

# HEET

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Cambridge City Council  
Squeaky Leak Report

# HEET

- Efficiency maven for nonprofits & their communities
- Started 2008
- EPA Award
- Greater Boston area
- Helped 11% of nonprofits in Cambridge



# New England Pipes

- Oldest pipes in Boston area from 1880s
- Old pipes leak and can crack
- 3% = conservative estimate of lost gas



# Natural Gas Leaks

- Potentially explosive



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- Hurt human health



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- Kill trees



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- Potentially explosive
- Hurt human health
- Kill trees
- Powerful greenhouse gas

NATURAL GAS  
WHEN BURNED



CO<sub>2</sub>



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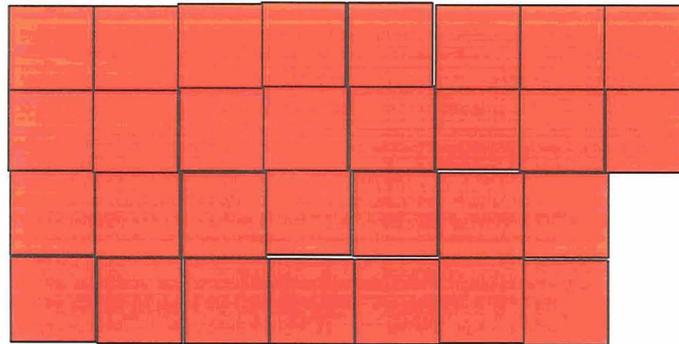
NATURAL GAS  
WHEN BURNED



CO<sub>2</sub>

=

UNBURNED NATURAL GAS



Methane

Over 100 years, 30X as powerful

[HEETma.org](http://HEETma.org)

# Natural Gas Leaks

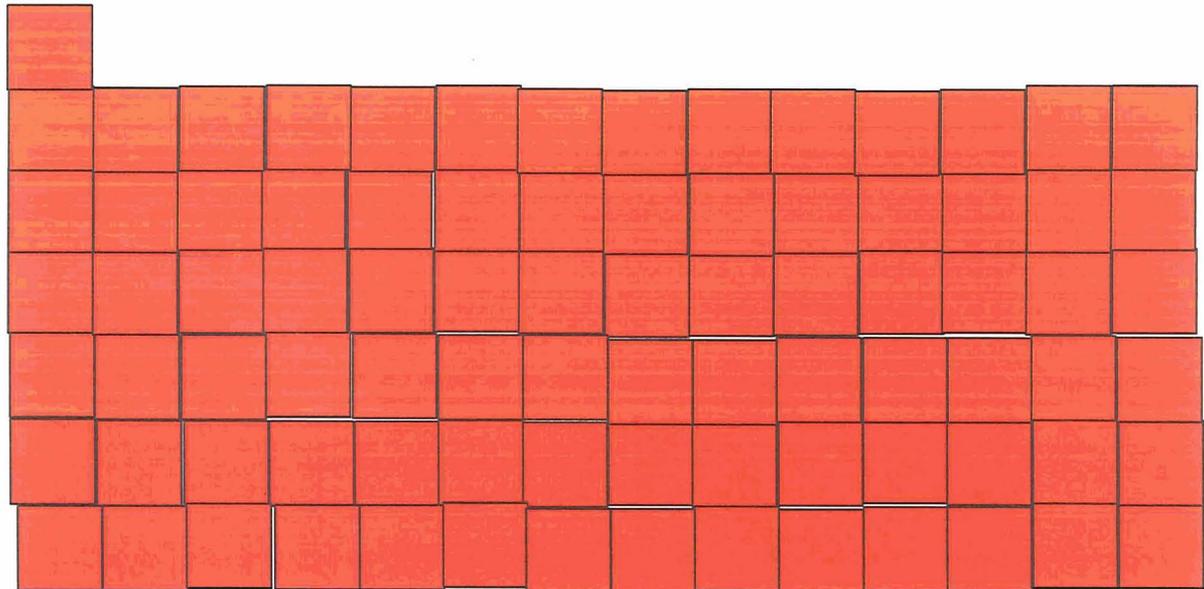
- Potentially explosive
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NATURAL GAS  
WHEN BURNED



CO<sub>2</sub>

=



Over 20 years, 85X as powerful

[HEETma.org](http://HEETma.org)

