

# Making Water Heating Green

**G**REENHOUSE GASES AND CLIMATE CHANGE ARE HOT topic these days. Yet, sometimes we forget how important our own efforts can be in fighting pollution.

Through power supplier Basin Electric Power Cooperative, in Bismarck, N.D., your electric co-op delivers renewable energy like wind, heat recovery and biomass as part of its regular electricity mix.

That helps reduce our dependence on carbon-based fuels and unstable foreign sources of energy. Supplying members with nearly 10 percent of their power from renewable energy also reduces pollution and the greenhouse gas emissions that traditional electric generation might have produced.

But members can help reduce pollution and greenhouse gas emissions significantly right at home with a “green” water heater.

Water Heater Innovations, Inc. (a subsidiary of Rheem Manufacturing) has created the first environmentally conscious electric water heater. At a factory near St. Paul, Minn., Water Heater Innovations is producing the lifetime warranty Marathon water heater.

“Marathon leads the way in environmentally friendly manufacturing, design and operation,” beamed John Richards, western regional manager

for Marathon. He strolled proudly past a computer-controlled molding machine using compressed air to form polybutene into a seamless, plastic tank that cannot rust or corrode.

“Our units are not only produced in an environmentally conscious manner, over the life of the unit, customers will prevent countless greenhouse gases from ever being created,” Richards explained.

Unlike every gas water heater (“Including those new tankless models”) electric-powered Marathons do not create greenhouse gases. There is no need for a flue to vent out pollution like fossil fuel water heaters require.

“That prevents pollution on a daily basis,” he said. “But, because it is a water heater designed to last forever, a Marathon also prevents pollution in other ways.”

Nearly 10 million water heaters are produced, transported and installed annually in North America. Richards says installing lifetime warranty heaters could quickly cut that number in half.

“Imagine the energy savings by reducing the manufacturing activities of traditional water heaters (parts, assembly, baking the glass lining, transportation of materials, re-melting scrap metals,

By Tom Green

Nearly 10 million water heaters are produced, transported and installed annually in North America. Installing lifetime warranty heaters could quickly cut that number in half.



etc),” Richards added, his voice straining over more computer-controlled machines winding strands of fiberglass over cooled, plastic tanks already fitted with valves and universal pipe fittings.

The multiple layers of fiberglass surround the molded inner-tank and act as a pressure vessel. The Marathon plastic tank is designed to flex with the normal changes in pressure within a plumbing system and have greater durability than rigid, steel tanks. The fiberglass filament – coated in plastic resin – holds the tank in place. Another neat trick of engineering that makes the Marathon the strongest tank in the industry.

But Richards was still talking up the environmental benefits. “Also, reducing the number of water heaters sold annually will reduce transportation and storage of finished goods, cut down on fuels used in re-installation by a consumer or plumbing contractor, eliminate carting off the failed tank and cut down on the mountain of un-useable units that clutter our landfills.”



In addition to protecting the earth, Marathons are also “installation-friendly” and the factory tour points out all the key features that make this unit lightweight and easy to set up.

The next stop on the production line is creating ports and installing the heating elements and the electrical control boxes. At this point the unit is thoroughly leak tested with helium to ensure the heater will provide a lifetime of reliable service to the purchaser. (Helium molecules are even smaller than air and water so they can detect leaks better and, no, the testers using helium do not all talk like Mickey Mouse.)

The baked, fiberglass-encased plastic tank is then inserted into a high-density, plastic shell. This polyethylene “jacket” is also seamlessly blow-molded at the factory in a process nearly identical to creating the inner tank. In addition to being lightweight, the “car-bumper tough” exterior resists dents, scratches and rust.

The plastic jacket is then cut open to allow the tank to be inserted. Next the cavity between the exterior jacket and the inner, fiberglass-encased tank is sealed with insulation.

“It’s not just any insulation,” notes Richards. “Our Envirofoam™ insulation is completely free of ozone depleting gases. That four inches of insulation also helps make the Marathon one of the most energy efficient models on the market. It only allows five degrees of heat loss over a 24-hour period. When you heat water with a Marathon and the power goes out, you’ll still have a hot shower the next morning.”

The heating elements of a Marathon are also energy efficient. Water heating is a large portion of home energy consumption – about 15 percent to 25 percent. Marathon’s low watt-density coated elements offer exceptional durability and the highest energy factor of any similar-sized model.

“Of all the fuels available, electric water heaters will have the highest energy efficiency” Richards pointed out. “Generally speaking, a Marathon will be less expensive to operate than propane and due to the volatile nature of gas prices, we are now the least cost alternative compared to natural gas in many markets. An additional advantage is that there is no risk of fuel leaks, NOX fumes or carbon monoxide with a Marathon. They are also less expensive to install and do not need unsightly flues for venting.”

When you need a new water heater, think green and get gray. The gray plastic jacket that surrounds the environmentally friendly Marathon electric water heater.

## Is A Tankless Water Heater Right For You?

**Co-ops have received a flurry of questions about tankless water heaters.**

Tankless water heaters are just what the name says – water heaters with no holding tank. They heat water on demand rather than storing hot water for use later.

A large heating element in the unit flash heats water as it flows through the unit.

These appliances are common in Japan and Europe where they’ve been in use many decades. They made their first appearance in the United States about 25 years ago.

On the surface, tankless water heaters seem like a great idea. There is no wasted water while a person waits for hot water to reach the faucet. There’s also no standby loss from the tank holding hot water day-in and day-out.

But for a typical family, a tankless water heater will not meet normal water heating needs.

The output of most tankless units is only two to three gallons of hot water per minute. This means activities using hot water, like showering, laundry or washing dishes, can only be done one at a time. This doesn’t fit in the lifestyle of most busy households. If the unit is not a modulated type, water temperature drops as demand increases. The faster the water flows through a tankless unit, the lower the temperature rise. It also takes a long time to fill a bathtub with an added capacity unit.

The more capacity, the higher a tankless water heater costs. Models that can supply five gallons per minute can cost \$1,000 or more.

And wiring requirements of tankless water heaters are big: up to 28,000 watts! That’s 117 amps, which may be more than all the rest of the electrical use in a home combined. An ordinary tank-type electric water heater uses only 4,500 watts. Even though tankless heaters only have that high electricity need for just a short time, it can cause such a great demand on the home’s wiring and panel that a separate 60- to 150-amp circuit may need to be installed.

Because tankless water heaters don’t have standby losses, their energy factor is relatively high – around 0.98. But super-insulated water heaters, like the Marathon, approach that figure at 0.91. Standard water heaters with an insulating wrap can also approach these energy factors. So, an electric tankless water heater is barely more efficient than a well-insulated electric tank water heater.

Customers must also understand the wiring cost for a tankless water heater is double that of a tank unit. Factoring the additional costs of the unit, upgraded wiring and more expensive installation, it will take a customer a long time to get a payback on a tankless water heater versus an easy-to-install, energy efficient electric water heater. For homeowners with a hard, mineral-heavy water source, regular maintenance costs should be another consideration. As lime and other deposits begin to build up from the water heating process, tankless heaters become less efficient. On tank water heaters, these minerals settle on the bottom of the tank and can be easily drained off.