

# HIGH COSTS, HIGH EMISSIONS: WHY IT'S TIME TO PHASE OUT ENERGY-WASTING FURNACES

Outdated, inefficient gas furnaces are generating high energy bills that burden lower-income households and emitting millions of tons of avoidable climate emissions and other pollutants that harm human health. In a soon-to-be-released proposed rule, the Department of Energy (DOE) will consider phasing out the least efficient models currently on the market.

**Heating is the biggest utility cost for most U.S. households and a significant source of emissions that harm the climate and health.**



**Strong new standards** could cut average annual home heating bills for consumers replacing an inefficient furnace by about

**\$100**  
per year

Nearly half of U.S. homes—about 50 million—are heated with a gas or propane furnace.<sup>1</sup> Households with a basic (non-condensing) gas furnace face annual average heating bills of about \$700.<sup>2</sup> Those who live in older, draftier homes or in colder climates can have much higher bills. High heating bills can force a terrible choice between paying for heat and other necessities such as food and medicine.<sup>3</sup> These bills particularly strain low-income households, which pay three times as much of their incomes on energy costs than non-low-income households and are disproportionately Black, Hispanic, and Native American.<sup>4</sup> In 2022, rising residential gas prices are making this strain even worse.

Burning fossil fuels in homes for space and water heating, cooking, and other purposes is responsible for about 340 million metric tons of greenhouse gas emissions.<sup>5</sup> Upstream methane leaks throughout the gas supply chain can nearly double the annual greenhouse gas emissions impact of gas-fueled appliances.<sup>6</sup> Gas appliances are also

a significant source of NO<sub>x</sub>, which is precursor to particulate and ozone pollution. This pollution causes asthma attacks, cardiovascular disease, and even premature death—health problems especially prevalent in low-income communities.<sup>7</sup> Gas heating appliances—primarily furnaces—account for about two-thirds of household gas use and related emissions.<sup>8</sup>

<sup>1</sup> Includes both gas and propane furnaces, which are nearly identical. Energy Information Administration (EIA), Residential Energy Consumption Survey (2015). Table HC 6.1, [www.eia.gov/consumption/residential/data/2015/hc/php/hc6.1.php](http://www.eia.gov/consumption/residential/data/2015/hc/php/hc6.1.php).

<sup>2</sup> U.S. Department of Energy, Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Residential Furnaces. August 30, 2016. Table 8.6.1.

<sup>3</sup> J. Howat, J. T. Colgan, W. Gerlitz, M. Santiago-Mosier, and K. R. Rábago. Report Reversing Energy System Inequity. Retrieved April 1, 2022, from [www.nclc.org/images/pdf/special\\_projects/climate\\_change/report-reversing-energy-system-inequity.pdf](http://www.nclc.org/images/pdf/special_projects/climate_change/report-reversing-energy-system-inequity.pdf).

<sup>4</sup> A. Drehobl, L. Ross, and R. Ayala, How High are Household Energy Burdens? (Washington, DC: American Council for an Energy-Efficient Economy, 2020). [www.aceee.org/research-report/u2006](http://www.aceee.org/research-report/u2006).

<sup>5</sup> EPA Greenhouse Gas Inventory Data Explorer, [cfpub.epa.gov/ghgdata/inventoryexplorer/#residential/entiresector/allgas/category/current](https://cfpub.epa.gov/ghgdata/inventoryexplorer/#residential/entiresector/allgas/category/current).

<sup>6</sup> J. Dennison, L. Louis-Prescott, and T. Gruenwald, How Air Agencies Can Help End Fossil Fuel Pollution from Buildings (2021) Pg 5. [rmi.org/insight/outdoor-air-quality-brief/](http://rmi.org/insight/outdoor-air-quality-brief/).

<sup>7</sup> Ibid., pg. 7.

<sup>8</sup> EIA, RECS 2015, Table CE4.1, [www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce4.1.pdf](http://www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce4.1.pdf).

## Phasing out inefficient furnaces would ease costs for households and reduce emissions.

Manufacturers have developed and popularized substantially more efficient models—known as condensing furnaces—that capture and use more of the heat from the furnace’s combustion chamber, reducing waste. A condensing furnace can cut gas use and heating bills by about 15%, or \$100 per heating season on average.

Many consumers have already made the switch, and about half of new purchases are now condensing models. But too many consumers end up with the least efficient gas furnaces since that is often what a landlord or a builder chooses. For homeowners, replacing a broken furnace in the middle of winter often does not allow for time to consider more-efficient options.

By adopting improved efficiency standards that require new furnaces sold to be energy efficient, DOE can ensure that all consumers benefit from this condensing technology. In a 2016 analysis, DOE found that the additional upfront cost of a more efficient furnace would be paid back well within the furnace’s useful life. Of course, for renters and anyone else who does not pay the cost of a new furnace, the savings start the day that a new, more efficient furnace is fired up.

A strong new standard would also eliminate millions of tons of climate change emissions and thousands of tons of NO<sub>x</sub> emissions, reducing pollution that harms human health.

## What about heat pumps?

With electricity generation becoming cleaner, heat pumps can be a great way to reduce climate emissions and, for some consumers, ease heating bill costs. Many utilities and states run programs to encourage heat pump adoption.<sup>9</sup>

The proposed DOE gas furnace standard will not require consumers to purchase heat pumps, which are regulated separately. In 2016, DOE estimated that if non-condensing models were removed from the market, one in ten households looking to replace a furnace would instead purchase a heat pump. The rest would opt for a condensing furnace.

## Gas utilities have fought efforts to phase out the least efficient furnaces for decades.

The big trade associations that represent gas companies—the American Gas Association and American Public Gas Association—have fought standards that would reduce consumer bills (and gas utility sales). They stymied two attempts by the Obama administration to raise the standards and then convinced the Trump administration to issue a rule that effectively blocked strong standards. The Biden DOE repealed that rule this year over the gas industry’s objections. Now, more than 30 years after Congress enacted the original furnace standards, which have never been meaningfully updated, the gas industry is once again lobbying against improving them.

## DOE should set a strong standard that phases out energy-wasting models.

The department is now preparing to propose a new furnace standard. In February 2022, DOE sent a draft rule to the White House for review, which is allowed to last 90 days. When that review concludes, DOE will publish the rule for public comment.

Phasing out the most inefficient furnaces would be a big win for consumers, the climate, and public health. It would ease burdensome energy bills and help achieve climate goals. Supporters of strong furnace standards should be prepared to weigh in on the Biden administration’s proposed rule.

<sup>9</sup> W. Berg, E. Cooper, and N. Cortez, State Policies and Rules to Enable Beneficial Electrification in Buildings through Fuel Switching (Washington, DC: ACEEE, 2020). [www.aceee.org/policy-brief/2020/04/state-policies-and-rules-enable-beneficial-electrification-buildings-through](http://www.aceee.org/policy-brief/2020/04/state-policies-and-rules-enable-beneficial-electrification-buildings-through).