Applied Economics Clinic
Economic and Policy Analysis of Energy, Environment and Equity

POLICY BRIEF

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Massachusetts Gas versus Massachusetts Climate Goals

This Applied Economics Clinic policy brief demonstrates why Massachusetts cannot both continue to utilize gas for heating and meet legally mandated statewide emission reduction targets. There is a clear economic argument for focusing gas system investments on improving safety while transitioning away from gas to clean, highly efficient technologies as quickly as possible. Moving away from gas will make communities safer, save utility customers money, and meet the Commonwealth's climate goals.

Mandated Emissions Reductions

Massachusetts has committed to ambitious policies to reduce greenhouse gas emissions across all energy uses (The Global Warming Solutions Act) and from electric generation specifically (the Renewable Portfolio Standard and Clean Energy Standard).

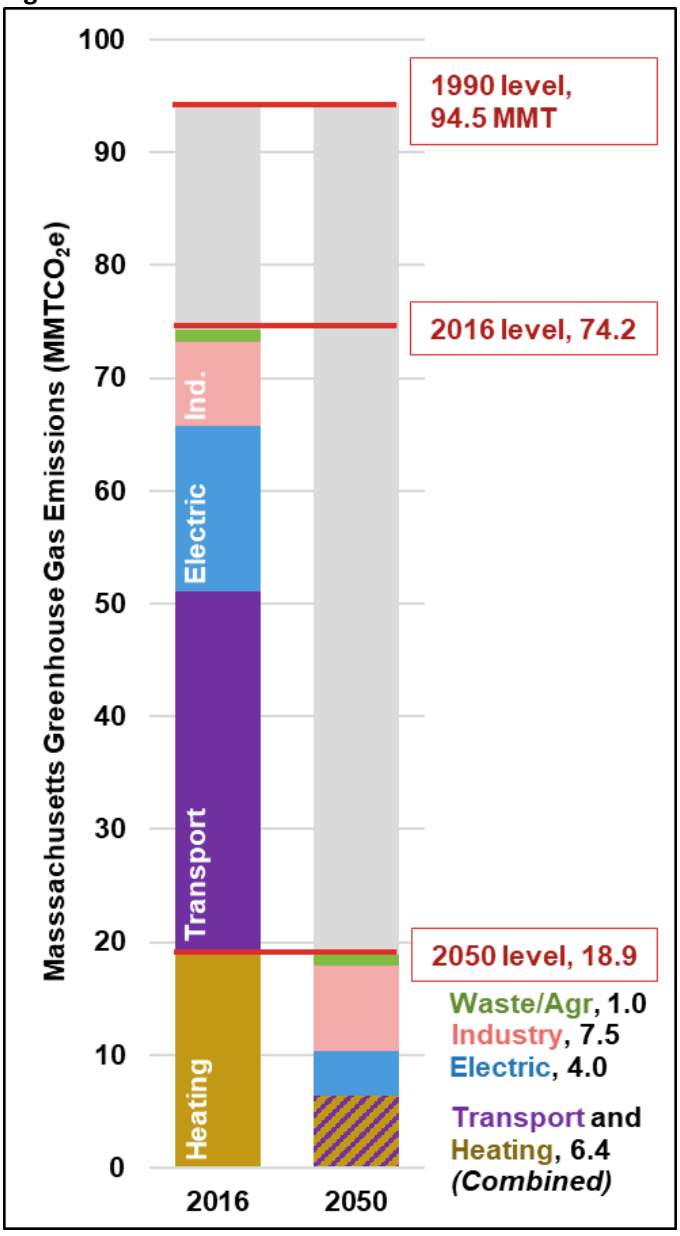
The Global Warming Solutions Act commits Massachusetts to an 80 percent reduction in greenhouse gas emissions from 1990 levels by 2050. That means state-wide emissions must drop from 94.5 million metric tons (MMT) of carbon dioxide "equivalents" (CO_2e) in 1990 (and 74.2 MMT in 2016) down to 18.9 MMT in 2050 (see Figure 1).

About 8.5 MMT of the 2050 total are reserved for industry, waste and agriculture, where emissions are especially difficult to eliminate. That leaves a budget of 10.4 MMT for the remaining sectors: electric, space and water heating in buildings, and transportation (which, together, accounted for approximately 70 MMT of emissions in 2016).

Existing policies will shrink electric sector emissions down to about 4.0 MMT by 2050—leaving just 6.4 MMT of the emissions budget for Massachusetts transportation and heating needs (see Figure 1).

Today, the Commonwealth's gas distribution system—not including electric generation—emits about 13 MMT statewide each year; this number includes almost 1 MMT from leaky pipes. In 2050, the heating and transportation sectors must share a 6.4 MMT budget. The math is clear: There isn't enough room for gas heating under Massachusetts' climate law.

Figure 1. Massachusetts Greenhouse Gas Emissions



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The Role of Gas

Specific emission reduction policies do not currently exist to address the emissions from heating our homes and businesses. In addition, the gas distribution system in the Commonwealth is old and leak-prone—posing health and safety risks in the form of air pollution and potential explosions.

Massachusetts utilities have committed $66 million each year to fixing leaks. This is in addition to the more than $9 billion allocated for the replacement of 6,000 miles of leak-prone pipes. A surcharge on every ratepayer's gas bill funds this enormous replacement project, increasing Massachusetts gas bills by 6 percent.

What if we spent that $9 billion differently?

- Given the approximately 1 million gas furnaces in Massachusetts homes, it would cost $700 million—together with the Commonwealth's existing no interest HEAT Loans—to make it economic to convert these homes from gas to modern electric heat pumps.
- Even if it cost another $1 billion to provide the same incentive to businesses, the price tag still would not approach the $9 billion needed to fix all leak-prone pipes.
- Changing all oil heating to gas only lowers heating emissions by 2 MMT, from 19 to 17 MMT.
- These 17 MMT can be reduced to 4 MMT by converting all heating to electric heat pumps (which cause some emissions from electric generation). Switching all heating to electric heat pumps would also eliminate leaky pipes and their emissions.

With a heating plus transportation emissions budget of 6.4 MMT in 2050, these changes allow just 2 to 3 MMT for the transportation sector, down from 32 MMT today.

Proposed Massachusetts' legislation includes a surcharge on gas bills to be spent on renewable energy projects—modeled after the existing 0.2 percent surcharge on electric bills (about 25 cents per month) which supports local renewable energy development and has made it possible for the Commonwealth to become a national leader in green energy, creating over 100,000 jobs and $11 billion in in-state economic activity.

Impacts of Current Policy

As wealthier communities invest in clean transportation, electric heat, and solar panels to meet their climate goals, the burden of supporting Massachusetts' gas distribution system will fall to those towns and neighborhoods left holding the proverbial bag—still using gas to warm buildings, provide hot water, and cook food. Without support from policies to modernize and decarbonize, the cost to repair an archaic gas system will fall increasingly on poorer families.

Legally mandated renewable energy development and emission reductions cannot be reconciled with multibillion-dollar spending on new gas infrastructure. While the Commonwealth may be able to fix the gas system (at great expense), we cannot continue to use the gas system at its current levels and meet our statewide emission reduction goals.

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