



# Energy Analysis

## Empowering Consumer Choices: Analyzing the Impact of the ENERGY STAR Program on the Adoption of High-Efficiency Gas Appliances

Rev.2023.06.09

The American Gas Association developed the following analysis of the Environmental Protection Agency's ENERGY STAR program and its effectiveness in promoting higher-efficiency gas appliances. This analysis provides data and context on the current space heating market to support the evaluation of the potential consequences of a recent proposal from the EPA to sunset the ENERGY STAR specification for gas furnaces.

**The ENERGY STAR program encourages consumers to select energy-efficient appliances, including natural gas.** From 2015 to 2021, the market for ENERGY STAR gas appliances, including furnaces, water heaters, and dryers, increased significantly. Shipments of ENERGY STAR furnaces grew by 123% during this period, with a market share rise from 26% in 2015 to 41% in 2021. Gas dryers and water heaters also experienced substantial growth in market penetration. ENERGY STAR gas tankless water heaters, which have the highest efficiency for gas, out-shipped heat pump water heaters at a pace of six to one.

**There is still an opportunity for ENERGY STAR to improve the adoption of higher-efficiency gas appliances.** Only 41% of furnace shipments received the label in 2021, increasing from 26% in 2015 with a seven-year average of 31% from 2015 to 2021. Based on reported data from EPA and manufacturer shipment data, there is room for the program to grow, and the label still has not captured a significant portion of the market.

**High-efficiency natural gas appliances are often the most cost-effective and lowest emissions option for consumers.** Natural gas homes typically consume less energy than homes with high-efficiency electric air source heat pumps. While electric applications can have a higher "site" rated energy efficiency, the full-fuel-cycle energy requirements—the energy used or lost in energy extraction, processing, transportation, conversion, and distribution, including the generation and transmission of electricity—are often lower for natural gas than electric applications, including air-source heat pumps. The energy costs associated with high-efficiency natural gas are also lower. A recent AGA analysis found that an ENERGY STAR-qualifying natural gas furnace energy costs \$584 compared to \$971 for a qualifying electric air-source heat pump.

**There are negative consequences, particularly to lower-income consumers, to removing the ENERGY STAR label from gas furnaces and other gas appliances.** Removing the ENERGY STAR label could lead to a decrease in adopting higher-efficiency gas equipment, as consumers may opt for lower-efficiency options due to first-cost burdens. Factors such as availability of natural gas service, cost savings, and regional differences influence consumer choices. Few households have installed a heat pump where natural gas service is available. Sixty percent of existing heat pumps are installed in homes that cannot connect to the natural gas system. Income also influences the installation of HVAC systems, with fewer lower-income owners installing heat pumps than natural gas furnaces.

## ENERGY STAR Background

- ENERGY STAR is a voluntary labeling and certification program that supports adopting energy-efficient products and practices.
- The ENERGY STAR program encourages consumers to choose efficient appliances by providing simple, credible, and unbiased information that consumers and businesses rely on to purchase the most energy-efficient product that meets their needs. A secondary goal is for these changes in market sentiment to be sustained. A short-term trend likely will not be capable of predicting a permanent shift in market shares of higher-efficiency products.
- On May 18, 2023, the Environmental Protection Agency proposed to phase out the ENERGY STAR certification for natural gas furnaces by December 30, 2024. Specifically, EPA proposes to sunset the ENERGY STAR Version 4.1 Specification for Furnaces and remove central air conditioners (CAC) from the ENERGY STAR V6.1 Specification for CAC and Heat Pump Equipment effective December 30, 2024, with no new certifications accepted after December 30, 2023.
- The notice states that the proposed action is consistent with the EPA's focus on electric heat pumps and their ability to deliver energy-efficiency gains, pollution reduction, and cost-savings to consumers.
- EPA asserts its responsibility to guide consumers to efficient electrification of space heating, which is inconsistent with ENERGY STAR program guidance "to treat fuel types separately, so that consumers may find the right products for the fuel type in their home."<sup>1</sup>

## ENERGY STAR is Well Recognized Among Households and Continues to be a Major Influencer in Consumer Choices

- In 2019, 91 percent of households recognized the ENERGY STAR label when shown the label, and 83% of households recalled having seen or heard of the ENERGY STAR label without it being shown first.
- Eighty percent of households reported having at least a general understanding of the ENERGY STAR Label, and 56% of households knowingly purchased an ENERGY STAR product, an all-time recorded high.
- Sixty-eight percent of households reported that ENERGY STAR was at least somewhat influential in purchasing decisions.<sup>2</sup>

