On the Run: Tracking Fugitive Emissions from a Proposed Natural Gas Compressor

Background

Millennium Pipeline Company, LLC, plans to build a natural gas compressor station in the town of Highland, in Sullivan County, NY. Compressor stations pressurize natural gas in order to move it through gathering and transmission pipelines.

Millennium has requested the Federal Energy Regulatory Commission (FERC) to approve their upgrade project by July 31, 2017. Construction is intended to begin fall of 2017, placing the station into service in September of 2018.

The effects of natural gas extraction on public health are not well researched. Although community impact standards are improving, there are many gaps in understanding the effects of natural gas compressors on community health.

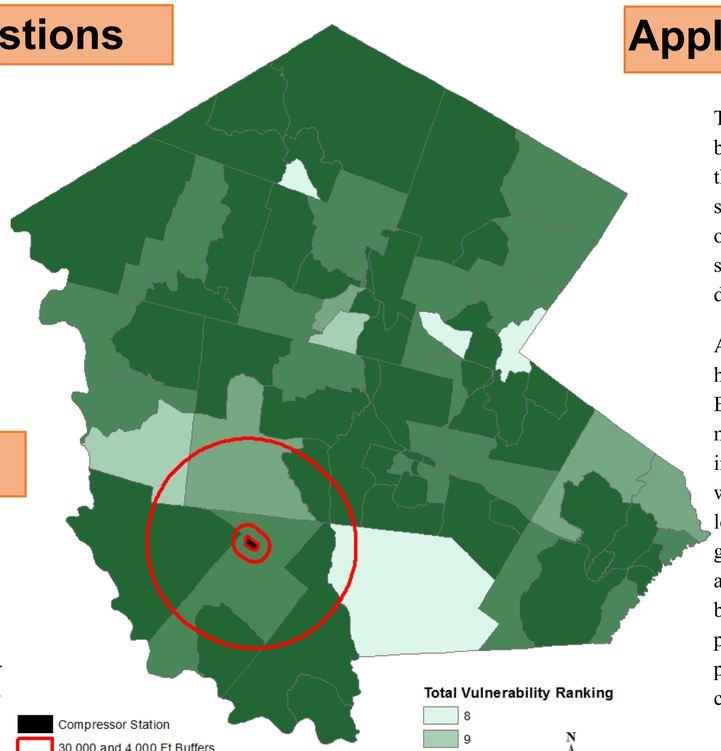
Natural gas compressor stations produce fugitive emissions, which increase as the compressor ages. These emissions consist of nitrogen oxides (NOx), volatile organic compounds (VOCs), particulate matter (PM2.5), and various air toxics. These chemicals have been linked to such destructive health effects as cancer and mutations, as well as long-term health problems with skin, eyes, and kidneys and the respiratory, gastrointestinal, brain/nervous, immune, endocrine, and cardiovascular systems.

With such high stakes for local residents neighboring compressor stations, it is imperative that residents and regulatory organizations such as FERC make fully informed decisions as to their approval, construction and management.

Research Questions

1.How many people would be affected by fugitive emissions from the proposed natural gas compressor station?

2. How many of the compressor's neighbors would be vulnerable populations, such as the very young or very old?



Limitations

This analysis only calculates populations categorized as vulnerable by virtue of age, and does not address other vulnerabilities such as poverty or access to healthcare facilities; however, it should be noted that Sullivan County is ranked 61st out of 62 counties in overall healthcare outcomes, and is not positioned to accommodate increased health issues from its residents. Future maps could expand the vulnerability analysis to include a fuller spectrum of factors.

This analysis is limited to air pollution produced by the compressor, and does not cover all potential negative health effects. Other ill effects from compressor stations include water pollution, noise pollution, and uncontrolled blowdowns and potential explosions.

At present, air quality monitoring and baseline data in rural and isolated areas is extremely limited, and would greatly benefit from further study.

Applications

This map is designed to be used by residents of the nearby area to consider the potential reach of the emissions and possible proximity to residences and schools.

Additionally, this map has utility for the Federal Energy Regulatory Commission (FERC) to inform its decision of whether to approve Millennium Pipeline's upgrade project, basing its assessment on the number and vulnerability of people affected by air pollution produced by the compressor.

Sources

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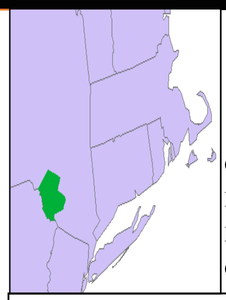
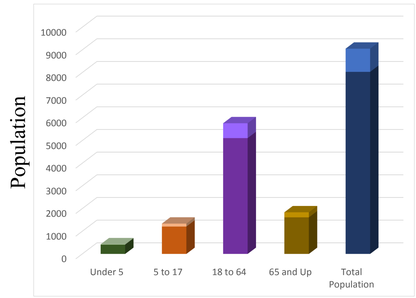


THE FLETCHER SCHOOL
TUFTS UNIVERSITY

Cartographer: Maggie Snyder
Date: May 11, 2016
Projection: NAD 1983 UTM Zone 18N
Class: GIS for Humanitarian Applications

Population within Emission Reach, by Age



Upper Level: 4,000 ft buffer Lower Level: 30,000 ft buffer

"Public health was not brought into discussions about shale gas extraction at earlier stages; in consequence, the health system finds itself lacking critical information about environmental and public health impacts of the technologies and unable to address concerns by regulators at the federal and state levels, communities, and workers. . . ."

—Institute of Medicine at the National Academies of Science

Methodology

Buffer zones were chosen based on the widest found estimates of fugitive emission reach. Steinzer, cited, suggests 4,000 feet as a relevant distance. Rapkin recommends 6 miles, equivalent to approximately 30,000 feet. Both distances were used as indicative measures of potential reach. Steinzer also notes 500 feet as a significant distance for health concerns resulting from fugitive emissions; however, this was determined to be too small of an area for sufficient analysis.

Emission distance was connected with US Census Bureau data on the age and location of the local population to determine the possible quantity and vulnerability of people affected.