# Natural Gas Leaks

- Potentially explosive
- Hurt human health
- Kill trees
- Powerful greenhouse gas
- Paid for by the ratepayer

**Gas Bill** 10/2015  
Residential Gas Service

**Detail of Charges for Gas Service**

Charges for Residential - Rate 311	
<b>Gas Supply Charges</b>	
Gas Commodity Charge	\$80.81
Interstate Transportation and Storage	\$6.47
<b>Total</b>	<b>\$87.28</b>
<b>Delivery Charges</b>	
Delivery Charge	\$45.76
<b>Total</b>	<b>\$45.76</b>
Indiana Sales Tax	\$7.98
<b>Total Charges for Gas Service This Period</b>	<b>\$141.02</b>

1 Gas Supply Charges  
(option to be provided by NIPSCO or one of 12 Choice Suppliers)

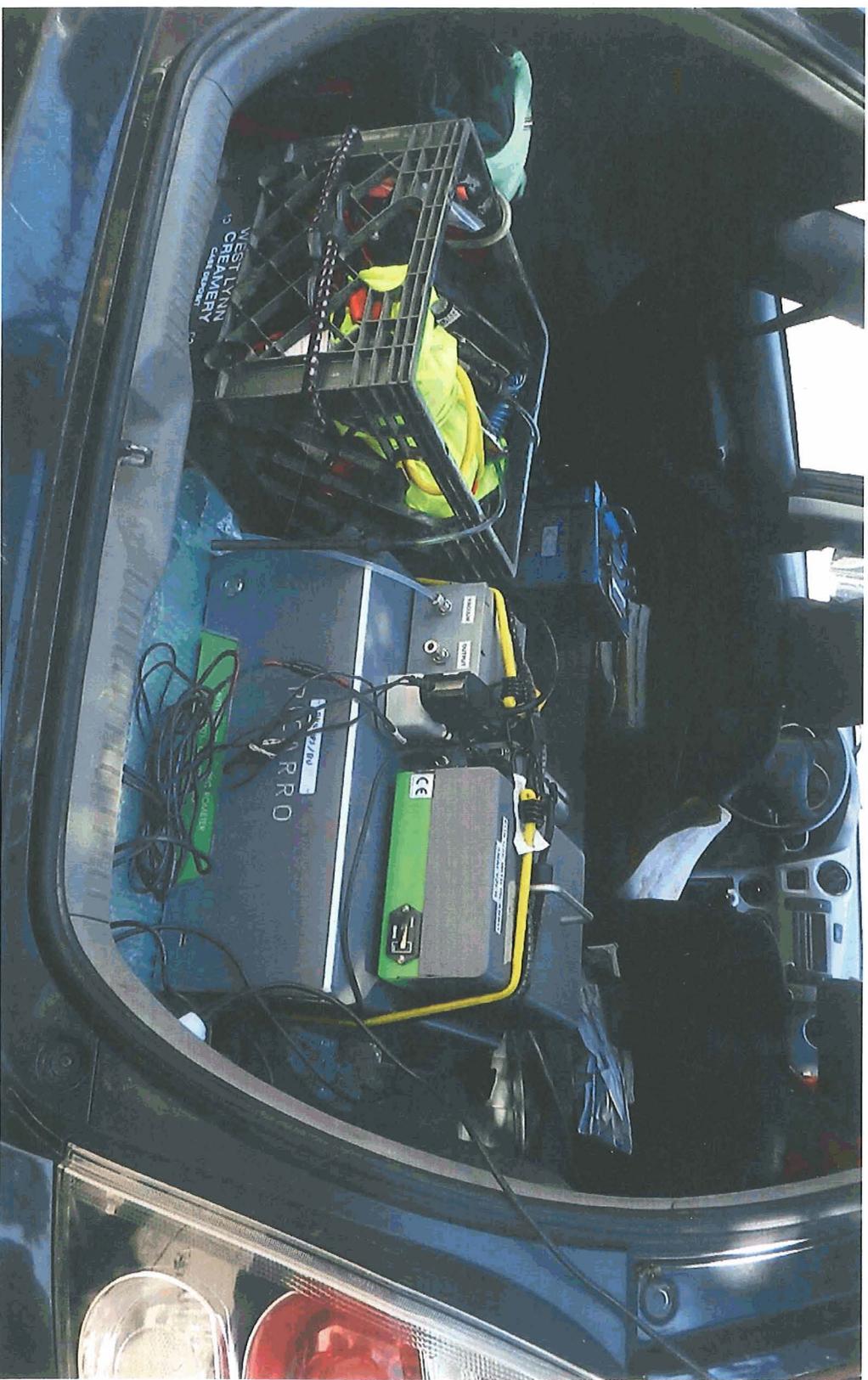
2 NIPSCO Gas Delivery Charges  
(this portion of your bill remains if you participated in Choice)