---

<sup>1</sup>Environmental Protection Agency. "ENERGY STAR Products Program Strategic Vision and Guiding Principles." [https://www.energystar.gov/sites/default/files/asset/document/ENERGY\\_STAR\\_Strategic\\_Vision\\_and\\_Guiding\\_Principles.pdf](https://www.energystar.gov/sites/default/files/asset/document/ENERGY_STAR_Strategic_Vision_and_Guiding_Principles.pdf)

<sup>2</sup>U.S. Environmental Protection Agency. (2020). National Awareness of ENERGY STAR for 2019: Analysis of 2019 CEE Household Survey. [https://www.energystar.gov/sites/default/files/asset/document/National\\_Awareness\\_of\\_ENERGY\\_STAR\\_2019\\_DNVGL\\_050120\\_508.pdf](https://www.energystar.gov/sites/default/files/asset/document/National_Awareness_of_ENERGY_STAR_2019_DNVGL_050120_508.pdf)

## Comparison of Residential Space Heating Appliances



Electric Heat Pump

Electric Resistance Furnace

Natural Gas Furnace

DOE/NAECA Efficiency	8.5 HSPF	10.5 HSPF	99 AFUE	80 AFUE	96 AFUE
Full-Fuel-Cycle Energy Use per Year*	79 MMBtu	61 MMBtu	131 MMBtu	68 MMBtu	52 MMBtu
CO <sub>2</sub> e** Emissions/Yr*	3.9 Metric Tons	3.0 Metric Tons	6.3 Metric Tons	3.7 Metric Tons	2.6 Metric Tons
Annual Cost***	\$1,256	\$971	\$2,057	\$770	\$584

\* Excludes A/C operations

\*\* Includes greenhouse gas impact from unburned methane

\*\*\* Energy Cost is based on 2022 DOE representative average unit costs for energy where electric rate is 14.26 cents/kWh; gas rate is \$12.09/MMBtu

Source: American Gas Association. Comparison of Home Appliance Energy Use, Operating Costs, and Carbon Dioxide Emissions

### Natural Gas Furnaces Are Lower Cost and Often Result in Lower Emissions Than Other Options

- Natural gas furnaces are often the most cost-effective and lowest-emissions appliance for many consumers.
- While an electric heat pump may consume less energy than natural gas at the site—within the home or building—the overall energy requirements for natural gas are often lower when the full-fuel-cycle energy requirements are accounted.
  - Full-fuel-cycle metrics account for requirements to bring valuable energy to your home and therefore provide a more comprehensive view of efficiency and emissions associated with consumer appliances.
  - The full-fuel-cycle includes the energy used or lost in energy extraction, processing, transportation, conversion, and distribution, including the generation and transmission of electricity.<sup>3</sup>

<sup>3</sup> National Research Council. 2009. Review of Site (Point-of-Use) and Full-Fuel-Cycle Measurement Approaches to DOE/EERE Building Appliance Energy-Efficiency Standards: Letter Report. Washington, DC: The National Academies Press. <https://doi.org/10.17226/12670>.

- AGA conducted an analysis released in March 2023 comparing residential heating applications and fuels.<sup>4</sup>
  - The average cost for residential natural gas is the cheapest form of energy, costing homes \$12.09 per MMBtu versus \$41.79 per MMBtu for electricity.
  - The typical natural gas single-family home with standard efficiency appliances costs less than other fuel sources, including electricity, at just \$1,068 per year. Even compared to a home with a cold climate heat pump, the natural gas home saved \$390 on average.
  - Specifically for heating applications, AGA found that the annual heat pump cost ranges from \$971 to \$1,256 compared with \$584 to \$770 for a natural gas furnace.
  - An ENERGY STAR-qualified natural gas furnace can reduce annual greenhouse gas emissions from heating between 13 and 33 based on an average U.S. electric grid mix.
    - These values are based on a conservative analysis of greenhouse gas emissions from electric power. Further reductions are expected when emissions are calculated using marginal electric grid factors.

