

WATER HEATER STYLE SELECTION

Determining which style water heater you are looking to purchase?

Standard Tank Water Heater

The standard tank hot water heater supplies hot water by heating a tank contained in an approved housing with electricity, natural gas or propane. Water is heated to a specified temperature setting controlled by the user or manufacturer of the water heater. The standard size tank for a residential application is 40-50 gallons, however smaller and larger sizes are available based on the intended application. Most tank style hot water heaters have an efficiency rating of 80%; high efficiency models are available for more economical installations. Standard B-vent or PVC is acceptable for venting based on manufacturers required venting materials. Electric water heaters are vent-less but have specific power supply requirements listed by the manufacturer.



Tankless, On Demand, or Whole House Point - of- Use Water Heaters

Tankless hot water heaters are rated differently than standard tank water heaters. Tankless water heaters are designed to provide a specified GPM (gallons per minute) of hot water, based on temperature rise, to the plumbing in a residential or commercial/light industrial application. Tankless water heaters are often used when space is limited and a more efficient system is preferred. When sized properly, tankless water heaters can provide a continuous supply of hot water, unlike a standard tank water heater that is limited to a specific gallon amount. Tankless water heaters only call for fuel/electricity to heat when a minimum circulation of water is passed through the water heater. this makes a tankless heater much more fuel efficient, which cuts back on monthly costs.

Point -of- Use Water Heaters and Instant Hot Water Dispensers

Most commonly used under cabinets or sinks, Point-of-Use Water Heaters supply readily available hot water to a single fixture or appliance. These small water heaters produce hot water by increasing the incoming water temperature from the main hot water supply before water enters the fixture or appliance. Point of use hot water heaters are often electric, however smaller natural gas and propane models are available. Instant Hot Water Dispensers typically have the heating units mounted under the cabinet or counter top with the faucet or dispensing nozzle mounted through the counter top or sink.



For more information on a specific water heater, choose one from the following links:

- [Tankless Water Heater Selection Guide](#)
- [Standard Water Heater Selection Guide](#)
- [Hot Water Dispenser Selection Guide](#)
- [Point-of Use Selection Guide](#)



Information sources include BlueRidge EMC, Energy.gov, EPA.gov, WW Grainger

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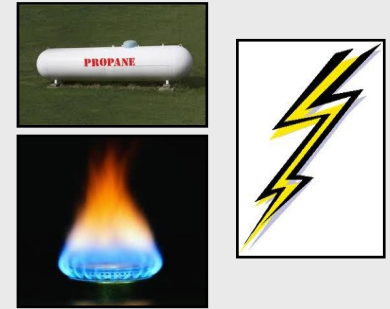
Water Heater Selection Guide

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Energy Source

The energy source of your water heater will determine the size, efficiency and cost of your new water heater. Standard tank water heaters are available with electric, natural gas and propane energy sources. The most efficient way to replace a water heater is to select one with the same energy consumption type heater as the existing water heater. When choosing an energy source, remember it is important to consider whether the hot water supply has been running out. If this is a problem, the new water heater will require a higher GPH (gallons per hour)



Sizing up your Water Heater Requirements

The size of the water heater will be determined by the GPM (gallons per minute) of hot water needed in the water heater's most demanding hour. To determine which size water heater to choose, use the table below to help estimate residential usage for one hour of hot water demand. This is considered the minimum hourly GPH of the new water heater. Choosing a water heater with a GPH less than the estimated GPH will result in running out of usable hot water. Commercial and light industrial applications will require estimating from the consumer on the hot water consumption demand for the unit needed.

Fixture	Average Gallons per Use
Shower	20
Bath	20
Shaving	2
Hand Sink	4
Hair Station	4
Dishwasher	14
Food Prep Sink	5
Washing Machine	32

BTU and Recovery Rate

When selecting a new water heater, the first hour recovery rate and BTUs of the unit will determine how many gallons the water heater can heat to temperature in a one hour time period. This rating, as well as the storage capacity of usable gallons of hot water equal the amount of water that can be used in the first hour. Fast recovery units and high efficiency units offer a higher GPH than standard units because of a different heating design engineered to heat water more quickly and efficiently than a large tank with a standard recovery rate.

Example: A 40 gallon, natural gas, 38,000 BTU water heater has a storage tank capacity of 34.6 gallons of hot water. The GPH recovery @ 90 temperature rise in the first hour is 38.4. Combining the two equals the first hour's available gallons of hot water, 73 gallons.

Special Consideration

Standard tank water heaters can be equipped with power vents for forced venting applications. If the existing water heater has a power vent application it is best to replace it with a unit equipped with a power vent.