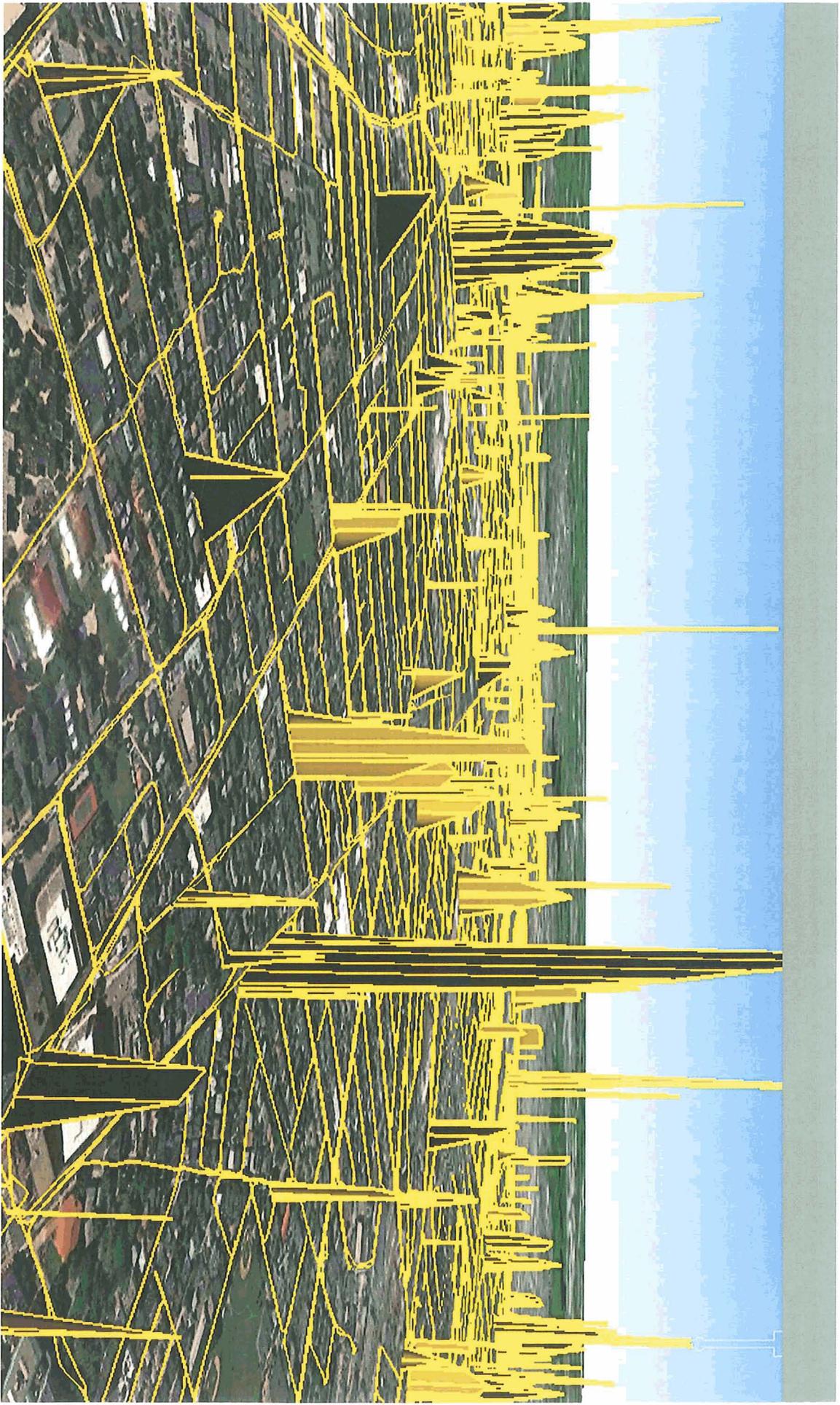
**Utilities map the leaks, but don't share the info with residents or municipalities.**



So we mapped Cambridge and Somerville.



