Massachusetts and Natural Gas Pipelines: An Economic and Environmental Analysis

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Background

- Proposed in 2015, Spectra's Access Northeast Pipeline Project aims to expand on the Algonquin Gas Transmission system through the construction of the Q-1 loop and the West Boylston Lateral. The objective is to meet growing demand for natural gas at peak periods within the Northeast.
- Access Northeast is projected to raise the total New England capacity (Figure 1, horizontal green line) to 5,000,000 dekatherms, solving the problem of insufficient pipeline capacity for 30 to 40 days but also creating tremendous slack capacity for the remaining days of the year (Rand Barthel). Has led to speculation that the slack capacity will be exported to Canada.

Environmental Impact

- Air sample testing near compressor stations and transmission have detected B.T.E.X (benzene, toluene, ethylbenzene, and xylene). Chronic exposure to low levels of B.T.E.X can lead to decreases in blood platelets, damage to the nervous system, kidney and liver damage, and an increased risk of cancer.
- Natural Gas is nearly pure methane and methane's effects on global warming are 84 times as potent than CO2 (EPA). For this reason, methane is considered a greenhouse like Carbon Dioxide . In 2015 alone there were 15,739 unrepaired natural gas leaks in Massachusetts which according to a Harvard study account for 60%-100% of the regions methane emissions depending on the season.
- An Act Relative to Natural Gas: This act in 2014 requires natural gas companies to assign a grade to natural gas leaks. Grade 1 is an immediate threat to individuals or property requiring immediate repair, Grade 2 is a non-hazardous leak that must be repaired within the next 12 months, Grade 3 leaks are non-hazardous and are expected to remain non-hazardous so they do not require repair. In the case of National Grid, there were 10,002 natural gas leaks in 2016 with 96% percent of these leaks being Grade 3. (ML)
- Due to the high compositions of methane and lack of oxygen in natural gas, leakages near trees and shrubbery effectively kill their roots thus killing the plant. Generally these leaks are classified as Grade 3, meaning they are never fixed. In Massachusetts, leaking gas kills or damages $15-25 million worth of trees in Massachusetts (Ackley).

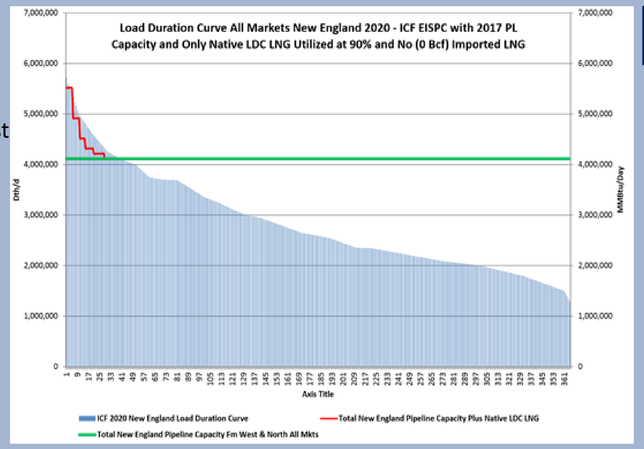

Figure 1. Daily Natural Gas Capacity

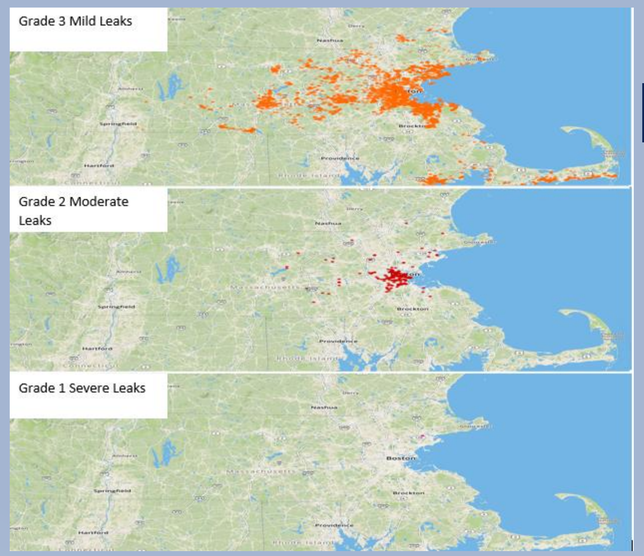

Figure 2. Volume of Leaks By Grade

Economic Impact

- Spectra funded studies on the impact of Access Northeast projects a yearly average of $1 billion dollars saved by consumers during normal weather conditions. A Connecticut Economic Resource Center analysis of the project states that over the next decade Access Northeast will collectively grow the effected states economies by $4.9 billion dollars with $2.3 billion of this growth being labor income. CERC also projects the project to create 2,161 new jobs throughout the Northeast every year until 2026.
- Ratepayers pay for the cost of lost natural gas which was estimated by Senator Edward Markey as between $640 million dollars and $1.5 billion dollars for lost natural gas between 2000 and 2011 in Massachusetts. He also estimates that ratepayers paid on average $273 for lost natural gas.
- Significant pipeline accidents, such as explosions and fires, also cost the public on average $40,617,873, 12% of the average total cost, while the industry pays $421,728,403 dollars on average. Between 2005 and 2015 there has been an average of 286 incidents, 14 fatalities, and 58 injuries per year. 78% of the fatalities are public while only 27% are industry.

Renewable Alternatives

- In order to meet the climate goals highlighted in the Paris Agreements, investment should be focused on renewable and efficient energy choices rather than new natural gas pipelines.
- Massachusetts Attorney General Maura Healey's study on renewable energy states that investment in renewable energy will achieve a cost effective solution that reduces CO2 emissions by 1.86 million tons while saving customers a net of $146 million dollars. Investment in natural gas would conversely increase CO2 emissions by 80k tons while saving customers $61 million dollars.