Acoustic Methods to Detect Cross Bores

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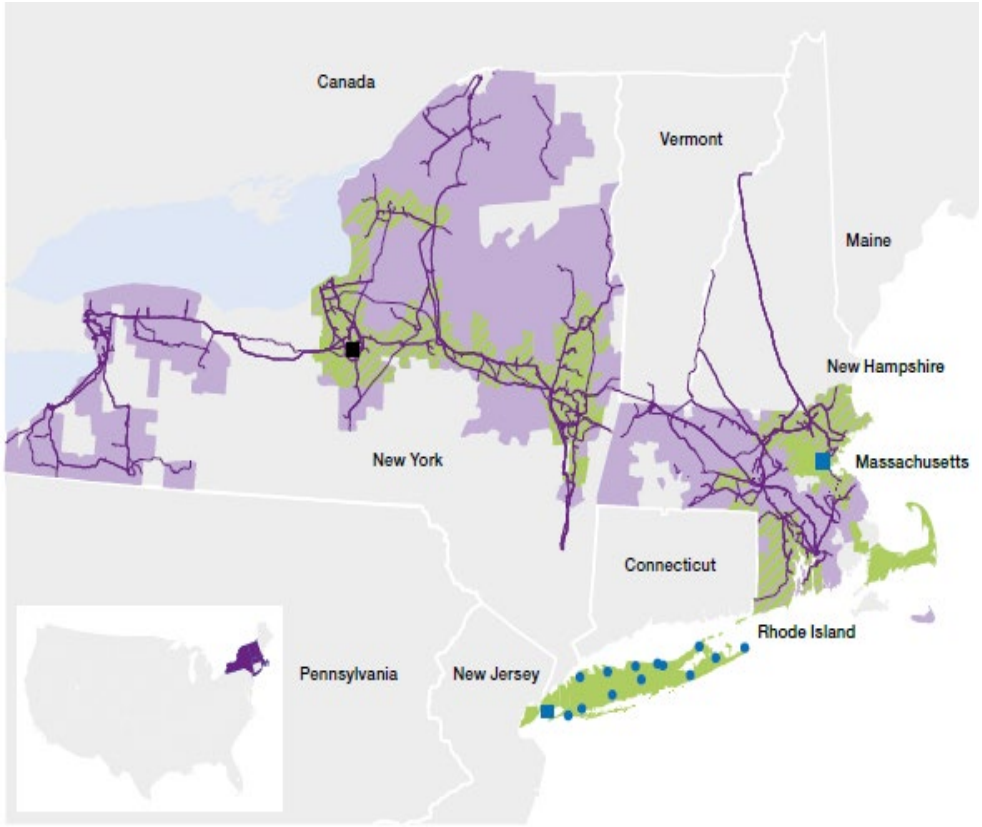
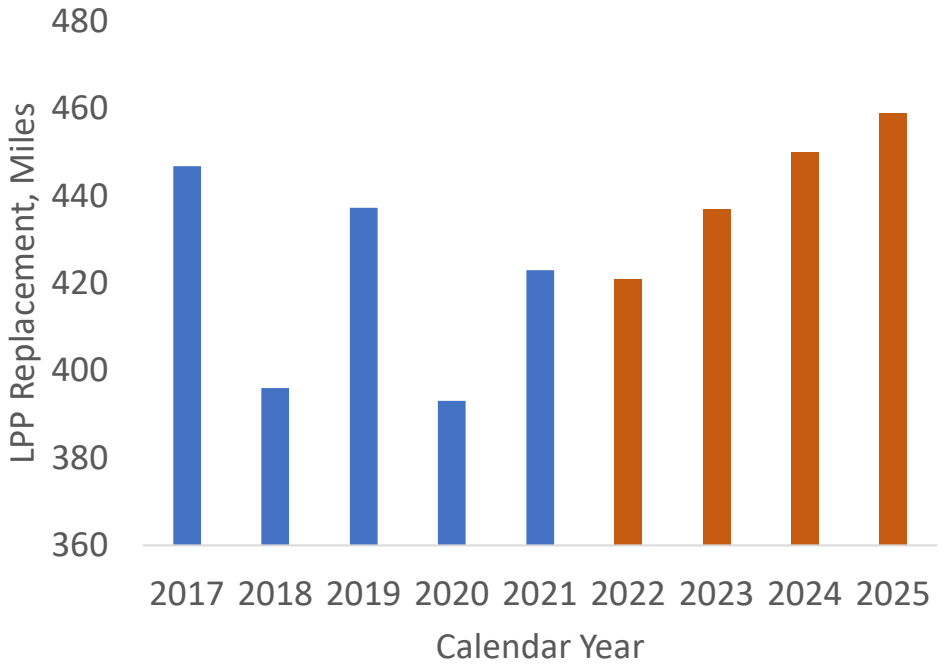
nationalgrid

