



## **AMI-enabled Natural Gas Detectors**

Melissa Corniel, Project Manager

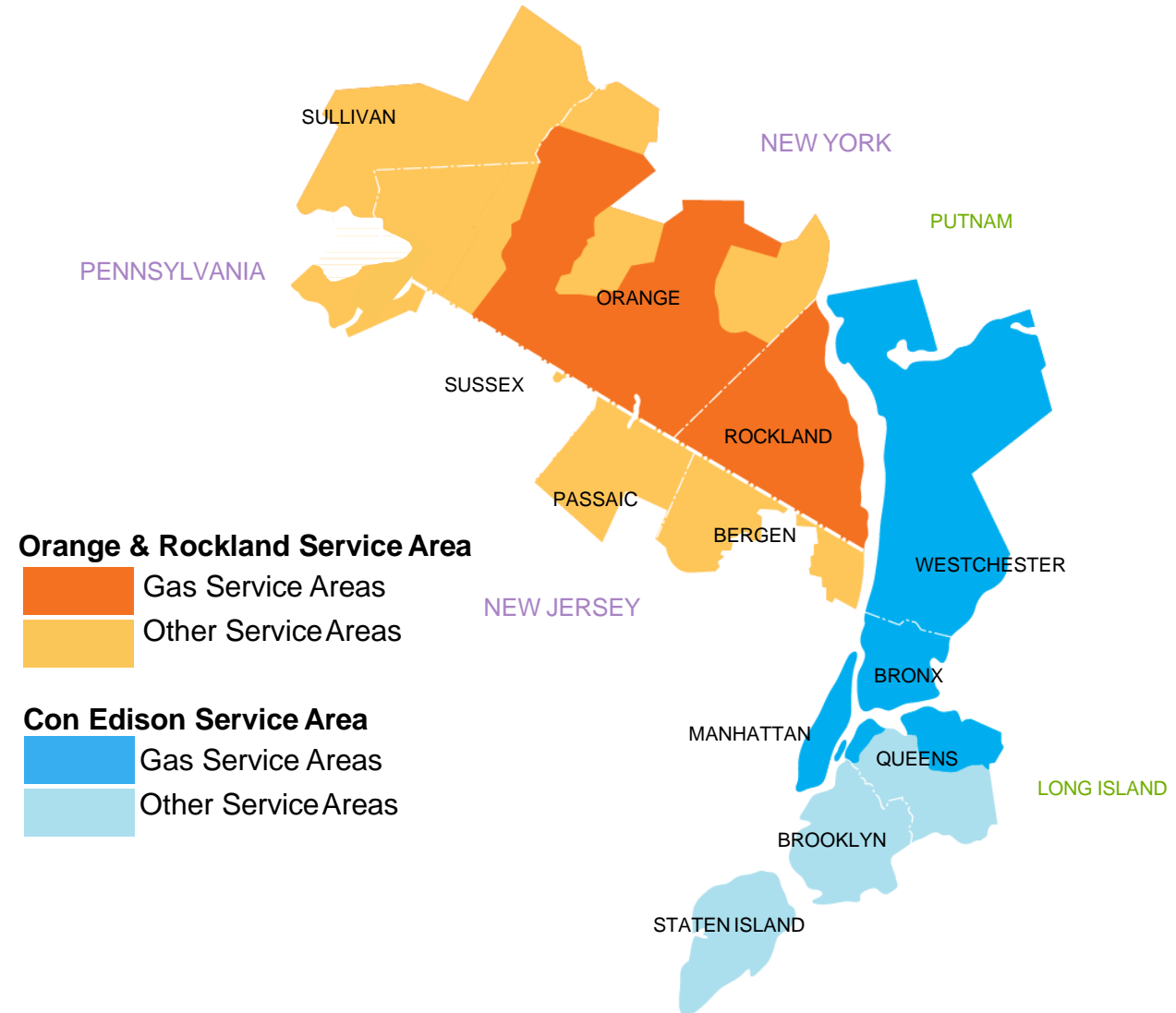
Jonathan Diaz, Engineer

# Agenda

- Introduction
- The journey begins
- Device design and functionality
- Pilot program and experiences
- Mass deployment

