# Reports detail massive leaks from natural gas pipes in US

**John Marion**
**28 August 2015**

Natural gas leaking from old and poorly maintained pipes in the United States is putting trillions of cubic feet of methane, a long-term greenhouse gas, into the atmosphere every year while utility companies profit on it. Leaks in some pipes have existed for decades, with the knowledge of gas distribution companies. Even in parts of the country that are not experiencing mass utility shutoffs, injuries and deaths occur regularly.

An August 2013 report prepared by the staff of Senator Edward Markey (Democrat of Massachusetts) estimated that Massachusetts customers paid between $640 million and $1.5 billion for escaped gas between 2000 and 2011. The national total was around $20 billion. The distribution companies make their profit from a markup on the gas they sell, with the result that customers paid the cost of the leaked gas while the utilities soaked them for profits on it as well.

In addition, utilities such as National Grid—a British company with substantial operations in the Northeast United States—are aware that the leaks, combined with the harsh Massachusetts winter this year, have meant that increasing numbers of people cannot pay their bills.

The cause of most of the leaks is old cast iron and bare steel piping that utilities have not bothered to replace because of the cost. These corners were cut even though 33 states allowed companies to charge customers at least some of the cost of replacing old pipes. At the time of the report, only two states, Pennsylvania and Texas, capped the amount that companies can charge customers for leaked gas.

Using data from the Pipeline & Hazardous Materials Safety Administration, the Markey report documented 796 “significant incidents,” including more than 250 explosions, on US gas distribution pipelines between 2002 and 2012. One hundred sixteen people were killed and 465 injured.

During the same period there were 23 incidents resulting in 24 injuries and the deaths of two children in Massachusetts. Subsequently, in April 2014, a house explosion in Boston’s Dorchester neighborhood injured 12 people.

The Markey report found that utility companies were replacing less than 4 percent of leaking pipes in Massachusetts every year. Nationally, it estimated that across 46 states there were 91,000 miles of leaking pipes. Between 2000 and 2011, the report estimated, 2.6 trillion cubic feet of gas were “unaccounted for.” As a greenhouse gas, methane is 21 times more potent than carbon dioxide as a greenhouse gas over a 20-year period, and more than 70 times stronger over a 100-year period.

Nationally, gas companies reported the release of 69 billion cubic feet of gas in 2011 alone, “equal to the annual carbon dioxide emissions of about six million automobiles,” according to the report.

The amounts reported by utility companies to various state and federal agencies are, however, lower than the volumes actually being released. The Markey report documents cases of companies absurdly reporting negative amounts of lost gas and of the same utility reporting different amounts to different agencies.

The 69 billion cubic feet reported for 2011 was less than 1 percent of the total natural gas produced in the US that year. Similarly, the US Environmental Protection Agency’s greenhouse gas inventory for 2012 calculated that the amount of methane lost during transmission, storage, and distribution was approximately 0.7 percent of the total delivered to consumers. This data, however, was combined from a variety of sources including industry reports, customer meters, and data from mishaps. In Massachusetts,

which has a higher proportion of cast iron and bare steel pipes than other states, the estimate was approximately 1.1 percent.

However, a study published in the *Proceedings of the National Academy of Sciences* (PNAS) in February 2015 found that the actual rate of leakage in the state is 2.7 percent, with an uncertainty of plus or minus 0.6 percent. It also found that methane levels in the atmosphere, including those from sources other than pipeline leaks, have been increasing significantly since 2007.

The study— conducted in Boston by researchers from Harvard, Boston University, Duke University, Aerodyne Research, and other institutions—used detailed measurements from two locations in Boston, and sensor in Petersham and Nahant. The purpose of the latter was to test whether readings in the city were affected by winds carrying methane from other locations. They also controlled for background methane from other sources—sewage, wetlands, and landfills—and documented that the area has no geological methane sources.

The PNAS study concluded that leaked natural gas was the source of 98 percent of the methane it measured in the winter, and that "emissions from natural gas are found to be two to three times larger than predicted by existing inventory methodologies and industry reports." Attempting to extrapolate, it calculated that the study region accounts for only 3 percent of the nation's residential and commercial usage, while the yearly leakage of approximately 15 billion cubic feet estimated in the study is approximately 8 percent of the national amounts calculated by other methods. In other words, those methods are significantly understated.

After the Markey report, Massachusetts passed a law requiring utility companies to report the age and location of all known leaks. A non-profit called the Home Energy Efficiency Team then mapped all the reported leaks and calculated a total of 20,000. At least ten of them were more than 20 years old, with one dating from 1985.

Prior to this law, utilities were required to fix leaks posing an imminent threat of explosion, but not "minor" leaks, even when near schools or hospitals.

Predictably, utility companies have responded to the reports with promises of "aggressive maintenance programs." Eversource, however, expects its upgrades to take 25 years, with less than 10 percent of its cast iron pipes being replaced this year. National Grid's timeline is 20 years.

National Grid is promising to spend $2.4 billion on replacing pipes over the next five years, but this expenditure will hardly stand in the way of its profits. Its financial results statement for the year ending March 31, 2015 takes the $2.4 billion into account and still boasts worldwide operating profits of £3.863 billion for the period, up by 5 percent from the previous year. Earnings per share were up 9 percent. US operating profits were £1.164 billion. Post-tax Return on Equity for calendar year 2014—including gas and electric—was 6.2 percent in Massachusetts, 8.2 percent in New York, and 10.4 percent in Rhode Island.