



Natural Resources Council of Maine

3 Wade Street • Augusta, Maine 04330 • (207) 622-3101 • Fax: (207) 622-4343 • www.nrcm.org

Testimony in Support of LD 2077, An Act Regarding Customer Costs and the Environmental and Health Effects of Natural Gas

**To the Committee on the Energy, Utilities and Technology
by Jack Shapiro, Climate and Clean Energy Program Director
January 23, 2024**

Senator Lawrence, Representative Zeigler, members of the Energy, Utilities and Technology Committee, my name is Jack Shapiro, and I am the Climate and Clean Energy Director at the Natural Resources Council of Maine (NRCM). NRCM has been working for more than 60 years to protect, restore, and conserve Maine's environment on behalf of our 30,000 members and supporters. NRCM testifies in support of LD 2077, An Act Regarding Customer Costs and the Environmental and Health Effects of Natural Gas.¹

LD 2077 is a reasonable, measured approach to resolving a significant tension in Maine's climate and energy policies. Climate change, driven by carbon emissions from burning coal, oil, and gas, is behind serious impacts to our state and around the world. Not only was 2023 the hottest year ever recorded by far – we have also been reminded of the escalating risks almost daily this winter right here in Maine. Torrential rains and record high water levels – linked to climate change – from the December and January storms resulted in lives lost, dozens of communities flooded, hundreds of roads and trails washed out, working waterfronts decimated, and nearly half the state without power.

Fortunately, Maine has already taken significant actions to address climate change, led in no small part by the work of this Committee. Since 2019, the Legislature has established strong emissions-reduction and clean energy goals, and the state has a comprehensive climate action plan, which is showing results. Solar energy has expanded 700% in the past few years. Electric vehicle registrations have tripled since 2020. And Maine is a national leader in high-efficiency heat pump adoption.

Natural gas is a modest but important – and likely undercounted – contributor to Maine's greenhouse gas emission profile. Maine has four gas distribution companies, serving

¹ https://legislature.maine.gov/legis/bills/display_ps.asp?PID=1456&snum=131&paper=&paperId=l&ld=2077

approximately 50,000 customers in Maine, and is expanding.² In the context of climate change and the work Maine has already done to promote beneficial electrification, subsidizing the expansion and assuming the indefinite operation of Maine's gas distribution system is not sensible. In addition, the gas system is causing immediate and ongoing health impacts to Mainers and brings with it significant long-term ratepayer risks.

That's why LD 2077 takes common-sense actions to stop gas expansion, and to scrutinize gas utilities' operations in Maine. Specifically, the bill:

- Ends existing subsidies for adding new customers to the gas system, locking in associated emissions for years.
- Prevents utilities from expanding into entire municipalities – but does not prevent new customers from connecting to the system where it already exists.
- Disallows promotional allowances.
- Initiates a study of district geothermal as a potential transition for the gas utility workforce and for existing infrastructure.
- Initiates an inquiry to determine pathways for how gas utilities could operate economically in a way that protects ratepayers and is consistent with Maine's statutory emissions reduction targets.
- Directs state agencies to provide a report to help policymakers understand the indoor air quality and health impacts of burning fossil fuels inside residences and commercial buildings.

Gas and Climate

Methane is the major component of natural gas and is a climate super pollutant, with more than 80 times the warming power of carbon dioxide over the first 20 years after it reaches the atmosphere.³ Methane leaks throughout the system from wells, transmission pipelines, distribution mains, service lines, and appliances within the home.⁴ Multiple studies have shown that these leaks are systematically undercounted – including by the EPA methodology currently used to account for Maine's greenhouse gas (GHG) emissions.⁵ Because of the global warming potential of even a small amount of methane leakage, the continued operation and growth of the

² <https://hazmat.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids>. Accessed 1-19-2024.

