

Methane Gas Leaks Across Hartford Threaten Health & Climate

Methane gas leaks from pipelines, gas meters, and inside homes in Hartford is a major climate and public health concern that must be addressed through fossil free alternatives.

Climate Threat

When released directly into the atmosphere, methane is 84 to 87 times more powerful than carbon dioxide as a global warming agent.¹ When combusted, methane gas produces carbon dioxide, the most common greenhouse gas, as well as nitrogen dioxide, a precursor to ozone.²

Public Health Threat

Gas appliances fill our homes with many of the same pollutants as car exhaust – carbon monoxide, nitrogen dioxide, particulate matter, and formaldehyde.³ Because of this, the air we breathe indoors is often more polluted than outdoor air.⁴ Health impacts stemming from elevated nitrogen dioxide exposure include:

- Aggravated respiratory symptoms and higher susceptibility to lung infections⁵
- 42% increased risk of developing asthma symptoms⁶
- IQ and learning deficits in children⁷

Asthma rates among children living with gas stoves are comparable to those of children living with cigarette smokers, with one study attributing 12% of all childhood asthma to pollution from gas stoves.⁸ Children in Hartford are more than 3 times more likely to be hospitalized (41.5 per 10,000 population vs. 12.7 per 10,000 population) or visited an emergency department (241.7 per 10,000 population vs. 61.3 per 10,000 population) for their asthma when compared to residents from the rest of Connecticut.⁹

Methane Gas Leaks from Pipelines in Hartford

In 2016 and 2019, Sierra Club Connecticut conducted two research studies of methane gas leaks in Hartford. Both studies found active methane leaks throughout the city of Hartford. In 2016, a total of 716 distinct methane leaks over 225 road miles in Hartford was detected, resulting in a leak frequency of 3.2 leaks per road mile. The 2019 study covered fewer road miles, but found 4.3 leaks per mile. The leak frequencies found in 2016 and 2019 compare to 4.3 leaks per mile previously found in Boston, Massachusetts (MA) (Phillips, et al. 2013).

A preliminary estimate of methane leaks in Hartford from the 2016 study is 0.86 metric tonnes leaked per day (or 313 metric tons per year; a metric tonne is 2,204.6 pounds, a U.S. ton is 2,000 pounds), equivalent to 42,840 cubic feet per day of natural gas. This leakage rate represents an equivalent daily gas consumption of approximately 214 U.S. households.

Methodology

The Sierra Club studies in 2016 and 2019 identified natural gas leaks using vehicle mounted sensing equipment. More on the methodology: [Hartford, Connecticut Mobile Methane Leak Survey, 2016](#) and [Connecticut Mobile Methane Leaks Survey and Analysis Results, 2019](#)

¹ [Methane Matters: Scientists Work to Quantify the Effects of a Potent Greenhouse Gas, NASA Earth Observatory, 2016](#)

² [Air Quality & Health, World Health Organization, 2022](#)

³ [Gas stoves can generate unsafe levels of indoor air pollution, Vox, May 11, 2020](#)

⁴ [Gas Stoves: Health and Air Quality Impacts and Solutions, RMI, 2020](#)

⁵ [Gas Stoves: Health and Air Quality Impacts and Solutions, RMI, 2020](#)

