

CGA Energy Nexus & Annual Technical Conference 2024

Fuelling the Future

Life Saving and Emissions Reductions with Residential Methane Detectors

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October 7–10, 2024 | Toronto, ON | #CGATEchnicalConference #CGAEnergyNexus #FuellingTheFuture

Leveraging Residential Methane Detector Technology for Smarter Gas Safety



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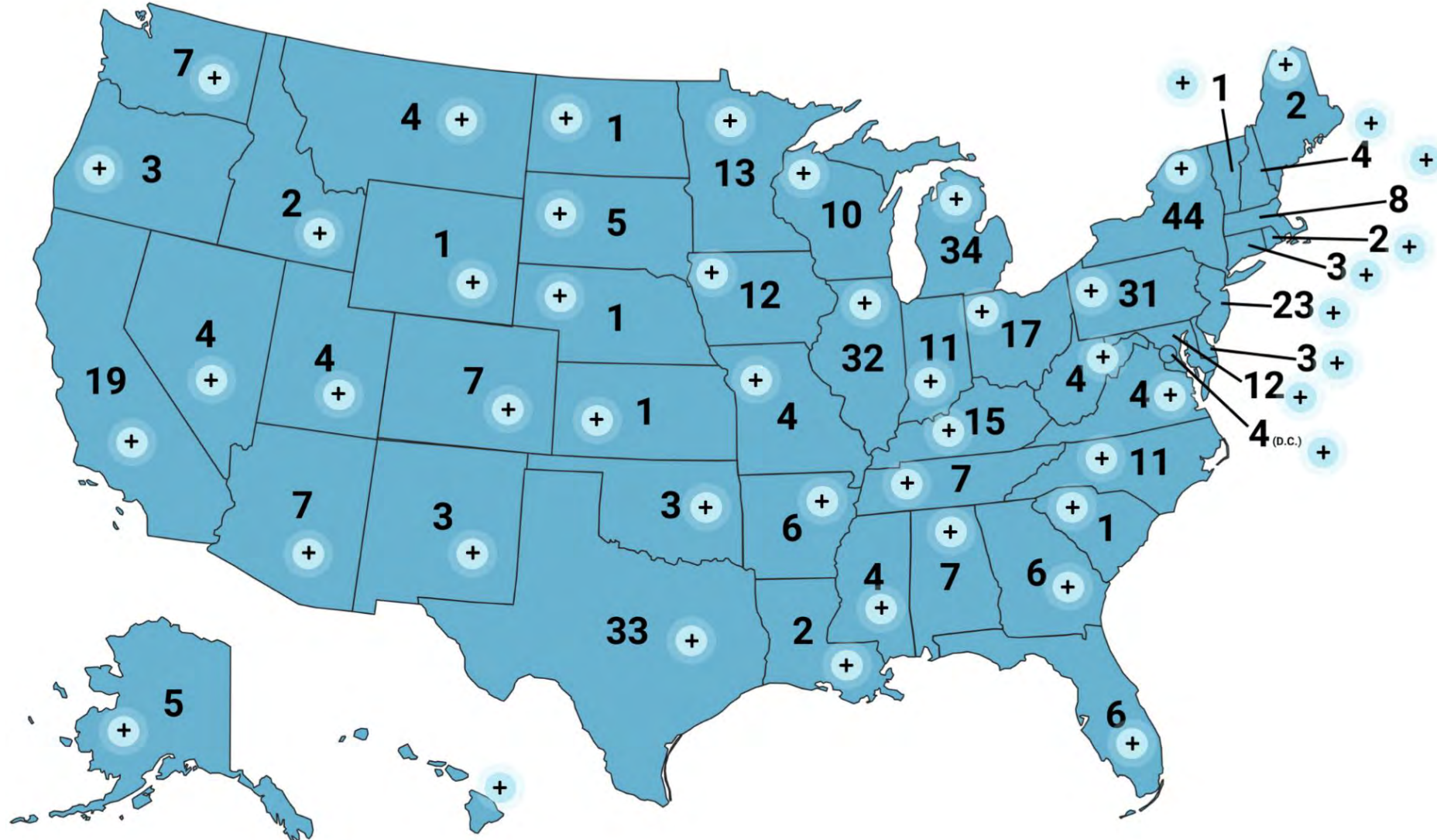


SAFETY MOMENT

US GAS INCIDENT MAP

DID YOU KNOW?

GAS INCIDENTS
HAPPEN **EVERY**
2 DAYS IN THE
U.S.*



**Disclaimer: The natural gas incidents displayed on this map are compiled by DeNova Detect from publicly available news reports since 2006.*

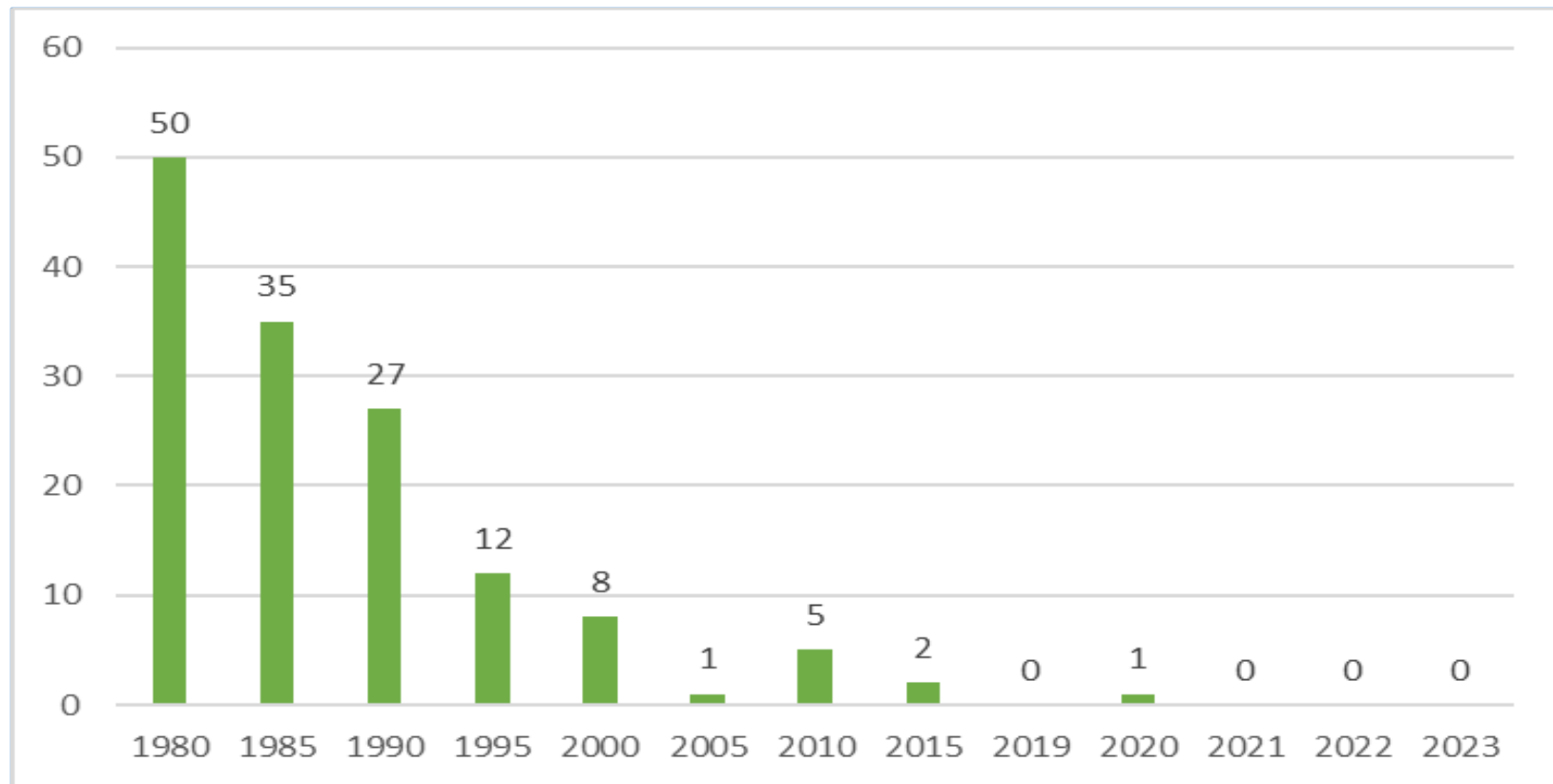
Gas Alarms Are Proven to Help Save Lives in Japan and the U.S.

