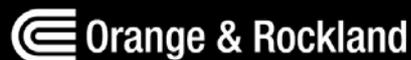


PHMSA R&D Forum: Natural Gas Distribution

February 19th, 2020



Katherine L. Boden
Vice President, Gas Engineering
Consolidated Edison Company of New York



Consolidated Edison and Orange & Rockland Utilities

Con Edison Service Area

Gas Service Areas



Other Service Areas



- 1.1 M customers
- 4,320 miles distribution mains
- 376,000 gas services
- 92.6 miles transmission mains
- 1 LNG Plant (1 Bcf storage)

Orange and Rockland Service Area

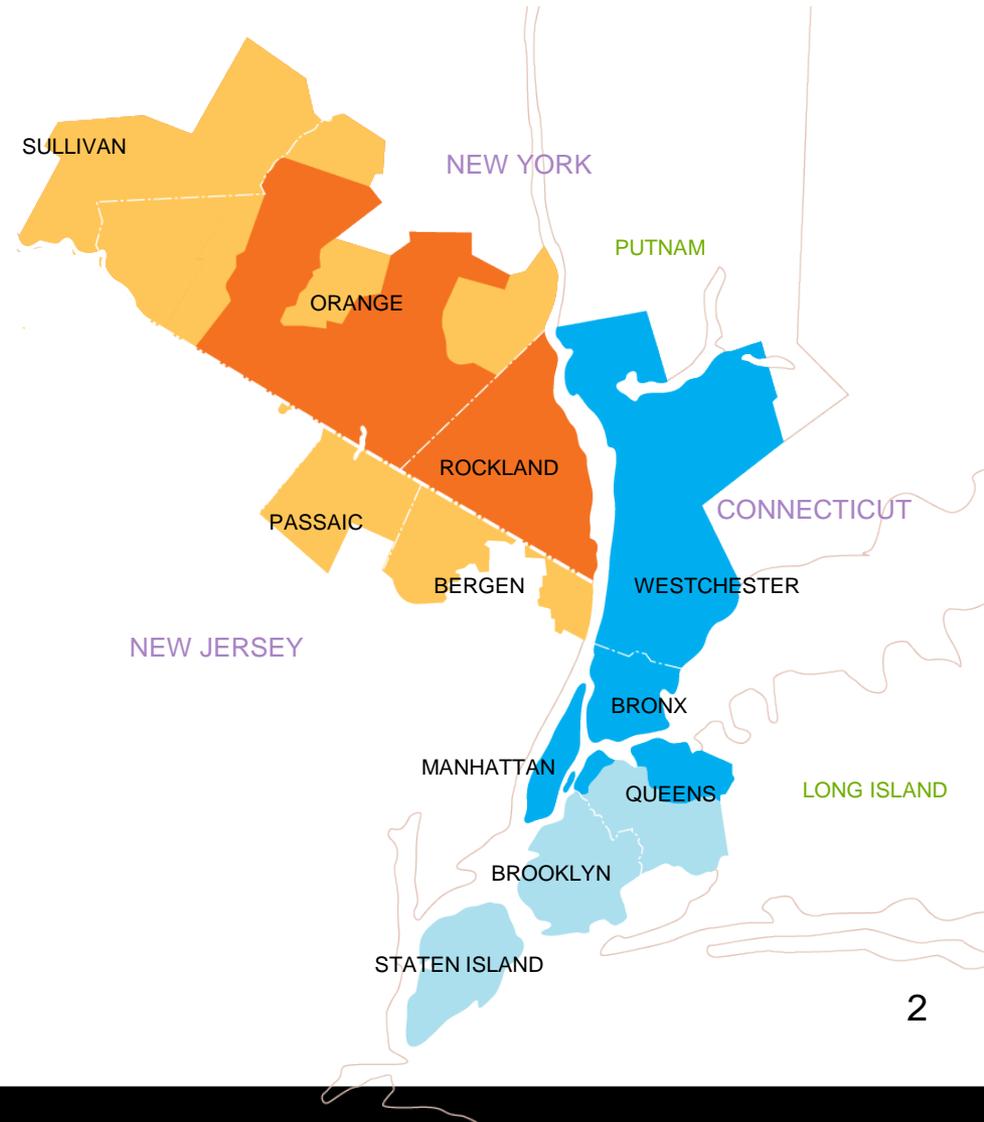
Gas Service Areas



Other Service Areas



- 135,000 customers
- 1,870 miles distribution mains
- 105,000 gas services
- 1 mile transmission main



NATURAL GAS

SAFETY RESILIENCE INNOVATION



Enhancing Safety: A Joint Effort

Natural gas utilities spend \$24 billion annually to help enhance the safety of natural gas distribution and transmission systems.

