

FACTS REGARDING TANKLESS WATER HEATERS

Several of Ohio's distribution cooperatives have received inquiries from consumers regarding tankless water heaters. The following is a summary of the installation, operation, and costs of these water heaters so that cooperative personnel can be better informed and formulate the proper response to their consumers.

Electric residential tankless water heaters have been commercially available for several years and are also referred to as on-demand water heaters, instantaneous water heaters, and point-of-use water heaters. Their primary goal is to eliminate the need for a storage tank and to provide almost instantaneous hot water at the tap.

Tankless water heaters therefore need very large heating elements to heat a large volume of incoming water from a nominal 60 degrees to whatever water temperature the homeowner desires. The load created by the heating elements can be as much as 28 kW and greater for one water heater.

Some of the advantages to the consumer are:

- Unlimited supply of hot water at flow rates less than 2.4 gallons per minute, depending on the size of the unit.
- Instantaneous hot water if installed at the point of use. This may require more than one tankless water heater in a home.
- 10% to 20% savings in water heating energy costs if there is no demand charge. This savings is due to the elimination of tank losses and piping losses, especially advantageous if the tank is located in an unheated garage or in a basement during summer months.
- Small wall space required for equipment.

Disadvantages to the consumer:

- Very costly to purchase- approximately \$900 for a 40 gallon equivalent tank replacement.
- Costly to install – may require a larger service panel and wiring. A 28 kW tankless water heater requires 3 – 40 amp breakers and 3 #6 cables to serve the unit.
- Not good for simultaneous, multiple uses.
- Possibility of dimmed and/or blinking lights.
- More expensive to repair, for instance a new heating element is approximately \$200 just for the element.
- The hot water outlet temperature is flow dependant i.e. for a 28 kW unit, if the required flow is less than .8 gpm then no water is heated and if the flow is over 2.4 gpm, the outlet temperature will begin to decrease. At 4.4 gpm the temperature will be less than 100 degrees F.

Disadvantages to distribution cooperative:

- Loss of kWh sales.
- May require up to a 50 kVA transformer
- May require up to a 350 mcm service cable.
- Lowers the load factor.

The coop may want to suggest some alternatives to a homeowner that is considering a tankless water heater such as insulating the water heater tank and hot water pipes, installing low flow shower heads, installing timers and heat traps.

Some distribution cooperatives around the country have considered prohibiting tankless water heaters on its residential rates and requiring the water heaters to be on a demand or time of use rate as a way of discouraging the installation of tankless water heaters.

The photograph below is of the inside of a tankless water heater showing the enclosed heating elements at the top, the water inlet/outlet at the bottom, and the power cables that are required.