### **Gas space Heating Remains a Preferred Energy Option for Many Consumers**

- There is little evidence of the home heating market shifting to electric heat pumps as an alternative to gas space heating as gas furnaces offer superior cost savings and lower emission impacts than mainstream alternatives.
- Based on data from the Energy Information Administration's 2020 Residential Energy Consumption Survey (RECS 2020), 16 million households use a central electric heat pump. By contrast, there are 53 million households that use a natural gas furnace.
  - Of these 53 million natural gas furnace households, 42 million also have a central air conditioning unit.
- The RECS survey also indicates whether households are located near a natural gas service line and thus have the option to install different appliances. Where natural gas is available, 60% have a natural gas furnace, compared to the national market share of 43%. These households have the most fuel choice and choose natural gas because of the lower cost savings.
- Of the 16 million households with an electric heat pump, 10 million or 60% indicate they do not have access to natural gas in the first place. This means they likely replaced or offset a newly constructed home that would otherwise have an electric, propane, or oil heating system.
- For comparison, of the 1.5 million ENERGY STAR heat pumps shipped in 2021, AGA estimates only 600 thousand might have been near a gas main. In 2021, 1.6 million ENERGY STAR gas furnaces and 1.3 million ENERGY STAR air conditioners were shipped.

### **Natural gas utilities use ENERGY STAR to promote energy efficiency.**

- Natural gas utilities administer over 132 natural gas efficiency programs across 42 states, which collectively invest more than \$1.4 billion annually to assist customers with purchasing and installing these efficient gas appliances.
- To date, ENERGY STAR-certified gas furnaces have been a central offering within these programs.

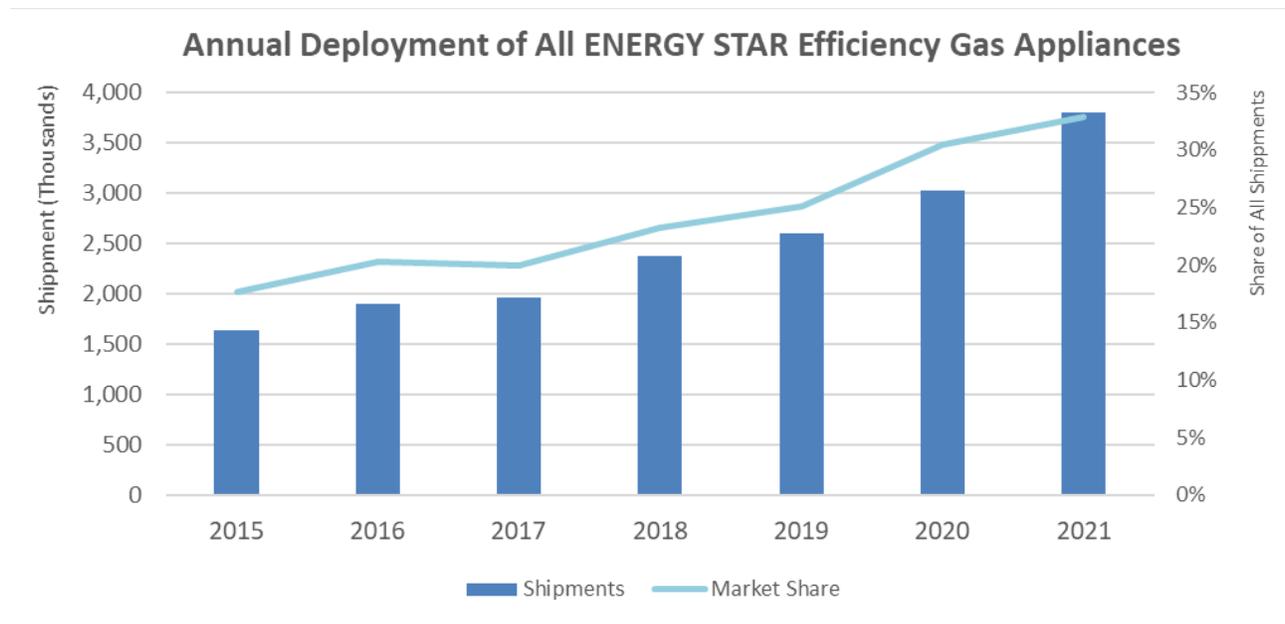
---

<sup>4</sup> American Gas Association. (2023). Appliance Cost and Emissions Comparison 2022. <https://www.aga.org/wp-content/uploads/2023/03/Appliance-Cost-and-Emissions-Comparison-2022.pdf>

- Many natural gas energy efficiency programs promote using ENERGY STAR home heating equipment and rely on ENERGY STAR certification when determining eligibility for utility-provided incentives, including appliance rebates.<sup>5</sup>

