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# Commonwealth of Massachusetts Assessment of Pipeline Safety

## Phase 1 Summary Report

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## Executive Summary

### Introduction

In November 2018, the Massachusetts Department of Public Utilities (DPU) selected and contracted with Dynamic Risk Assessment Systems, Inc. (Dynamic Risk) to conduct an independent statewide examination of the safety of the Commonwealth's natural gas distribution system (Assessment). The Commonwealth asked that this Assessment be a comprehensive and technical safety review resulting in recommendations for improvement.

This Phase 1 Summary Report presents a summary of the work performed in Phase 1 and provides initial observations and recommendations from Phase 1. This executive summary provides a high-level summary of the principle areas covered in the Phase 1 Summary Report including:

- Scope of this Assessment;
- The Panel;
- Guiding Principles;
- Phase 1;
- Context for Phase 1 Summary Report;
- Perspectives Considered in Phase 1;
- Initial Observations; and,
- Preliminary Recommendations.

Further detail on each topic is found in the body of the Phase 1 Summary Report.

Phase 2 is anticipated to continue the assessments from Phase 1 and build upon the information collected to date. Phase 2 will include field visits with each gas company to better understand their programs and practices. A Final Report will be produced at the end of this project and will encompass the work performed in both Phase 1 and Phase 2.

### Scope of this Assessment

This Assessment, conducted in Phases 1 and 2, includes evaluating the physical integrity and safety of the Commonwealth's gas distribution systems operated by the seven investor-owned gas distribution companies and four municipal gas companies (collectively, the Gas Companies) and the operations and maintenance policies and practices of those Gas Companies. In the course of conducting this assessment, the Panel is evaluating the effectiveness of organizations, programs and processes being employed by the Gas Companies as well as elements of the safety culture. The Panel also offers observations regarding various organizations involved in pipeline safety within the Commonwealth, such as the DPU, the Attorney General's Office, and other Interested Parties.

example, in August 2008, the Commonwealth passed the Global Solutions Warming Act, which requires the Commonwealth to reduce greenhouse emissions by 80% by 2050<sup>25</sup>.

To date, it appears the Commonwealth is in the process of developing a transition plan under which the citizens of the Commonwealth can access energy to provide necessary heating, cooling, and cooking to people in homes and businesses. In this transition plan, the safety and reliability of natural gas service during the transition away from fossil fuels may not have been a focus.

## 7.4 Initial Observations about GSEP

The Massachusetts State legislature enacted a new law introducing the **Gas Safety Enhancement Program (GSEP) in 2014. Gas Companies increased the pace of replacement of leak-prone pipe under GSEP's rate recovery mechanism.** Gas Companies generally adopted a plan to replace the remaining leak prone pipe over the next 20 years. Observations related to GSEP and the process for support and executing this program are provided below (see sections 7.4.1 to 7.4.6).

### 7.4.1 **GSEP is an example of a legislative and regulatory success.**

**The Panel's initial observation is that GSEP is an example of a legislative and regulatory success. Enacted in 2014, GSEP was intended to increase the pace of replacement of leak prone pipe by Gas Companies by adopting a method by which Gas Companies can recover the costs of the replacement work, capped at a certain percentage of a company's annual revenue, in a timely manner<sup>26</sup>. Based on the work to date, GSEP seems to be accomplishing these goals.**

This rate recovery mechanism benefits Gas Companies and customers by enabling companies to more effectively plan ahead, by obtaining materials, acquiring needed equipment, and planning for managing increased labor needs. This includes hiring personnel or by entering into longer-term contracts with more favorable financial terms. Moreover, there is some evidence that indicates a reduction in the leak rates, which also indicates a level of effectiveness of GSEP.

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<sup>25</sup> The Global Solutions Warming Act set economy-wide greenhouse gas (GHG) emission reduction goals for Massachusetts that will achieve reductions of between 10 percent and 25 percent below statewide 1990 GHG emission levels by 2020 and 80 percent below 1990 statewide emission by 2050.