AGA and its members are dedicated to the continued enhancement of pipeline safety. Safety is a joint effort — a partnership that engages customers, regulators and policymakers at every level. We are committed to proactively collaborating with federal and state regulators, public officials, emergency responders, excavators, consumers, safety advocates and the public to continue improving the industry's longstanding record of providing natural gas service safely and effectively to more than 177 million Americans.



AGA
American Gas
Association

REGULATORY OVERSIGHT

There is significant oversight and regulation focused on the natural gas industry to help ensure public safety.

The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) establishes federal safety standards for pipelines, and PHMSA partners with state pipeline safety agencies on inspections and enforcement of intrastate pipelines. Individual states can regulate intrastate pipeline systems above and beyond federal requirements, and there are hundreds of state-specific pipeline safety regulations currently in place.

AGA supports continuous improvements to the safe delivery of natural gas through:



Information sharing among emergency responders and the public that effectively informs and enhances pipeline safety

Advocating for the effective enforcement of "Call 811"

Collaboration with key stakeholders

R•D

Supporting innovation in research and development for technologies that enhance safety



Conducting forums for the industry that facilitate the sharing of leading practices



Application of Technology In Urban Environments Pose Challenges



Application of Technology In Urban Environments Pose Challenges

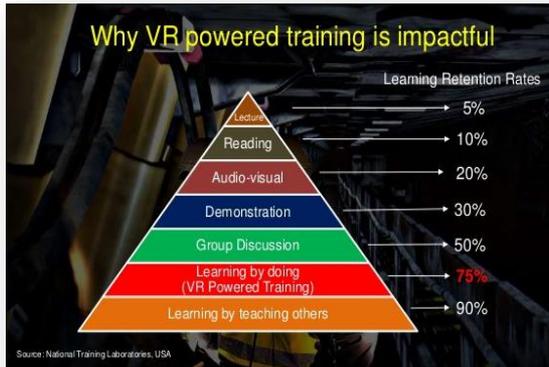
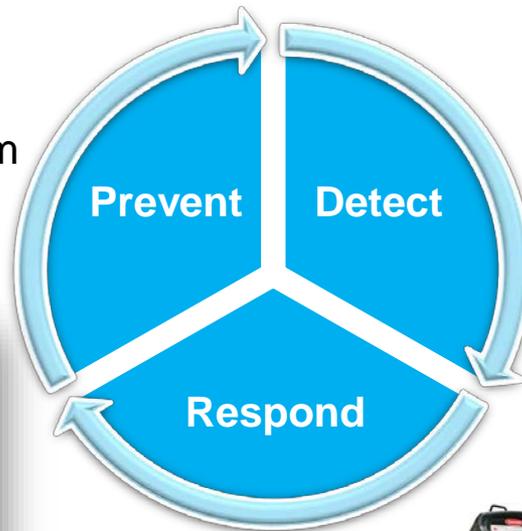


Prevent > Detect > Respond

Distribution company operations and long-term planning are focused on improving gas safety through the effective prevention, detection and response to gas leaks

- Pipeline Safety Management System (API 1173)
- Compliance & Quality
- Damage Prevention
- Main Replacement Program
- Training & Qualification

- Leak Survey Programs and Approach
- AMI Enabled Natural Gas Detectors
- System Sensors: Valve alarms, cathodic protection monitors...