# Who is Con Edison?

- Founded in 1823 as NY Gas Light Company
- Longest listed stock on the NYSE
- Provides Electricity, Gas and Steam to NYC and Westchester county
- Serves 3.6 million electric and 1.2 million gas customer meters in NYC & Westchester County
  - ~375,000 gas services
- Peak electric load 13,322MW
- Peak gas load 1,565 MDT
- Con Edison, Inc. also owns Orange & Rockland Utilities



# Catalyst Events



- East Harlem explosion 3/12/14



- East Village explosion 3/26/15

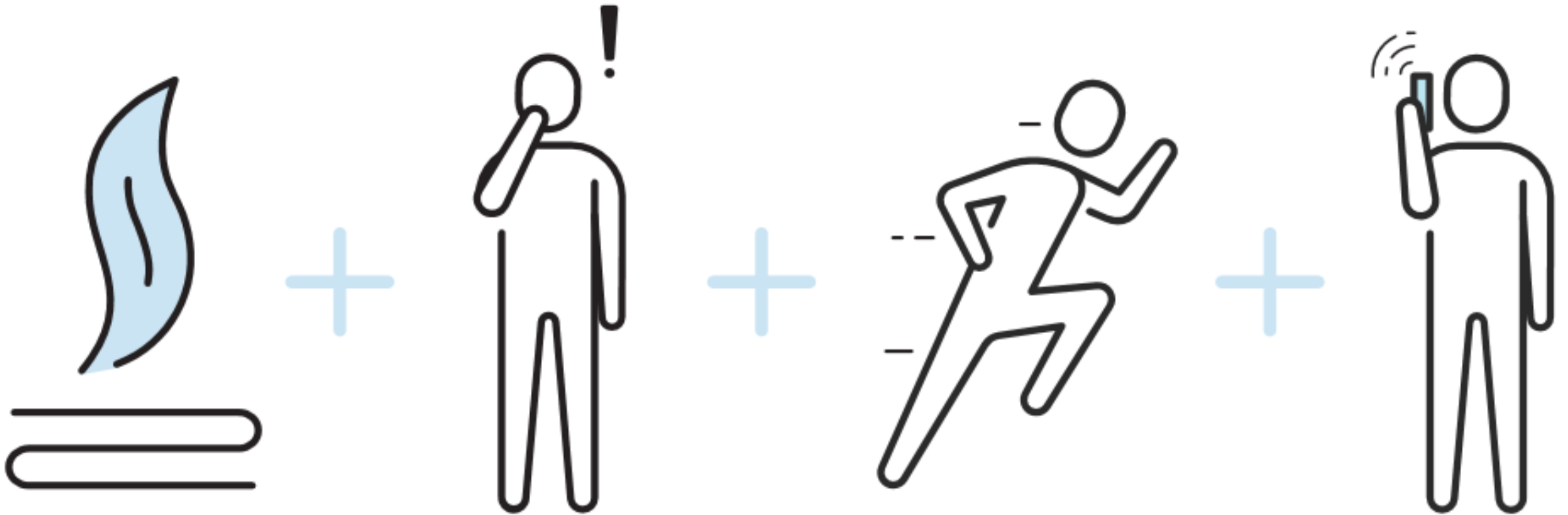


# Findings From the Harlem Incident



- 10 consumers smelling gas and **did not** react
- 1 consumer smelling gas day before called Con Ed ~25 min prior to incident