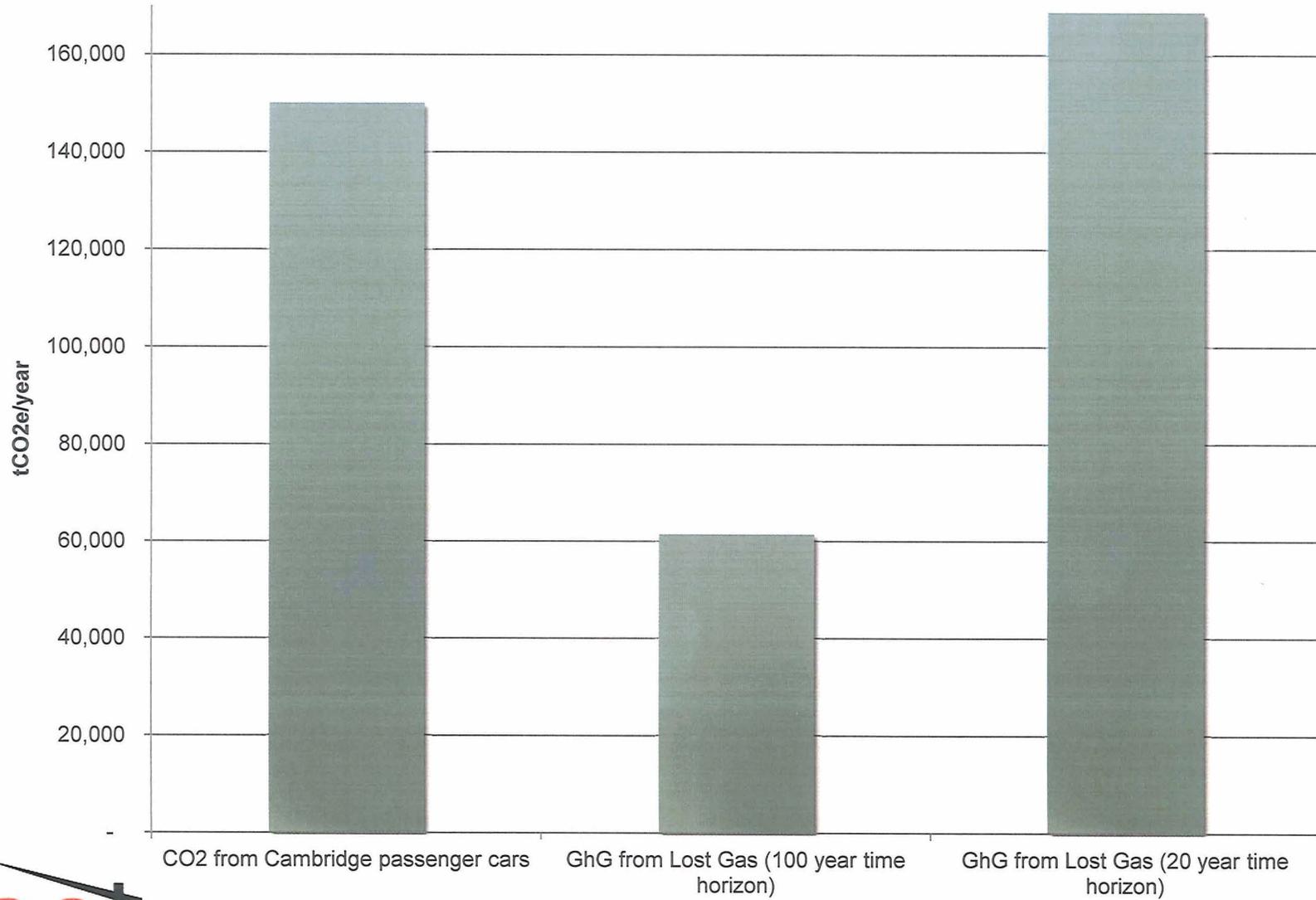




# Cambridge

- Expected # of leaks: 675
- Found: 305
- Trees: 150 to 200 dead or damaged
- Wasted gas/ year = over \$1 million for Cambridge, \$28/household
- 5-year street reconstruction plan seems successful