THE JAPAN EXPERIENCE

1980 – Japan mandates stand-alone gas alarms (50% use NG & 50 die/year)

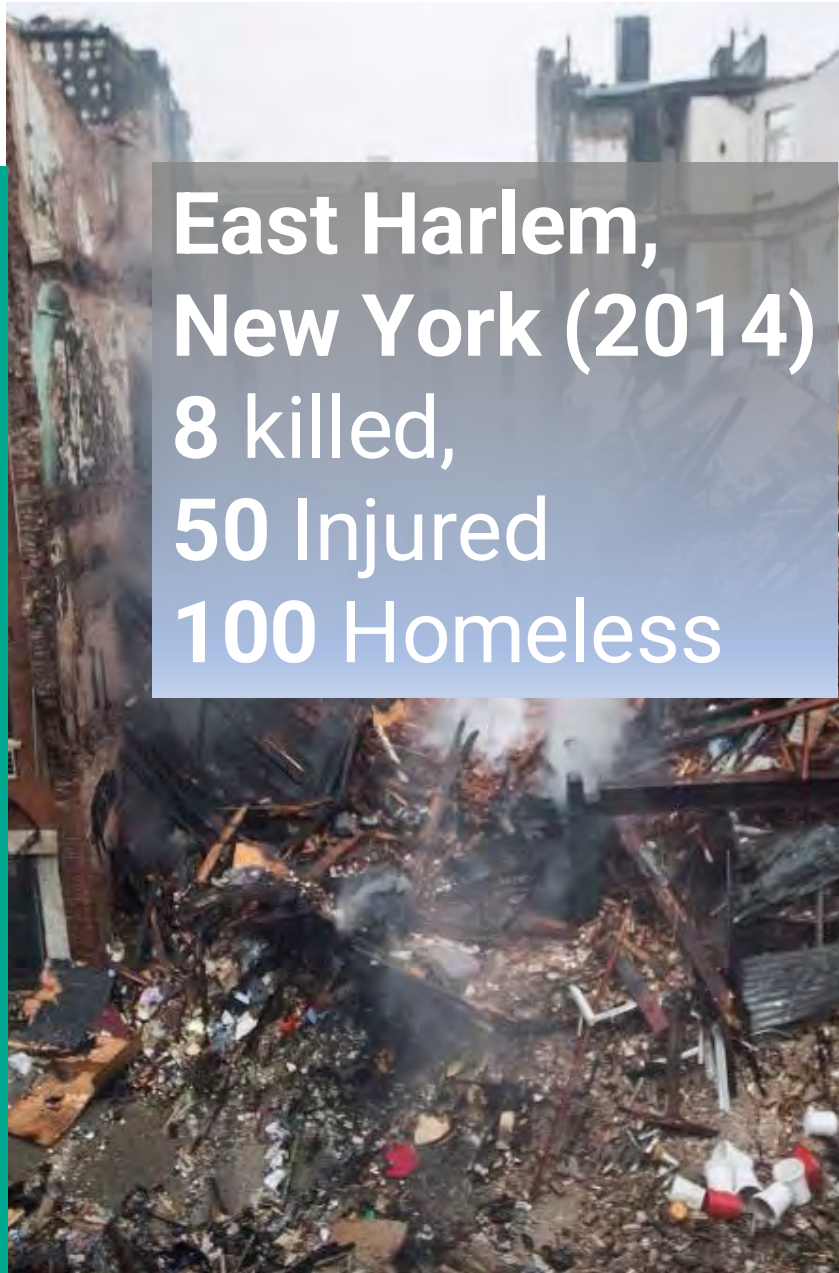
2021+ - Zero deaths due to gas explosions (Gas Alarms are mandated and effective)

Deaths drop from 50 per year to ZERO

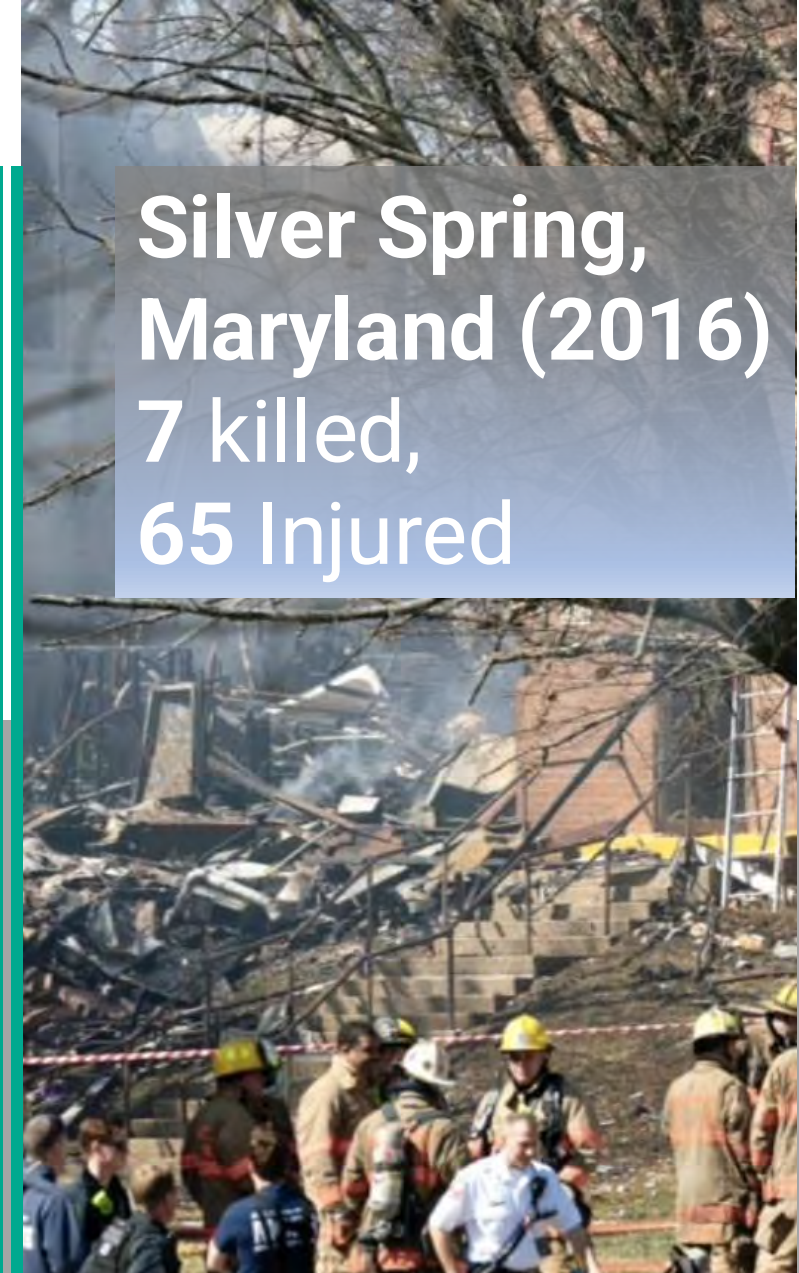




**Shizouka,
Japan (1980)**
15 killed,
223 Injured



**East Harlem,
New York (2014)**
8 killed,
50 Injured
100 Homeless



**Silver Spring,
Maryland (2016)**
7 killed,
65 Injured

THE CHALLENGE

IT'S 2024...

