

Home heating efficiencies offer 'hat trick' of savings: study

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Improving the energy efficiency of Maryland homes heated by natural gas would generate a "hat trick" of economic and environmental benefits over the next 10 years, including more than 80,000 new jobs, savings of hundreds of dollars in average heating bills and a nine percent reduction in residential carbon emissions, concludes a new study by the University of Maryland Center for Integrative Environmental Research (CIER).

In the researchers' analysis, homeowners - with assistance from state government - would be encouraged to replace worn-out gas furnaces and water heaters with energy-efficient models, which are generally more expensive. Also, there would be incentives to improve household insulation. While these upgrades would cost thousands of dollars, they would more than pay for themselves in savings. Nearly half of Maryland homes are heated with natural gas.

"We're missing some big opportunities to lower home heating bills, improve the Maryland economy and reduce [carbon emissions](#)," says principal investigator, Matthias Ruth, CIER director and Roy F. Weston Chair for Natural Economics at the University of Maryland.

"Helping homeowners spend a little more up front can help the state as a whole in the long-run," Ruth adds. "This kind of co-investment makes good economic and environmental sense."

The Maryland Department of the Environment commissioned the study, "Strategies for [Carbon Dioxide Emissions](#) Reductions: Residential

Natural Gas Efficiency, Economic and Ancillary Health Impacts in Maryland."

The University of Maryland's CIER conducted the research in partnership with The Johns Hopkins University, the University of California, Merced and Towson University.

Previous CIER research for the State analyzed the potential energy and economic impacts of investing in [electricity](#) efficiency.

Using a series of economic projection tools, the researchers, in part, conclude that:

- An average single-family household could save \$400 to \$500 in natural gas bills the first year by investing approximately \$3,000 in a package of cost-effective energy efficiency measures: wall insulation, duct sealing, furnaces, water heaters, and pipe wrap;
- Spending extra to purchase more energy-efficient natural gas furnaces and water heaters pays for itself in fuel savings; the cost of home improvements are more than offset by energy savings;
- State incentives to encourage homeowners to purchase the most energy-efficient furnaces and water heaters and to make recommended home efficiency improvements would have positive economic effects, including the creation of more than 80,000 jobs, especially in the construction field, and nearly \$11 billion in economic activity;
- Reducing natural gas consumption would help Maryland meet its 2020 greenhouse gas emissions reduction targets, cutting residential emissions by more than 10 million tons over the next

decade, or about 9 percent;

- Home insulation should be avoided or accompanied by energy-efficient ventilation measures in parts of the state (mostly in Western Maryland) with high radon concentrations, where tightly sealing a house may increase effective exposure to the gas;
- Findings apply to smaller, older Maryland homes; fewer benefits are realized in newer, larger homes.

"Though our research looked solely at conditions in Maryland, I wouldn't be surprised that similar benefits might apply in some other states where a large portion of household heating needs are met by natural gas," Ruth says.

The research team used a series of sophisticated economic projection tools to estimate the economic and environmental impacts under varying climate and appliance standards scenarios. The economic analysis considered the direct and indirect economic effects.

"Given the overall positive impacts of enticing efficiency of [natural gas](#) use by households, there is an important role to be played by the State," says Andy Blohm, a University of Maryland researcher on the CIER team. "We have already seen notable leadership by Maryland in promoting [energy efficiency](#) and greenhouse gas reductions. Our study clearly shows both the economic and environmental wisdom of that leadership."

More information: Full Text of the report is available online: [www.cier.umd.edu/documents/Res ... ency in Maryland.pdf](http://www.cier.umd.edu/documents/Res...ency_in_Maryland.pdf)

Provided by University of Maryland

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