

Spoken Testimony to the Senate Committee on Global Warming and Climate Change

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Thank you Chair Creem. I am independent decarbonization strategist and a lead author on the Massachusetts 2050 Decarbonization Roadmap Study. My focus today is to offer an independent assessment of the gas utilities proposed enablement plans filed as part of the 20-80 “Future of Gas” docket and those plans’ reliance on *Hybrid Electrification* scenario evaluated as part of the Independent Consultant’s Decarbonization Pathways Report.

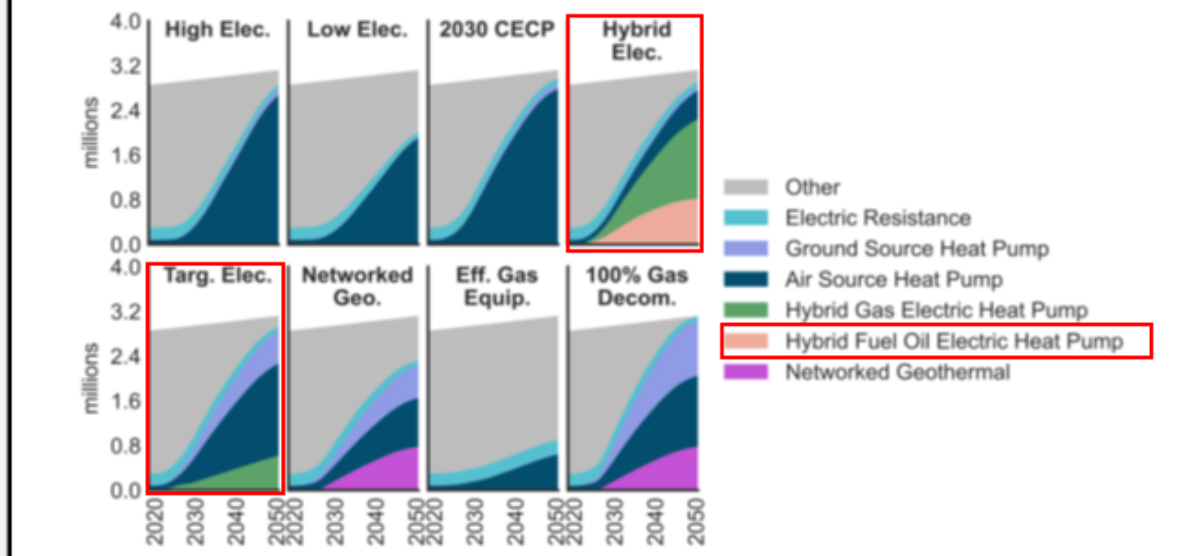
In the Massachusetts Decarbonization Roadmap, we intentionally emphasized that:

A strategy reliant on the continued use of pipeline gas for building heat carries asymmetric risks compared to electrification. A future increase in the price of pipeline gas together with increasing reductions in costs associated with heat pumps could result in a significant cost-driven market advantage for heat pumps that, regardless of policy, leads to a large, uncontrolled customer exit from the gas system. The potential for an uncontrolled exit driven by market economics raises significant additional equity concerns.

The purpose of this text was to emphasize the role of market dynamics in addition to policy in decarbonizing heat, and its logic extends beyond heat pumps as I will explain in a moment. While the 20-80 study evaluated a range of scenarios that could be used to understand the implications of an uncontrolled exit of customers from the gas system, the study’s design and the enablement plans are based on the oversimplistic premise that pipeline delivered gas does not face significant market risks.

The *Hybrid Electrification* scenario emerged from the study as the lowest cost pathway because it balanced the challenges associated with electrification and renewable gas. It did so by placing the gas system on a knife’s edge, by assuming that approximately all current gas customers would shift to a heat pump with gas backup hybrid arrangement. It also assumed that approximately all current fuel oil-heated buildings would shift to an analogous heat pump with oil back up arrangement. The inclusion of oil-hybrid approaches – only in this scenario – could be responsible for as much as a third of the cost savings observed in the Hybrid Scenario, and serves as a thumb on the scale in favor of that scenario in the analysis.

Figure 18. Residential space heating stocks by scenario, emphasis on electrification. A full overview of space heating stock conversions is provided in Appendix 1.



Adapted from Figure 18 of the Independent Consultant Report – Decarbonization Pathways

I hypothesize that if the oil-hybrid assumption been applied to the Targeted Electrification scenario, then that scenario would have a lower range of costs than the Hybrid Electrification Scenario. Further, similar non-pipeline hybrid arrangements that employ propane or pellet stoves, could be used as a tool for transitioning gas-served homes off of the gas system to enable a more tactical decommissioning of the gas system that saves money, and avoids straining the electrical grid.

While gas industry groups imply that electrification policy will take away customer choice, electrification will provide customers with value-creating alternatives to pipeline gas. We can accommodate individual choices while making responsible decisions to manage shared infrastructure. Air quality concerns aside, if you want to cook with an open flame, you can with propane, it might be renewable-propane in the future, and you'll be able to do it next to a \$100 induction cooktop that boils water faster than anything else. Similar options will be available for heat and will severely erode gas demand.

In the near term, hybridizing heat makes sense for the next decade and can serve as a steppingstone to more ambitious strategies such as networked geothermal. Maintaining gas hybridization longer term will require coercive regulation, whose purpose is to maintain the gas system. Long-term hybrid gas scenarios will face significant bioenergy challenges. Ultimately, the arc of technological progress and consumer behavior bends away from combustion and toward electrification and efficiency. It will do so faster than the depreciation of the pipes that we are on track to put into the ground over the next decade.

The 20-80 study should have been designed with the aim of developing targeted strategies for mitigating the risk of an uncontrollable customer exit. Its cross-sector framework struggles to do this because of its lack of granularity. The optimal strategy for Boston will

differ from those best suited for Lexington or for Holyoke. This is why I, in partnership with the UMass Energy Transition Institute, have begun looking into some of these questions using building and pipe-level data to identify the best locally-focused strategies.

I hoped my comments today have helped the committee better understand the 20-80 study. Along with this spoken testimony I am also submitting a working paper detailing these and several other critiques of the hybrid scenario and the utilities' enablement plans.

Thank you very much for your time today and I am happy to answer any questions.