## Climate Impacts of Burned and Lost Natural Gas in Cambridge MA (2014 Estimate)



# Recommendations to City

- Lobby DPU for ongoing leak maps
- Prioritize street repair based on leaks
- Use next year's leak map to check results
- Tell other cities about 5-year plan
- Inform DPU & AG of missed leaks
- Overlay dead trees with leak maps
- Persuade utility to pay for tree damage
- Check tree pits for leaks before planting
- Have Bob do mapping next year

Gas Safety Inc.

16 Brook Lane

Southborough, Ma 01772

[www.gassafetyusa.com](http://www.gassafetyusa.com)

508-344-9321

[bobackley@gassafetyusa.com](mailto:bobackley@gassafetyusa.com)

- Protecting Your Environment

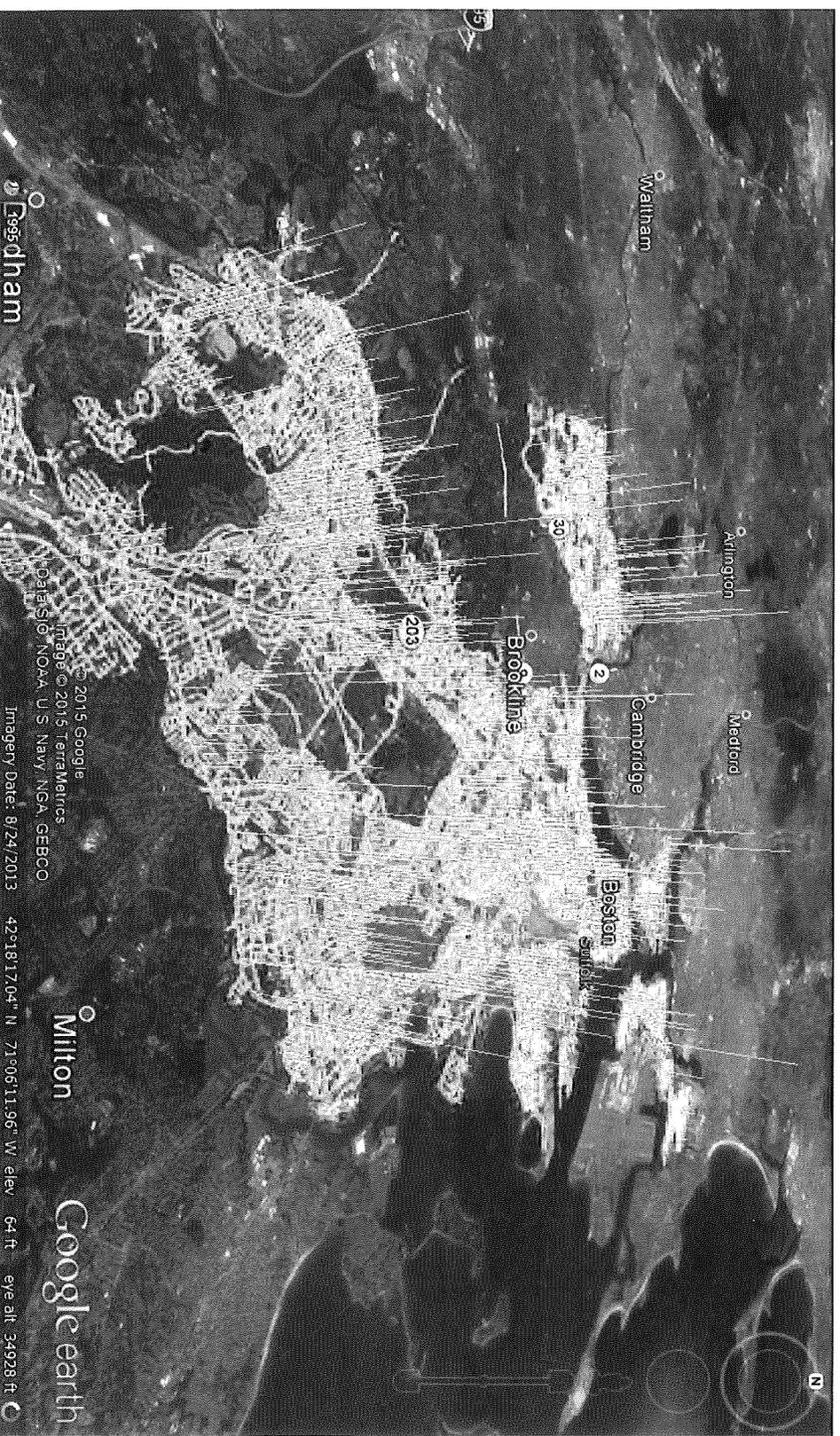
# Fugitive Methane Emissions

- Natural Gas Distribution Systems
- Natural Gas Mining Operations
- Greenhouse Gas Emissions
- Damage to Trees caused by leaking natural gas

# Boston Natural Gas Leaks 2012

## Collaboration with Boston University

### Supported by Barr Foundation



# District of Columbia Natural Gas Leaks 2013 Collaboration with Duke University



# Manhattan 2012 Supported by

# Damascus Citizens for Sustainability



# Dimock, PA 2014 Supported by Damascus Citizens for Sustainability



# Cambridge /Sommerville Gas Leak Study 2014 Supported by HEET



# Gas Leaks

- External forces  