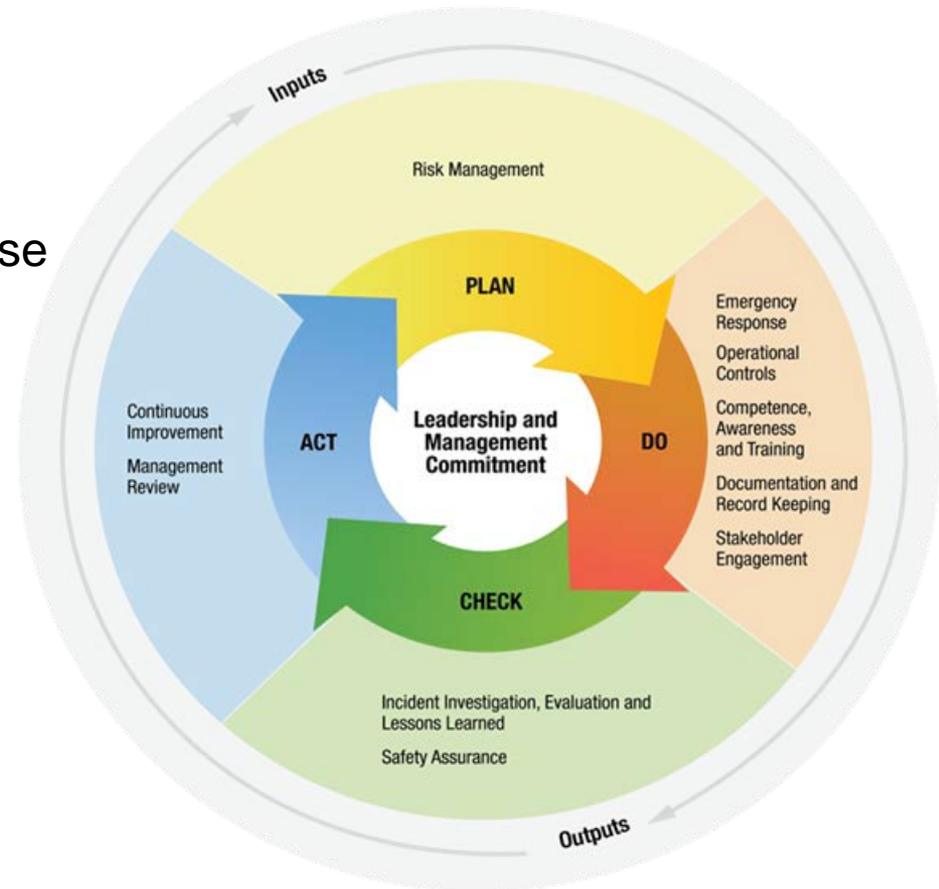


- Leak Response
- Leak Repairs



Prevent > Utilize API RP 1173

- Leadership Management & Commitment
- Risk Management
- Emergency Preparedness & Response
- Operational Controls
- Competence, Awareness, & Training
- Documentation & Record Keeping
- Stakeholder Engagement
- Incident Investigation, Evaluation, & Lessons Learned
- Safety Assurance
- Management Review & Continuous Improvement



Pipeline Safety Management System

Prevent > Mitigations & Controls

Damage Prevention



Mapping Accuracy

- Marker Balls
- Geospatial Mapping



Education & Awareness

- Outreach to local agencies, excavators and customers
- Maintain "Call 811 Before You Dig"