Despite strong focus on public safety, events continue to occur involving lack of reporting of gas odors.

WHY DON'T PEOPLE REACT & REPORT?

- Smell is not recognized/masked/unreported
- Assumed someone else reported it
- Reporting discouraged by other influences
- Diminished sense of smell

(i.e., Elderly, COVID-19, Common cold/RSV, etc.)

**WE NO LONGER
HAVE TO RELY
ON SENSE OF
SMELL FOR
PUBLIC SAFETY**

IT'S 2024

**THE
DIFFERENCE
BETWEEN
USING YOUR
NOSE & A
NATURAL GAS
ALARM COULD
PREVENT GAS
EVENTS &
SAVE LIVES**



PHMSA EVENT DATA

U.S. Natural Gas Distribution System Significant Incidents 2004 - 2023

Significant Incidents Since 2004	Date Range	Incidents	Fatalities	Injuries	Current Year Dollars
20-Yr Avg	2004 - 2023	67	9	41	\$165 Million
10-Yr Avg	2014 - 2023	66	8	42	\$233 Million
3-Yr Avg	2021 - 2023	56	7	24	\$34 Million
2023	2023	61	15	31	\$45 Million
Total	2004 - 2023	1336	182	810	\$3.3 Billion

NFPA Data
(2007-2016)

4,200 home structure fires annually began with ignition of natural gas

40 fatalities annually

140 injuries annually

80% associated with cooking or heating equipment

RAISING SAFETY STANDARDS



- NTSB included in-home methane detection on its **2021-2023 Most Wanted List**
- PHMSA's recent NPRM, Pipeline Safety: Gas Pipeline Leak Detection and Repair **encouraged "the adoption of in-home methane detectors..."**
- Experience has demonstrated leveraging technology proven at scale can provide an effective additional layer of protection

Sept 2020 - Con Edison mass
deployment of AMI gas detectors

250,000+ units installed

4,300+ alarms received – 15%
from underground infrastructure

Virtually **ZERO** false alarms

Several serious gas events
averted due to the early warning
of gas leaks

Gas Safety Education & Gas
Alarm Adoption is Key

**The U.S.
Experience**



BARRIERS TO ADOPTION

REASONS FOR DELAYS?

- Lack of public awareness, education & industry advocacy
- Historic concerns of detector performance and potential for false alarms (***Painful*** experience with CO detectors in the early 1990's)
- Commercial plug-in units - impractical to install in proper place near ceiling
- Lack fit-for-purpose **performance** and **installation standards** to incorporate into building codes
- National regulations **DO NOT** exist for residential natural gas detectors & some state/local mandates only recently enacted

ADDRESSING BARRIERS

GAS INDUSTRY RESPONSE

ADVANCED TESTING/STANDARDS

- Evaluate device response/performance
- NFPA715 Standard developed
formalized alarm placement recommendation
- UL1484 Updated
 - Evaluate existing UL
Standards/Recommendations (lower detection
threshold from 25% LEL to 10% LEL)

**Improving Public Safety With
Widespread Residential Natural
Gas Detector Adoption**

**Our Alarms Meet/Exceed All
Safety Standards**

- ✓ Meet Performance standard – UL 1484
- ✓ Meet Installation standard – NFPA 715
 - ✓ Commercially available and proven
technology to conform to those standards

NATURAL GAS ALARMS

- **Compliant to UL1484 Standard:**
 - Detection threshold of 10% LEL
 - Resistant to false alarms
 - Can't be a source of ignition in a maximum flammability fuel gas environment
 - Available for residential, multi-dwelling units or mixed-commercial buildings
- Virtually ZERO FALSE ALARM rate
- MEMS sensor technology enables both a **10-year sensor & battery** lifecycle
- 100% Battery powered device to **install near** ceiling
- DUAL voice alerts in English/Spanish & 85 decibel alarm can help PROMPT action when gas odors may not



Utility product shown above

SMARTER GAS LEAK DETECTION

Automated, Connected *Chain-of-Communications* for AMI or AMR Gas Utilities



TRUSTED ADVANCED GAS LEAK TECHNOLOGY SOLUTIONS

New Cosmos USA Consumer & Utility RMD Products

- DeNova Detect Equipment
- AMI Program/Pilot Support
- Product Demonstration/Integration
- Gas Industry Subject Matter Experts
- Non-AMI Nationwide Program Enablement



WHEN IT COMES TO SAFETY, IT'S NOT JUST ABOUT TECHNOLOGY

CONSUMER BEHAVIOR IS IMPORTANT, WE
HAVE TO **INFORM** AND **EDUCATE** WITH A
COMPREHENSIVE PUBLIC SAFETY
APPROACH – SO CONSUMERS RESPOND
TO GAS ALARMS AND GAS ODORS
EXACTLY THE SAME WAY –
EVACUATE AND **CALL 911...**



NEXT UP...



RICK TRIESTE
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Consolidated Edison of New York

DeNova Detect[®]
Smarter Gas Leak Safety



Con Edison AMI Enabled Natural Gas Detector Deployment

Presented By:

Rick Trieste

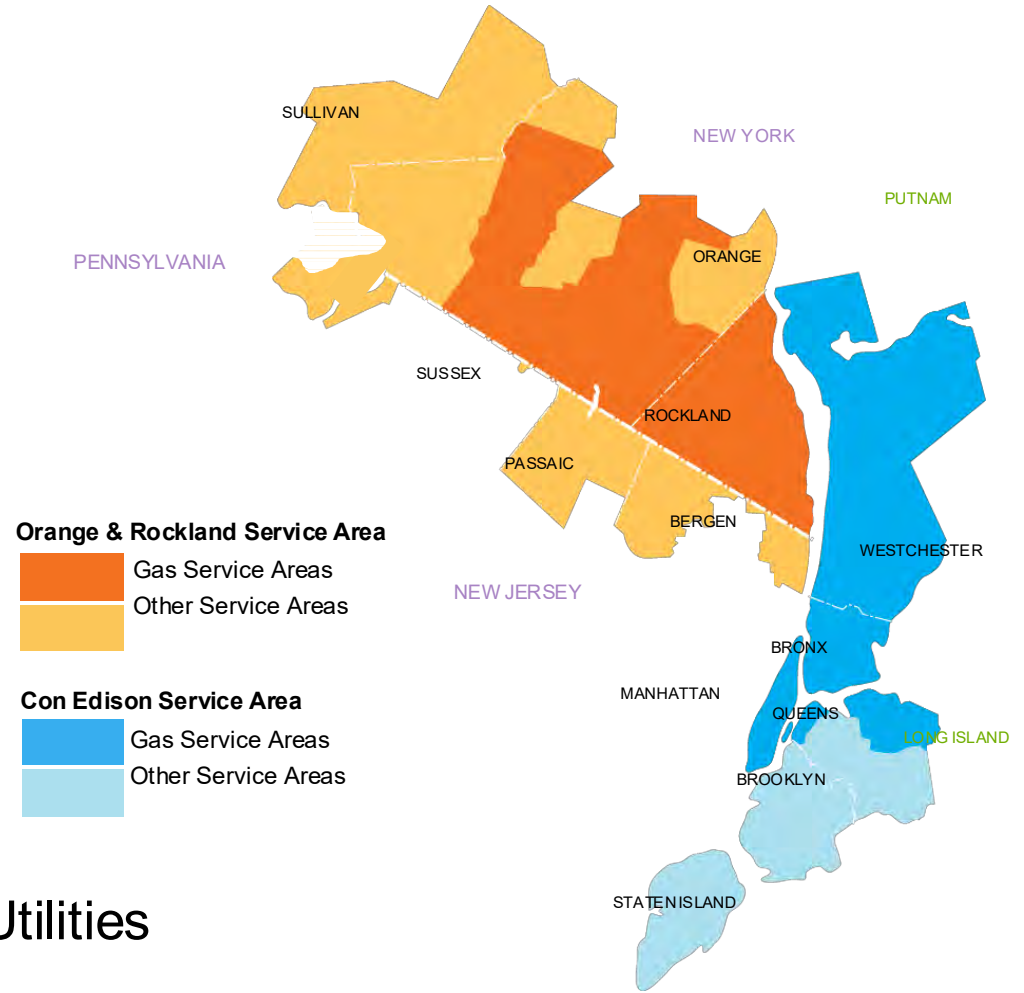
Department Manager Research,
Development & Demonstration
Con Edison of New York