# Smell Gas. Act Fast.



**Don't assume someone else will report it.**

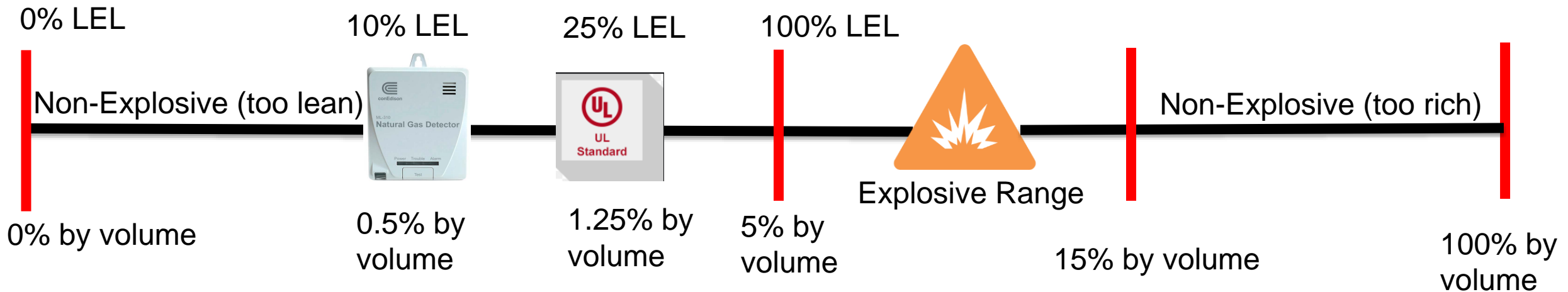
# NTSB Natural Gas Detector Recommendations

- April 22, 1974 – 305 E 46<sup>th</sup> St, NYC
  - “The **Department of Housing of Urban Development** to investigate the practicability and availability of gas vapor detection instrumentation in strategic placement in buildings. Based on the results of this investigation, **recommend guidelines to appropriate State and local government agencies for regulations of gas detection instruments in buildings.**” <sup>(1)</sup>
- June 9, 1994 – 1339 Allen St, Allentown PA
  - “The **Allentown Housing Authority** to evaluate the safety benefits of using gas detectors in buildings that it owns or manages that are served with gas as a means of providing emergency-response agencies with early notice of released gas within buildings; **install gas detectors in buildings in which it is determined that they would be cost effective and beneficial.**” <sup>(2)</sup>
- August 10, 2016 – 8701 Arliss St, Silver Springs MD
  - “To the **National Fire Protection Association**:.....**revise the NFG Code**, NFPA 54, to **require methane detection systems for all types of residential occupancies with gas service**. At a minimum, the provisions should cover the installation, maintenance, placement of the detectors, and testing requirements.” <sup>(3)</sup>

(1) NTSB PAR 76-2; (2) NTSB PAR 96-1; (3) NTSB/PAR-19/01

# Challenges

- Customer odor calls have been the primary source of gas leak reports
- Since 2015, Con Edison has received ~217,000 calls from the public
  - 90% of total calls
- Technology can help improve public and responder safety
  - Goal: Prevent, Detect, Respond





# Product Timeline & Testing

- Ensure alarmed only in response to methane
- Test sensor performance at 10% LEL (UL-1484 is 25% LEL)
- Testing showed no response to household products
  - Ethanol, acetone, paint thinner, stain remover, adhesives, polish, bathroom cleaner, sprays, fresheners, ammonia, hydrogen-sulfide & bleach