Compliance & QA

- Reporting Contractor Noncompliance
- "On the Mark" Program



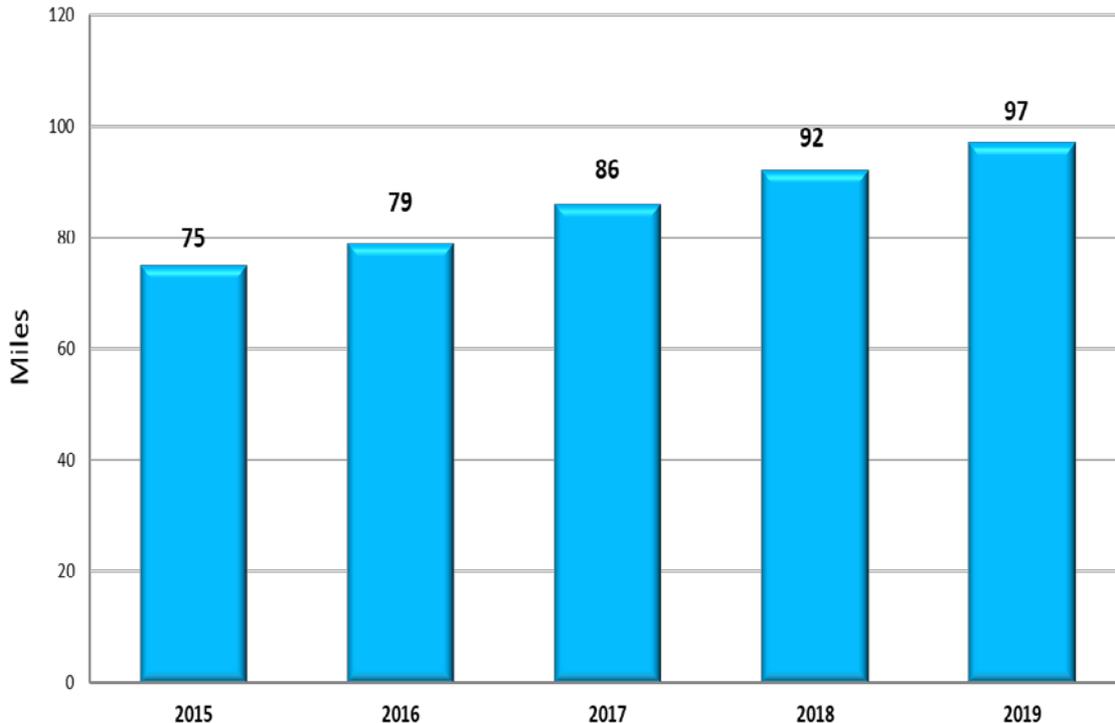
Data Analytics

- Excavator Risk Scores

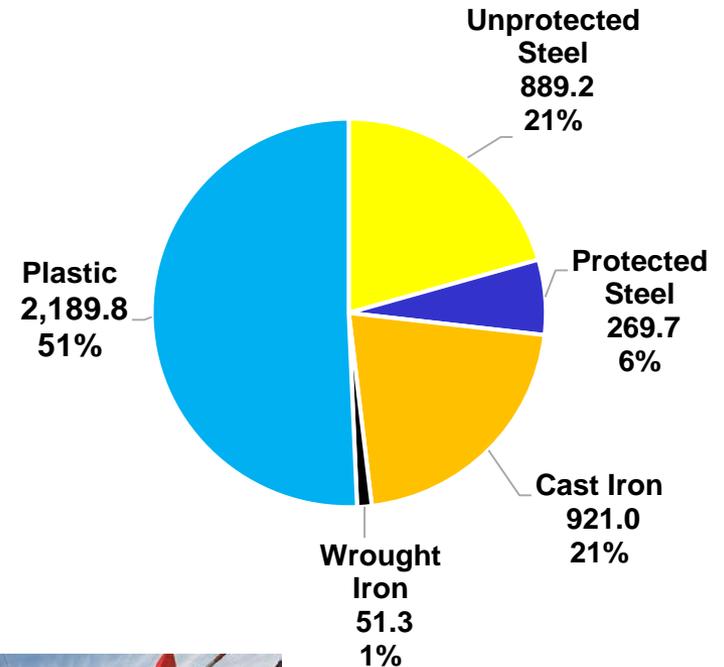


Prevent > Main Replacement Programs

Replacing 90 Miles Per Year at Con Edison thru 2038

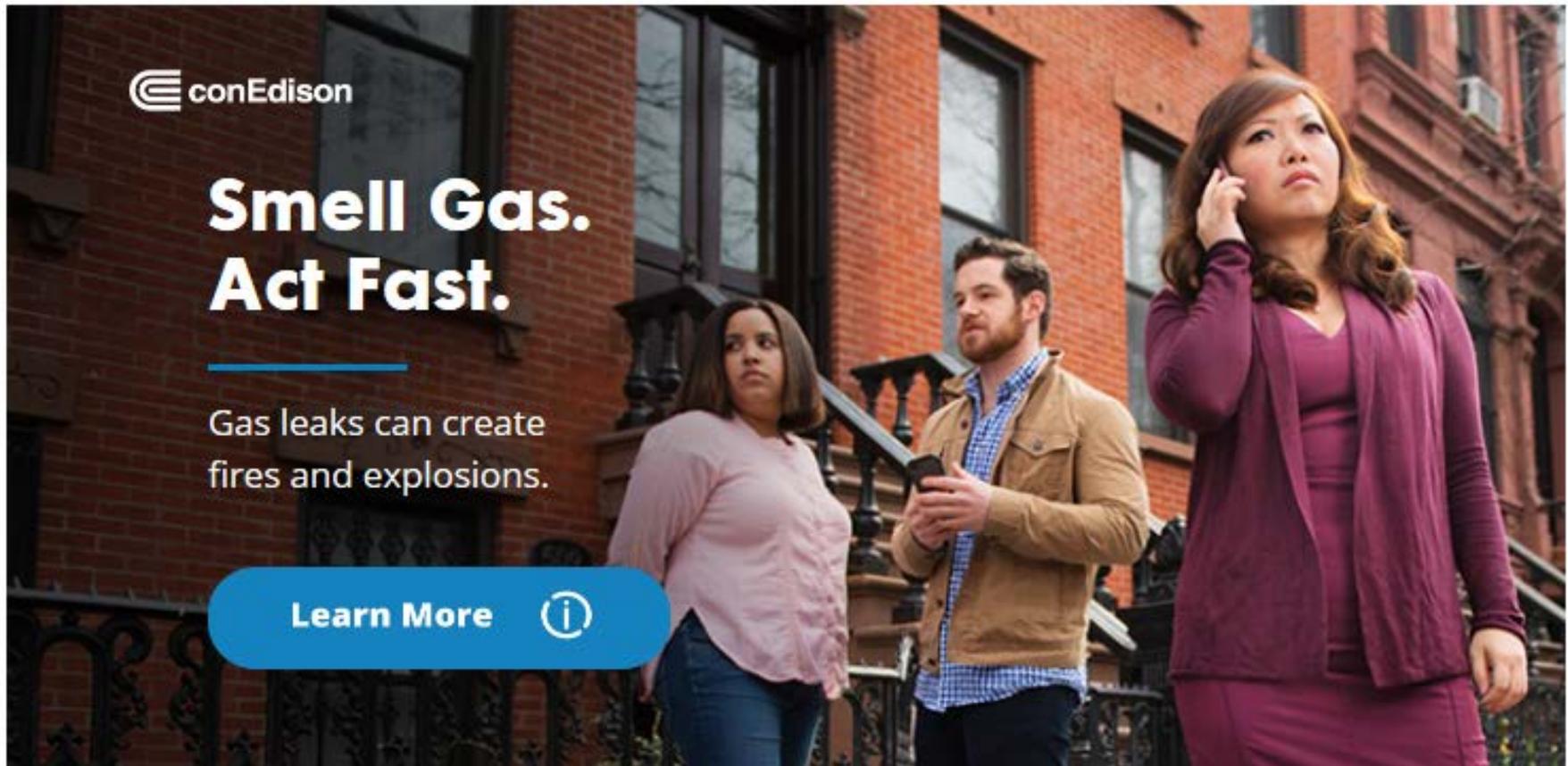


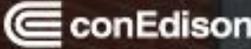
Overall Con Edison Distribution System Material Composition (miles)



Detect > Public Awareness Campaigns

Don't assume someone else will make the call.

A public awareness campaign for gas leaks. The background shows three people on a city street in front of a brick building. A woman in a pink shirt looks concerned, a man in a tan jacket looks at his phone, and a woman in a purple suit talks on her phone. The campaign text is overlaid on the left side.