Consolidated Edison Company of NY

Consolidated Edison Company of NY

- Serves 3.6 million electric and 1.2 million gas customers in NYC and Westchester County
- Gas Company Information:
 - 94 miles transmission pressure pipe
 - 1 Peak Shaving LNG Plant
 - 4,600 miles distribution main & service pipe
 - 377,000 gas services
- Con Edison, Inc. also owns Orange & Rockland Utilities



CATALYST EVENTS



East Harlem explosion 3/12/14



East Village explosion 3/26/15

HISTORICAL PERSPECTIVE

POST INCIDENT PUBLIC AWARENESS CAMPAIGN: **SMELL GAS. ACT FAST.**

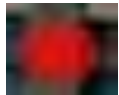
Prior to the AML-enabled Natural Gas Detector, we solely relied on our public awareness campaigns and customer calls to report indoor gas odors.



Don't assume someone else will report it.

INSIGHTS FROM THE EAST HARLEM INCIDENT (2014)

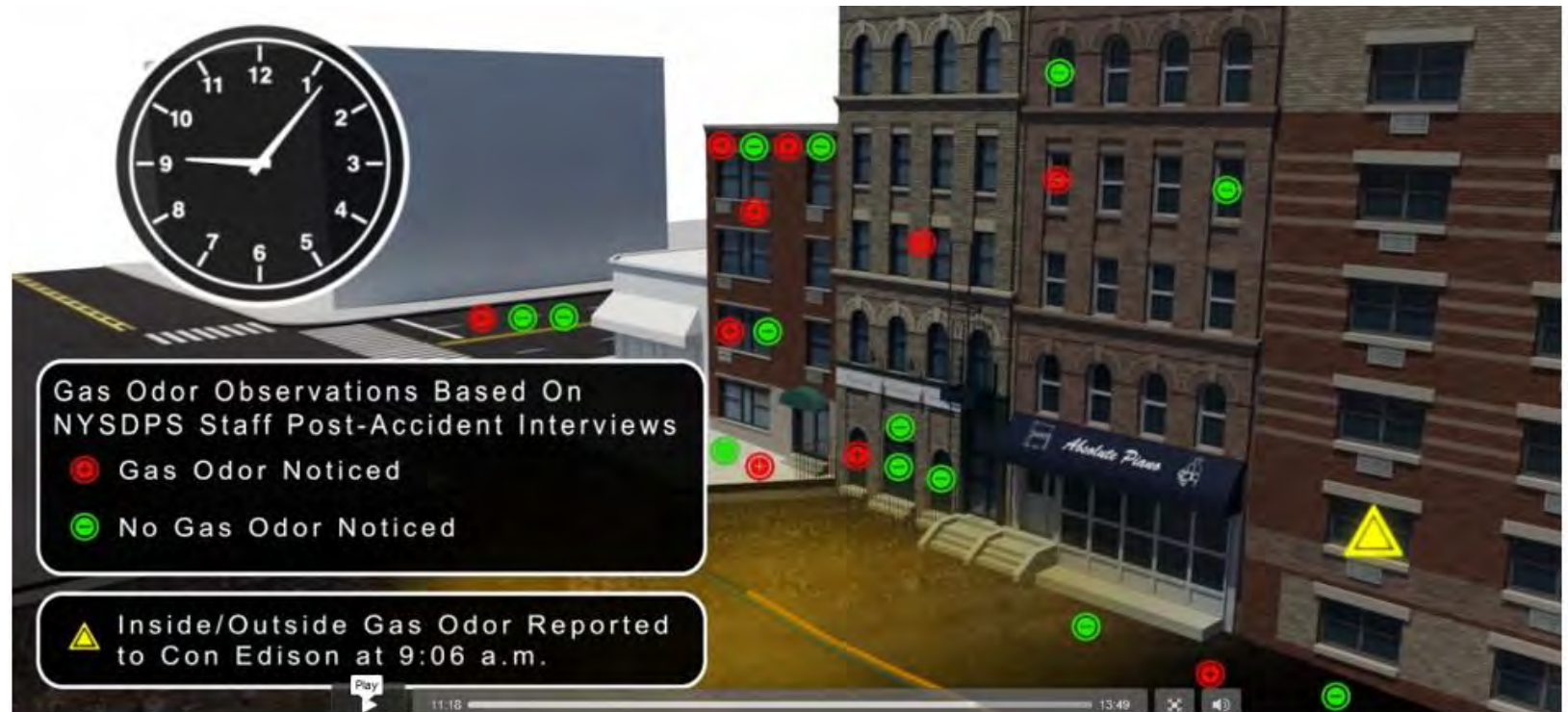
Numerous residents noticed a gas odor and failed to report it. A communication enabled NGD likely would have prevented this incident.