³ <https://www.iea.org/reports/methane-tracker-2021/methane-and-climate-change>

⁴ Lebel et. al. "Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes." *Environmental Science & Technology* (2022). <https://pubs.acs.org/doi/10.1021/acs.est.1c04707>

⁵ Weller et. al. "A National Estimate of Methane Leakage from Pipeline Mains in Natural Gas Local Distribution Systems." *Environmental Science & Technology* (2020). <https://pubs.acs.org/doi/10.1021/acs.est.0c00437>; Sargent et. al. "Majority of US urban natural gas emissions unaccounted for in inventories." *PNAS* (2021). <https://www.pnas.org/doi/10.1073/pnas.2105804118>; Plant et. al. "Large Fugitive Methane Emissions From Urban Centers Along the U.S. East Coast." *Geophysical Research Letters* (2019). <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019GL082635>;

gas system poses a significant threat to Maine's climate goals: 45% gross emissions reductions in seven years, 80% in 27 years, and net-zero emissions in 22 years.⁶

Numerous analyses recommend the managed phase-out of fossil fuel infrastructure at all scales as necessary to avoid catastrophic climate impacts. The National Academies of Sciences, Engineering and Medicine's 2023 report, "Accelerating Decarbonization in the United States," recommends: 1) Considering whether new gas projects are consistent with GHG emissions reduction targets; 2) Requiring gas distribution utilities to plan for transitioning investments and operations in light of end-use electrification to ensure safety and affordability; and 3) To consider moratoria on new gas lines in previously unserved areas.⁷ All of these recommendations are aligned with the provisions in this bill.

2023's annual "10 New Insights in Climate Science" report underlined the importance of a managed phase-out of fossil fuels. The report noted that despite the need to rapidly reduce carbon emissions from existing fossil fuel infrastructure – including utility gas systems – companies continue to invest in expanding new infrastructure, risking the creation of stranded assets and undermining decarbonization efforts.⁸

Because of these climate risks, it only makes sense to stop major new expansions of the gas system in Maine and end the practice of subsidizing or incentivizing new connections.

Gas and Health

A growing body of research is showing the harmful indoor air quality and health impacts of burning fossil fuels inside homes. Burning gas for cooking and heating creates indoor air pollution including nitrogen dioxide (NO₂), carbon monoxide, and formaldehyde,⁹ pollution linked to asthma in children and other health impacts.¹⁰ A 2022 study found natural gas in homes contained air toxics including carcinogens like Benzene.¹¹ Nitrogen oxides also contribute to the formation of ground-level ozone or smog. Pollutant concentrations from cooking can reach levels that would exceed clean air standards for outdoor air quality.¹² Poor air quality and the associated impacts are notoriously inequitable,¹³ and pre-existing and chronic health conditions that are made worse by air pollution are associated with race, income, and age. These impacts are enormous – 13% of childhood asthma cases in the United States are attributable to gas stove use.¹⁴ This bill's study of indoor air quality and health impacts from fossil fuel combustion will

⁶ MRSA Title 38, Section 576-A.

⁷ <https://nap.nationalacademies.org/resource/25931/interactive/>

⁸ <https://10insightsclimate.science/year-2023/2-rapid-managed-fossil-fuel-phase-required/>

⁹ <https://www.npr.org/2021/10/07/1015460605/gas-stove-emissions-climate-change-health-effects>

¹⁰ <https://rmi.org/insight/gas-stoves-pollution-health/>

¹¹ <https://www.nytimes.com/2022/10/20/climate/gas-stove-benzene-california.html>

¹² <https://www.sciencedirect.com/science/article/abs/pii/S036013231730255X?via%3Dihub>

¹³ <https://www.science.org/doi/10.1126/sciadv.abf4491>

¹⁴ Gruenwald et. al. "Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States." *Int. J. Environ. Res. Public Health* (2023). <https://doi.org/10.3390/ijerph20010075>

help policymakers understand how this growing body of research applies in Maine, and inform future policies to improve Mainers' health.