**Two Years Ago.....[https://youtu.be/uf\\_8DUwT8TM](https://youtu.be/uf_8DUwT8TM)**



# Final Product



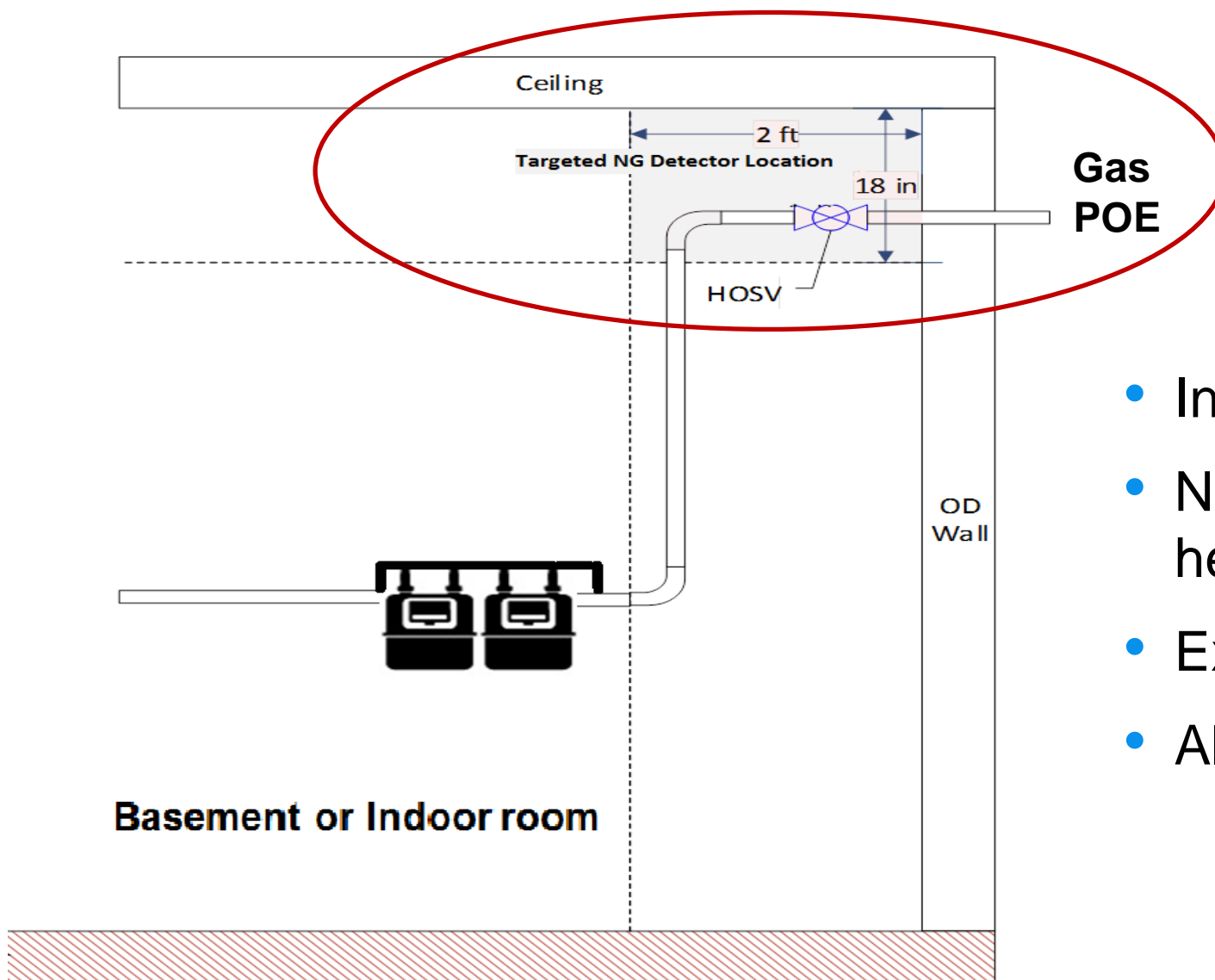
- 6-year life span
  - 7 & 10-year life pending
- UL and FCC certified
- Alarms (methane) 10% LEL
- Provides local audible alarm
- Alarm through Advanced Metering Infrastructure (AMI) Network
- No customer maintenance required

# Project Overview and Strategy

- Install at gas indoor Point-of-Entry (POE)
- Leverage AMI enabled sensor and network through back office software integration
  - Creates alarm ticket in the Gas Emergency Response Center (GERC) when 10% LEL methane is detected
- Educate customers through letters, detector tag, and dedicated website



# Typical Installation



- Install near the gas POE
- Near the ceiling above the POE or head of service valve (HOSV)
- Exceptions are documented
- All installations are photographed