10 consumers smelling gas and **did not** react

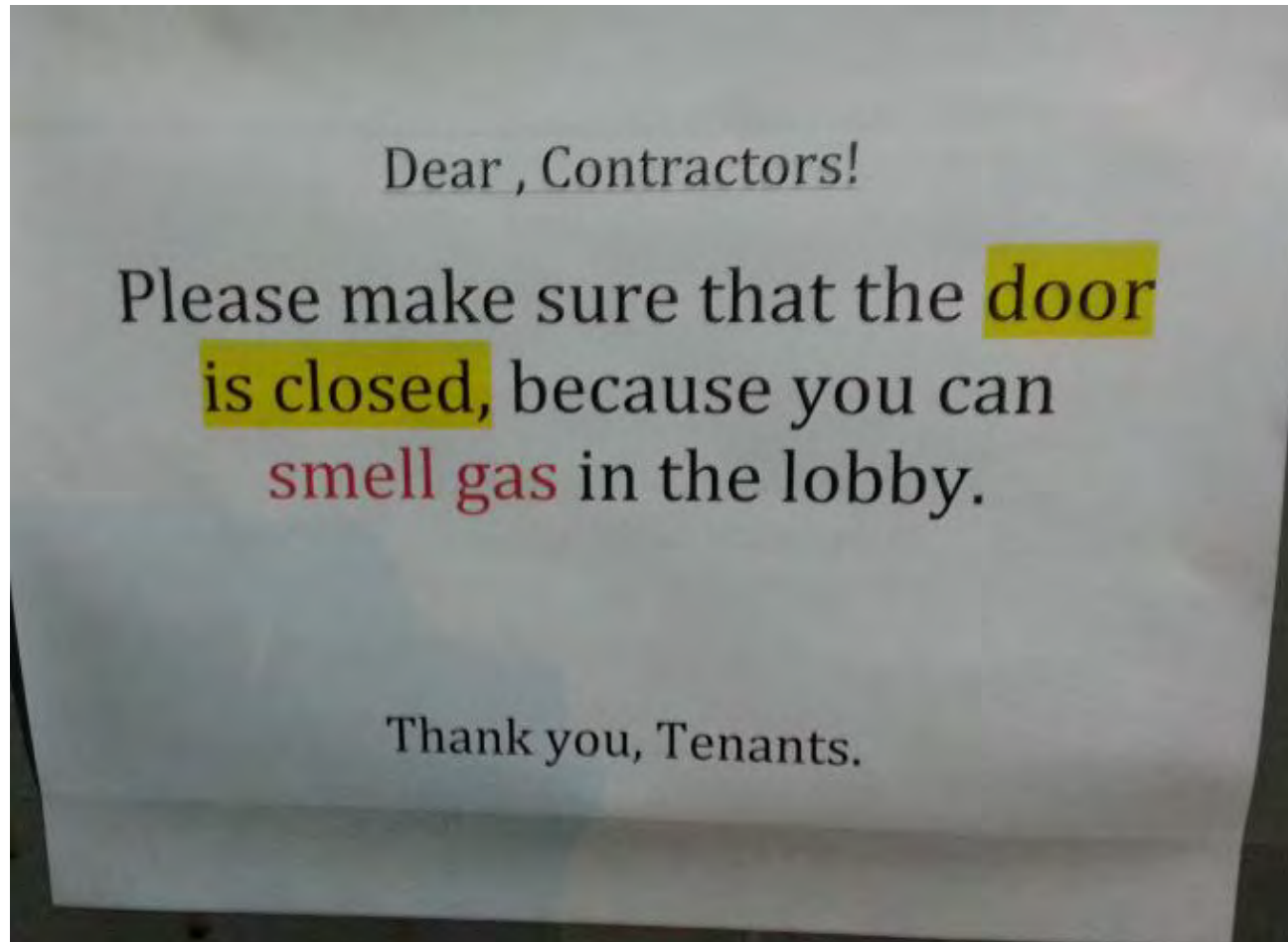


1 consumer smelling gas the day before called Con Ed ~25 min prior to incident

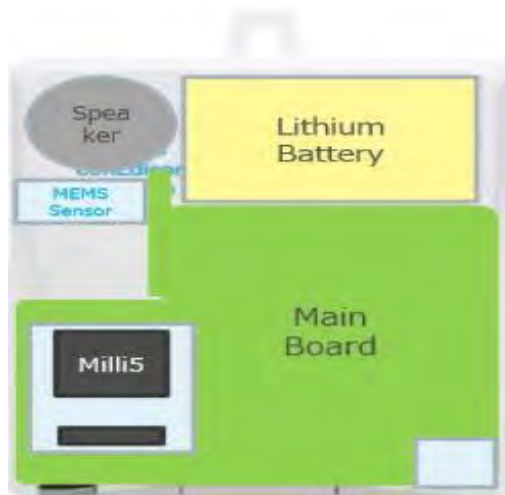


And if you think people are responsive to odors...well...think again...

- Sign found posted in a NYC building **AFTER** the 2015 East Village Explosion:



Natural Gas Detector Technology



- Evolved to 10-year life span
- UL and FCC certified
- Alarms at 10% LEL (0.5% gas-in-air)
- Provides local 85 db audible alarm & voice alerts in English & Spanish
- Communicates: Heartbeat, low battery, unit malfunction & gas alarm
- Post alarm reports gas concentration in 1% LEL increments every 30 secs
- Alarms through AMI Network
- Created new leak ticket category – GLA (Gas Leak Alarm)
- No customer maintenance required

PROJECT OVERVIEW

INITIAL PROGRAM COMPLETION EXPECTED BY END OF 2025

2016 – 2017
Industry research
GTI Testing

- Technology/Vendor selection
- GTI testing
- Code review

2018-2019
Pilot Program
9,000 units installed

- Plan and coordinate program
- Install at building point of gas service entry
- Ensure all systems work
- Review procedures
- Monitor, gain feedback, continuously improve
- 5-year battery life

2020 - 2025
Implementation

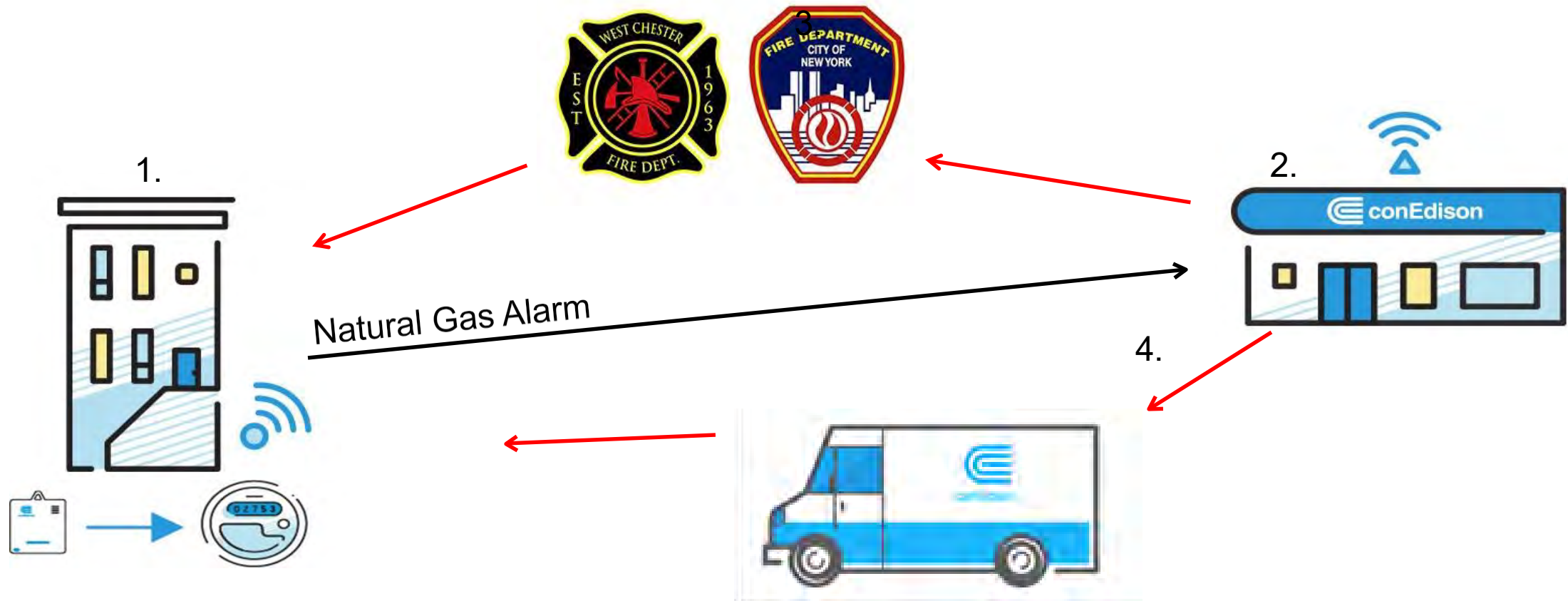
- Procure and train workforce
- Educate stakeholders, emergency responders, and customers
- Install NGDs pursuant to AMI rollout
- Install NGDs bundled with service line inspections
- Improved battery life to 10-years

Pre-Deployment Communication

- Communication with employees, DPS Staff, FDNY & Westchester County FD
 - Town Hall Meetings with agencies
 - Meetings with FDNY leadership
 - Developed emergency response protocols
 - Discussed concerns
 - Thorough explanation of technology in-use