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Energy Source

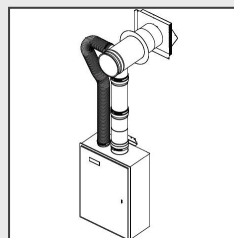
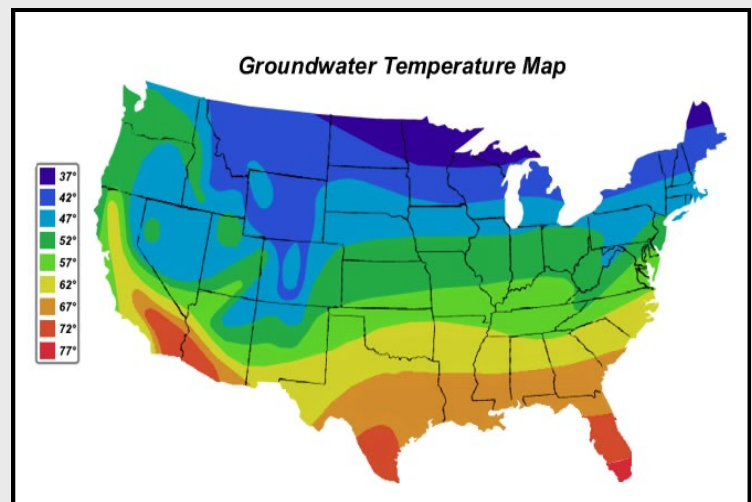
Tankless hot water heaters are made to operate on natural gas, propane or electricity. When choosing which type of energy to use it is best to keep the same energy supply as the existing water heater. If the water heater is a new installation, the most efficient energy source for your area will work best. Remember, a tankless water heater using an electric energy source will require multiple dedicated circuit breakers. Be sure to check manufacturer specifications for the available power supply needed before selecting your water heater.

Sizing Your Tankless Water Heater

Unlike traditional tank-style water heaters the tankless models are rated on GPM (gallons per minute) rather than GPH (gallons per hour) or recovery rating. Based on the chart below, you can estimate your GPM and average ground water temperature to properly size the tankless water heater. When sized properly, the tankless water heater will provide a continuous flow of hot water provided the GPM through the heater does not exceed the temperature

	Temp. increase	Gallons Per Hour
Standard 50 gallon Tank	45 degrees	150 first hour
Tankless	45 degrees	534

Fixture	GPM	Average Temp.
Tub	4	102F
Shower	2.5-3.0	104F
Washing Machine	2	120F
Dishwasher	1.5	110F
Kitchen Sink	1.5	110F



Ventilation

Tankless water heaters with a natural gas or propane energy source need to be vented. Manufacturers may specifically require PVC, Stainless Steel, and standard B-vent requirements for each style of heater. This must be checked by the installer to make sure the tankless water heater is properly vented to avoid warranty and error code issues.

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Point -of- use hot water selection

Point-of-use hot water heaters are electrical appliances that can be installed under cabinets to supply hot water to a single fixture and are available in tankless and standard tank models.

The flow rate of the water heater should meet or exceed the temperature rise you are looking for.

Most point of use hot water heaters servicing a single sink or shower are rated by GPM.

Example: Temperature rise @ GPH or GPM

Determining the proper GPM will be based on how often you use this fixture and how long. Showers will require a higher GPM than a hand washing sink which only gets used a few times a day.

Fixture	Average Flow GPM	Average Temp.
Tub	4.0	102 F
Shower	2.5 - 3.0	104 F
Washing Machine	2.0	120 F
Dishwasher	1.5	110 F
Kitchen Sink	1.5	110 F



When choosing a point-of-use hot water heater for a specific fixture, make sure you know the size of the inlet/supply and the outlet to the fixture, as well as any electrical or power supply requirements.

Larger systems that use natural gas and propane as an energy source are available and should be sized the same as a standard tankless water heater. When servicing multiple fixtures in an area, multiple point-of-use hot water heaters can be connected on the same system (RV's, trailers, condos, light commercial/industrial applications).



[Standard Tankless Water Heaters](#)

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Hot Water Dispenser Selection

Instant Hot Water Dispensers typically have the heating units mounted under the cabinet or counter top with the faucet or dispensing nozzle mounted through the counter top or sink.

Hot water dispensers are designed as a hot water appliance rated by the amount of cups they can produce per hour.

Most hot water dispensing units have a heating unit mounted under a sink or counter top. A faucet or water dispensing nozzle at counter or sink level dispenses the hot water into preferred dish, some counter top models are available.



Before selecting a hot water dispenser make sure the cups per hour or GPH rating will work for your application. If consistently filling cups of hot water be sure the recovery rate can maintain the quantity demanded.



Under Counter Mount
Sink Top Dispensers



Hot Water Applications	
Uses	Examples
Beverage Preparation	<ul style="list-style-type: none"> Coffee, tea and cocoa
Food Preparation	<ul style="list-style-type: none"> Pasta and instant noodles Soup Rice Gelatin Sauces Cereal Baby food
Cleaning and Household Activities	<ul style="list-style-type: none"> Soften and rinse dried food from pots and pans Remove labels from jars Prepare canning jars Clean containers for recycling Loosening tight lids on cans and jars Polishing silver Making hot compresses to relieve aches and pains Preparing potpourri
Warming	<ul style="list-style-type: none"> Preparing baby bottles Heating an ice cream scoop or cheese slicer to make use easier Melting chocolate and softening butter Thawing meat or frozen vegetables



Multiple units can be installed on the same hot water system if the power and water supply requirements meet manufacturer specifications.

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