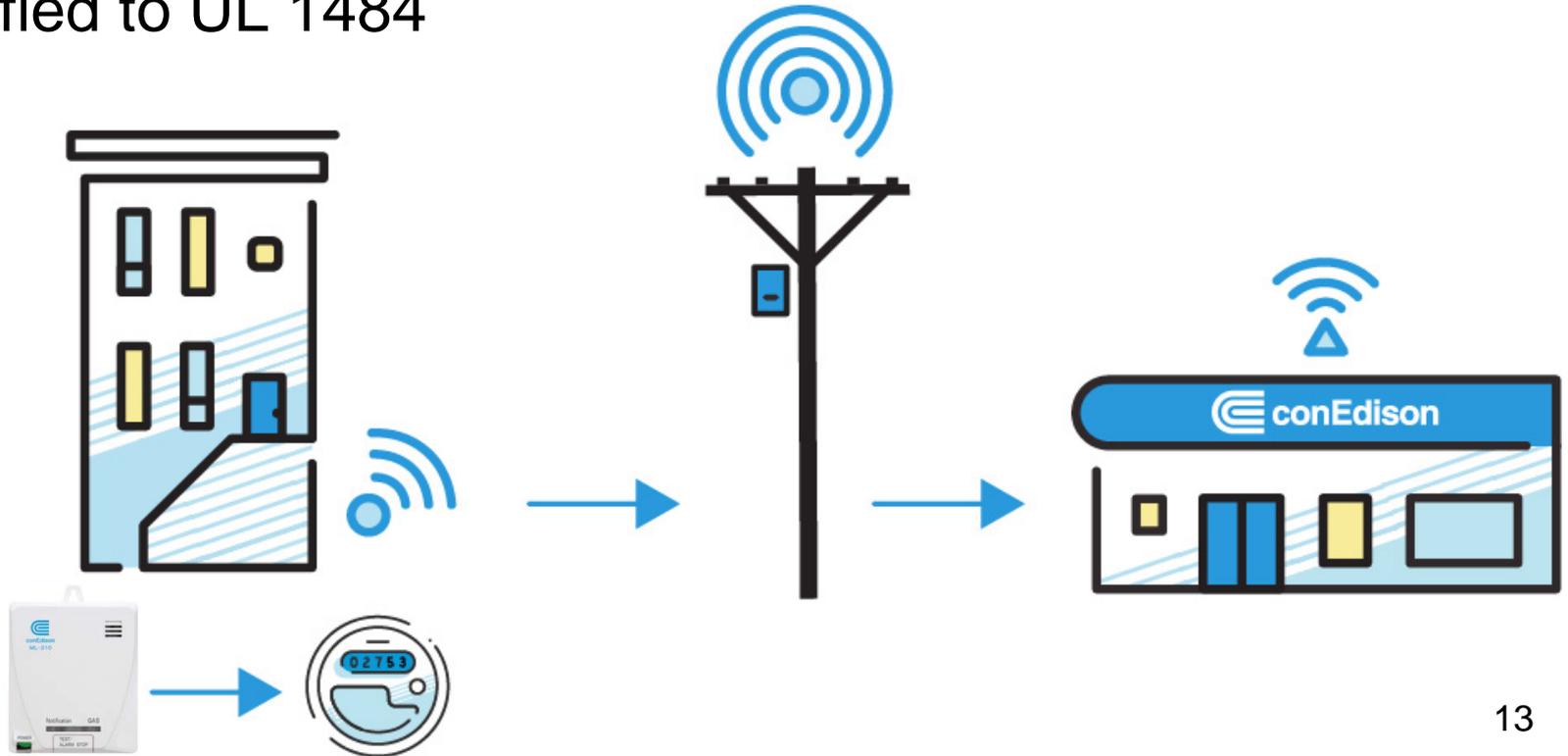
 **Smell Gas.
Act Fast.**

Gas leaks can create fires and explosions.