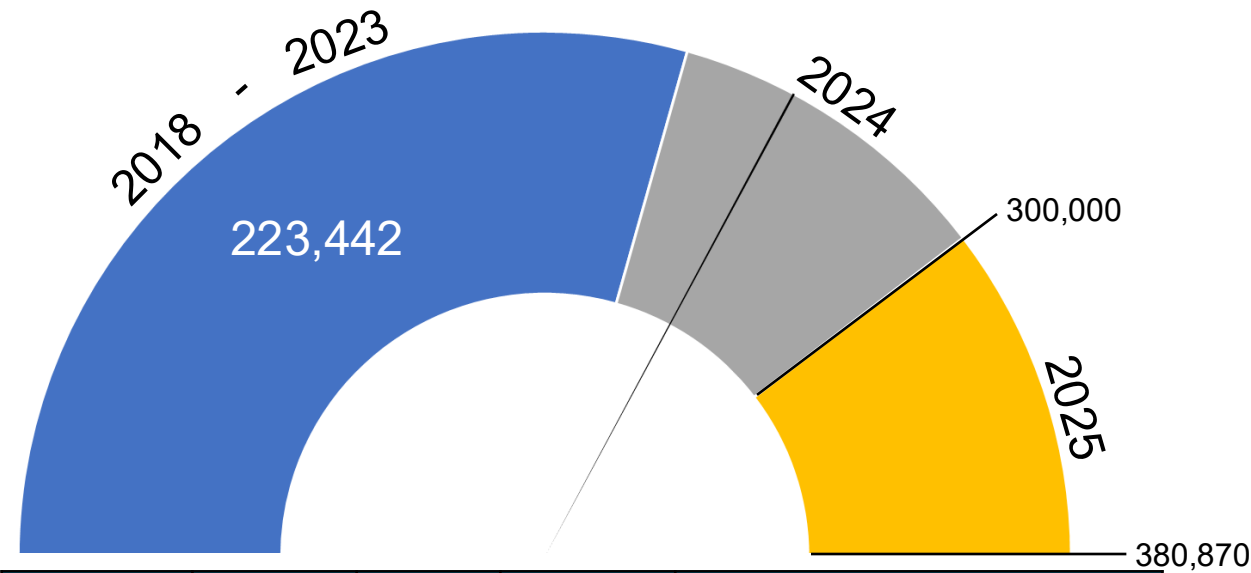


Response & Coordination



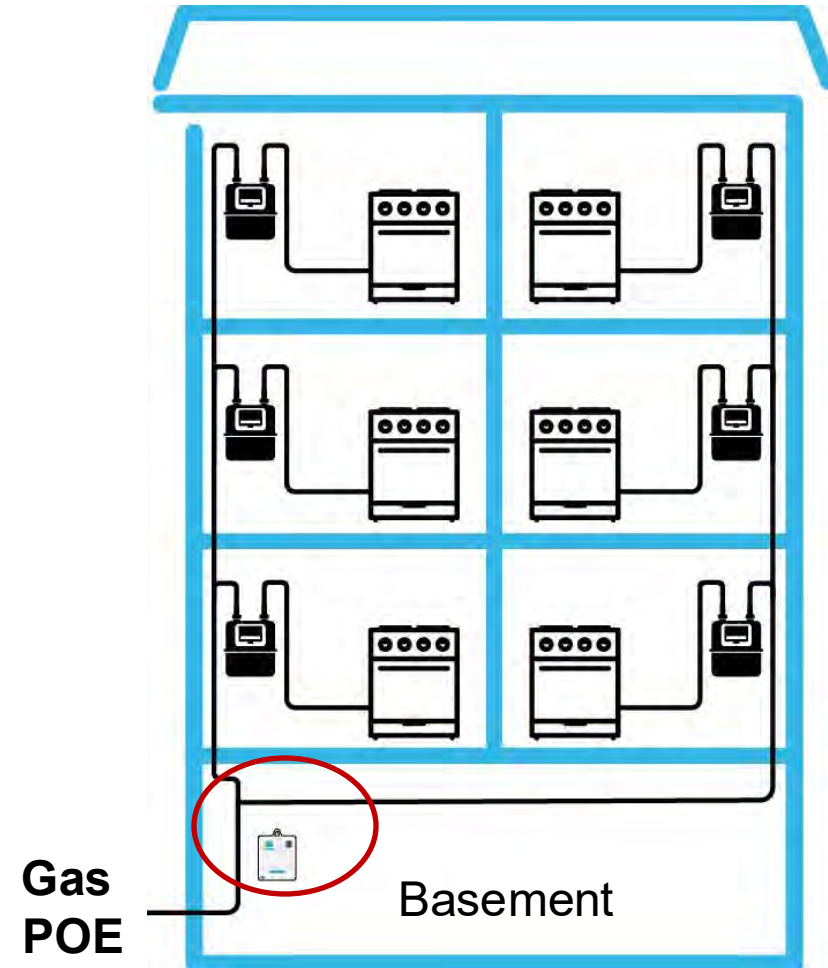
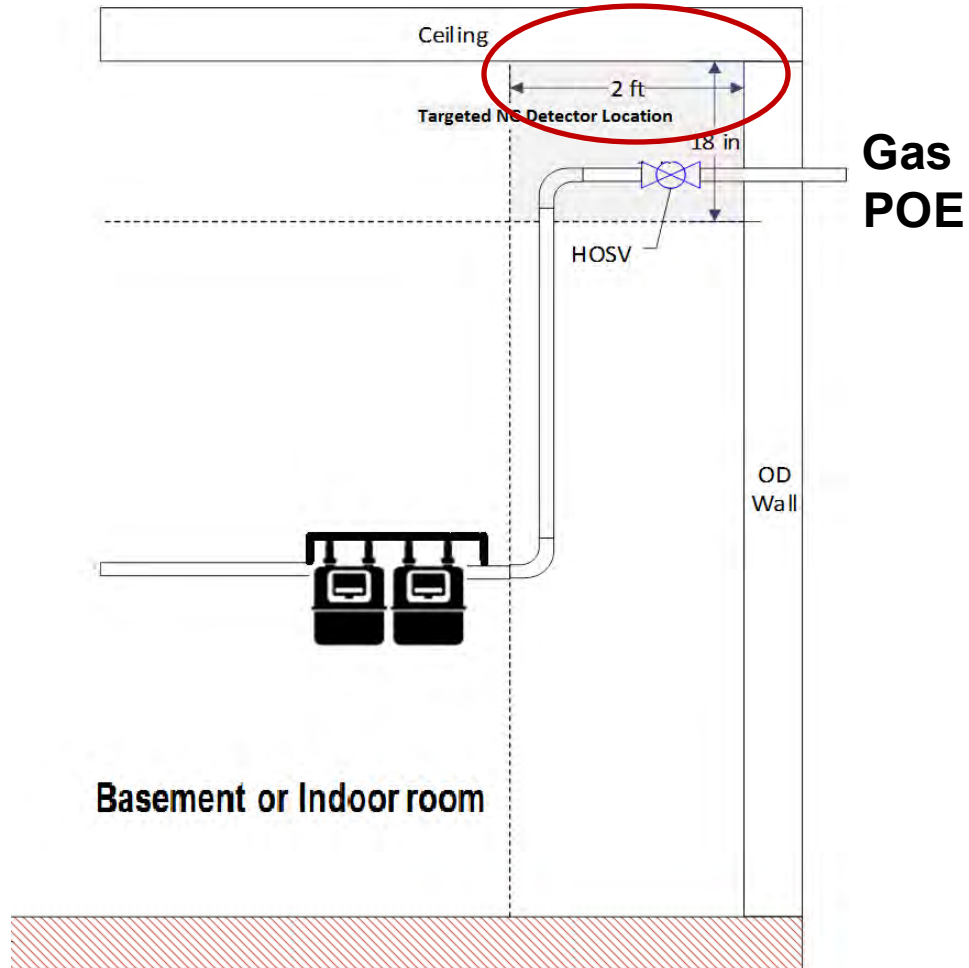
Natural Gas Detector Program – Deployment Progress

- 253,564 system-wide installations as of July 31



Area	Services	NGDs	% Installed	Unit Life %			
				5-yr	6-yr	7-yr	10-yr
Bronx	84,697	56,128	66%	0%	8%	65%	27%
Manhattan	42,247	32,761	78%	1%	6%	46%	47%
Queens	104,484	61,171	59%	0%	12%	61%	27%
Westchester	149,442	103,504	69%	2%	63%	20%	15%
Grand Total	380,870	253,564	67%	1%	31%	43%	25%


NGDs Installed Near POE for Both Indoor & Outdoor Meters



Installation Examples




Warning Tag

**WARNING**

This device detects the presence of NATURAL GAS, which can IGNITE or EXPLODE, CAUSING SERIOUS INJURY or DEATH. NEVER IGNORE ANY ALARM.
DO NOT TAMPER WITH THIS DEVICE OR ITS BATTERY OR MOVE OR RELOCATE THE GAS DETECTOR FROM WHERE IT IS INSTALLED.
Doing so could disable this device, cause it to malfunction, and/or result in serious injury or death.
A yellow blinking light indicates that the Gas Detector may not be functioning properly or that its battery may be running low. CONTACT CON EDISON IMMEDIATELY AT THE PHONE NUMBER BELOW IF YOU OBSERVE A YELLOW BLINKING LIGHT.