excavation  
frost conditions
- Mechanical failure  
leaking joints  
pipeline rupture due to defects
- Corrosion

# Excerpt - Northeast Gas Association Website

## Leak Recognition and Response

A gas leak is usually recognized by smell, sight, or sound.

**SMELL** - Natural gas is colorless and odorless. We add a distinctive, pungent odor so that you'll recognize it quickly (not all gas transmission pipelines are odorized).

**SIGHT** - You may see a white cloud, mist, fog, bubbles in standing water, blowing dust, or vegetation that appears to be dead or dying for no apparent reason.

**SOUND** - You may hear an unusual noise like roaring, hissing, or whistling.

What Should You Do if You Suspect a Gas Leak

**MOVE** to a safe environment.

**CALL** your Local Distribution Company immediately

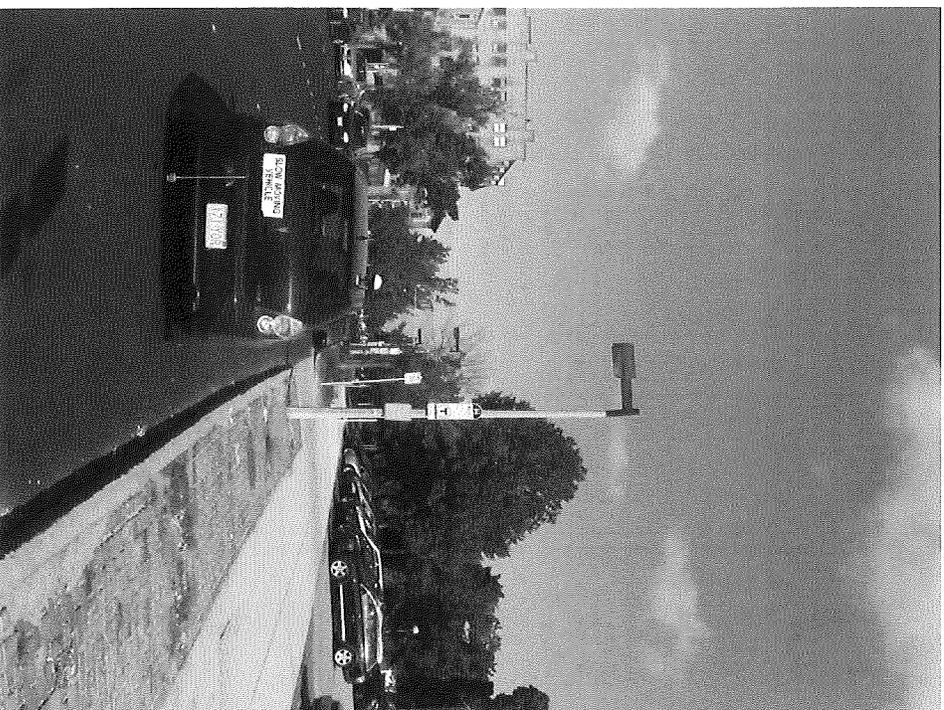
**DO NOT** strike a match, use telephones, switch on/off appliances, lights, or even a flashlight in the area where you smell gas. These items can produce sparks that might ignite the gas and cause an explosion.