Electrification and Gas Rates

There is significant policy, industry, and technological momentum behind beneficial electrification, in Maine, nationally, and around the world. Maine is a national leader in heat pump adoption, and after achieving the state's goal of 100,000 heat pump installations two years early, Governor Mills raised the state's goal to 275,000 heat pumps installed by 2027.¹⁵ The Inflation Reduction Act (IRA) includes incentives for heat pump installations, incentives for magnetic induction stoves, and for electric panel upgrades to support electric appliances.¹⁶ Between federal and state programs, Maine households can receive up to \$10,600 for a whole-home heat pump conversion. In November 2023, the federal Department of Energy announced \$169 million in funding to manufacture more clean energy technologies like heat pumps here in the United States.¹⁷

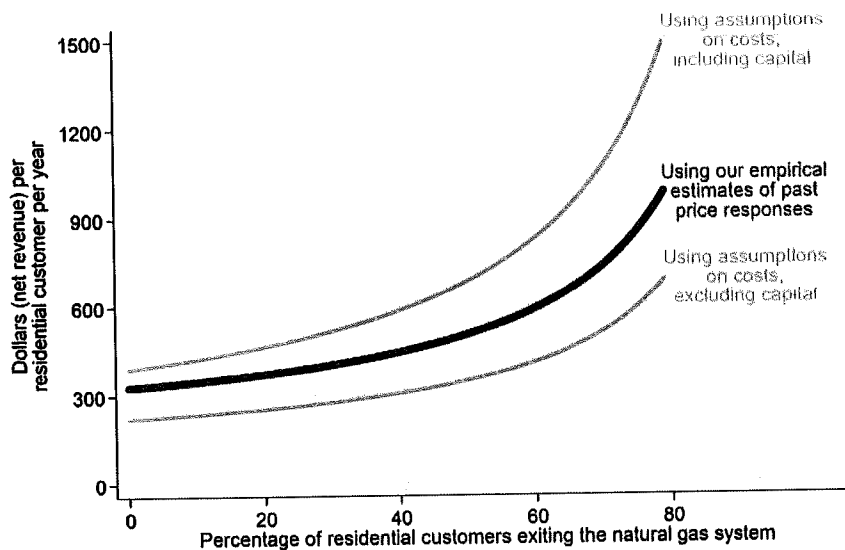
This unmistakable direction is likely to result in fewer customers for gas utilities over time. Empirical evidence studying rates at gas utilities over time shows that when gas utilities' customer bases shrink (in the past due to population loss), rates increase for the customers remaining on the system.¹⁸ At higher rates of customer loss, rates for remaining customers can increase by between 100%-400% as fixed infrastructure costs are extracted from a dwindling ratepayer population. The provisions in LD 2077 would help avoid increasing those fixed costs, by eliminating promotional allowances, and subsidized line extension allowances, as well as identifying potential options for mitigating these rate impacts over time through the inquiry at the Public Utilities Commission (PUC).

¹⁵ <https://www.maine.gov/governor/mills/news/after-maine-surpasses-100000-heat-pump-goal-two-years-ahead-schedule-governor-mills-sets-new>

¹⁶ <https://www.consumerreports.org/appliances/inflation-reduction-act-and-new-electric-appliance-rebates-a3460144904/>

¹⁷ <https://www.energy.gov/articles/biden-harris-administration-announces-169-million-accelerate-electric-heat-pump>

¹⁸ Davis, Lucas W., Hausman, Catherine. "Who Will Pay for Legacy Utility Costs?" *Journal of the Association of Environmental and Resource Economists* (2022). <https://www.journals.uchicago.edu/doi/abs/10.1086/719793>



*Rate impacts for residential gas customers as customer base shrinks
Davis & Hausman (2022)*

Gas Is Not Low Cost

It is often argued that natural gas is “low cost.” This is true if the comparisons are limited to other polluting fossil fuels such as heating oil. However, even setting aside the significant health risks, as well as the costs of climate damages from the carbon dioxide created during gas combustion and from methane leakage, gas is not the bargain its proponents claim. Gas prices are highly volatile, and exposed to global markets and global events such as the Russian invasion of Ukraine, and unrest in the Middle East. Between 2020 and today, gas prices in Maine swung by a factor of three.¹⁹ Overall, as of the beginning of this week, Efficiency Maine’s heating cost calculator showed electric heating options as more affordable than gas, with the lowest annual estimated heating costs in order as follows:

- Geothermal Heat Pump (electric) - \$1,242
- Heat Pump (ductless) (electric) - \$1,698
- Wood Stove - \$1,717
- Heat Pump (ducted) (electric) - \$2,122
- Natural Gas Boiler - \$2,256
- Natural Gas Room Heater - \$2,306
- Natural Gas Furnace - \$2,510

Gas does not appear to be a solution for low-income Mainers either. The Office of the Public Advocate’s (OPA) most recent energy burden study found that low-income homes heating with natural gas spend on average \$3,000 annually on energy, with those heating with electricity spending on average \$1,800 per year.

¹⁹ <https://www.eia.gov/dnav/ng/hist/n3010me3M.htm>

Some gas proponents claim that limiting gas expansion would increase housing or construction costs, but this claim is not well supported. Several studies have shown that all-electric residential construction is actually less expensive than mixed-fuel construction, largely due to avoiding equipment and installation costs for fossil-fuel infrastructure.²⁰

Looking Forward to the Future of Gas

LD 2077 includes several provisions that reduce incentives and subsidies for gas expansion but also initiates an inquiry into the future of gas utilities' operations in Maine. Many other states and utilities are also grappling with the tension between the need to achieve emissions reduction with legacy regulatory structures that incorrectly assume fossil-fuel infrastructure expansion is a public good. Many of these pathways could be appropriate for one or more of Maine's four gas distribution utilities and can and should be considered carefully through the proposed inquiry, including:

- Targeted electrification to allow selective decommissioning of certain parts of the gas system, reducing system costs.²¹ This could be especially cost effective in less-dense service areas.²²
- Requiring non-pipeline alternatives analysis as a condition of recovering investments in pipeline and distribution mains.²³
- Evaluating the need for joint gas-electric utility planning.
- Detailed review of planned infrastructure investments in light of state climate and clean energy goals.²⁴
- Competitive procurements to provide whole-building electrification services, allowing selective gas circuit decommissioning.²⁵
- Piloting geothermal heating district demonstration projects.²⁶ This could be especially cost effective in denser service areas.

Conclusion

²⁰ <https://web.archive.org/web/20230112143052/https://newbuildings.org/wp-content/uploads/2022/04/BuildingDecarbCostStudy.pdf>; <https://rmi.org/insight/the-economics-of-electrifying-buildings-residential-new-construction/>

²¹ <https://www.smartcitiesdive.com/news/albany-ca-gas-pipeline-decommissioning-building-electrification-decarbonization/700050/>

²² <https://www.ethree.com/a-new-e3-benefit-cost-analysis-of-targeted-electrification-and-gas-decommissioning-shows-potential-for-cost-savings/>

²³ Massachusetts DPU Case 20-80-B. 12/6/2023 Order.
<https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18297602>

²⁴ <https://ltgov.illinois.gov/news/press-release.27314.html>

²⁵ <https://www.coned.com/en/business-partners/business-opportunities/-/media/23db06efb6e145379d6fc8d420743736.ashx>

²⁶ <https://www.canarymedia.com/articles/carbon-free-buildings/new-york-will-repurpose-gas-pipelines-to-pump-clean-heat-into-buildings>

Transitioning toward clean energy and electrification and away from fossil fuels in home heating and cooking will not be easy, and it is imperative that we approach the transition in as thoughtful and as fair a way as possible. By obeying the first law of holes – when you find yourself in one, stop digging – LD 2077 limits large-scale gas system expansion and ends subsidies and incentives for growing the system. Then LD 2077 initiates a set of studies to help inform how we can equitably and cost-effectively make this transition, while limiting the climate, health, and ratepayer risks that come part and parcel with the operation of the gas system.

This bill represents a reasonable approach to a clear problem, which is why NRCM strongly supports LD 2077, and we urge the Committee to support it as well.

Thank you.