### The ENERGY STAR Program Has been Successful at Improving Efficiency for Gas Appliances

- From 2015 to 2021, the market presence of ENERGY STAR gas appliances, including furnaces, water heaters, and dryers, has significantly increased. Shipments of ENERGY STAR furnaces have grown by 123% since 2015, with over 1.6 million units labeled in 2021. The market share for ENERGY STAR furnaces has also nearly doubled from 26% in 2015 to 41% in 2021.
- ENERGY STAR gas dryers displayed the greatest growth in market penetration, with shipments increasing from 17% in 2015 to 50% in 2021.
- In 2021, ENERGY STAR gas water heater shipments totaled 736 thousand tankless units and 415 thousand new storage units. The market share for ENERGY STAR gas tankless and storage units combined grew from 12% in 2015 to 19% in 2021.
- Although shipments for electric air-source heat pumps have increased from 0.9 million in 2015 to 1.5 million in 2021, for most years, the market share of ENERGY STAR units has remained approximately the same, between 39% and 43%, with only 112 thousand shipped in 2021. ENERGY STAR tankless gas water heaters out-shipped electric heat pump water heaters at a rate of six to one.



SOURCE: EPA ENERGY STAR Program Annual Shipment Summary 2015-2021

<sup>5</sup> American Gas Association. Natural Gas Efficiency Programs Report (2022). <https://www.aga.org/research-policy/resource-library/natural-gas-utility-efficiency-programs/>

ENERGY STAR Appliance Shipments (Thousands)								
	2015	2016	2017	2018	2019	2020	2021	7 Year Total
Gas Furnaces	732	727	845	878	1,041	1,340	1,634	7,197
Gas Boilers	112	112	114	136	147	150	188	959
Gas Clothes Dryers	226	485	340	633	635	668	832	3,819
Gas Storage	275	271	278	287	283	303	415	2,112
Gas Tankless	297	304	387	444	491	565	736	3,224
All Gas Water Heating	572	575	665	731	774	868	1,151	5,336
Air-Source Heat Pump	888	943	1,075	1,258	1,631	1,370	1,518	8,683
Heat Pump Water Heater	55	52	72	65	84	104	112	544

ENERGY STAR Appliance Marketshare								
	2015	2016	2017	2018	2019	2020	2021	7 Year Average
Gas Furnaces	26%	25%	27%	26%	30%	40%	41%	31%
Gas Boilers	45%	45%	45%	53%	56%	57%	N/A	63%
Gas Clothes Dryers	17%	35%	24%	46%	45%	47%	50%	38%
Gas Storage	6%	6%	6%	6%	6%	7%	8%	6%
Gas Tankless	100%	100%	100%	100%	100%	100%	100%	100%
All Gas Water Heating	12%	12%	13%	14%	15%	18%	19%	15%
Air-Source Heat Pump	39%	39%	41%	43%	59%	40%	39%	43%
Heat Pump Water Heater	100%	100%	100%	100%	100%	100%	100%	100%

SOURCE: EPA ENERGY STAR Program Annual Shipment Summary 2015-2021

### AHRI Shipment Data Indicates There Is Room for Growth in ENERGY STAR Furnace Program

- The incentives for households to install an ENERGY STAR furnace can be a compelling reason to install a more efficient one. The program's success since 2015 presents a clear case for a growing interest in efficiency, with customers installing the highest available options for gas appliances. Removing the program could cause customers to install lower-efficiency furnaces due to the first cost burdens the program helps with. Utility, state, and federal incentives are based on the guidance of this program. Without it, households may install either less efficient equipment or pay more to install higher efficiency equipment.
- The Department of Energy provides a series of tables from AHRI that specify shipment data by state, year, and efficiency through 2015.<sup>6</sup> AGA reviewed the share of gas furnaces based on the North vs. South criteria used by ENERGY STAR to determine how much the program may impact consumer choices.
- AGA weighed the most recent shipment data by the market share of gas furnaces installed between 2015-2019 to approximate that 39% of households might have purchased a furnace that could have qualified based on efficiency rating alone. Between 2015 and 2019, ENERGY STAR only accounted for 25% to 30% of the total market for gas furnaces. The difference between these two data points suggests there is room for the program to grow and that the label has not captured a significant portion of the market. It also raises concerns that, for many consumers, the ENERGY STAR label may

<sup>6</sup> DOE Proposed Rule EERE-2014-BT-STD-0031, Consumer Furnace Life-Cycle Cost (LCC) and Payback Period Analysis, EIA Residential Energy Consumption Survey 2020 for Households with a Gas Furnace less than 5 years old

have been a deciding factor when installing the newer unit because 2/3rds of the condensing market may have depended on the label.

