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Re: DPU Docket No. 20-80: Investigation by the Department of Public Utilities on its own Motion into the role of gas local distribution companies as the Commonwealth achieves its target 2050 climate goals

Dear Department of Public Utilities (DPU):

My name is Dorie Seavey and I am a Boston-based independent research economist who has conducted in-depth studies of the gas distribution system in Massachusetts, including *GSEP at the Six-Year Mark*, released last October.

I attended most of the stakeholder meetings and technical sessions and have submitted written and verbal comments and questions. My written comments below focus on the enormous but so far unconsidered opportunity cost of the Gas System Enhancement Program (GSEP) embedded in the Net Zero Enablement Plans ("preferred pathways") put forward by the gas companies (LDCs).

The LDCs preferred pathways depend on GSEP.

The gas companies have requested sweeping regulatory changes under DPU 20-80 (aka The Future of Gas Investigation), one of which would enable the procurement and use of "alternative gases" in our distribution system, including biomethane, synthetic natural gas, and hydrogen.

If we assume for the moment that these alternative gases are truly renewable and non-emitting, and safe for human health, then how would the gas companies' plans to introduce them make any sense given that the Commonwealth has one of the oldest, leakiest gas distribution systems in the country?

It turns out that **the preferred energy pathways put forward by the gas companies are ONLY feasible or possible if the gas industry continues to use GSEP to replace its pipeline infrastructure** since these pathways require upgraded plastic pipelines ready to deliver fracked gas blended with alternative gases. Without GSEP, five of the eight pathways modeled by the Consultants—Efficient Gas Equipment, Hybrid, Targeted and Low Electrification, and Networked Geothermal—would be non-starters.

The GSEP program allows the gas companies to accelerate the replacement of their leak-prone gas distribution infrastructure with a planned conclusion date of 2039. Ratepayers eventually pay for 100 percent of the investments through a per therm tariff over the lifetime of the pipeline assets which is typically about sixty years. GSEP's current cost is nearly $600 million annually and over 5,000 miles of mains remain to be replaced,[1] or roughly 70 percent of the leak-prone pipe that the DPU has so far authorized for replacement under GSEP. Much of this remaining pipe is located in more densely populated urban centers where replacement work is often difficult, complex, and very costly.[2]

GSEP's original purpose has quietly morphed.

Put in place by the Legislature in 2014, the original purpose of GSEP was to reduce leaks and promote safety. Those goals made sense at the time and the notion that the gas system might need to be urgently decommissioned before the end of the economic life of these assets was not part of the landscape. Furthermore, GSEP was viewed as a logical successor to its predecessor, the TIRF programs (targeted infrastructure replacement factor programs), under which 691 miles of pipe and over 20,000 services were replaced from 2010 to 2013.

But GSEP's original purpose has quietly morphed. The program has become the gas companies' accelerated investment vehicle for making our gas distribution system biofuel- and hydrogen-ready. Nowhere in MGL statute, however, has this new purpose received the Legislature's blessing.

Under the veil of the 2014 GSEP statute (MGL ch.164 §145), gas companies are now speeding up their installation of new polyethylene plastic pipe so that the fracked gas they distribute can be blended with biomethane, synthetic natural gas, and hydrogen. With the DPU's support and cooperation, GSEP is being used by the gas companies to reinvigorate over 90 percent of their rate base,[3] tying it to a nearly 10 percent rate of return through the end of the century.

GSEP has been a stealth player in the Future of Gas Investigation, receiving no explicit scrutiny.

GSEP has been relegated to backstage in the Future of Gas Investigation even though this program could not be more **foundational** to the gas companies' preferred pathways. GSEP received no explicit scrutiny in the E3 and ScottMadden reports nor in the gas companies' Net Zero Enablement Proposals; instead it has been taken as given.

In sharp contrast, GSEP's new purpose is unabashedly acknowledged in gas industry-supported research. For example, the Associated Industries of Massachusetts recently funded a *UMass-Lowell study*

[1] Dorie Seavey, *GSEP at the Six-Year Mark* (October 2021), p. 48, note 140, https://static1.squarespace.com/static/612638ab5e31f66d7ae8f810/t/61561b8c4955b93159a753a3/1633033102069/GSEPatTheSix-YearMark.pdf.
[2] Ibid, p. 26.
[3] See Figure 26 of the Independent Consultant Report.

supporting the development of hydrogen in the Commonwealth. That study draws a direct link between GSEP and the viability of introducing hydrogen.[4] The report states that so far over half of the Commonwealth's pipelines have been replaced with plastic pipes, and that an additional 4,000 miles of mains and hundreds of thousands of services remain to be replaced.[5] The report even goes so far as to suggest that "*the GSEP timeline could be accelerated*" to expedite the introduction of hydrogen since several thousand miles of mains still await GSEP replacement with hydrogen-compatible plastic pipe.

GSEP's likely total costs are on the order of $40 billion yet the DPU and LDCs consider GSEP off-limits to the Future of Gas Investigation.

As a participant in the DPU 20-80 stakeholder process, I urged the Consultants to provide their estimates of the total statewide cost of GSEP over time since those costs are necessarily imbedded in the Consultants' forecasts of annual revenue requirements. The Consultants did not provide these total cost estimates. The final report does contain a reference to "*a significant increase in gas system costs through the mid-2030s*," driven in large part by GSEP.[6]

In an appendix to their final report ("*GSEP Investment Forecast*"), the Consultants do provide, however, a forecast of annual GSEP investments through 2039.[7] Using these annual forecasts, I modeled GSEP's capital revenue requirement using straight-line depreciation to project the total cost of GSEP from the program's inception in 2014 onward. I assumed the current DPU approved rate of return on pipeline assets for each gas company and the 60-year asset life for polyethylene pipes claimed by the gas companies in their CY2022 GSEP proceedings.[8] **The resulting total GSEP cost is $40 billion (in constant 2019 dollars)**.