# Examples - Installation Locations



## 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](http://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:

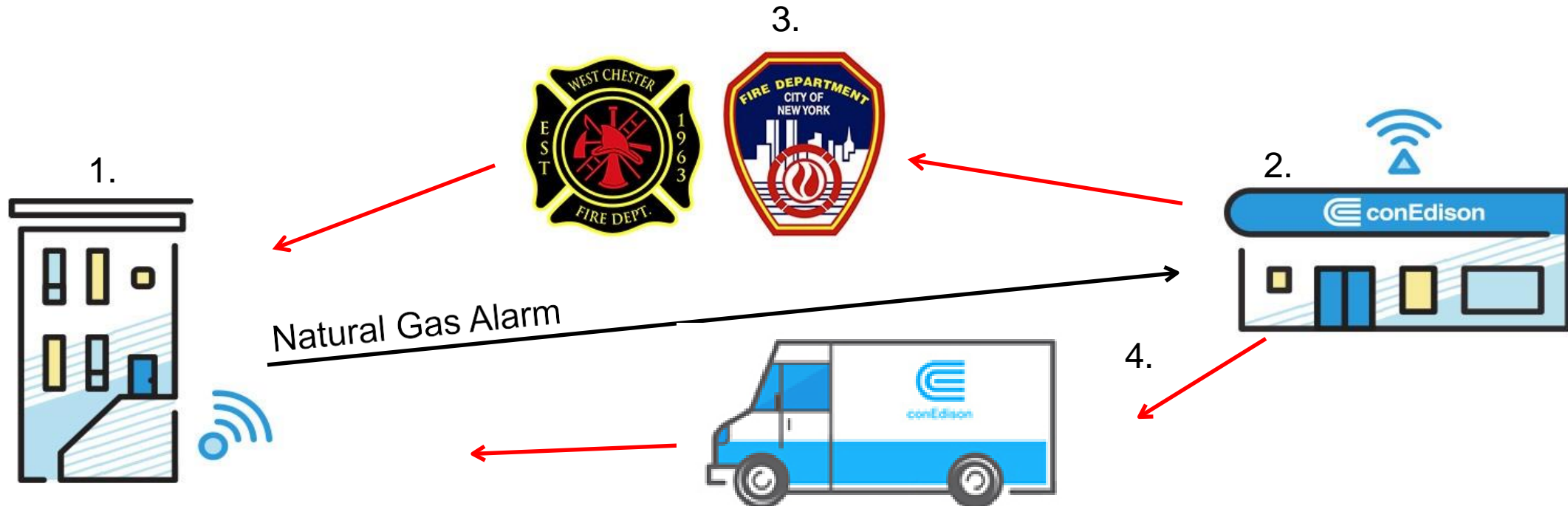
1. EVACUATE IMMEDIATELY and take others with you.
2. Do NOT use a phone, light a match, or turn on or off any light switches, flashlights, or appliances. Doing so could IGNITE a FIRE or EXPLOSION.
3. CALL 911 once you are safely outside the premises.
4. Do NOT reenter until told to do so by authorities.