Read and follow the other Important Safety Information & Warnings for this Gas Detector available at:
conEd.com/NaturalGasDetector or by scanning this QR code:



EVACUATION PROCEDURE

If at any time you SMELL NATURAL GAS or THE ALARM ON THIS DEVICE SOUNDS:

1. EVACUATE IMMEDIATELY and take others with you.
2. Do NOT use a phone, light a match, or turn on or off any light switches, flashlights, or appliances. Doing so could IGNITE a FIRE or EXPLOSION.
3. CALL 911 once you are safely outside the premises.
4. Do NOT reenter until told to do so by authorities.

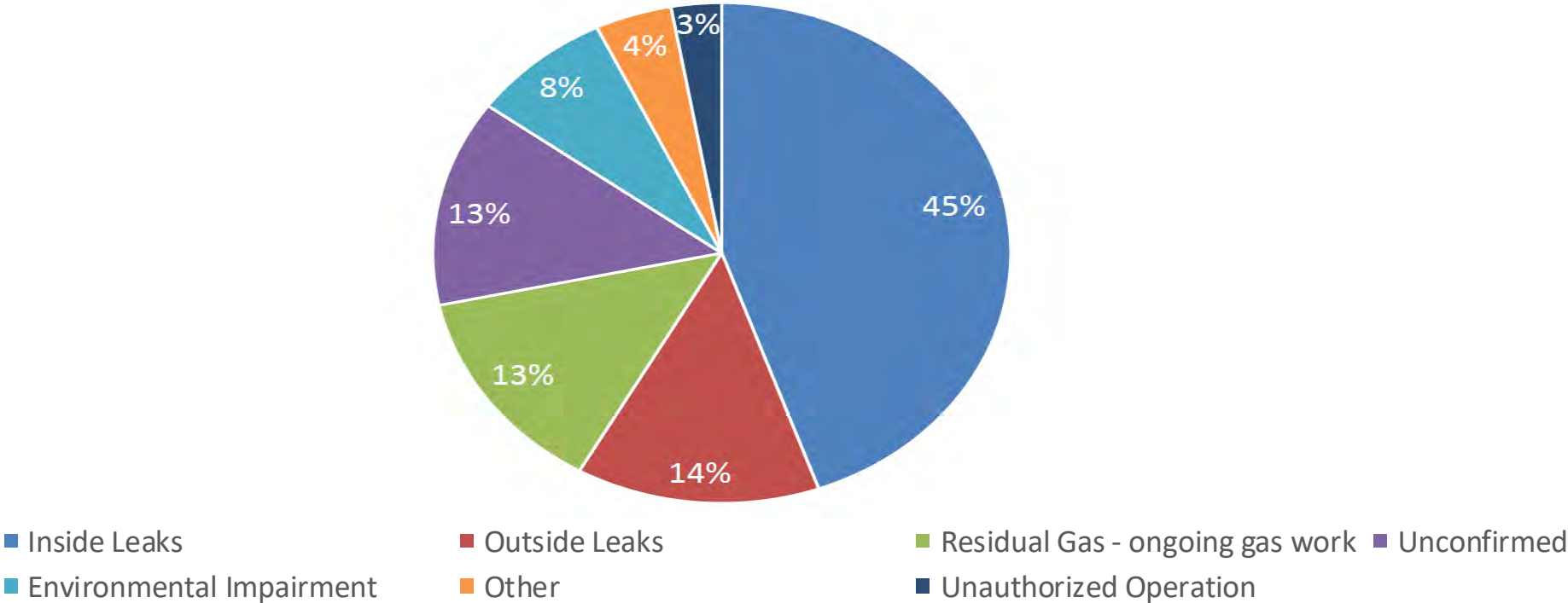
**conEdison**

Natural Gas Detector
For information or questions, call
1-800-75-CONED (1-800-752-6633).
Mira el otro lado para español.
中文请见其他标签
다른 한국어 태그 참조
См. другую метку с русским текстом
বাংলার জন্য অন্য ট্যাগ দেখুন

Natural Gas Detector Program – Gas Leak Alarm Results

Detectors demonstrate a high degree of accuracy. More visibility and new learnings about leak mitigation.

NGD Alarm Location	Aug '24	Total GLAs	% of Total GLAs
Bronx	64	951	21%
Manhattan	31	595	13%
Queens	44	915	20%
Westchester	67	2,082	46%
Total Program	206	4,543	



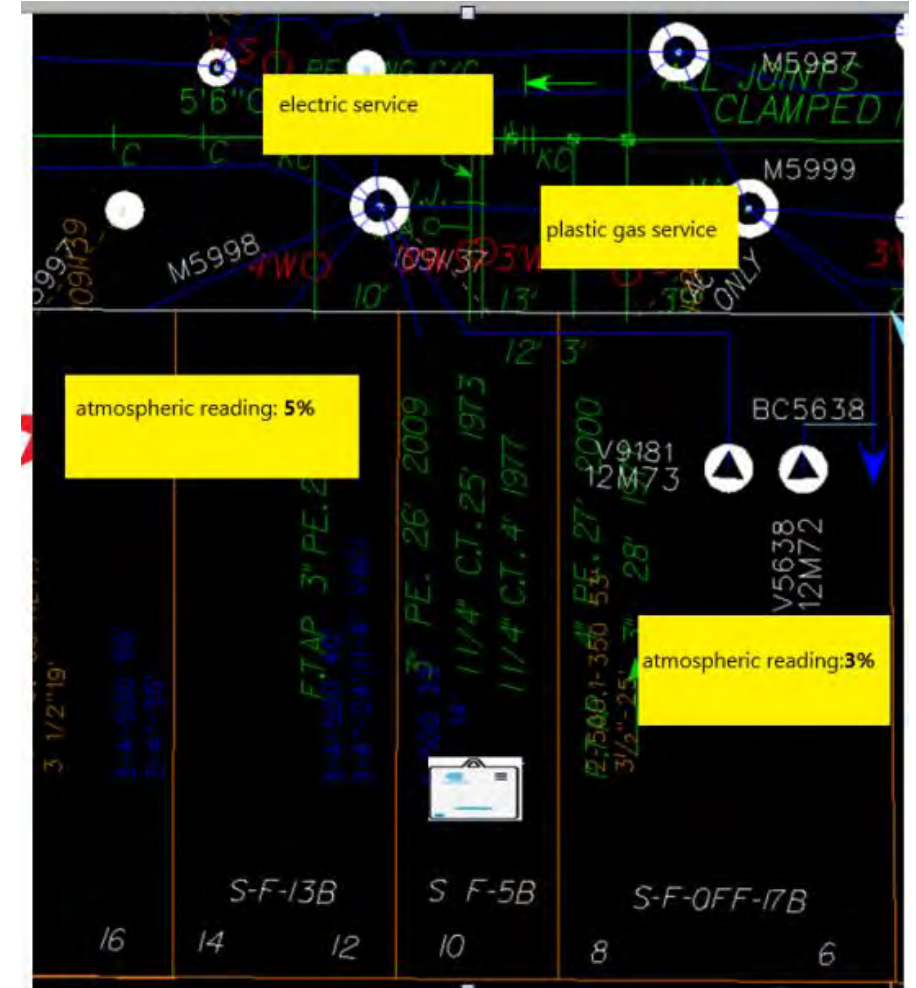
Early Warning of Outside Leak from Cracked CI Main