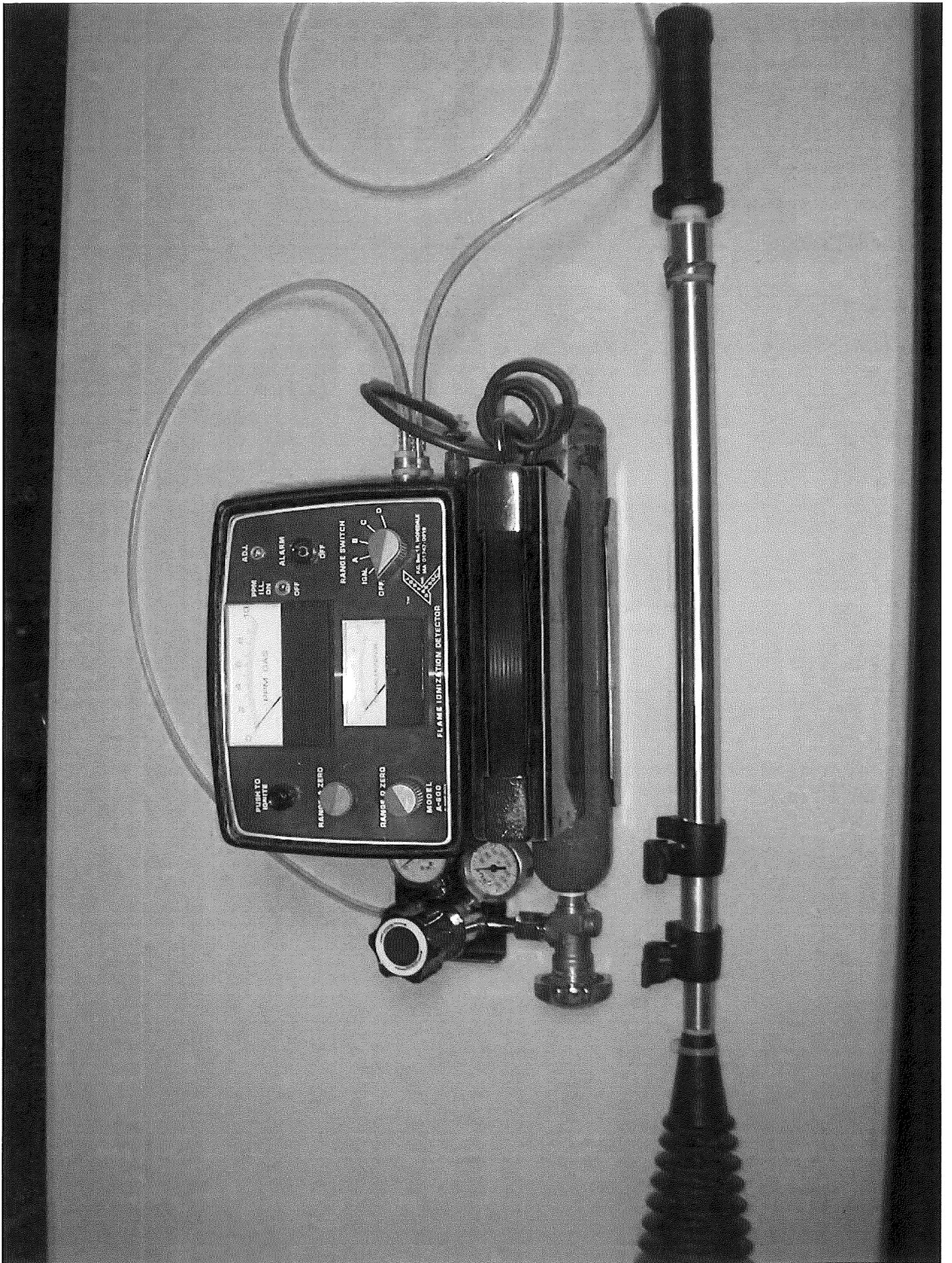
**DO NOT** assume someone else will report the condition.

