

Strong Water Heater Standards Could Save Households Nearly \$200 Each Year and Slash Climate Pollution

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Upcoming energy efficiency standards for home water heaters could shift sales away from outdated technology. Two top manufacturers have united with efficiency advocates in urging efficiency levels that would deliver the largest cost savings and greenhouse gas reductions of any appliance standards to date.



Water heaters are the second-largest energy user in most households. Yet most new models—whether electric or gas—use older, inefficient technology, contributing to large energy bills and greenhouse gas emissions.

The U.S. Department of Energy (DOE) is preparing to propose the first new efficiency standards for water heaters in 13 years. Last year, a multi-stakeholder coalition submitted a joint [recommendation](#) to DOE calling for a major boost to efficiency levels. The coalition included two of the largest water heater manufacturers (Bradford White and Rheem), energy efficiency organizations (American Council for an Energy-Efficient Economy, Appliance Standards Awareness Project, and Northwest Energy Efficiency Alliance), environmental advocates (Natural Resources Defense Council), and consumer advocates (Consumer Federation of America).

UPDATED STANDARDS FOR ALL HEATING TYPES

Federal standards set separate minimum efficiency levels for different types of water heaters, including electric tank water heaters and gas-fired tank water heaters (which each make up nearly half of new sales) as well as gas-fired instantaneous (“tankless”) models. The joint stakeholder recommendation to DOE, if adopted in the upcoming rule, would strengthen the minimum efficiency level for each of these three major types while ensuring that households save far more through reduced energy costs than any increase in purchase price.

Upcoming standards could avert hundreds of millions of metric tons of carbon dioxide emissions and reduce other air pollutants, such as nitrogen oxides, that harm human health

SHIFTING ELECTRIC MODELS TO HEAT PUMPS

Most electric water heaters in the United States today use the same “electric resistance” technology that has been around for more than a century. Such models were widely commercialized beginning in the 1940s, but there’s one problem: they use a lot of electricity. In fact, they draw about a quarter of a home’s total electricity use, on average, according to federal data.

ASAP advocates for appliance, equipment, and lighting standards that cut planet-warming emissions and other air pollution, save water, and reduce economic and environmental burdens for low- and moderate-income households. ASAP’s steering committee includes representatives from environmental and efficiency nonprofits, consumer groups, the utility sector, and state government. Learn more at appliance-standards.org

The joint proposal would shift most new electric models to a far more efficient technology: heat pump water heaters. These can use less than half as much energy to heat the same amount of water to a given temperature.

Heat pump water heaters could save households \$185 on utility bills every year. Taking into account additional upfront costs, households would save more than \$1,000 over the lifetime of the product.

Heat pump water heaters are a proven technology. They have been used for decades and are the most popular type of electric water heater in Japan, and their sales are growing rapidly in parts of Europe. Yet many contractors in the United States still don't offer this super-efficient technology to customers.

Compared to electric resistance models, heat pump water heaters can deliver even more hot water over a short period of time. They generally include backup electric resistance elements to meet demand during periods of high use.

The joint proposal would allow lower efficiency levels for the smallest water heaters (30 gallons and below), for which heat pump technology hasn't yet been introduced to the market. There is also an exception designed to accommodate "low-boy" models, which are shorter and wider and designed for space-constrained applications, typically in multifamily buildings.

Heat pump water heater purchasers would see their investment pay off in about three years through dramatically reduced energy bills. And new tax incentives and rebates under the Inflation Reduction Act would let many households see even quicker payoffs.

CUTTING ENERGY WASTE IN GAS MODELS

Most of today's gas-fired water heaters similarly do not use the most efficient technologies. The joint recommendation calls for meaningful updates. For gas-fired tank models, the recommended standards would reduce energy use by about 10% relative to models just meeting the current standards, saving consumers \$17 annually. Manufacturers would be able to meet the standards by reducing heat losses up the flue when the water heater isn't firing. (An earlier DOE analysis found this efficiency level to be the highest level that would ensure users save money overall.)

For gas tankless water heaters, the recommended standards would effectively require models to use condensing technology to capture more heat, saving about 15% of the energy used relative to the current standards and saving consumers \$31 annually. About half of new gas tankless water heaters sold already meet the recommended standard levels.

NEW STANDARDS LONG AWAITED

DOE hasn't updated residential water heater standards since 2010. By law, it was due to propose new standards (or determine that an update was not appropriate) by 2016. The White House began its review of DOE's upcoming proposal in February.

When DOE publishes its proposed rule, it will hold a public comment period; the department can then prepare final standards. By law, the standards would take effect five years after DOE finalizes them.