- Two detectors alarmed during a cracked cast iron gas main leak



Early Warning of Outside Leak from Electric Burnout

- 10 W 32 Street
- GLA received on 9/26/22
- Investigation uncovered atmospheric readings



Open-ended Pipe with Gas Escaping Inside Building

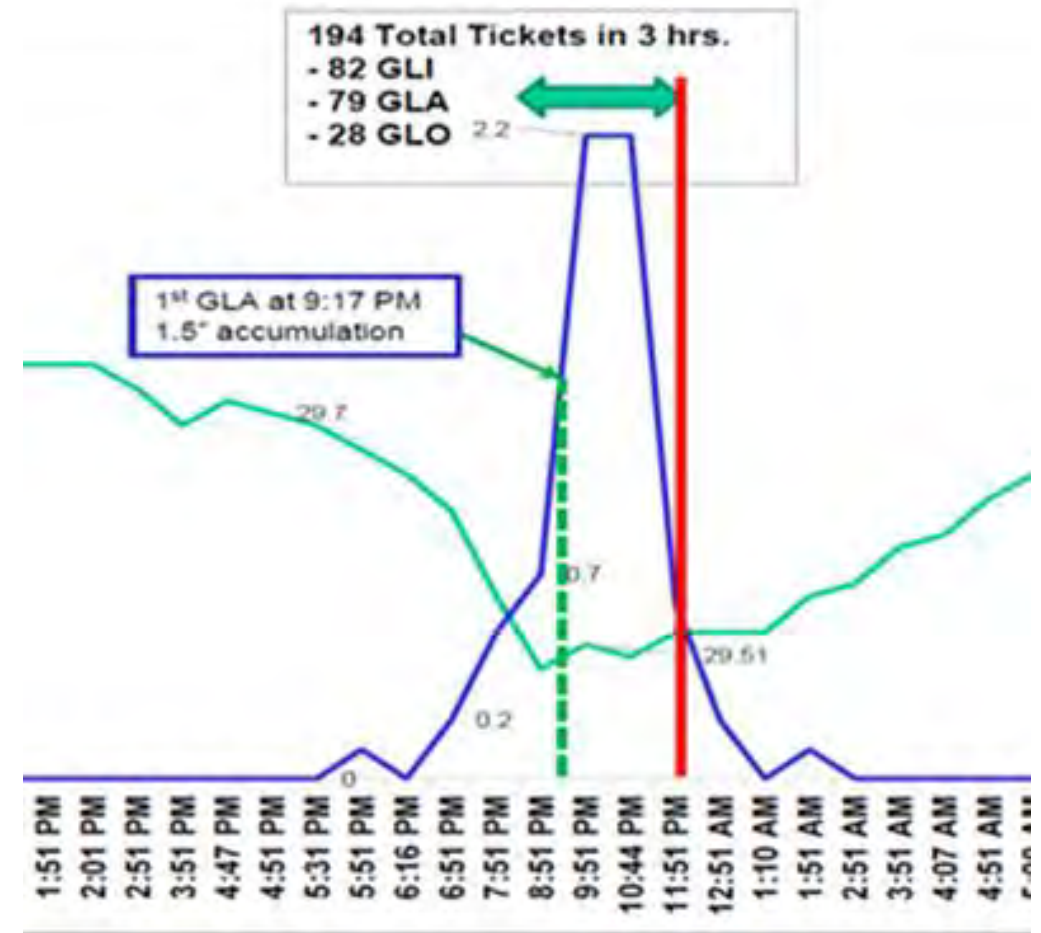
- Hotel in Tarrytown, Westchester County
- 6% gas in air
- 75 occupants were evacuated
- Gas-fed boiler unit that exploded
- customer's piping damaged
- Open ended piping



Other NGD Program Experiences

- Early notification of building fires due to combustion material off gassing
- Illegal pipework
- Elevated GLO, GLI AND GLA activity during heavy rains
- Service line inspection frequency regulatory relief & O&M savings due to installation of NGDs

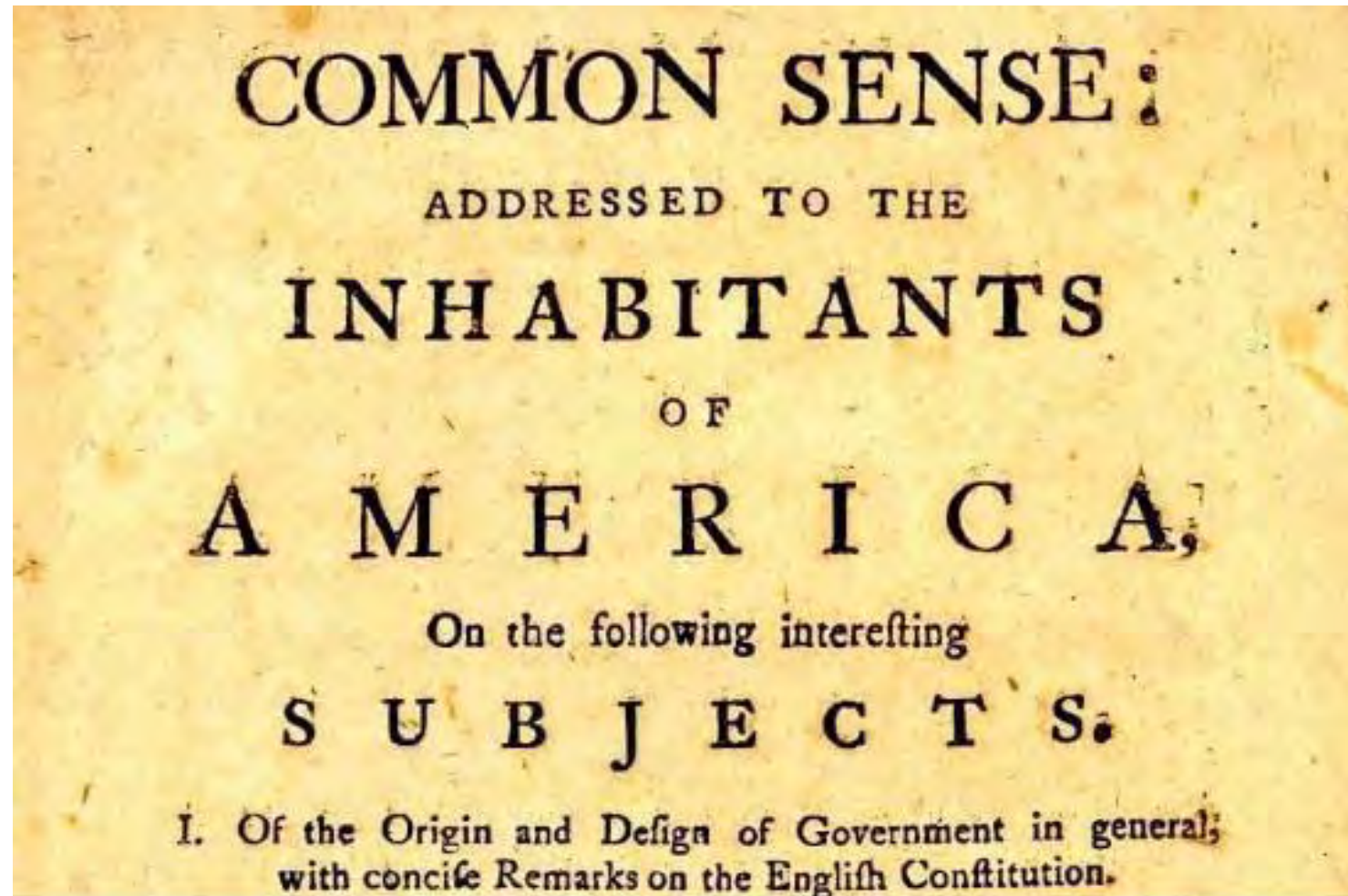
Precipitation and Barometric Pressure



GLA 9th Alarm – Thomas Paine’s Cottage – New Rochelle NY



Residential Natural Gas Detectors are simply that



Questions?