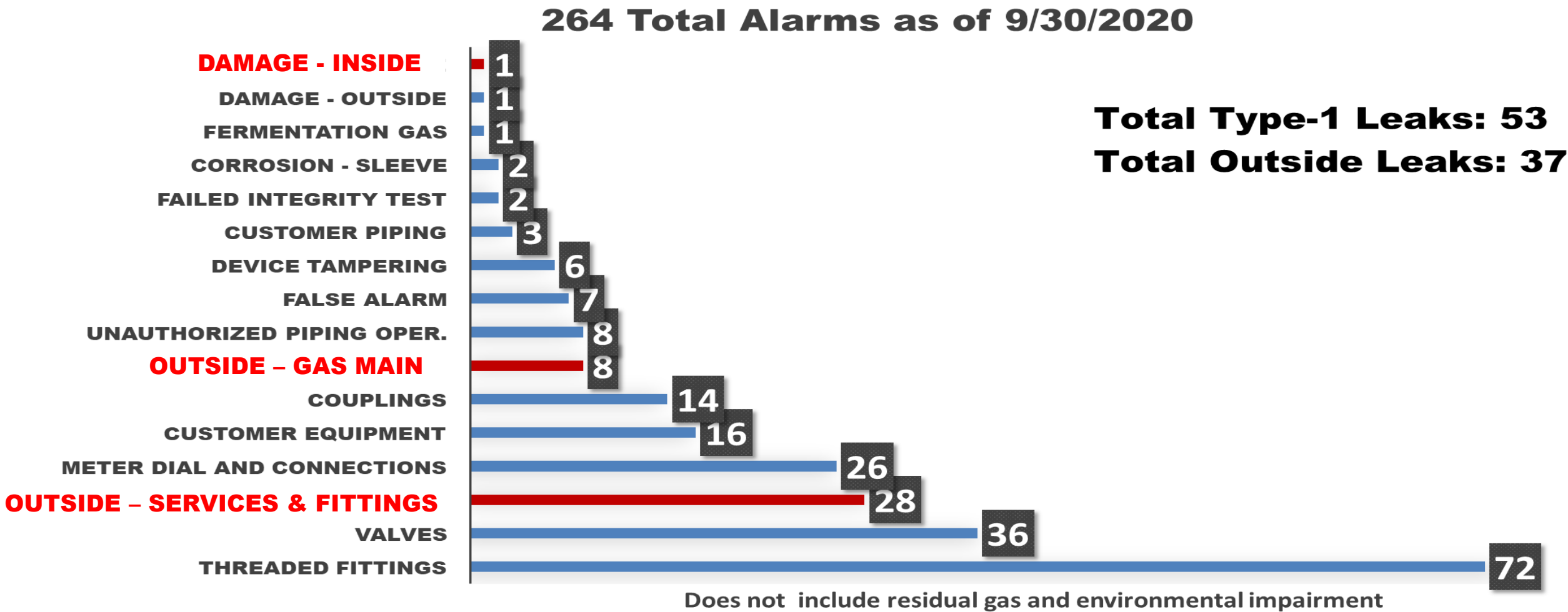
**Natural Gas Detector**  
For information or questions, call  
1-800-75-CONED (1-800-752-6633).  
Mira el otro lado para español.  
中文請見其他標籤  
다른 한국어 태그 참조  
См. другую метку с русским текстом  
বাংলায় জন্য অন্য ট্যাগ দেখুন

# Response & Coordination

- Solicited Fire Dept. feedback and input
- Developed emergency response protocols
- Integrated response with Fire Depts.
- Create new leak type – GLA