National Grid is one of the world's largest investor-owned utilities, with more than 7 million gas and electric U.S. customers and 22,000 employees in the U.S. and U.K.



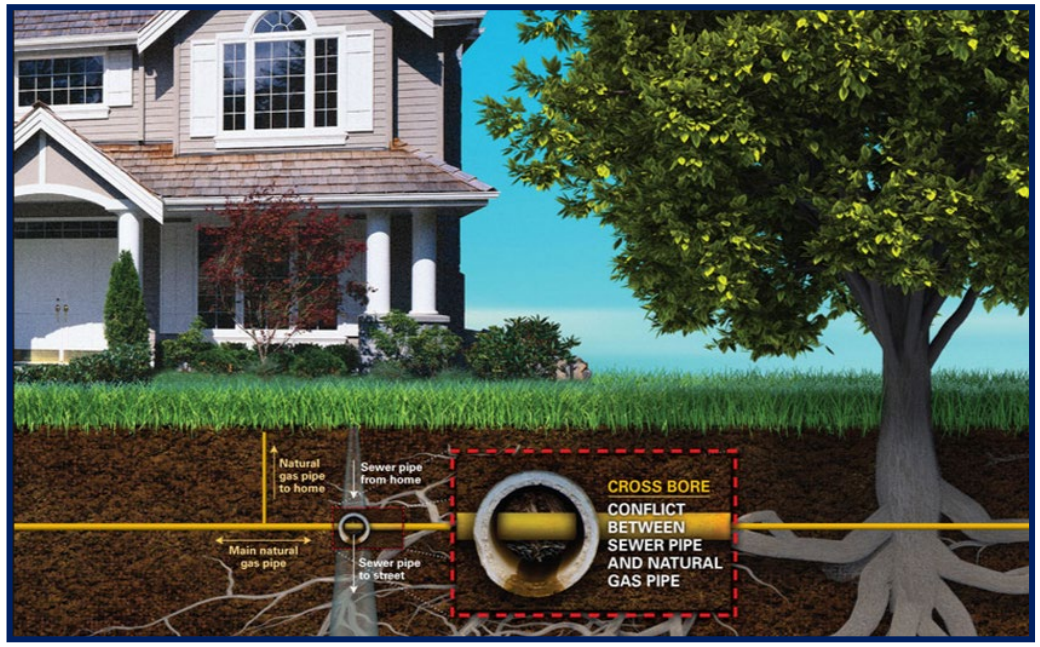
- 3.6 million gas customers
- 35,000 miles of gas distribution pipeline; 490 miles of gas transmission pipeline
- 3.4 million electric customers
- Electricity transmission network of 8,800 miles of overhead line; 100 miles of underground cable; 380 transmission substations

