

August 31, 2021

VIA ELECTRONIC MAIL ONLY

Poppy Milliken

ERM, on behalf of the Future of Gas

futureofgas@erm.com

Dear Future of Gas Consultants:

The undersigned stakeholders respectfully provide the comments and recommendations below for improvement of the scenarios presented at the stakeholder meeting held on August 24, 2021. The scenarios will help provide Massachusetts gas utilities (“local distribution companies” or “LDCs”) with information necessary to file required proposals in Massachusetts Department of Public Utilities (“DPU”) Docket No. 20-80, the Department’s investigation into the future of LDC operations in the Commonwealth.

Preamble

We thank the LDCs, E3 and Scott Madden for their work and appreciate the difficulty of this undertaking in considering how to decarbonize the gas system (DPU 20-80). We understand what an extraordinarily difficult problem it is, in terms of economics, emissions and people. (We also recognize that hosting stakeholder meetings on Zoom increases the difficulty of communication and connection. Please accept our empathy.)

We understand this undertaking is critically important. The analysis, and the actions that follow it, will impact not only the LDCs, but also their workers and customers and particularly the low-income customers who currently depend on heat being delivered at a low cost. A strong business model needs to be found and we all need to move toward that model in an efficient and synergistic manner. It is because of the critical importance of this analysis and this undertaking that we offer these comments.

Our hope is that the results of these pathways will bring clarity about the best way forward. Without that clarity, when the DPU opens its investigation there will be confusion and conflict. Instead, we would like to find agreement among all of us, for when we reach that agreement, we will know we have found true common ground. This hopefully will be on the best path forward, one where we are most likely to be able to meet the needs of the future.

Critical Elements Missing from the Proposed Scenarios

Include 100% Decommissioning of the Gas Distribution System

To ensure gas utilities and their customers can transition to using a new non-emitting low-cost thermal energy, we must allow for all options to be on the table. Analysis under this proceeding must include geographically optimized and phased 100% gas decommissioning scenarios to achieve Massachusetts' climate mandates. The future of gas in Massachusetts cannot be adequately assessed without scenarios that fully decommission the use of the gas distribution system in the Commonwealth by 2050. At least two scenarios must be added that cease gas pipeline operations on short term and longer-term time scales, while still providing heating to gas customers and a just transition for the gas utility workforce. One of these scenarios should include replacement of distal, constrained, or aging gas infrastructure with GeoBlocks wherever financially feasible, interconnecting them to build up a GeoGrid. This could result in more work for gas workers, lower cost energy for customers and greater profit for the LDCs. The proposed "targeted & optimized electrification" scenario is not sufficient to address the mechanisms, implementation costs, and long-term cost savings to fully decommission gas infrastructure in Massachusetts.

Prohibit Expansion of Existing Infrastructure as Soon as Possible

The study should compare the costs associated with continued expansion of the gas system out to 2027 relative to halting expansion in 2023 at the conclusion of the 20-80 process. We recognize that use of 2027 reflects the assumptions in the Commonwealth's Roadmap, but it is reasonable to assume that, as the Roadmap analysis found, a significant finding of the 20-80 process will be that continued expansion of the gas system out to 2027 will result in greater costs for consumers who remain on the gas system due to legacy equipment and assets. The costs of continued expansion past the conclusion of the 20-80 process are likely in the billions and avoidance of these costs should be a focus of this work. All scenarios evaluating customer exits from the gas system should evaluate the timing of ending expansion in 2023 vs 2027.

Given this stranded cost risk, it would be prudent for EEA and its sub-agencies to issue a moratorium on gas system expansion and to impose stays of all expansion-related proceedings at the EFSB and DPU pending the conclusion of DPU Docket No. 20-80 and related proceedings.

Provide an Equitable Transition for the LDC Workforce

An additional critical element missing from the scenarios presented at the August stakeholder meeting is the labor component. While several of the proposed scenarios significantly ramp down the scale of LDC operations by 2050, which will presumably result in workforce cuts,

none explicitly address the critical need for a just transition for the LDC workforce. Numerous individuals and families in Massachusetts depend on the existing utility structure for income and employment; knowing that the present structure is unsustainable, transitioning these laborers to new employment with family-sustaining wages will be crucial.