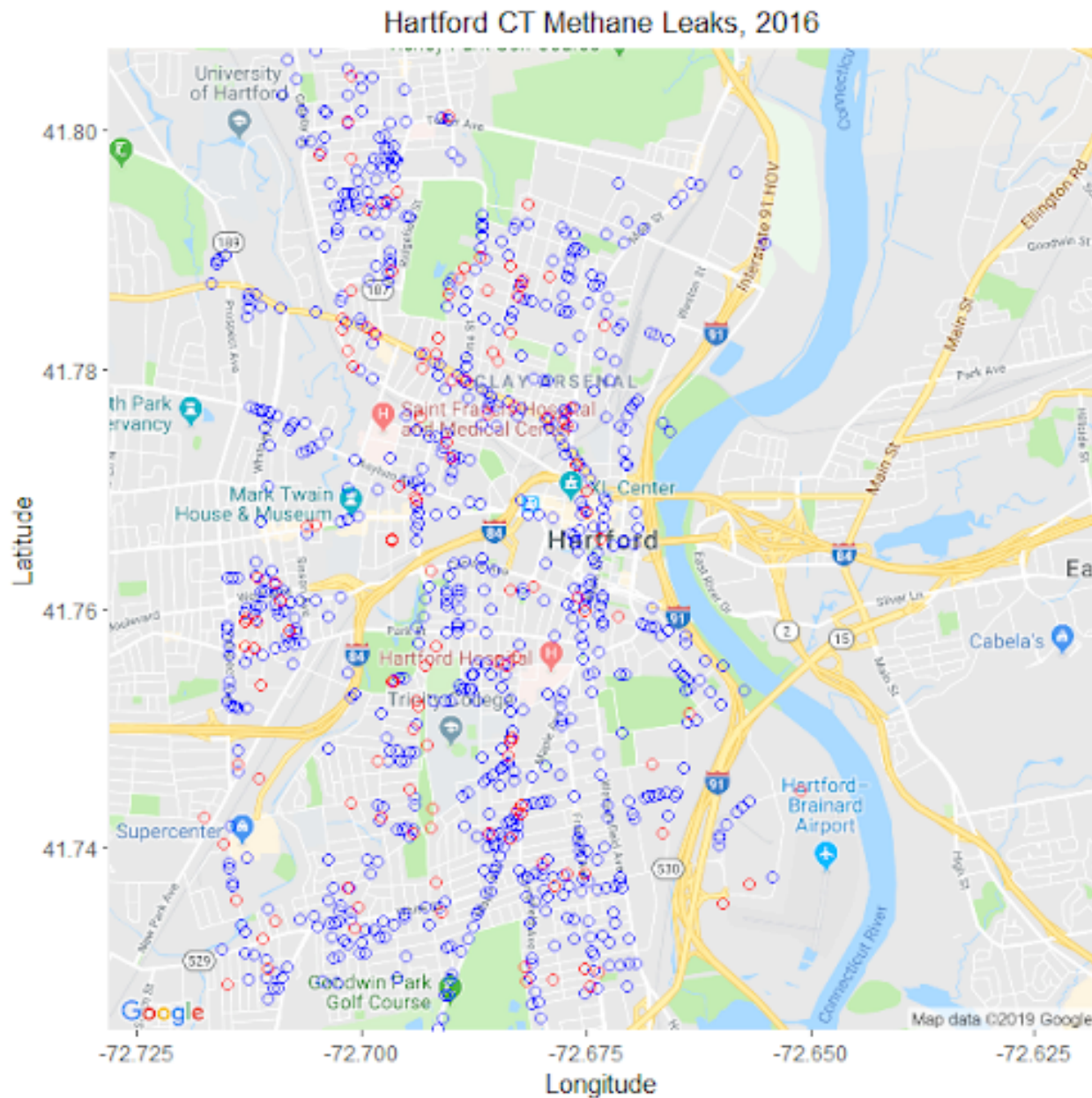
⁶ [Gas Stoves: Health and Air Quality Impacts and Solutions, RMI, 2020](#)

⁷ [Effects of prenatal exposure to NO2 on children's neurodevelopment: a systematic review and meta-analysis, Environmental Science and Pollution Research International, April 20, 2020](#)

⁸ [Kicking the Gas Habit: How Gas is Harming our Health, Climate Council \(Australia\), May 2021](#)

⁹ [Asthma Data Fact Sheets for the Five Largest Cities in Connecticut 2009](#)

Hartford Methane Gas Leak Map



The map above shows the locations of methane gas leaks in Hartford in 2016. The data plotted in blue (716 leaks) are the leaks located by the Sierra Club from February 25 through March 31, 2016. In red, are the leaks reported by the Public Utility Regulatory Authority (138 leaks of Grade 1 and 2) October 15, 2015 – October 15, 2016. The 2019 study showed no improvement; in fact, the results support that methane leaks remain prevalent and persistent in Hartford.