# Gas Leak Alarm (GLA) Cause

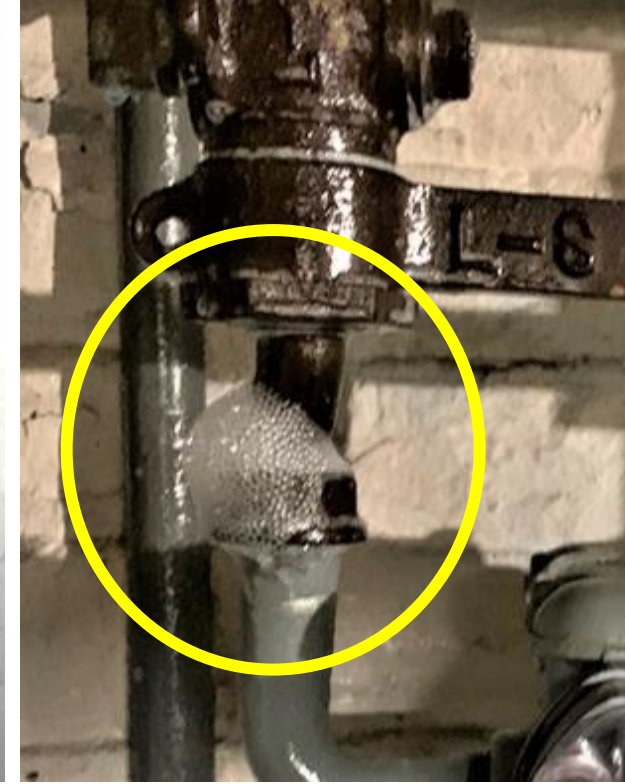
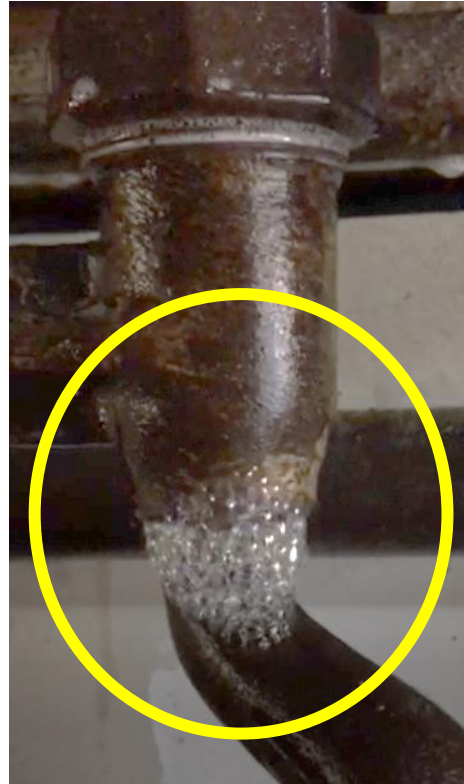
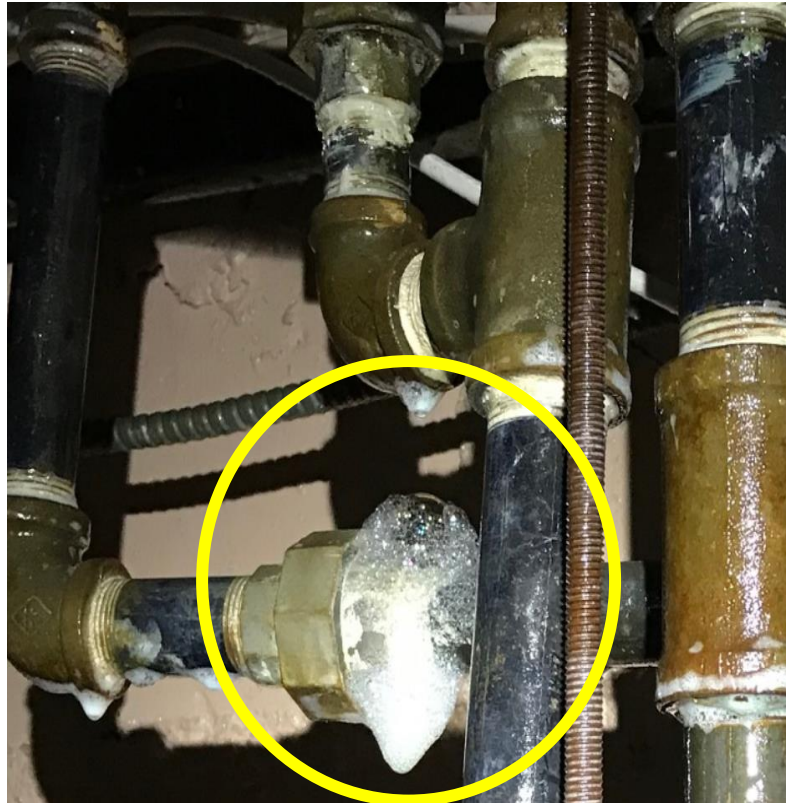


# Example GLAs – Street Leak Entering from Telephone Point-Of-Entry (10/8/19 - Manhattan)





# Examples of Inside Pipe Leaks





# What We Learned - Pilot

- Detector sensitivity
- Process improvements
- Types of failures and alarms
- Detector improvements
  - Methane reading during alarms
- Positive reaction from customers
- NYS PSC support

