AMI-enabled Natural Gas Detectors

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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

Don’t assume someone else will report it.
NTSB Natural Gas Detector Recommendations

• April 22, 1974 – 305 E 46th 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.” (1)

• 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.” (2)

• 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.” (3)

(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
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

2016 – 2017
Industry research
GTI Testing

- Technology/Vendor selection
- GTI testing

2018-2019
Pilot Program
9,000 units installed

- Plan and coordinate program
- Ensure all systems work
- Review procedures
- Improvements

2020 - 2025
Implementation

- Rollout of NGDs
- Improve technology to 7- and 10-year units
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

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 REPLACE THE GAS DETECTOR FROM WHERE IT IS INSTALLED. Do not under any circumstances disable this device. Caution is advised when moving or replacing the device. A defective tag may result in serious injury or death. A yellow flashing light indicates that the Gas Detector may not be functioning properly or that its battery may be low. Call your supplier immediately at the phone number below if you observe a yellow blinking light.

Read and follow other important Safety Information:

- This device is intended for use with the Type 1 gas detector kit.
- This device is not intended for use with other gas detection devices.
- This device is intended for use in locations where gas may be present.
- This device is intended for use in locations where gas detection is critical to ensuring safety.
- This device is not intended for use in locations where gas detection is not critical to ensuring safety.
- This device is intended for use in locations where gas detection is not required.
- This device is intended for use in locations where gas detection is required.

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, fans, or appliances. Doing so could ignite a FIRE or EXPLOSION.
3. CALL 911 once you are outside the building if you are safe.
4. DO NOT return until told to do so by authorities.

For information or questions, call 1-844-70-CONED (1-844-70-CONED) or by scanning this QR code:
Response & Coordination

• Solicited Fire Dept. feedback and input
• Integrated response with Fire Depts.

• Developed emergency response protocols
• Create new leak type – GLA
Gas Leak Alarm (GLA) Cause

264 Total Alarms as of 9/30/2020

- Total Type-1 Leaks: 53
- Total Outside Leaks: 37

- DAMAGE - INSIDE: 1
- DAMAGE - OUTSIDE: 1
- FERMENTATION GAS: 2
- CORROSION - SLEEVE: 2
- FAILED INTEGRITY TEST: 3
- CUSTOMER PIPING: 6
- DEVICE TAMPERING: 7
- FALSE ALARM: 8
- UNAUTHORIZED PIPING OPER.: 8
- OUTSIDE - GAS MAIN: 14
- COUPLINGS: 16
- CUSTOMER EQUIPMENT: 26
- METER DIAL AND CONNECTIONS: 28
- OUTSIDE - SERVICES & FITTINGS: 36
- VALVES: 72
- THREADED FITTINGS: 72

Does not include residual gas and environmental impairment
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
Mass Deployment Schedule

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

2020
12K Units
• Westchester
• East Harlem

2021
91K units
• Westchester
• Manhattan / Bronx

2022
91K units
• Westchester
• Manhattan / Bronx

2023-2025
181K units
• Queens
• Manhattan / Bronx
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?
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