

## Reducing Emissions from the Natural Gas Distribution Network

**Policy Summary:** There are over 6,000 miles of aged non-cathodically protected steel, cathodically protected steel, cast-iron, and wrought-iron natural gas distribution pipelines in the Commonwealth. While calculations associated with lost and unaccounted for gas and its resulting GHG emissions are difficult to ascertain with certainty, a recent study commissioned by the Department of Public Utilities (DPU) estimated that natural gas escapes constructed distribution systems for a host of reasons at a rate of 0.6 to 1.1 percent.<sup>64</sup> While regulators and operators work to minimize leaks on the distribution system to minimize risks to health and public safety, gas leaks can also be a contributing source of GHG emissions.

In October 2014, seven of the eight natural gas local distribution companies (LDCs) in the Commonwealth filed plans with the DPU to replace all aged non-cathodically protected steel, cathodically protected steel, cast-iron, and wrought-iron natural gas distribution infrastructure in their service territories within a 20 to 25 year timeframe. The recent study referenced above concluded that replacing this infrastructure would result in a dramatic reduction in the amount of methane emissions from the natural gas distribution system.

|                                     | <b>Savings from full policy implementation</b> | <b>% of 1990 level</b> |
|-------------------------------------|--|------------------------|
| Economy-wide GHG reductions in 2020 | 1.7 MMTCO <sub>2</sub> e                       | 1.8%                   |

**Rationale:** Natural gas typically contains some 98% methane. Methane is a powerful GHG, over 20 times stronger than the most common GHG, carbon dioxide, and can be released from operational transmission, distribution, and natural gas storage systems.<sup>65</sup> Aged natural gas distribution infrastructure prevalent in the Commonwealth is more prone to experiencing such leaks than more modern infrastructure. As a result, an emphasis on repairing or replacing this infrastructure is expected to reduce the amount of natural gas lost during distribution.

**Policy Design:** In October 2014, LDCs filed initial plans with the DPU which specified a timeline for replacing all eligible aged infrastructure in their service territories. Eligible infrastructure includes mains, services, meter sets, and other ancillary facilities composed of non-cathodically protected steel, cast iron, and wrought iron. To accomplish the repair or replacement of this eligible infrastructure, as required by legislation, LDCs are required to file annual plans that lay out: (1) a schedule of replacement over the subsequent calendar year, (2) an anticipated timeline for the completion of each project, (3) the estimated cost of each project, (4) rate

<sup>64</sup> For a distribution system, those factors would include, but are not limited to: system leakage, metering variances, theft of service, purging during construction activities, and third-party damages.

<sup>65</sup> Transmission networks emit methane from compressors, pneumatic device vents, routine maintenance and pipeline venting, station venting, and meters/regulators. Natural gas storage emits methane from compressors, liquefaction of natural gas for storage, and re-gasification of stored gas for distribution.

change requests, (5) a description of customer costs and benefits under the plan, and (6) any other information the DPU considers necessary to evaluate the plan. The DPU evaluates each plan to determine if it reasonably accelerates eligible infrastructure replacement and provides benefits to customers. The DPU will complete its review of each plan within six months. Once approved, the gas distribution company may begin recovering the estimated plan revenue requirement associated with the repair or replacement work. Subsequently, on or before May 1<sup>st</sup> of the following year, the gas distribution company must file final project documentation for construction completed the previous calendar year in order to demonstrate substantial compliance with the plan, and to demonstrate that the costs were reasonably and prudently incurred. The DPU must complete a prudence review of final documentation within six months.

**GHG Impact:** This policy is expected to reduce GHG emissions by 1.7 MMTCO<sub>2</sub>e from 1990 through 2020.<sup>66</sup>

**Other Benefits:** Eliminating leaks associated with aged and eligible natural gas distribution infrastructure will increase health and public safety by reducing the number of natural gas leaks in the Commonwealth. In addition, customers will save money, as gas that is lost during distribution must still be procured by the LDCs and paid for by customers. Finally, this policy will have an economic benefit, as accelerating the replacement of natural gas infrastructure will lead to the creation of jobs.

**Experience in Other States:** There is much experience in Massachusetts and other states with the repair and replacement of the natural gas distribution network.

**Legal Authority:** M.G.L. c. 164, § 145 permits the gas distribution companies to submit plans to the DPU to repair or replace certain aging natural gas distribution infrastructure on an accelerated basis.

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<sup>66</sup> Based on plans filed with DPU and see also the discussion of “Natural Gas Systems” on pages 17-19 of MassDEP’s *Statewide Greenhouse Gas Emissions Level: 1990 Baseline and 2020 Business As Usual Projection Update* at <http://www.mass.gov/eea/docs/dep/air/climate/gwsa-update-15.pdf>