

# 7 | HOT WATER HEATERS

## Water Heating: Your Second-Biggest Energy User

On average, water heating uses about 20% of the total energy consumed in a home and is the second-largest energy user after space heating. It's one of the most straightforward pieces of equipment to upgrade and also provides a good opportunity for energy savings.

## Factor in the Energy Factor (EF)

Several different types of water heaters are available, and prices and energy efficiency vary. The best measure of water-heater efficiency is the energy factor (EF), which compares the energy supplied in heated water to the total daily energy consumption of the water heater. An EF of 0.67 or higher is considered the benchmark to be looking for.

## Natural Gas Storage Water Heaters

These types of water heaters are the most common in Edmonton. Their cylindrical tanks offer a ready reservoir (storage tank) of hot water. Since water is constantly heated in the tank, energy can be wasted when the tank isn't in use. (This is called standby heat loss.) Therefore, it's important to select the right size of tank. According to Natural Resources Canada's Office of Energy Efficiency, a single family with 4 family members, 2 bathrooms, a dishwasher and a clothes washer requires a 180-litre (40 gallon) tank.

## Extra Water Tank Insulation = Extra Savings

Some storage water heater models have a heavily insulated tank, which significantly reduces standby heat losses and lowers annual operating costs. Look for models with tanks that have a thermal resistance (R-value) of R-12 to R-25. A high R-value increases the energy factor of the water heater. Look for ENERGY STAR-rated high-efficiency hot water tanks. Gas water heaters also have venting-related energy losses. Either a fan-assisted gas water heater or an atmospheric-sealed combustion water heater reduces these losses.

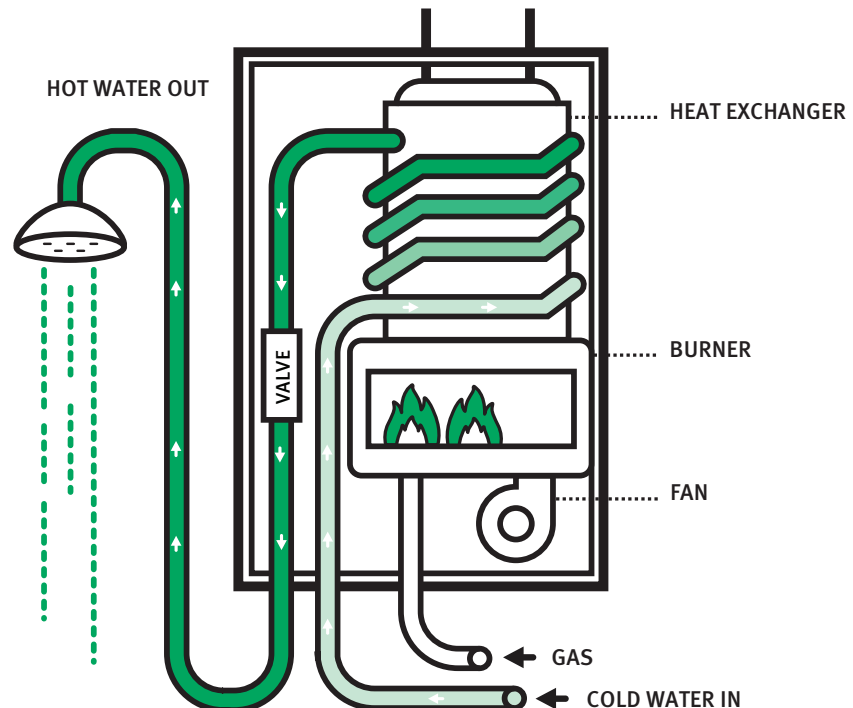
## Tankless Water Heaters: Energy Efficiency's in the House

Tankless water heaters, also known as on-demand or instantaneous water heaters, provide hot water only as it's needed. Since they don't produce the standby energy losses associated with storage water heaters, they can save you money. They're also mounted on the wall so they save on floor space as well.

