

Avoiding the “Big Dig 2.0”

Alternative Uses for \$20 Billion in Massachusetts’ GSEP Spending

October 20, 2021



Introduction

Earlier this month, Gas Leak Allies released a [new report](#) by Dorie Seavey, PhD, which estimates that Massachusetts utilities are projected to spend \$20 billion of consumers’ money on the [Gas System Enhancement Program \(GSEP\)](#), an initiative intended to replace “leak-prone” infrastructure for fossil gas (also called “natural gas”) in Massachusetts.¹ Gas leaks present a significant safety risk because fossil gas is highly combustible, and these same leaks also significantly increase greenhouse gas (GHG) emissions because methane, the primary component of fossil gas, has over 80 times the warming potential of carbon dioxide (CO₂) over a 20-year period.²

Over a third of the gas pipes in the Commonwealth are considered leak-prone under GSEP, because they were installed decades ago and are made of materials that are more prone to leaks, including cast and wrought iron.³ To put the \$20 billion cost number of replacing these leak-prone pipes in context, the “Big Dig”, the most expensive highway project in U.S. history and a Massachusetts shorthand for overrun project costs, is estimated to have cost \$24.3 billion.⁴ Replacing gas pipes is incredibly expensive—gas companies in Massachusetts spent \$2.3 billion from 2015-2020 on pipe replacements, or \$385 million per year.⁵

The findings from the [Massachusetts Decarbonization Roadmap](#) are clear—in order for the Commonwealth to achieve its ambitious target of net-zero emissions by 2050, the state needs to dramatically reduce its reliance on fossil gas. Asking Massachusetts ratepayers to foot the \$20 billion bill for investments in long-lasting, yet soon-to-be obsolete, fossil gas infrastructure is simply incompatible with the emission reduction targets established by state law and is wasteful of ratepayer money.

While Acadia Center acknowledges the need to repair select gas pipes that pose the most imminent safety risks, the scale of investment called for by GSEP goes well beyond addressing these immediate concerns and presents a serious risk of over-investing in fossil gas infrastructure. Alternatively, spending \$20 billion on zero-emissions building retrofits would save ratepayers money, improve health outcomes, and drastically reduce emissions—a much more responsible use of ratepayer funds.

¹ Dorie Seavey PhD, *GSEP at the Six-year Mark: A Review of the Massachusetts Gas System Enhancement Program*, 2021. <https://www.gasleaksallies.org/gsep>

² International Panel on Climate Change (IPCC), Sixth Assessment Report, 2021. <https://www.ipcc.ch/report/ar6/wg1/>

³ Dorie Seavey PhD, *GSEP at the Six-year Mark: A Review of the Massachusetts Gas System Enhancement Program*, 2021. <https://www.gasleaksallies.org/gsep>

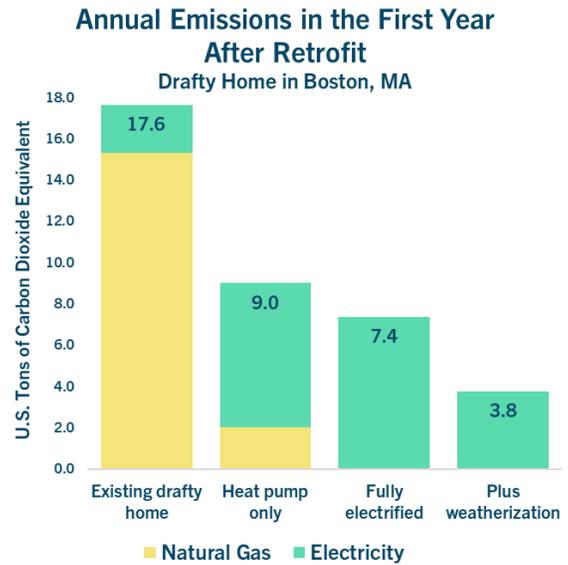
⁴ WBUR “State Official: Big Dig Costs Pegged at \$24.3B”, 2012. <https://www.wbur.org/news/2012/07/10/big-dig-cost-estimate>
Dorie Seavey PhD, *GSEP at the Six-year Mark: A Review of the Massachusetts Gas System Enhancement Program*, 2021. <https://www.gasleaksallies.org/gsep>

⁵ Dorie Seavey PhD, *GSEP at the Six-year Mark: A Review of the Massachusetts Gas System Enhancement Program*, 2021. <https://www.gasleaksallies.org/gsep>

Spending \$20 Billion on Zero-Emissions Building Retrofits Would Have Wide-ranging Positive Impacts

Some homes are incredibly inefficient

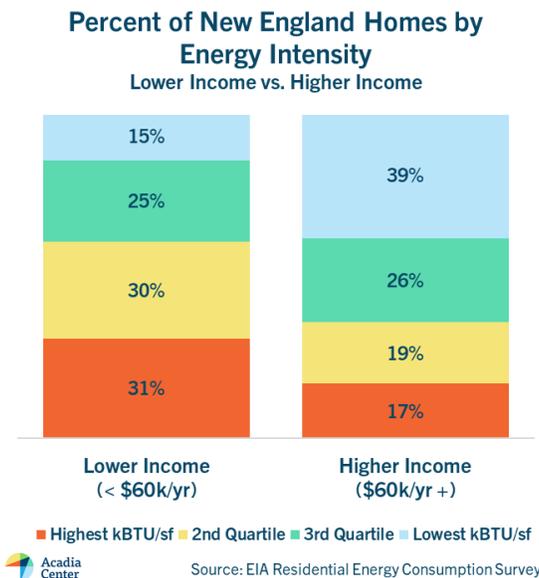
Not every Massachusetts home is created equal. Analysis by Synapse Energy Economics shows that 22% of homes in Massachusetts generate 50% of the Commonwealth’s total residential building GHG emissions.⁶ Carrying out weatherization and whole-home electrification of these roughly 600,000 homes would cost about \$9.7 billion⁷, less than half of what gas companies are planning to spend on unnecessary gas infrastructure.



