



Distribution Safety & Integrity R&D

-
- > Ron Edelstein
 - > June 7, 2016

 - > NECPUC Meeting

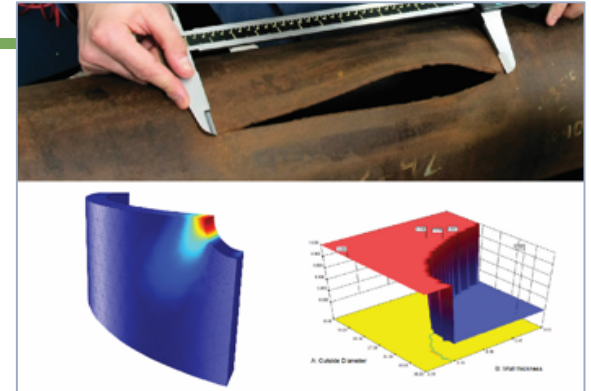
GTI Energy Delivery Programs



Inspection and Verification



Intelligent Utilities



Risk and Decision Analysis



Construction Techniques

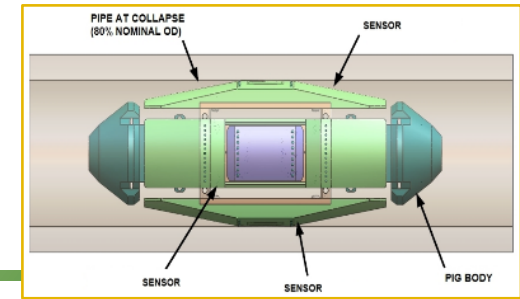


Methane Emissions and Detection



Grid Resilience

EMAT Sensor for Small Diameter and Unpiggable Pipes; Prototype and Testing (U.S. DOT / OTD)



> Objective

- Starting with Phase 1 bench-scale unit, Phase 2 will build and test an Electro-Magnetic Acoustic Transducer (EMAT) sensor beta-prototype.
- Detect and quantify wall loss and longitudinal cracks in metallic small-diameter and unpiggable pipes containing fittings and other restricting features.
- The initial target pipe diameter is 8 inches, however the commercial goal is to build tools that can navigate in 6- to 12-inch pipes.

> Focus

- Establish a pipe defect/flaws test matrix and prepare pipe test samples with characterized cracks and flaws.
- Design and build the receiver and transmitter units and data management system.
- Integration and lab testing of the prototype.
- Field testing of the prototype.

Characterization and Fitness for Service of Corroded Cast Iron Pipe (U.S. DOT)



> Objective

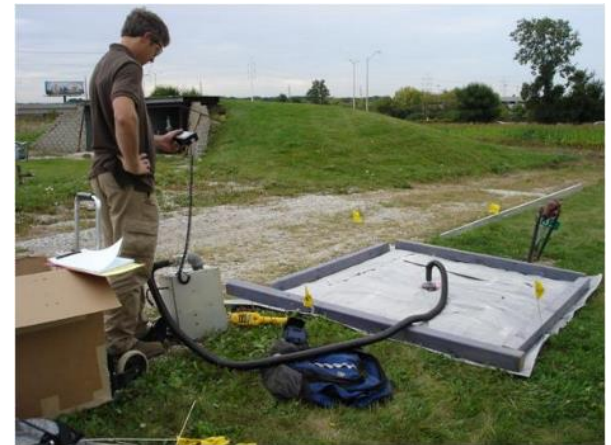
- Provide a Fitness-For-Service (FFS) model and method for operators to characterize and grade graphitic corrosion defects on cast iron natural gas pipes. This will help operators make monitoring, repair, and replacement decisions, as well as prioritize accelerated replacement decisions related to cast iron mains and services.
- Summarize and categorize the required input parameters to the FFS model related to cast iron material, graphitic corrosion geometry and characteristics, and operational environment.
- Validate the FFS model by comparing its output to a statistically analyzed set of historical cast iron failure data.
- Provide a physical testing program to fully validate the FFS model.

> Focus

- FFS model and method for Cast Iron Pipe

Improving Methane Emission Estimates for Distribution Pipe (CARB / OTD)

- > National and state specific (CA via CARB) emission factors are being developed
- > Initially focused on plastic pipe
- > Method is based on leak measurements made at the surface using Hi-Flow Sampler
- > Sought input and engaged with various stakeholders: AGA, EPA, EDF, NIST
- > Also revising emission factors for cast iron and unprotected steel as well as activity data
- > EPA OIG encourages use of revised emission factors
- > OTD funding: \$1M+
- > CARB funding: \$230k



Revised Plastic Pipe EF	3.72 scf/leak-hr
GRI/EPA 1996 Plastic Pipe EF	12.45 scf/leak-hr

Breakaway Fittings for MSA's (OTD)

Objective:

- > To develop a working breakaway disconnect / shutoff fitting for meter set assemblies (MSA) and other aboveground gas systems.

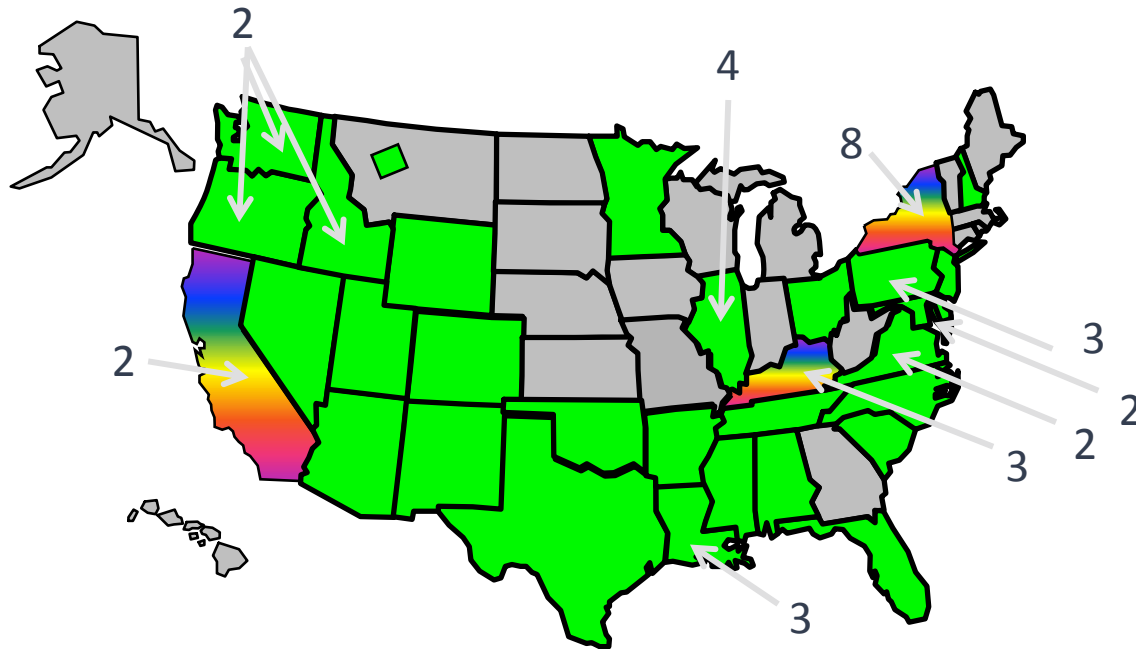
Focus

- > Reduce the risk from vehicle collision or ice/snow falling from a building roof.



Delta R&D Program Map

– Approved States: 30 but Need New England



- ◆ Company and Regulatory Approval (# of companies)
- ◆ Pending filings + approvals (NY, CA, KY), DC (Filing)