I would note that nowhere in its final report does E3 describe the assumptions underlying its forecast of annual GSEP investment costs. These assumptions should be obtained and evaluated by the DPU and careful consideration given to factors that could increase or decrease GSEP's costs.

In my opinion, there are two key factors likely to increase GSEP's total costs. The first is increases in unit costs for replacement work. My research shows that for NGrid-Boston and NGrid-Colonial, for example, the unit cost of replacing a mile of main has steadily increased by 14% and 23% per year, respectively, during the period 2017 to 2021. NGrid-Boston—the LDC responsible for the vast majority of remaining leak-prone pipe authorized for GSEP replacement—reports a 2021 unit replacement cost of $2.9 million per mile of main, up from $2.55 million in 2020.

[4] Christopher Niezrecki at al. *The Viability of Implementing Hydrogen in Massachusetts*, UMass-Lowell (January 2022), p. 72, https://futureofhydrogen.org/wp-content/uploads/2022/02/The-Viability-of-Implementing-Hydrogen-in-Massachusetts.pdf.

[5] My research shows that over 5,000 miles of mains remain to be replaced under the leak-prone inventories approved by the DPU in GSEP filings from 2014 to the present. See note 1 above.

[6] Energy Environmental Economics, *The Role of Gas Distribution Companies in Achieving the Commonwealth's Climate Goals – Independent Consultant Report – Technical Analysis of Decarbonization Pathways*, MA DPU 20-80 (March 18, 2022), p. 68, https://thefutureofgas.com/content/downloads/2022-03-21/3.18.22%20-%20Independent%20Consultant%20Report%20-%20Decarbonization%20Pathways.pdf.

[7] See Appendix 4: Input Assumptions Workbook of the Independent Consultant Report, worksheet titled "*GSEP Investment Forecast*."

[8] I assumed an average WACC for the LDCs of 9.64% (or 9.25% weighted by remaining leak-prone pipe for each LDC as reported in 21-GLR-01), and an annual inflation factor of 2 percent. In my October 2021 report, *GSEP at the Six-Year Mark*, I presented a $20 billion total GSEP cost. That cost reflected a 15-year depreciation time horizon in order to align with the Commonwealth's 2050 net-zero mandates. It also projected annual investment costs for GSEP based on actual unit costs in 2021 for each LDC, and the slightly higher average WACC at that time (9.82%).

The second factor likely to increase GSEP's total investment cost is increases in the weighted average cost of capital (WACC) due to higher interest rates on the debt portion of the investment cost due to inflation along with higher returns on the equity portion that the LDCs are likely to request in light of the arguably elevated riskiness of pipeline investments in the midst of an uncertain energy future.

A factor likely to decrease GSEP's overall investment cost is any acceleration in the rate of depreciation accomplished by shortening the assets lives of GSEP-financed gas distribution infrastructure. In their 20-80 common regulatory framework proposal, the LDCs have signaled that they will be requesting such accelerated cost recovery in their forthcoming rate base cases.[9]

Finally, it is incumbent upon the DPU to analyze GSEP's role in the significant stranded cost and cost recovery problems that the Consultants and LDCs have identified. Because GSEP is considered off-topic, this analysis does not appear to have been conducted by the Consultants. Instead, the Consultants' report contains references such as the following: "*All pathways imply transformational change for the LDCs and their customers, raising substantial cost recovery and potential stranded cost challenges for those scenarios with high levels of customer departures."*[10] Such references beg the question of what portion of the cost recovery and stranded cost challenges are attributable to GSEP. This question deserves careful analysis and a clear answer.

GSEP's opportunity costs are massive and must be actively considered and not ignored.

GSEP's likely staggering total cost of $40 billion translates into roughly $23,500 per gas customer—enough to install a cold climate heat pump and weatherize a customer's building shell. Or, alternatively, it's enough to electrify the entire MBTA, including all new rolling stock, and to revamp all stations for level boarding and ADA access plus construct the North-South rail link.[11]

GSEP has become the largest, most expensive infrastructure project ever undertaken in the Commonwealth and its cost contribution to each of the gas companies' Future of Gas preferred pathways should be explicitly evaluated and considered. So too must GSEP's likely contributions to the cost recovery and stranded cost challenges identified by the Consultants and the LDCs.

In conclusion:

The Legislature, the DPU, and the rest of the Executive Branch must address the glaring disconnect between GSEP's original purpose and what the program is being used for now.

The DPU and the gas companies must not continue to treat GSEP as off-limits to DPU 20-80 and the Future of Gas Investigation.

The DPU must put GSEP's full opportunity costs on the 20-80 table. Such transparency is vital both to the credibility of the DPU 20-80 Investigation and for making the best energy choices we can on behalf of ourselves and future generations.

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[9] DPU 20-80, *Common Regulatory Framework and Overview of Net Zero Enablement Plans*, https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/14633273.

[10] Energy Environmental Economics, *The Role of Gas Distribution Companies in Achieving the Commonwealth's Climate Goals – Independent Consultant Report – Technical Analysis of Decarbonization Pathways*, MA DPU 20-80 (March 18, 2022), p. 14, https://thefutureofgas.com/content/downloads/2022-03-21/3.18.22%20-%20Independent%20Consultant%20Report%20-%20Decarbonization%20Pathways.pdf.

[10] See Appendix 4: Input Assumptions Workbook of the Independent Consultant Report, worksheet

[11] See testimony by energy engineer, Grant Hauber, on 3 May 2022 during the first DPU 20-80 Public Hearing.

Thank you for your consideration of my comments.

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