[Learn More](#) 

Detect > AMI Enabled Natural Gas Detectors

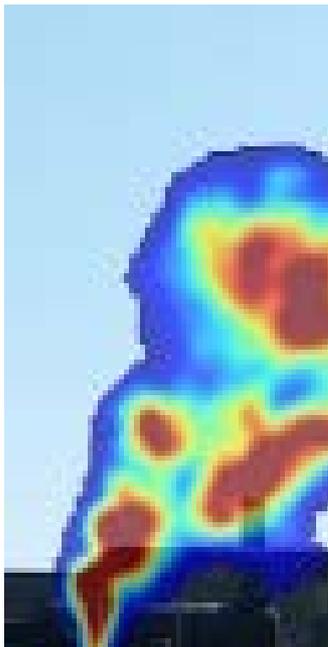
- Company asset
- Battery powered - 5 yrs.
- Certified to UL 1484
- 10% LEL alarm (0.5% gas-in-air) exceeding UL 1484 minimum alarm requirement!



Detect > Methane Sensing

Flexibility to deploy multiple technology SOLUTIONS

- Technology Development
- Technology Evaluation
- Modeling
- Methodologies
- Measurement Studies



Technology

- Sensor Type
- Detection
- Quantification
- Measurement



Platform

- Hand-held
- Vehicle
- UAVs
- Drones
- Aircraft



Asset

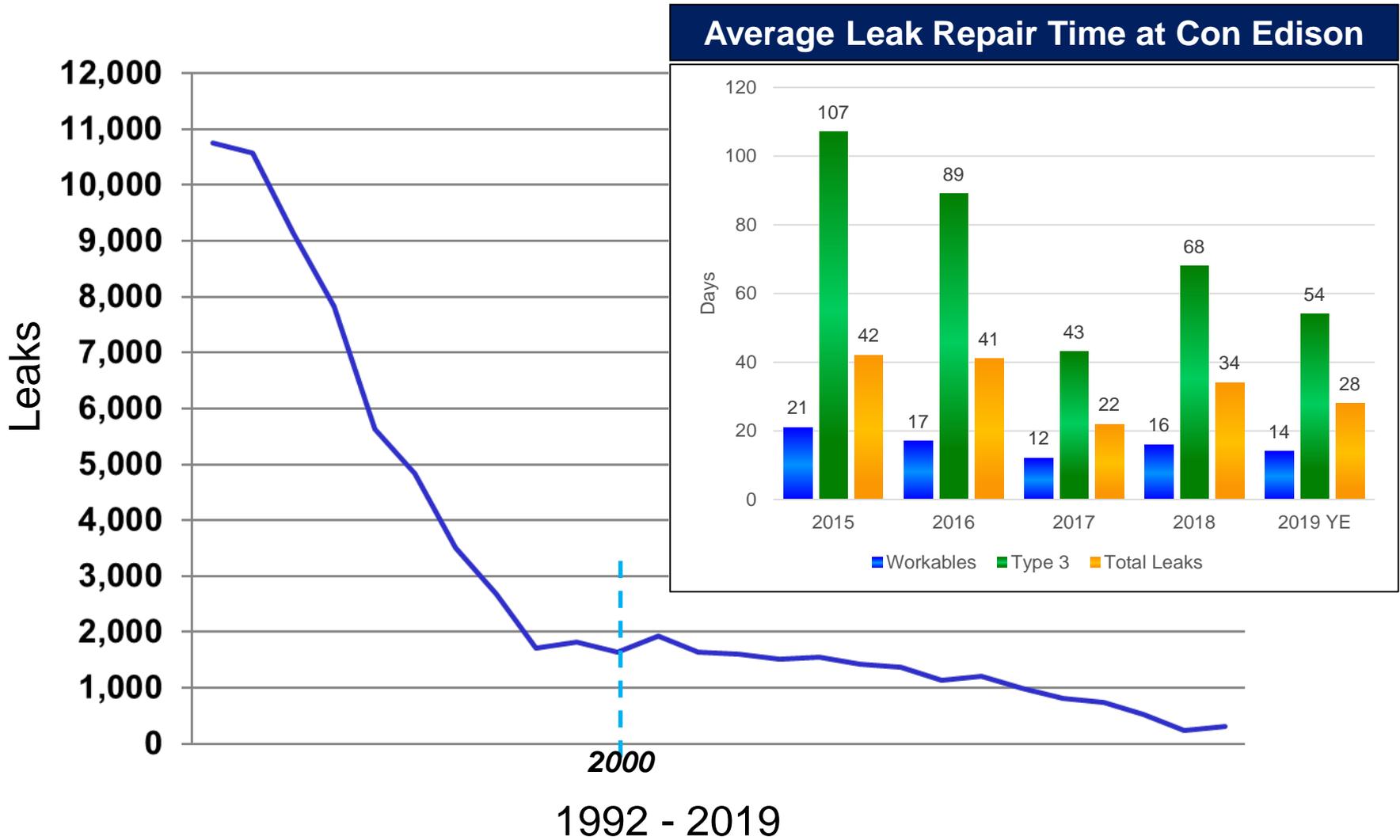
- Pipelines
- M&R Stations
- Compressor Stations
- Meters