## Upcoming model design

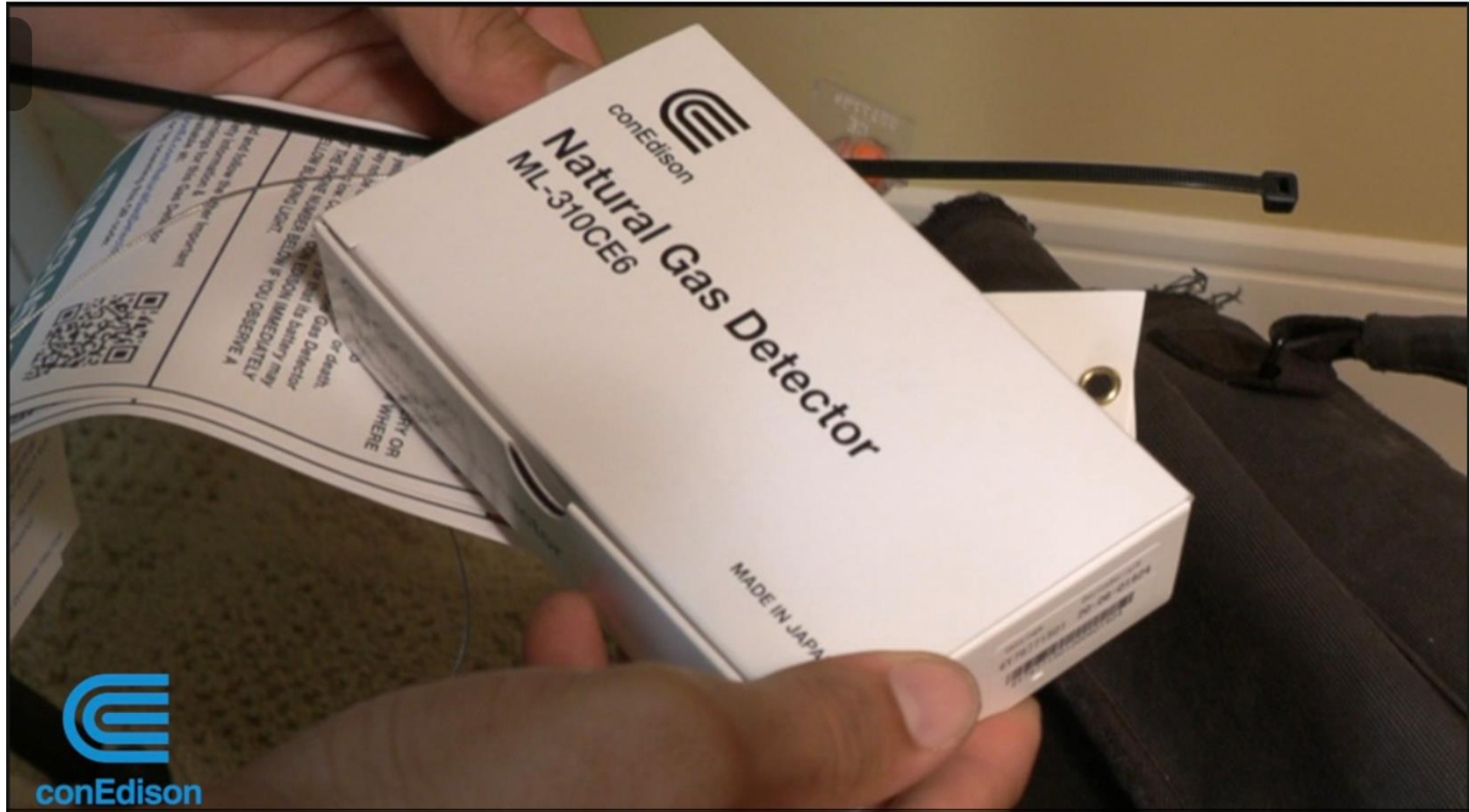


# Mass Deployment Schedule

- Mass deployment started 9/14/2020
- 5-year program for ~375K services
- Follows AMI deployment

<div>2020</div> <div>12K Units</div> <div><ul style="list-style-type: none"><li>• Westchester</li><li>• East Harlem</li></ul></div>	<div>2021</div> <div>91K units</div> <div><ul style="list-style-type: none"><li>• Westchester</li><li>• Manhattan / Bronx</li></ul></div>	<div>2022</div> <div>91K units</div> <div><ul style="list-style-type: none"><li>• Westchester</li><li>• Manhattan / Bronx</li></ul></div>	<div>2023-2025</div> <div>181K units</div> <div><ul style="list-style-type: none"><li>• Queens</li><li>• Manhattan / Bronx</li></ul></div>
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# Marketing Campaign: <https://youtu.be/7REaQo--JAI>



# Industry Interest

- American Gas Association
- Northeast Gas Association
- U.S. and European utility operators
- NTSB & Public Service Commission
- Gas Technology Institute
- Manufacturers
- National Fire Protection Association
- Insurance risk underwriters

# Questions?







## **AMI-enabled Natural Gas Detectors**