minimum efficiency electric water heater.

In high-demand homes, **the propane tankless unit** (System D-high) **saves $240 annually over the 80-gallon heat pump water heater** (System G-80)**.** While efficient, the heat pump water heater exhausts cool air into the basement during winter, driving up overall energy costs.

Cold Climate Zone



Annual Energy Costs - Cold Climate

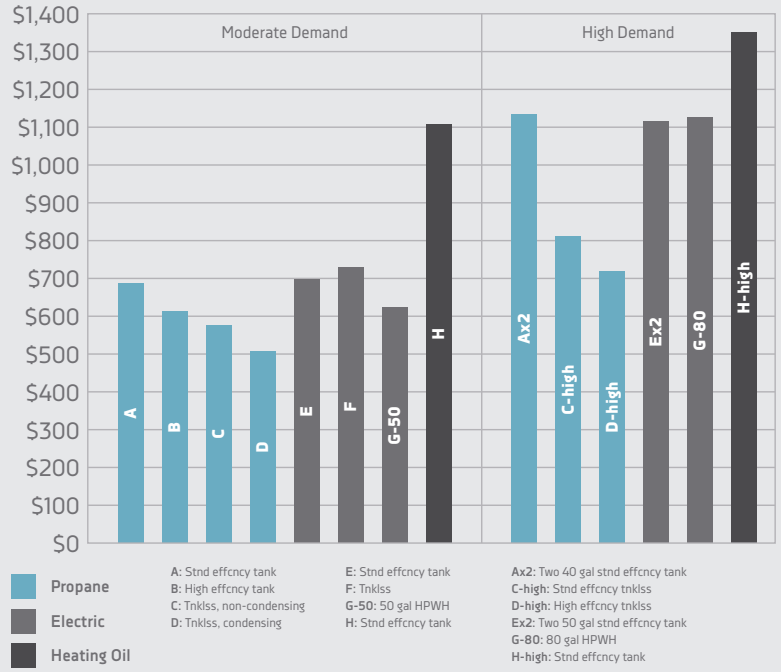


THE BEST LONG-TERM VALUE

Annual Cost of Ownership is the combination of the cost of the original equipment, installation, and annual energy costs.

For new construction, moderate-demand homes, the higher energy and equipment costs and shorter lifespan of the **heating-oil-powered water heater** (System H) contribute to an **ACO that is more than twice that of the propane-powered tankless water heater** (System D). **The high efficiency propane-powered storage tank water heater** (System B) has an **ACO value 10 percent lower than the electric storage tank** (System E). For the millions of cold climate households using electric water heaters, a propane system would offer a better long-term value.

In high-demand homes, the "twinned" tanks (Systems Ax2 and Ex2) have relatively high ACO costs, as do the heat pump water heater and the heating-oil-powered water heater. **The propane tankless water heater systems** (Systems C-high and D-high) **offer ACO savings of $350 to $575** comparatively.



Replacement analysis results mirror the new construction findings, with the propane-powered tankless unit again having the lowest ACO. Compared with the 50-gallon electric water heater, **the propane tankless unit has a 23 percent lower ACO — a much better long-term value.**

LOWERING YOUR CARBON FOOTPRINT

More and more, homeowners are concerned with lowering their carbon footprint. The CO_2 analysis reveals that despite **the heat pump water heater's** high efficiency rating, it **has 38 percent higher emissions than the propane-powered condensing tankless unit** in the moderate-demand home.

NO MORE BUSINESS AS USUAL

Updated standards for water heaters are forcing contractors, builders, and homeowners to ask different questions when it comes to new construction and system replacements. Propane-powered water heating systems offer many advantages making them strong competition for the "business as usual" choices. And, as traditional tank-based systems grow larger to meet new standards, homeowners will appreciate the space they save with propane-powered tankless systems. In cold climate zones, propane offers economic, energy, performance, and installation benefits that homeowners want.

FOR MORE INFORMATION

To learn more about propane-powered water heaters, the new NAECA standards, and the Propane Education & Research Council, visit **buildwithpropane.com**.

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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.