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June 17, 2013

Chairman John Keenan
Joint Committee on Telecommunications, Utilities and Energy
State House, Room 473B
Boston, MA 02133

Chairman Benjamin Downing
Joint Committee on Telecommunications, Utilities and Energy
State House, Room 413F
Boston, MA 02133

Re: Massachusetts Sierra Club Testimony in Support of H.2933/H.2934, Bills Relative to Natural Gas Leaks, and H.2950, Relative to Gas Leaks and Natural Gas Infrastructure

Dear Chairman Downing, Chairman Keenan, and Honorable Members of the Committee,

Thank you for this opportunity to offer our comments on H.2933/H.2934, bills relative to natural gas leaks. The purpose of these bills is to enhance environmental protection in the Commonwealth by creating a mechanism to monitor and promptly repair leaks, as well as encouraging utility companies to upgrade their aging infrastructure. The Sierra Club strongly supports these bills.

The Sierra Club is the oldest and largest grassroots non-profit and non-partisan environmental organization in the country, with over 1.4 million members and supporters nationwide. Its chapter in Massachusetts has over 22,000 members throughout the state and a history of protecting the environment that spans more than forty years. We work to create healthy, vibrant communities through support of clean air and water; clean energy; recycling and waste-elimination; and the preservation of the Commonwealth's most treasured forests, parks and open spaces.

Natural Gas's Contribution to Global Warming and Loss of Plant Life

To better understand the need for the present bill, it is necessary to consider the environmental impact of natural gas emissions. Natural gas consists almost entirely of methane (CH₄), a potent heat-trapping gas that accounts for as much as a third of the human contribution to global warming.¹ Worldwide, three trillion cubic feet of methane leak into the air every year, producing a global warming effect equal to half of the total emissions from coal plants in the United States according to the Environmental Protection Agency (EPA), although a number of government scientists and industry officials caution that the real figure is almost certainly higher.² In Massachusetts alone, it is estimated that 8-12 billion cubic feet of natural gas are released each year due to leaks, enough to power 18,000 homes.

While another greenhouse gas, carbon dioxide (CO₂), often receives more attention, the global warming potential of methane is estimated at 23 times that of carbon dioxide averaged

over 100 years.³ One major difference between these two gases is that while CO₂ can remain in the atmosphere for a century or more, methane persists for about 8-9 years before it is oxidized into CO₂ and water.⁴ Therefore, acting quickly to address methane emissions could substantially cut global warming in the short run as we tackle the tougher challenge of cutting the most prevalent greenhouse gas - carbon dioxide.⁵

Methane emissions also harm plant life, particularly in areas where there are high concentrations of natural gas leaks. This manifests itself in oxygen consumption and carbon dioxide production, as well as by increased numbers of different types of bacteria. The resulting deficiency of oxygen, the excess of carbon dioxide, and the possible formation of inhibitory amounts of ethylene are the primary culprits responsible for the death of trees near natural gas leaks. These compounds also impact the soil, requiring significant recovery time before plant life can return to normal.⁶

Aging Infrastructure

One major source of methane emissions is leakage from natural gas infrastructure that provides energy to consumers and businesses. According to a national EPA-funded study, methane emissions from natural gas distribution mains account for 32 percent of the industry's total methane emissions. A major culprit in these emissions is cast iron pipelines, which represent only 3% of the miles of all U.S. distribution mains but the age of which (fifty years or more) produces significant leaks.⁷ In 2011, Boston University researchers and collaborators led by Nathan Phillips, associate professor of geography and environment and director of BU's Center for Environmental and Energy Studies, conducted a mobile greenhouse gas audit that found hundreds of natural gas leaks under the streets and sidewalks of Greater Boston. Phillips and his partners measured methane concentrations at street level using a vehicle-mounted cavity "ringdown" analyzer. They found that a number of discrete sources of methane emissions were present at more than 15 times background levels. Moreover, general levels of methane were measured to be 10 percent higher than the worldwide average of 1.860 parts per million (ppm).⁸ Research in Rhode Island by National Grid has found not only an unacceptable level of leaks in certain areas where cast-iron and unprotected bare steel piping is concentrated but also revealed the rate of occurrence of these leaks is increasing.⁹ The gas pipeline infrastructure in the Commonwealth of Massachusetts faces a similar situation.

Government scientists and some industry officials have already suggested that monitoring of natural gas leaks in pipes and storage facilities needs to be greatly expanded, particularly as global production of natural gas is projected to rise almost 50 percent in the next twenty years.¹⁰ Several communities in the Commonwealth, including Brookline, Hingham, Quincy, and Worcester, have formed the Massachusetts Public Shade Tree Trust to hold gas companies accountable for the damage that has been done as a result of gas leaks that have been ignored by the company for years.