Provide the exact location, including cross streets.

Let us know if sewer construction or digging activities are going on in the area.

# Picarro Mobile Analyzer







**GAS-SENTRY™**

If *Lo* is shown, change batteries soon.  
To verify leak-tight connections,  
block probe tip to display *flow*.  
Use AUTO ZERO whenever clean  
air does not give proper readings.  
**CAUTION - READ MANUAL BEFORE OPERATING**  
**WARNING - CHANGE BATTERIES IN A  
NONHAZARDOUS LOCATION**

Bascom-Turner Instruments



CITY OF SALEM v. SALEM GAS LIGHT CO. Mass.  
1922

Supreme Judicial Court of Massachusetts, Essex.

CITY OF SALEM

v.

SALEM GAS LIGHT CO.

June 5, 1922.

Exceptions from Superior Court, Essex County;

Louis S. Cox, Judge.

Action by the City of Salem against the Salem Gas Light Company for the destruction of shade trees by gas escaping from defendant's pipes. Verdict for plaintiff, and defendant brings exceptions. Exceptions overruled.

# Northeast Gas Association CEO Tom Kiley Testimony

*Northeast Gas Association  
Joint Committee on Environment,  
Natural Resources & Agriculture  
October 25, 2011  
Page 4*

As I testified to the Telecom and Utilities' Joint Committee in June, gas utilities have had a mechanism in place to compensate property owners for damage to trees and vegetation if they have been damaged by natural gas. Utilities have always treated their customers with respect and we will continue to do so – directly with our customers and the communities we serve.

We find the term “suspected damage to trees” highly troubling, imprecise and vague. There can be many reasons for damage to trees and vegetation. Other potential causes of damage to trees and vegetation include:

- insect infestation
- vehicular damage
- incorrect tree species for planting
- diseases
- storm damage
- drought
- salt
- waste oil
- gasoline that is splashed up from road surfaces when it rains, and
- root damage due to construction, etc.

Trees and vegetation also die naturally due to age.

We dispute the assumption of this proposed provision.

We also want to note, separate from this proposed legislation, that a private entity – the Massachusetts Public Shade Tree Trust - is seeking significant profits from threatened civil litigation against gas utilities – and therefore their customers - on this claim of natural gas as being the cause of tree damage in the Commonwealth.

That concludes my remarks. Thank you.

# How Gas Injures The Trees

- Natural gas displaces oxygen needed for healthy root survival
- Methane consuming bacteria multiply in methane contaminated soil using up the oxygen and giving off carbon dioxide
- Extreme dryness causes roots to die from dehydration
- Weakened trees are more susceptible to other problems



**Gas Safety Incorporated**  
**P.O. Box 752**  
**Southborough, Massachusetts 01772**  
**www.gassafetyusa.com**  
**774-922-4626**

Date 11-3-07 Survey Type \_\_\_\_\_ Grade 3  
 Address 61 THATCHER STREET  
 City/Town BROOKLINE

Sketch:

THATCHER STREET

② 185/0    13/0    1/35    46/45    4/46    ① NA    4/50    20/0

Comments  
 (1) 26" SWEET GUM - ALMOST DEAD  
 (2) 24" SWEET GUM - LOW D<sup>2</sup> - N.C.  
 (3) 21" SWEET GUM - LOW D<sup>2</sup>

Surveyed By: B. ACHLEY





# Broadway by the Fogg Museum



# Saving Municipal Resources

- Test failing trees for methane
- Test all tree pits for methane prior to planting

# Saving affected trees

- Repair The Leak!
- Remove all dead and dying branches
- Fertilize trees with trunk injection

- **Pittsburg PA Tree Protection Ordinance**

- **§ 485.05 GAS OR OTHER SUBSTANCES  
DELETERIOUS TO TREE LIFE.**

- No person owning, using or having control of gas or other substances deleterious to tree life shall allow gas or other substances to come in contact with the soil surrounding the roots of any tree in any public place in the City, in the manner as may injure or destroy the tree or shrub.

# Repair of Natural Gas Leaks

- Enhance Public Safety
- Save Ratepayer Dollars
- Protect Public Shade Trees
- Reduce Green House Gas Emissions