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# Building a 21<sup>st</sup> Century Natural Gas Delivery System

Opportunities for enhanced research and development





# The American Gas Association

- The American Gas Association, founded in 1918, represents more than **200 local energy companies** that deliver clean natural gas throughout the United States.
- AGA member companies serve more than 65 million residential, commercial and industrial customers – **92 percent** of the 71 million natural gas customers throughout the United States.



# About APGA

*The voice and choice of public gas*

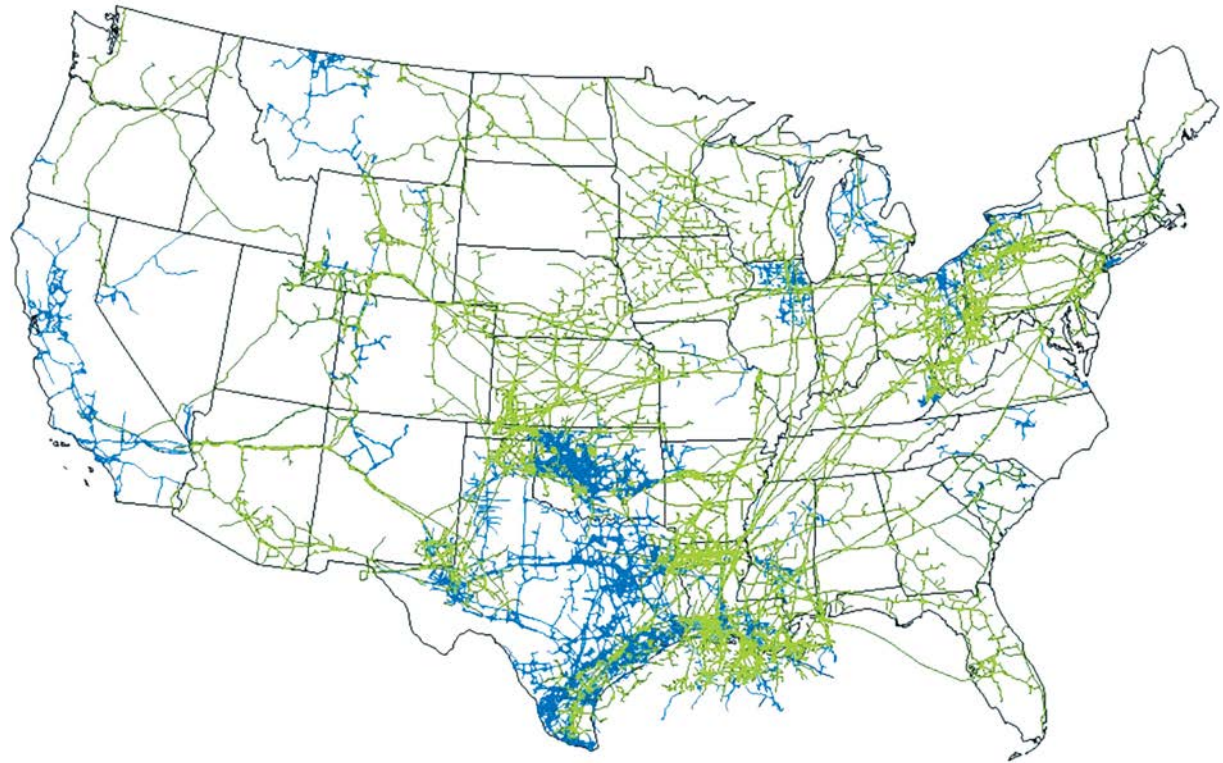
APGA is the only national trade organization representing America's publicly owned natural gas local distribution companies (LDCs).

- 1,000 public gas utilities in 37 states
- About 5,000,000 customers nationwide
- 120,000 miles of main
- 21,000 public gas employees
- System size ranges from Philadelphia with 500,000+ meters to Freedom, Oklahoma with 12 meters

# Transmission Pipelines Interstate & Intrastate

Variations in  
infrastructure  
results in different  
challenges.

- ***Pace of replacement projects***
- ***Geographic Approach to Replacement***
- ***Coordinated planning with both Interstate Transmission Operators and Municipalities***



- Interstate Pipelines
- Intrastate Pipelines



# Research Opportunities

Natural gas utilities *proactively spend* more than \$19 billion annually to help enhance the safety of natural gas distribution and transmission systems and to upgrade systems and expand service.

Natural gas operators have invested significant resources to enhance system safety and reliability, but *addressing key areas* will help further our goal of further enhancing the safe and reliable delivery of natural gas.

The process life-cycle for research requires that investment occur on *a continuous and long-term basis*.



## Success of Cost Effective Replacement Technologies:

- Live insertions of plastic distribution pipelines
- Split and Pull Technology
- In-Place Pipe Rehabilitation



# Current Challenges on **Intrastate Transmission**

## *Piggability of Pipelines*

- Addressing **Cased Crossings** when not able to pig
- Improved **ILI assessment** techniques – effective weld and long-seam assessment; ability to detect and characterize cracks

## *Hydrotesting of In-Service Pipelines*

- How conduct tests for **single feed** pipelines?
- Alternatives to hydrotesting
- Seasonal load constraints

## *Industry practices to meet Proposed IVP Regulations*

- Identification and confidence in pipe characteristics without cutting coupons

# Current Challenges facing Damage Prevention

- Prevention via improved maps, records, line locating accuracy and look ahead technology for trenchless
- Detection *before* the damage occurs
- Detection *when* the damage occurs
- Real-time situational assessment *after* the damage occurs
- Development of emergency response tools, techniques and systems



# Current Challenges in Reducing Emissions

## Enhanced Pipeline Replacement

- More efficient replacement of pipelines no longer considered fit for service
- Addressing vintage materials
  - Cast iron liners
  - Solutions for bare steel and other materials?
- More cost-effective replacement and rehabilitation techniques
- Improved methodologies and models to quantify emissions profiles and reductions





Challenges facing both

# Distribution and Transmission

- **Big Data**

Managing, analyzing and deriving benefits from more information without creating data overload

- **Interactive Threats**

Identifying, addressing and inclusion of interactive threats in advanced risk models

- **Records Management**

- **Tracking and Traceability of Materials**

- **Cyber Security**



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