### Recent AHRI Shipment Data for Condensing Furnaces by Efficiency and State

State	Households with New Gas Furnace	Condensing Only Shipment Market share by Efficiency Level AHRI 2013-2020										Fraction Condensing in 2015	North vs South	Percent Energy Star Criteria
		90%	91%	92%	93%	94%	95%	96%	97%	98%	99%			
Alabama	175,980	0%	0%	47%	0%	0%	9%	32%	6%	2%	14%	South	14%	
Alaska	30,416	0%	0%	14%	0%	0%	37%	42%	6%	0%	63%	North	54%	
Arizona	382,352	0%	0%	44%	0%	0%	19%	24%	1%	12%	18%	South	18%	
Arkansas	167,227	0%	0%	29%	1%	0%	23%	39%	6%	1%	19%	South	19%	
California	1,894,957	0%	0%	31%	0%	1%	27%	37%	3%	2%	26%	South	26%	
Colorado	366,739	0%	0%	44%	2%	1%	17%	29%	7%	0%	56%	North	30%	
Connecticut	158,459	0%	0%	16%	0%	0%	37%	30%	18%	0%	67%	North	56%	
Delaware	60,536	0%	1%	31%	1%	1%	32%	28%	6%	1%	70%	North	47%	
District of Columbia	23,696	0%	1%	37%	1%	2%	26%	29%	5%	1%	49%	South	49%	
Florida	142,860	0%	0%	35%	1%	0%	19%	28%	4%	12%	4%	South	4%	
Georgia	622,941	0%	0%	50%	0%	0%	18%	28%	3%	0%	13%	South	13%	
Hawaii	3,047	0%	0%	31%	0%	1%	27%	37%	3%	2%	26%	South	26%	
Idaho	107,285	0%	0%	26%	0%	0%	51%	18%	3%	2%	66%	North	49%	
Illinois	917,173	1%	0%	31%	1%	0%	42%	20%	4%	0%	57%	North	38%	
Indiana	502,203	0%	0%	19%	1%	0%	46%	30%	4%	1%	65%	North	52%	
Iowa	232,902	0%	0%	4%	0%	1%	25%	66%	3%	0%	90%	North	85%	
Kansas	223,814	1%	1%	31%	1%	1%	43%	20%	3%	0%	47%	North	31%	
Kentucky	226,524	1%	0%	35%	0%	0%	36%	24%	3%	1%	59%	South	59%	
Louisiana	138,768	0%	0%	28%	0%	0%	29%	33%	6%	5%	7%	South	7%	
Maine	35,210	0%	0%	33%	0%	0%	23%	34%	10%	0%	73%	North	48%	
Maryland	247,685	0%	1%	43%	1%	3%	20%	29%	3%	1%	44%	South	44%	
Massachusetts	314,062	1%	0%	29%	0%	0%	13%	47%	10%	0%	79%	North	56%	
Michigan	825,988	0%	0%	7%	0%	0%	35%	54%	4%	0%	73%	North	68%	
Minnesota	336,553	0%	0%	19%	0%	1%	21%	43%	15%	1%	81%	North	65%	
Mississippi	120,311	0%	0%	18%	0%	0%	41%	27%	7%	8%	7%	South	7%	
Missouri	287,067	1%	0%	34%	1%	0%	40%	23%	2%	0%	57%	North	37%	
Montana	74,722	0%	0%	17%	0%	1%	55%	22%	3%	1%	65%	North	53%	
Nebraska	102,146	1%	0%	18%	1%	2%	48%	25%	4%	0%	65%	North	50%	
Nevada	142,666	0%	2%	39%	0%	1%	25%	27%	1%	5%	9%	South	9%	
New Hampshire	45,876	0%	0%	33%	0%	0%	23%	34%	10%	0%	73%	North	48%	
New Jersey	444,232	0%	0%	33%	0%	1%	26%	35%	2%	3%	59%	North	39%	
New Mexico	143,408	0%	0%	44%	4%	0%	15%	33%	3%	1%	22%	South	22%	
New York	890,685	0%	0%	27%	0%	0%	27%	42%	3%	1%	70%	North	51%	
North Carolina	333,107	0%	0%	36%	0%	0%	15%	45%	0%	5%	60%	South	60%	
North Dakota	42,814	0%	0%	21%	0%	1%	40%	29%	7%	1%	81%	North	62%	
Ohio	862,064	2%	0%	14%	0%	1%	42%	36%	5%	0%	65%	North	54%	
Oklahoma	193,990	0%	0%	10%	2%	0%	37%	46%	5%	0%	29%	South	29%	
Oregon	155,237	0%	0%	18%	0%	0%	32%	42%	8%	0%	77%	North	62%	
Pennsylvania	645,212	0%	0%	29%	0%	0%	29%	37%	3%	1%	69%	North	48%	
Rhode Island	50,791	0%	0%	53%	0%	0%	20%	24%	2%	0%	58%	North	27%	
South Carolina	226,624	0%	0%	65%	2%	0%	19%	8%	0%	4%	31%	South	31%	
South Dakota	55,599	0%	0%	21%	0%	1%	40%	29%	7%	1%	81%	North	62%	
Tennessee	395,646	0%	0%	57%	0%	0%	21%	16%	4%	1%	29%	South	29%	
Texas	1,466,439	0%	0%	38%	0%	0%	16%	39%	4%	1%	7%	South	7%	
Utah	220,523	0%	0%	9%	0%	2%	59%	26%	4%	0%	64%	North	57%	
Vermont	16,348	0%	0%	33%	0%	0%	23%	34%	10%	0%	73%	North	48%	
Virginia	320,961	0%	0%	36%	0%	3%	32%	21%	4%	2%	39%	South	39%	
Washington	255,815	0%	0%	10%	0%	0%	43%	42%	4%	0%	55%	North	50%	
West Virginia	60,508	0%	1%	32%	0%	1%	47%	14%	2%	3%	79%	North	52%	
Wisconsin	438,626	0%	0%	14%	0%	0%	37%	38%	10%	0%	93%	North	79%	
Wyoming	39,944	0%	0%	17%	0%	1%	55%	22%	3%	1%	65%	North	53%	
<b>Total</b>	<b>16,168,739</b>												<b>39%</b>	