<sup>26</sup> Rather than waiting for the filing of a full rate case, the GSEP rate recovery mechanism requires a company to engage in a regulatory proceeding about GSEP replacement plans and expenditures with the DPU, in which the AG's Office Ratepayer Advocate participates, twice a year. In the first proceeding the Gas Company sets forth the work it intends to performed; in the second proceeding, the parties reconcile the actual work performed against the planned work and scrutinize the reasonableness of the costs incurred before the DPU grants a gas company recovery of the costs incurred. The recovery generally is capped at 1.5% of the gas company's revenues for the prior year. The DPU has the authority to grant waivers to allow recovery in excess of the cap if it deems it appropriate.

**7.4.2 GSEP provides many ancillary safety benefits.**

In addition to reducing risks by reducing the amount of leak prone pipe in the system, a number of ancillary safety benefits have occurred as a result of GSEP. These include:

- Installing excess flow valves as a flow shut off device<sup>27</sup>;
- Moving inside meters outdoors, thereby reducing the risk associated with indoor meters;
- Updating records of the system with new information;
- Installing pressure reducing regulators at every service;
- Using plastic pipe, which generally reduces the number of gas leaks;
- Enhancing the ability to accurately locate and mark assets has increased, and effectively reduces the number of dig-ins<sup>28</sup>; and,
- Reducing the number of low-pressure systems in the natural gas distribution system, which have their own inherent risks.

All of these additional benefits reduce risk to the public and increase public and pipeline safety.

**7.4.3 GSEP work also increases risk because of the live gas work required.**

Despite all of these safety benefits, the Panel also observes that any time a gas company undertakes any type of live gas work, it adds risk into the system. A gas company can manage this risk provided they have the appropriate personnel, processes and procedures in place, follow the procedures, and control for distractions. However, it is infeasible to reduce the risk to zero.

**7.4.4 The intense focus on GSEP may distract from focusing on other priorities.**

The Panel also observes that the intense focus on GSEP and the replacement of leak prone pipe can distract from managing other priorities (e.g. threats to pipeline integrity.) As described in Section 6.2, these threats could include (for example):

- Excavation damage caused by a dig in; and,
- Cracking caused by natural forces such as frost heave in a winter.

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<sup>27</sup> Excess flow valves (EFVs) (residential) and curb valves (businesses) are usually installed between the gas main and the gas meter. As part of the GSEP program, these generally are being installed on every service. An EFV responds to an excessive flow of gas automatically by closing and restricting the gas flow. EFVs provide another layer of protection from the accumulation of gas in homes and businesses as the result of a gas leak or a gas over pressurization event. The National Safety Transportation Board (NTSB) began recommending the installation of EFVs in the early 1980's for schools and other places where people gather, expanded that recommendation in the 1990's to all customers, and in 2001, renewed the call for EFV's for all gas customers. (See NOPV Preliminary recommendation related to Louden County, VA incident, dated June 22 2001). Since then, many utilities have been installing EFVs. In 2017, PHMSA issued a new rule expanding the use of EFVs.

<sup>28</sup> A dig-in is the shorthand term for damage that can occur to pipelines during excavation. The excavation may be performed by the gas company (1<sup>st</sup> party), its own contractors (2<sup>nd</sup> party), or someone totally unaffiliated with the gas company (3<sup>rd</sup> party). Third party excavators include entities, such as the water and cable companies, as well as individuals such as your neighbor planting a new tree. (3<sup>rd</sup> party). Excavation damage is the leading cause of pipeline damages across the country. Ways to lower the risk of dig-ins include encouraging calling 811 for a free locate before you dig, having up to date records of the type and location of assets, conducting accurate locating and marking the location of the buried pipelines, having gas company personnel present during the excavation, and requiring hand-digging within a specified distance from the asset.