

All-Electric New Construction: A Win for the Climate and Your Wallet

Save Money, Improve Housing Affordability, and Reduce Greenhouse Gas Emissions in Maryland by Requiring All-Electric New Construction

Direct use of gas, heating oil, and propane in buildings—primarily for space and water heating—accounted for 13% of Maryland’s greenhouse gas emissions in 2017.¹ Maryland’s Greenhouse Gas Reduction Act (GGRA) currently mandates a 40% reduction in greenhouse gas emissions by 2030 and the State is likely to increase this goal and establish a goal of net-zero emissions by 2045.² To meet these requirements, the GGRA Plan sets a goal of electrifying fossil fuel end-uses in buildings so that Maryland’s building sector achieves net-zero emissions by 2045.³ In 2021, the MD Commission on Climate Change’s top recommendation for reducing emissions from buildings was to “adopt an all-electric construction code.”⁴



The Cost-Effective Solution: All-Electric New Construction

New construction requirements are a sensible first step in the building electrification transition that prevent us from making the problem worse.

The good news is that all-electric new buildings typically have the lowest construction and operating costs.

According to Rewiring America, 99% of households in Maryland—2.2 million—could save money on energy bills if they converted an existing appliance to a high-efficiency electric appliance.⁵

The Maryland Department of the Environment worked with Energy + Environmental Economics (E3) to model the costs of all-electric new buildings. E3’s Maryland Buildings Decarbonization Study⁶ found that:

- For single-family homes, all-electric homes **cost less to construct** than new mixed-fuel homes.
- For multifamily buildings, all-electric **costs about the same to construct** as mixed-fuel buildings.
- For commercial buildings, all-electric buildings can have **higher or lower construction costs** than mixed fuel buildings depending on building type and use.
- At current utility rates, **annual energy costs are comparable** between homes with electric heat pumps and homes with gas furnaces. Gas rates are expected to increase this winter.⁷
- **Annual energy costs are lower** for homes with electric heat pumps than homes heated by electric resistance, oil, or propane.
- As Maryland moves toward a net-zero-emissions goal, all-electric new buildings of any type—residential and commercial—will have the **lowest total annual costs** (including equipment, maintenance, and energy costs).

All-Electric New Construction Will Save Consumers Money Over the Lifetime of the Equipment

Much of the heating equipment installed this decade will be operational through the 2030s and into the 2040s, so it is important to consider not only what energy costs are today but what they will be over the lifecycle of the equipment. E3's [Maryland Buildings Decarbonization Study](#) found that all-electric new buildings have lower annualized consumer costs than mixed buildings for every building type in Maryland.⁸

Consumer Costs for New Construction

	Mixed-Fuel	All-Electric	Annualized Savings
Single-family Residential	\$5,500	\$3,800	+\$1,700
Multifamily Residential	\$4,100	\$3,400	+\$700
Small Commercial	\$18,400	\$15,500	+\$900
Large Commercial	\$150,000	\$147,000	+\$3,000

Mounting Evidence that All-Electric New Construction is Cost-Effective

In 2020, the think tank RMI found that a new all-electric, single-family home is less expensive to build than a new mixed-fuel home that relies on gas for cooking, space heating, and water heating in seven cities. RMI's analysis—[The New Economics of Electrifying Buildings](#)⁹—considered all-electric new home construction costs in Austin, TX; Boston, MA; Columbus, OH; Denver, CO; Minneapolis, MN; New York City, NY; and Seattle, WA. Likewise, the nonprofit Rewiring America found that the average household in Maryland will save **\$393 on their energy bills** by switching to modern, electric appliances.¹⁰

E3's [Maryland Buildings Decarbonization Study](#), RMI's seven-city report, and Rewiring America's analysis add to a body of work demonstrating that all-electric homes have lower construction and energy costs than mixed-fuel homes. This means that **all-electric new homes help improve housing affordability while reducing greenhouse gas emissions.**

Works Cited

1. Md. Comm'n on Climate Change, Building Energy Transition Plan, Oct. 11, 2021, at 4.
2. In its 2020 Annual Report, the Maryland Commission on Climate Change recommended increasing the goal to a 50% reduction by 2030 and adding a net-zero-by-2045 goal. Md. Comm'n on Climate Change, 2020 Annual Report, Nov. 15, 2020, at 11, *available at* <https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MCCCAnnualReport2020.pdf>.
3. Md. Comm'n on Climate Change, GGRA Plan, Feb. 19, 2021, at XIX, *available at* <https://mde.maryland.gov/programs/Air/ClimateChange/Documents/2030%20GGRA%20Plan/THE%202030%20GGRA%20PLAN.pdf>.
4. Md. Comm'n on Climate Change, 2021 Annual Report, Nov. 16, 2021, at 8, *available at* [https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/2021%20Annual%20Report%20FINAL%20\(2\).pdf](https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/2021%20Annual%20Report%20FINAL%20(2).pdf).
5. Rewiring America, Benefits of Household Electrification: Maryland, <https://map.rewiringamerica.org/states/maryland-md>.
6. Md. Comm'n on Climate Change, Building Energy Transition Plan, Oct. 11, 2021, *available at* <https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/2021%20Annual%20Report%20Appendices%20FINAL.pdf>.
7. U.S. Energy Info. Admin., Winter Fuels Outlook, Oct. 2021, *available at* https://www.eia.gov/outlooks/steo/special/winter/2021_Winter_Fuels.pdf.
8. These numbers assume that Maryland adopts E3's recommendation to pursue high electrification in the residential sector and modest electrification in the commercial sector. These assumptions impact the estimated future cost of gas, electricity, and equipment.
9. RMI, The New Economics of Electrifying Buildings: An Analysis of Seven Cities, 2020, *available at* <https://rmi.org/insight/the-new-economics-of-electrifying-buildings>.
10. Rewiring America, Benefits of Household Electrification: Maryland, <https://map.rewiringamerica.org/states/maryland-md>.