Studies Confirm Widespread Gas Leakage From Pipelines

In Boston, a 2021 study¹⁰ showed methane being released from the gas system into Boston's atmosphere is six times higher than estimates used by the Massachusetts Department of Environmental Protection. The Boston study showed total supply chain losses of 3.3 to 4.7% which significantly increases the climate impacts of fossil gas compared to Environmental Protection Agency estimates.

¹⁰ [Majority of US urban natural gas emissions unaccounted for in inventories](#)

A study of gas leaks from pipelines commissioned by the DC government in 2021 identified 3,346 locations with methane at concentrations higher than ambient background levels.¹¹ Neighborhood researchers in Washington DC found hundreds of methane gas leaks across the city in a citizen science project conducted in 2021 and 2022.¹²

In a 2014 study of barriers to weatherization in Connecticut, gas leaks were identified as one of the barriers found regularly inside homes.¹³

Stanford University researchers found that gas stoves leak significant amounts of methane, even when turned off.¹⁴ Methane gas leaks from stoves cause climate damage equivalent to that caused by about 500,000 gasoline-powered cars, according to the Stanford study. The Stanford researchers measured how much methane escapes from the moment a burner is turned on and when the flame ignites the gas. It also examined how much unburned methane is released during cooking and how much gas is leaked when the stove is off. The scientists from Stanford University conducted the study on gas cooktops in 53 California homes. The scientists found no relationship between the age or cost of a stove and its emissions. New and more expensive stoves leaked gas at similar rates to older and less expensive gas cooktops.

Fossil Free Solutions

One seemingly logical solution to the problem of gas leaks (and the approach favored by the fracked gas industry) would be simply to repair the leaks. However, fixing the already-existing leaks would take decades, during which the climate and health damage caused by leaking and burning methane gas would continue, and as some leaks are fixed, new leaks would appear. Additionally, even new pipelines can leak. A gas distribution system with zero leaks is impossible.

The cost of gas leaks isn't only paid in climate and public health damage, there's also an enormous financial price tag. Pipeline replacement in Connecticut costs tens of millions of dollars every year.

Instead of spending on fracked gas infrastructure, another approach would be to electrify buildings with highly efficient heating systems using clean energy. Switching to modern, electric heat pumps for hot water and space heating would reduce energy usage as they are far more efficient than their fossil fuel counterparts.

Building homes with clean electric appliances is less expensive than building with fossil fuel appliances. Foregoing gas piping in homes saves a median of nearly \$9,000. Electrifying existing buildings can also be cost effective, especially for households replacing both a gas furnace and an air conditioning unit, or bundling rooftop solar with electrification.

This approach is also necessary to meet the science-based greenhouse gas emission reduction goals that Connecticut has to avoid the worst impacts of the climate crisis.

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Note of thanks to the Sierra Club Washington DC Chapter for use of content from the February 23, 2022 report: [Neighborhood Researchers Find Hundreds of Methane Gas Leaks Across DC](#)

¹¹ [2021 Fugitive Methane Emission Survey of the District of Columbia For the District of Columbia Department of Energy and Environment, October 31, 2021](#)

¹² [Neighborhood Researchers Find Hundreds of Methane Gas Leaks Across DC](#)

¹³ <https://efficiencyforall.org/wordpress/wp-content/uploads/2020/08/Health-and-Safety-Barriers-study-final-report3-17-17.pdf>

¹⁴ [Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Homes, Environmental Science & Technology, January 27, 2022](#)