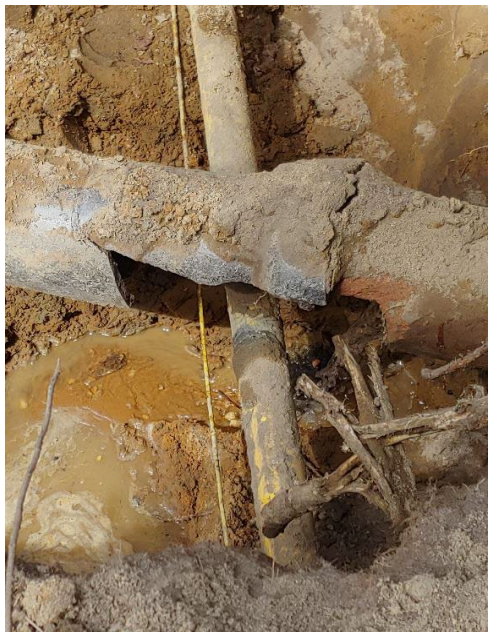


Our commitment to customers and the future of energy

Crossbore?

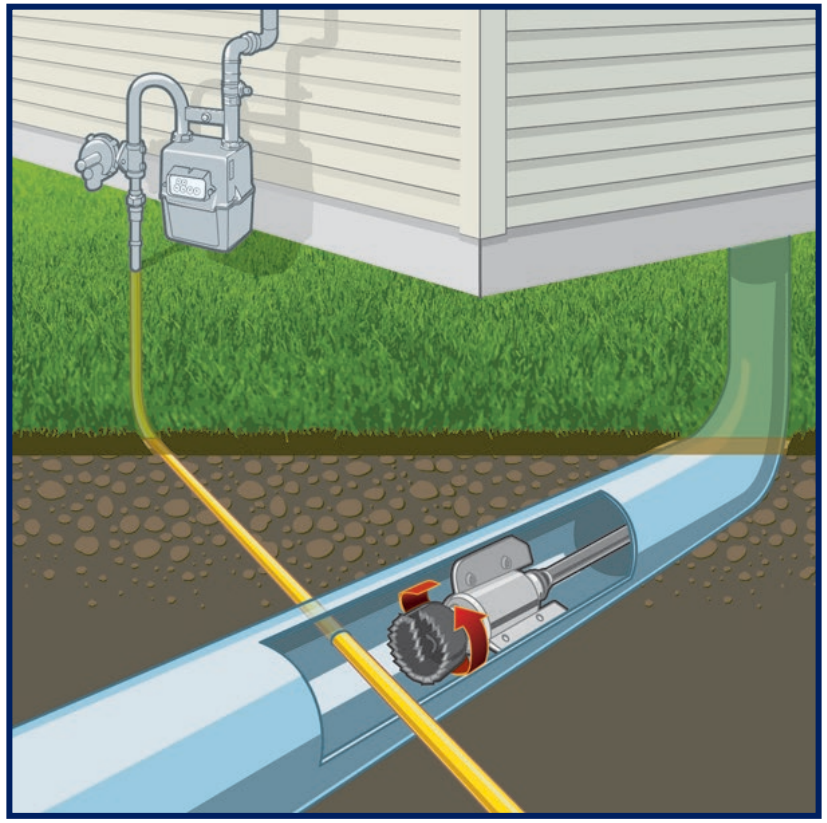
A cross bore is an occurrence when a gas pipe is drilled through an existing underground utility unknowingly, specifically sewer laterals.





Consequences of Crossbore?

Can cause backup in sewer laterals and could damage gas pipe during cleaning process that will cause gas to enter in the house.



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Detection Acoustic Detection