SOURCE: DOE Proposed Rule EERE-2014-BT-STD-0031, Consumer Furnace Life-Cycle Cost (LCC) and Payback Period Analysis, EIA Residential Energy Consumption Survey 2020 for Households with a Gas Furnace less than five years old

### Equipment Incentives Are Not the Only Deciding Factor in Installing an HVAC System

- Many factors shape a consumer's decision to purchase and install a particular HVAC system.
- When a unit is up for replacement, households will often need to replace the entire system, leading to higher installation costs at the time of the repair. Even after incentives, the cost to replace just heating or cooling might be the best financial option for the household at that time. Incentivizing efficiency should come first.

- High-efficiency natural gas furnaces are the lowest-cost option for colder climates, even with higher-efficiency heat pumps.
  - Cold-climate heat pumps, or systems with an HSPF rating above 9.2, only account for 8 percent of the heat pump market between 2013 and 2019<sup>7</sup>.
- Most replacements of furnaces or air conditioning units are typically unplanned because of a loss of service. ENERGY STAR helps educate customers to make more efficient choices while confronting difficult money decisions, often at inconvenient times.
- Service panel upgrades can significantly affect the cost of switching. Of the 53 million natural gas furnaces, 16 million were built before 1960 and might require additional upgrades to the electric service panel. Incentives exist to help with this process, but to this date, only 10 percent of all heat pumps are installed in these older homes. Nearly 15 times more gas homes older than 1960 exist than the number of heat pumps installed in similarly built homes near natural gas service. Upgrading a panel could cost, on average, \$2,890<sup>8</sup> to increase the amperage of the home from 100A to 200A. Additional costs may be required depending on the layout of the house and the inclusion of other electric appliances, such as a water heater, dryer, and stove.

<b>Homes Built Before 1960 by Heating Equipment (Thousands of Units)</b>						
	All Households	All Households w/ Natural Gas Access	Natural Gas Furnace	Natural Gas Furnace and AC	ALL Central Heat Pump	Central Heat Pump W/ Natural Gas Access
<b>Built Before 1960</b>	32,736	27,866	16,068	10,776	1,760	1,110
<b>All Households</b>	123,529	89,604	53,257	42,177	16,132	6,212

SOURCE: EIA Residential Energy Consumption Survey 2020

- Eliminating incentives for higher-efficiency natural gas may also incentivize less efficient resistance heating, especially as a backup source for heating when combined with a heat pump.
- Lastly, installing ENERGY STAR Appliances is typically a positive selling point when buying/selling or renting a home. Without the label on gas furnaces, households in the market to buy or sell a home may reconsider energy efficiency upgrades without an ENERGY STAR label they would otherwise promote.