Source: PowerHouse Home Energy Simulator

Retrofitting the most inefficient homes can significantly reduce GHG emissions

Spending \$20 billion on weatherizing and electrifying homes would reduce emissions substantially. Improvements to these roughly 600,000 homes could eliminate up to 40% of Massachusetts’ residential sector emissions immediately—and a further 10% by 2050 as the grid brings on more zero-carbon resources⁸—all for less than half of what gas companies are planning to spend on soon-to-be-obsolete infrastructure. What’s more, investment in zero-energy retrofits for the most inefficient homes keeps paying dividends. The Commonwealth can reduce emissions from each of its 600,000 super-inefficient homes by an average of 79% starting in the first year after improvements are installed—and as the grid gets cleaner, the remaining emissions will gradually drop to zero. Using a social cost of carbon,⁹ this level of emissions reduction would translate to \$743.7 million in avoided costs to society *every year*.



Source: EIA Residential Energy Consumption Survey

⁶ Synapse Energy Economics, Inc. “Which Buildings are the Highest Carbon Emitters?”, 2021. <https://www.synapse-energy.com/about-us/blog/which-buildings-are-highest-carbon-emitters>

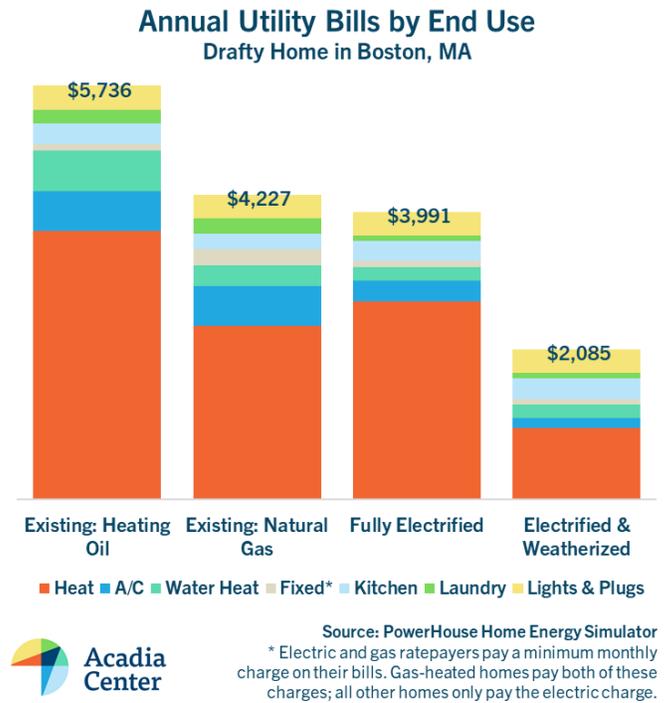
⁷ Cost estimate considers the full cost of building envelope improvements and the incremental cost of replacing fossil fuel space heating, water heating, and cooking equipment with electric equipment at the “end of life” for the fossil fuel equipment.

⁸ Weatherization paired with electrification of homes can significantly reduce emissions in retrofitted homes now and completely eliminate emissions in these same homes as New England transitions to 100% carbon-free electricity.

⁹ The social cost of carbon is an estimate, in dollars, of the economic damages that would result from emitting one additional ton of greenhouse gases into the atmosphere. It puts the effects of climate change into economic terms to help policymakers and other decisionmakers understand the economic impacts of decisions that would increase or decrease emissions.

Retrofitting the most inefficient homes saves money and reduces energy burden

U.S. federal government research shows that lower-income households in New England are significantly more likely to live in homes with a higher “energy intensity,” or energy use per square foot.¹⁰ As demonstrated by the figure above, more than 60% of lower-income households in New England live in homes that are less efficient than average. Weatherization and whole-home electrification of these super inefficient homes can save more than \$3,000 per year for inhabitants of the least efficient housing, as shown in the figure to the right.¹¹ By targeting drafty, inefficient housing units for retrofit work, the Commonwealth can set itself on a path toward achieving its climate commitments, while also fulfilling the imperative to meaningfully invest in environmental justice communities.



Conclusion

Using ratepayer funds to invest in long-lasting infrastructure requires careful consideration of how that infrastructure supports or hinders the Commonwealth’s goal of achieving net-zero emissions by 2050 and the societal imperative that our homes and businesses be healthy and warm. In the case of GSEP, it is obvious to Acadia Center that directing \$20 billion towards long-lasting, yet soon-to-be obsolete, gas infrastructure is not prudent and is incompatible with achieving the state’s emissions reduction targets. This staggering level of anticipated investment in fossil gas infrastructure does not come without significant opportunity costs. Precious ratepayer funds need to be allocated to opportunities that are cost-effective and in line with the state’s emissions reduction targets and environmental justice goals, including improving the efficiency of the Commonwealth’s aging and inefficient housing stock through weatherization and electrification.

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¹⁰ Based on data from the Energy Information Agency (EIA) Residential Energy Consumption Survey (RECS)

¹¹ Some of the most inefficient homes will not achieve this cost savings amount because data show that low-income occupants of inefficient housing often choose to keep their thermostat set at an uncomfortably cold temperature or forego window air conditioners, rather than spend large sums of money on operating heating and air conditioning equipment. Weatherization can eliminate the need for this type of behavior, which, although many households find it essential for financial reasons, can result in serious health detriments.