Tankless water heaters typically provide hot water at a rate of 8 to 15 litres (2 to 5 US gallons) per minute. Gas-fired tankless water heaters produce higher flow rates than electric ones and are generally cheaper to operate. However, while running, on-demand gas water heaters use more gas than a regular hot water storage tank and may require a larger gas supply line. Similarly, electric on-demand heaters require significantly larger electrical draw than storage tanks and may be restricted by the home's electrical service size.

On-demand water heaters can be up to 34% more energy-efficient than conventional storage-tank water heaters. The greatest potential improvements are in homes that use the least hot water, such as small dwellings, households using hot water only a few times in the day and places with very efficient fixtures. You can achieve even greater energy savings (of up to 50%!) by installing an on-demand water heater at each hot water outlet, but it can be very cost prohibitive.

Tankless Water Heater: How it Works



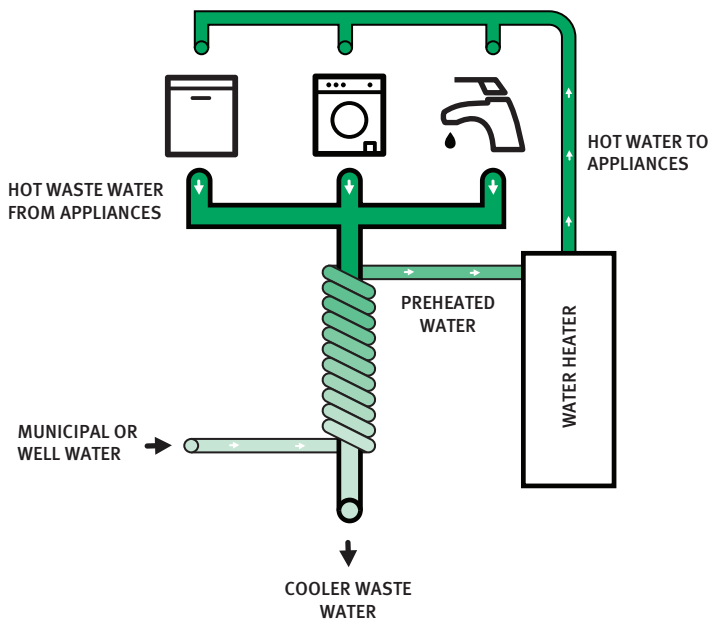
## Lower Your Energy Costs with a Tankless Hot Water Heater

The initial cost of a tankless water heater is higher than that of a conventional storage water heater, but wall-mounted tankless water heaters take up much less space, typically last longer and have lower energy costs, which could offset the higher purchase price.

## Drain-Water Heat Recovery

Drain-water heat recovery and drain-line heat exchangers: These systems are essentially a coil that goes around the drain line (coming from hot water sources like sinks, showers, bathtubs, dishwashers and clothes washers) that capture up to 60% of the waste heat passing through the drains.

The heat that's recovered is returned to the system which lessens the amount of energy required to heat additional hot water. These systems have no moving parts, so nothing can wear out or get clogged. Only fresh water goes through the pipes; hair and other materials go through a separate pipe. The systems cost about \$500 to \$800, including installation and can be one of the most cost-effective energy efficiency improvements in a home.



## GREEN FACTS AND TIPS: HOT WATER HEATERS

### Preventing Legionella Bacteria

It's important to set your hot water heater to between 50 and 55 C. This keeps energy costs low, but the temperature is high enough to prevent the growth of Legionella bacteria.

To learn more, please visit the Health Canada website at: [phac-aspc.gc.ca/id-mi/legionella-eng.php](http://phac-aspc.gc.ca/id-mi/legionella-eng.php)

### Excessive Water Temperature

Water that's too hot is not only more expensive but can also be dangerous for your family.

### Tankless Water Heaters Last Longer

Most tankless water heaters have a life expectancy of more than 20 years. They also have easily replaceable parts that extend their life by many more years. In contrast, storage-tank water heaters last 10 to 15 years.

### Have Your On-Demand Water Heater Installed by a Pro

It's important to ensure that on-demand water heaters are installed by qualified contractors and are properly vented. The condensing models require access to a drain.