### **Income Affects Household Adoption of HVAC Equipment**

- Based on the 2020 RECS database, the adoption rate for heat pumps is between 11% and 14% for all households depending on the reported income level. If consumers have access to natural gas, the share of households is cut by nearly half; between 6% and 8% of households with access to natural gas report having an electric heat pump as a primary form of space heating.
- For households with a heat pump and access to natural gas, the choice to install it may not have been a decision they made, let alone the unit's efficiency overall. For lower-tier income households, 44% and 63% of heat pumps are inside rental units. Meanwhile, for high-income households, approximately 90% of heat pumps with access to natural gas are inside owner-occupied or rent-free homes.
- Natural gas furnace households have higher ownership (less renting) than households with heat pumps. This is true for all incomes, especially lower-income households. The ENERGY STAR program is a tool to educate and promote efficiency to homeowners. It should not be used to penalize

<sup>7</sup> Gas Technology Institute; Assessment of Natural Gas and Electric Decarbonization in State of Colorado Residential Sector – Page 18 AHRI National Sales data for Heat Pumps.

<sup>8</sup> Based on the average single and multifamily cost of upgrading electrical panels in the 2019 City of Palo Alto Title 24 Energy Reach Code Cost-Effectiveness Analysis

households with gas services or households in colder climates that require the thermal efficiency that natural gas provides.

- This indicates a connection between income and cost, the adoption of heat pumps, and energy efficiency in general. Higher costs for gas appliances could result in households installing the less efficient options. Incentivizing only heat pumps in a market with low penetration may not result in a higher adoption rate but in less efficient gas and air conditioning appliances.

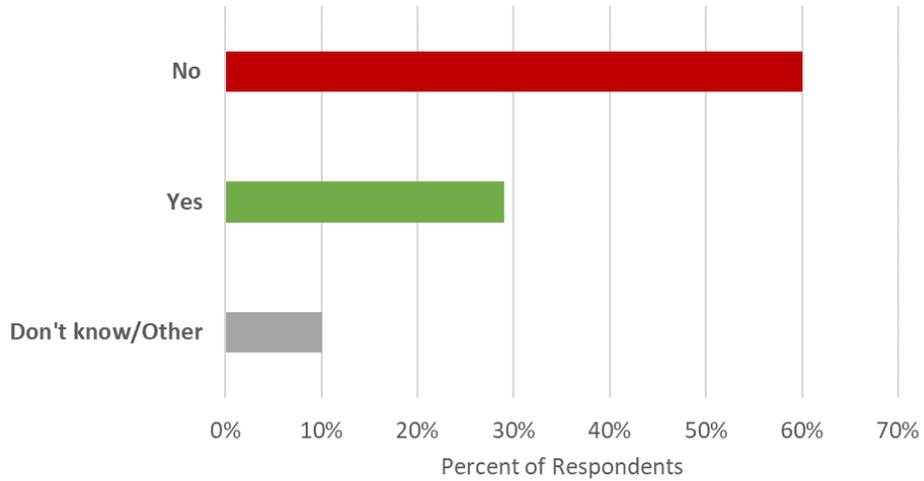
	\$0-\$19,999	\$20,000-\$39,999	\$40,000-\$59,999	\$60,000-\$74,999	\$75,000-\$99,999	\$100,000-\$149,999	\$150,000+	Total
<b>All Households</b>	18,734	24,073	19,607	12,837	14,874	16,541	16,862	123,529
<b>All Households w/ Natural Gas Access</b>	13,373	16,743	13,989	9,073	10,761	12,430	13,234	89,604
<b>Natural Gas Furnaces</b>	5,622	9,139	8,431	5,612	7,009	8,410	9,033	53,257
<b>Natural Gas Furnaces and AC</b>	3,128	6,665	6,510	4,560	6,044	7,420	7,851	42,177
<b>All Central Heat Pumps</b>	2,399	3,390	2,771	1,755	1,917	2,004	1,896	16,132
<b>Central Heat Pumps w/ Natural Gas Access</b>	1,121	1,213	1,180	563	677	696	763	6,212
<b>All Rental Households</b>	10,891	10,086	6,509	3,392	3,492	2,912	2,094	39,375
<b>Rental Households w/ Natural Gas Access</b>	8,140	7,490	4,713	2,638	2,477	2,315	1,660	29,433
<b>Rental Natural Gas Furnaces</b>	2,696	2,995	1,880	1,059	976	926	621	11,152
<b>Central Heat Pump Rental Units w/ Natural Gas Access</b>	706	603	515	178	166	67	84	2,320
<b>Share of Rented Heat Pumps w/ Natural Gas Access</b>	63%	50%	44%	32%	25%	10%	11%	37%
<b>Share of Rented Natural Gas Furnaces</b>	48%	33%	22%	19%	14%	11%	7%	21%

