

# Casting Away Cast-Iron Pipes: Tackling Leaking Natural Gas Infrastructure

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Elizabethtown Gas is in the midst of a four year, \$115 million project to upgrade its natural gas distribution network. Cast-iron and bare steel pipes are being removed and replaced with plastic and cathodically protected steel pipes. This will make the [New Jersey gas-distribution system more “safe and reliable,” the utility says.](#)

It will likely also reduce leaked greenhouse gases, [according to a new study out today.](#)

A team of researchers from Stanford University, Duke University, the U.S. Department of Energy and elsewhere drove a Chevrolet hatchback equipped with methane detection equipment over 1,600 miles in New York City, Durham N.C. and Cincinnati, Ohio. They were searching for evidence of leaks in the network of distribution pipelines that delivers natural gas to customers. The variation in readings between the cities was staggering. In Durham and Cincinnati, the team found less than one leak every two miles of street. Manhattan turned up an average of a leak every quarter mile.

The difference? Older cities that still have a lot of cast-iron pipelines and unprotected steel pipes leak more. Cities with more plastic pipes and cathodically treated coated steel pipes leaked less. “Aging natural gas infrastructure, particularly cast iron and unprotected steel pipelines, present an opportunity for economic and environmental benefits if leaks and emissions can be identified,” the study finds.

These older pipes are disappearing. According to data from the U.S. Pipeline and Hazardous Materials Safety Administration data, there were 103,661 miles of cast iron, unprotected steel and other antiquated pipes in service in 2010. By 2014, that figure had shrunk 13.7% to 89,433 miles. Elizabethtown Gas took out 692 miles, one of the largest reductions in the country.

Only 7% of the gas distribution pipes are the older, leakier variety, according to PHMSA data. And replacing these pipes with new plastic pipes make them safer and reduce wasteful loss of gas. But it’s not cheap. Elizabethtown Gas proposed \$115 million expenditure wouldn’t eliminate all of its 3,690 leaks. [Far from it.](#)

How much methane leaks on its way from the wellhead to the burner tip matters – a lot. Methane is a potent greenhouse gas. If none of it leaks, then substituting gas for coal has clear climate benefits. If too much leaks, you’re better off burning coal. Little wonder that scientists have been trying to quantify how much is leaking and arguing over each other’s calculations for the past couple years.

The takeaway from the study out today is that if you want to get eliminate greenhouse-gas emissions from the pipeline distribution network, then target replacing aging pipelines. A recent study from Colorado State University examined leakage in gas transmission pipelines and found [a few “super-emitters” were responsible for the bulk of the emissions.](#) Regular readers of this blog will recall that [we wrote about that issue over the summer.](#)

From the wellhead to the burner tip, the natural gas delivery system is leaky. But these and other recent studies have suggested there is a lot of low-hanging fruit. Fixes such as replacing century-old cast iron pipes, overhauling super-emitters and [getting rid of high-bleed pneumatic controllers](#) abound.

What's needed is someone to bring together all these studies are figure out how much leaked methane can be stopped – and at what cost.

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