Use Case

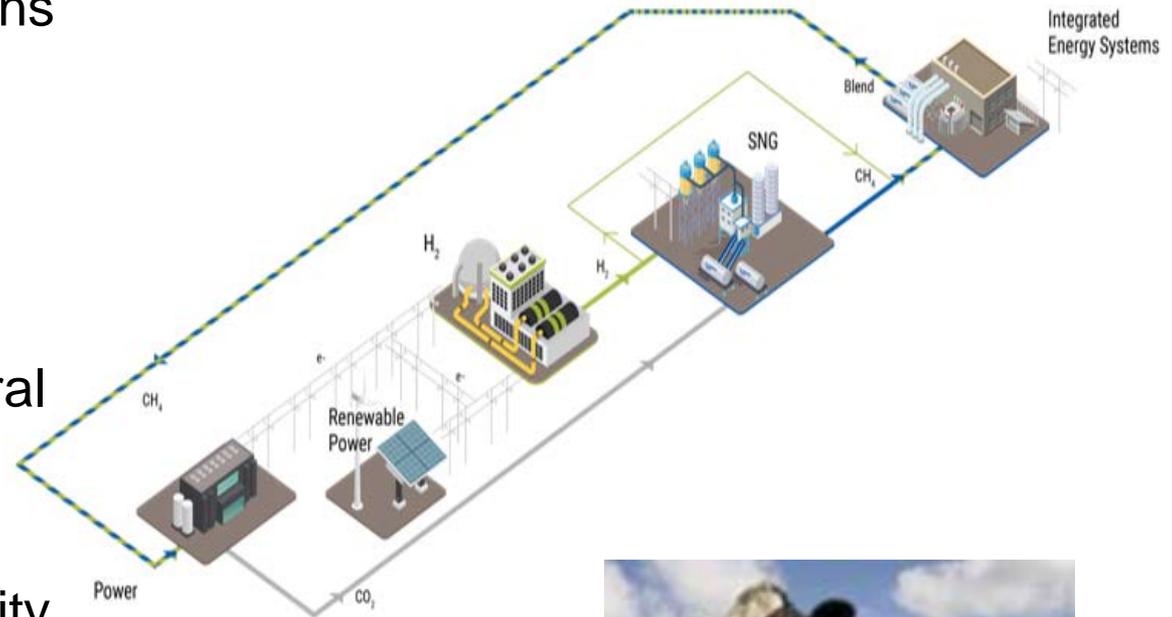
- Leak survey
- Leak Investigation
- Stationary Monitoring
- First Responder

Respond > Reduction of Gas Leak Inventory



Resilience > Smart Solutions for Natural Gas

- Reduce carbon emissions
- Use energy efficiently
- Manage peak demand
- Mitigate supply risks
- Enable renewable natural gas and hydrogen blending
- Enhance system flexibility
- Always consider the overall cost impact to customers!



Innovation > System of the Future

- Built to Last!
 - Fabricated of material that lasts longer than cast iron!
 - Installed with processes that are beyond pressure test quality, including Non Destructive Evaluation (NDE) that ensures safety, reliability, and longevity
- Work Smarter!
 - Tracking, traceable and verifiable materials
 - Sensor equipped, easy to monitor, easy to respond
 - Data analysis driven decision making
 - Condition and risk based inspection cycles and mitigation
- Ready for the Future!
 - Systems adaptable to new sources of fuel and much lower carbon emission standards
- Affordable and Cost Effective!

Project Goals and Objectives Need to be Realistic