SOURCE: EIA Residential Energy Consumption Survey 2020

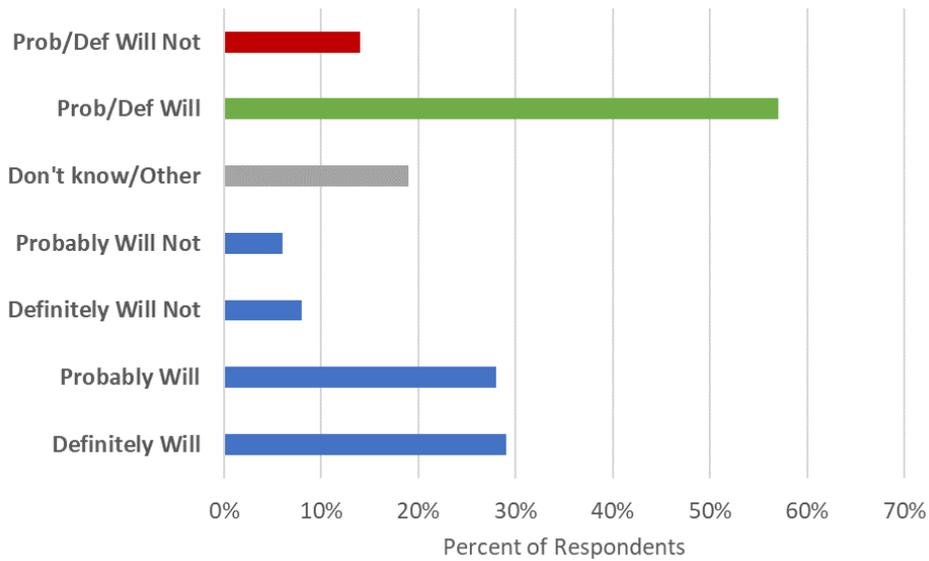
### **Most Homeowners Have Not Deliberately Purchased an Energy-Efficient Furnace In The Past. Most Will Next Time They Purchase a Furnace**

- According to a survey of American homeowners in 2013, 60 percent of respondents said they have not deliberately bought an energy-efficient home furnace.
- However, in the same survey, 67 percent of respondents stated they will or will definitely purchase an energy-efficient home furnace the next time they purchase a furnace.

**"Have you ever deliberately bought an energy efficient home furnace?"**



**"The next time you buy each of the following... how likely will you be to buy...an energy efficient home furnace?"**



SOURCE: George Mason University Center for Climate Change Communication/Yale University Project On Climate Change Communication Poll: April 2013. IPOLL

**American Gas Association  
Energy Analysis**

**Empowering Consumer Choices: Analyzing the Impact of the ENERGY STAR Program  
on the Adoption of High-Efficiency Gas Appliances**

**June 2023**

For questions about this analysis, please contact  
Brendan O'Brien, Director, Energy Analysis [bobrien@aga.org](mailto:bobrien@aga.org) | 202-824-7220  
Miles Vondra [mvondra@aga.org](mailto:mvondra@aga.org) | 202-824-7227

**NOTICE**

In issuing and making this publication available, AGA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is AGA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. The statements in this publication are for general information and represent an unaudited compilation of statistical information that could contain coding or processing errors. AGA makes no warranties, express or implied, nor representations about the accuracy of the information in the publication or its appropriateness for any given purpose or situation. This publication shall not be construed as including, advice, guidance, or recommendations to take, or not to take, any actions or decisions in relation to any matter, including without limitation, relating to investments or the purchase or sale of any securities, shares or other assets of any kinds. Should you take any such action or decision, you do so at your own risk. Information on the topics covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.