Address Environmental Justice Considerations

Although the presentation to stakeholders on August 24, 2021 mentioned environmental justice concerns, the only factor noted was that of the impact to total (electric and gas) consumer heating bills. Since the electrification of everything is likely to increase peak loads and the cost of electricity, we recommend that this factor be changed to the total (electric and gas) consumer energy bills (not just heating). More importantly, we recommend adding analysis of environmental justice issues such as public health impacts by reviewing changes in factors including but not limited to: air quality, frequency of high heat days, and energy system resiliency for each scenario.

Scenario-Specific Feedback

90% Reduction Scenario

Any scenario that alters gas sales assumptions needs to include an accelerating recursive process of customer attrition as soon as the price of heating with gas exceeds that of alternatives like heating with air source heat pumps (ASHPs). It is unrealistic to expect that the majority of LDC customers would willingly continue to maintain the entire system's fixed costs rather than converting to heat pumps (even industrial customers who can't easily electrify are likely to either have liquefied methane gas delivered and stored or convert to biogas or green hydrogen produced and used on-site once those options are economically attractive). The only realistic customer base left for the LDCs after the cost of gas heating exceeds electric heating and industrial alternatives would be those who cannot afford to pay for a new heating system, or those who do not have the legal right to upgrade their heating systems (tenants). In this analysis, please note the characteristics of the customers left in the LDC system, total energy bills incurred, and the likely percentage of total household income spent on energy.

Targeted & Optimized Electrification Scenario

The targeted scenario should incorporate networked ground source heat pumps ("GeoBlocks" or "networked GSHPs") wherever financially viable. All system growth, all gas main replacement and constraints, and a targeted phased replacement of distal ends of the gas distribution system should be incorporated in this scenario.

Where GeoBlocks are not financially viable, individual building installations of ASHPs and GSHPs should be considered. All these targeted areas should be fully disconnected from the gas system, with all appliances moved to electricity. For industrial customers where combustion is still needed, liquefied methane gas deliveries or the on-site generation and use of green hydrogen or biogas should be assumed.

Networked Geothermal Scenario

The presentation to stakeholders on August 24, 2021 stated that “[o]ther end-uses that are not suitable for networked geothermal systems remain connected to the gas system”. It would be financially unwise for customers, and would defeat the purpose of this analysis, if the entire gas system were to be maintained for gas stoves or clothes dryers. Where electric alternatives exist (induction cooktops and electric ovens, electric clothes dryers, electric fireplaces, etc.), the scenarios should assume that a building converted to networked geothermal would electrify all gas appliances and fully disconnect from the gas system.

Gas Innovation Scenario

The costs associated with any speculative technology in the “gas innovation” scenario must be rigorously developed and realistic. The decarbonized gases used in this scenario should include a detailed accounting of how the various feedstocks (i.e., biomass feedstocks for biomethane, CO₂ and hydrogen for synthetic methane, and renewable energy for green hydrogen) for these gases are being sourced, as well as a life cycle GHG emissions analysis for each resource. For any RNG (renewable natural gas) used, the LDCs must also retain or purchase the environmental attributes of the gas to avoid double-counting emissions reductions. Emissions accounting in this scenario should also incorporate the continued leakage of methane or hydrogen that would be mitigated in gas decommissioning scenarios.

In addition, for this scenario, the following questions should be addressed:

- How will the modeling ensure that there is adequate green hydrogen from excess renewable energy to serve gas end uses in the context of competing uses for that excess renewable energy?
- How will the modeling account for the seasonal storage of hydrogen?
- What assumptions are being made about the availability of appliances that can run on high concentrations of hydrogen, and the cost curves associated with these technologies?
- How does this scenario account for state and local electric heat pump deployment and building electrification targets?

Reference Scenario

The Reference Scenario must account for the costs of climate inaction. The undersigned stakeholders continue to be concerned about the framing of a “reference” scenario that is not compliant with Massachusetts law. If analysis of the Reference Scenario must proceed, it should include an extensive inventory of the costs associated with inaction on the climate crisis, including damages associated with extreme weather events, food scarcity, public health impacts, economic and social impacts, and more through and beyond 2050, such that the comparison to other scenarios being evaluated is fair, comprehensive, and accurate. If it is used as a baseline situation, it should also be compared with the other scenarios to show the increase in MA jobs and infrastructure improvements that would result from decarbonization actions.