The Need for Better Managing Natural Gas Emissions

The present bill offers a reasonable and fair approach to regulating natural gas leaks. Its basic purpose is to establish a uniform natural gas leak classification system in the Commonwealth for all natural gas companies that would rank priorities and establish protocol for monitoring. To enhance compliance and public accountability, the bill calls for an investigation of whether the state should require winter surveillance of cast iron pipelines as well as a provision to review plans for infrastructure replacement program to get rid of leak-prone materials. A notable feature of this portion of the bill is that it encourages focusing on projects where immediate replacement is needed and stipulates that replacements not exceed 25% of existing costs. A prudent feature of the bill is that it allows natural gas utility companies to wrap infrastructure and other upgrades into the cost of service, enabling them to recover the costs of their investments, while protecting consumers by requiring the state to approve revised service rates.

In sharp contrast, H.2950, places the burden of infrastructure repairs and upgrades on ratepayers by bypassing aspects of the rate review process. Adopting H.2950 would have the net effect of bypassing the existing regulatory process; a process which provides vital oversight. It would create a defacto monopoly on a fossil fuel at the same time that the Commonwealth is seeking to decrease CO2 and all greenhouse gas production. And lastly, it saddles the ratepayers – or worse – taxpayers – with the burden of repairing our aging gas pipelines.

The Sierra Club fully supports strong gas leak legislation because voluntary compliance in eliminating natural gas leaks has not proven effective, because the legislation would help decrease the amount of global warming gases released into the environment, and would decrease the arboreal damage created by these leaks. Indeed, it is only by a commitment to decreasing global warming gases such as the methane found in natural gas that we can slow the pace of global climate change.

We respectfully request that this Committee to report both H,2933 and H.2934 favorably, and urge all members of the Massachusetts State Legislature to support this bill's passage. We strongly believe that this bill is a crucial step in protecting our urban trees, and decreasing the unnecessary and avoidable release of methane.

Respectfully,



Ryan Black
Director
Massachusetts Sierra Club

¹ Andrew C. Revkin and Clifford Krauss, "Curbing Emissions by Sealing Gas Leaks," *New York Times*, October 15, 2009; Krishna Ramanujan, "Methane's Impacts on Climate Change May Be Twice Previous Estimates," *Goddard Space Flight Center*, July 18, 2005, <http://www.nasa.gov/centers/goddard/news/topstory/2005/methane.html> (accessed June 7, 2013).

² Ibid.

³ U.S. Environmental Protection Agency (EPA), "Methane," *Climate Change*, <http://epa.gov/climatechange/ghgemissions/gases/ch4.html> (accessed June 7, 2013).

⁴ Gavin Schmidt, "Methane: A Scientific Journey from Obscurity to Climate Super-Stardom", *NASA Goddard Institute for Space Studies*, September 2004, http://www.giss.nasa.gov/research/features/200409_methane/ (accessed June 7, 2013).

⁵ John M. Reilly, Marcus C. Sarofim, Sergey Paltsev, and Ronald G. Prinn, "The Role of Non-CO2 Greenhouse Gases in Climate Policy: Analysis Using the MIT IGSM" *MIT Joint Program on the Science and Policy of Global Change*, August 2008, <http://dspace.mit.edu/handle/1721.1/5543> (accessed June 7, 2013); U.S. EPA, *Climate Change*, <http://www.epa.gov/climatechange/> (accessed June 7, 2013).

⁶ A.D. Adamse, J. Hoeks, J. A. M. Bont and J. F. Kessel, "Microbial Activities in Soil Near Natural Gas Leaks," *Archives of Microbiology*, Vol. 83, no. 1 (1972), 32-51.

⁷ Carey Bylin, et al, "New Measurement Data Has Implications For Quantifying Natural Gas Losses From Cast Iron Distribution Mains," *Pipeline and Gas Journal*, Vol. 236, no. 9, September, 2009, http://www.epa.gov/gasstar/documents/cast_iron_mains.pdf (accessed June 7, 2013)

⁸ "Extensive Methane Leaks Discovered Under Streets of Boston," *Science Daily*, May 13, 2011.

⁹ Susan L. Fleck, "Engineering Standards and Policy for National Grid USA," *Providence Journal*, April 2, 2008.

¹⁰ Revkin and Krauss, "Curbing Emissions by Sealing Gas Leaks."