Scenarios Involving High Levels of Energy Efficiency

Extensive detail must be provided as to the basis of high levels of energy efficiency in each scenario. Considerations should include to what extent Mass Save is involved, the use of weatherization and appliance conversions, how high efficiency can be provided equitably, and how/by whom “high efficiency” will be measured. In addition, each scenario should include sensitivities to demonstrate what would happen to emissions if we do not reach high levels of energy efficiency.

Scenarios Involving Hydrogen

Inclusion of hydrogen as a distributed fuel in any scenario must include a rigorous accounting of the negative and dangerous externalities of hydrogen transportation and combustion, including health impacts from nitrogen oxides and the higher risk of pipe embrittlement and potential explosions from utilizing hydrogen compared with methane gas, as well as the costs and emissions associated with creating hydrogen-based fuel, and the leakage rate and global warming potential of leaked hydrogen from the distribution system.

Scenarios Involving Decarbonized Gas

Any degree of hydrogen or biogenic renewable gas blending into pipelines in any scenario must be compared on a cost versus emissions basis against the use of those same volumes of hydrogen or biogenic renewable gas as long duration storage for grid support during peak demand.

Scenarios Involving Electrification

All scenarios involving electrification should assume maximum levels of cost-effective demand response and load management, including new programs designed to optimize shifting of newly

electrified loads (electric vehicles, heat pumps, heat pump water heaters, etc.) to minimize impacts of electrification on peak generation and transmission and distribution.

Additional Questions for Consultants

In addition to the foregoing comments and recommendations, the undersigned stakeholders seek responses to the questions below. Responses should be provided in writing in advance of the September stakeholder meeting.

Re: 100% Reduction of Greenhouse Gas Emissions

How do you define 100% GHG reductions for the gas system? Is this solely end use, or does it also include emissions from the production of the end use fuel? Does this include leaks from the source of hydrogen, as well as the distribution pipes? If carbon sequestration is included as a strategy, is there any range of confidence that the emissions will remain sequestered for the time necessary for our climate to return to normal?

Additional Stakeholder Requests

To facilitate comparison of scenarios which result in different goals in different manners, please provide the results for each scenario with a breakdown of total costs per ton of carbon dioxide and in terms of impacts on total (electric and gas/thermal) household energy bills.

Conclusion

As described above, the undersigned stakeholders provide the foregoing with the hope that incorporating these considerations into scenario development will lead to a more successful, just, and equitable outcome in the present proceeding. We welcome any additional dialogue which may serve to improve such an outcome. Thank you for your time and attention to this matter.

Sincerely,

Caitlin Peale Sloan, Vice President, Massachusetts, *Conservation Law Foundation*

Priya Gandbhir, Staff Attorney, *Conservation Law Foundation*

Ania Carmago, *Mothers Out Front Massachusetts*

Audrey Schulman, *HEET*

Kyle Murray, Senior Policy Advocate, Massachusetts, *Acadia Center*

Deb Pasternak, Director, *Sierra Club Massachusetts*

Sarah Krame, Associate Attorney, *Sierra Club*

Andee Krasner, MPH, *Greater Boston Physicians for Social Responsibility*

Kathryn R. Eiseman, *Pipe Line Awareness Network for the Northeast (PLAN-NE)*
Patricia A. Gozemba, *Salem Alliance for the Environment (SAFE)*
Larry Yu, Co-Chair, *Climate Reality Project – Boston Metro Chapter*
Kannan Thiruvengadam, *Eastie Farm*
Nathan Phillips, *Boston University*
Charles Lidz, *No Ashland Pipeline*
Mary McAvity Cerulli, *Climate Finance Action*
Dorie Seavey, PhD, *DK Seavy Consulting*
Marilyn Ray Smith, *Emerald Necklace Conservancy* (signing individually)
Debbie New, *Gas Leaks Allies* (signing individually)
Steven Marantz, *Longmeadow Select Board Member* (signing individually)
Mark Sandeen, *Lexington Select Board Member* (signing individually)
Lise Olney, *Wellesley Select Board Member* (signing individually)