ULC ROBOTICS

Easy to introduce into pipeline environment

Sound travels well in pipelines and over long distances

Gets past debris and obstacles in pipelines

Can transfer between Intersecting pipelines

Introduce the Acoustic Signal into the Sewer System

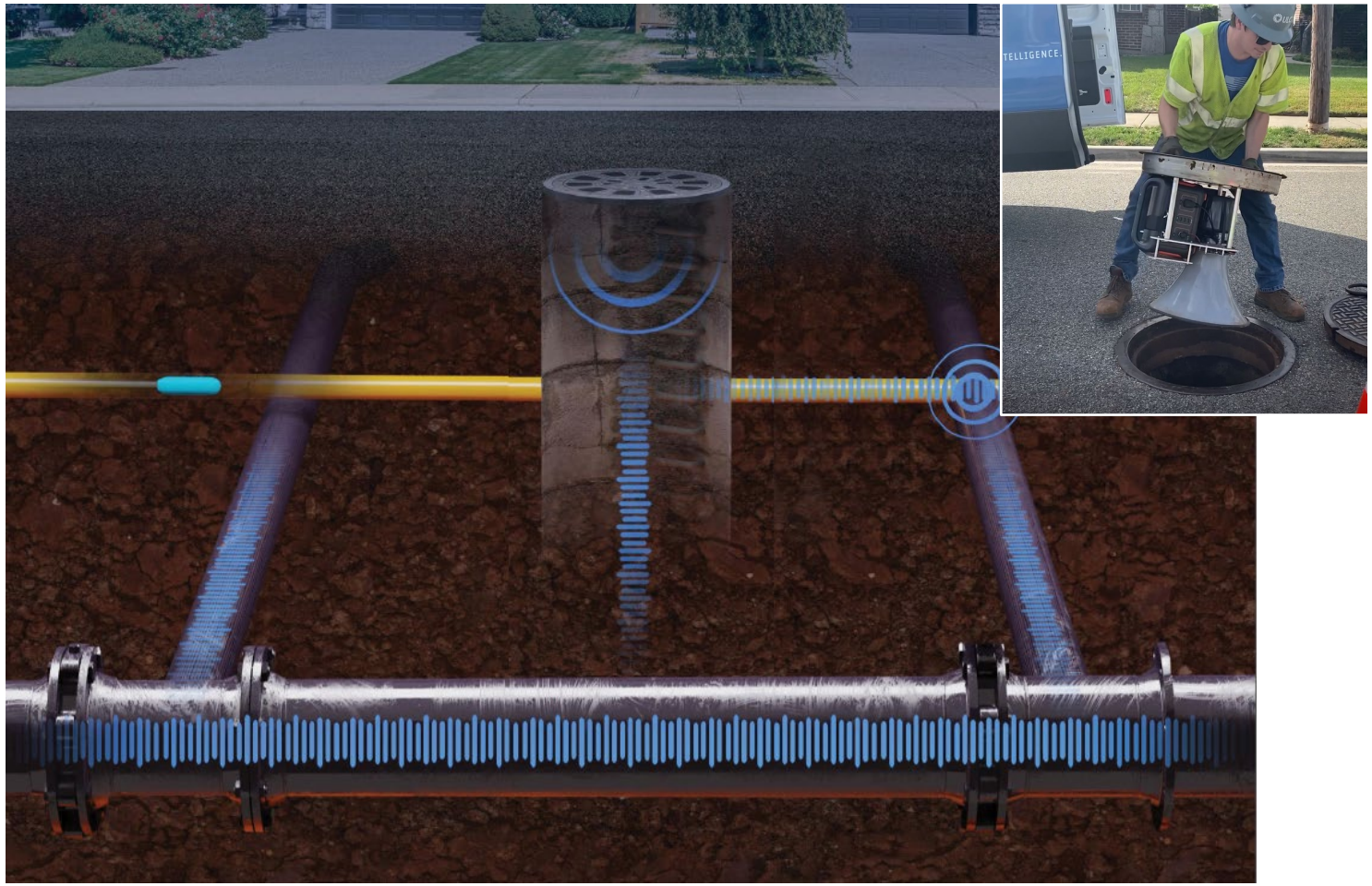
Deploy the Receiver into the Gas Main to Listen for Acoustic Signal

ULC Technologies provides technology development, contracted services and innovative products that reduces operations and maintenance costs while meeting the increasingly complex demands of regulators, energy customers and the general public.

How it Works?

1. Acoustic Pattern Introduced

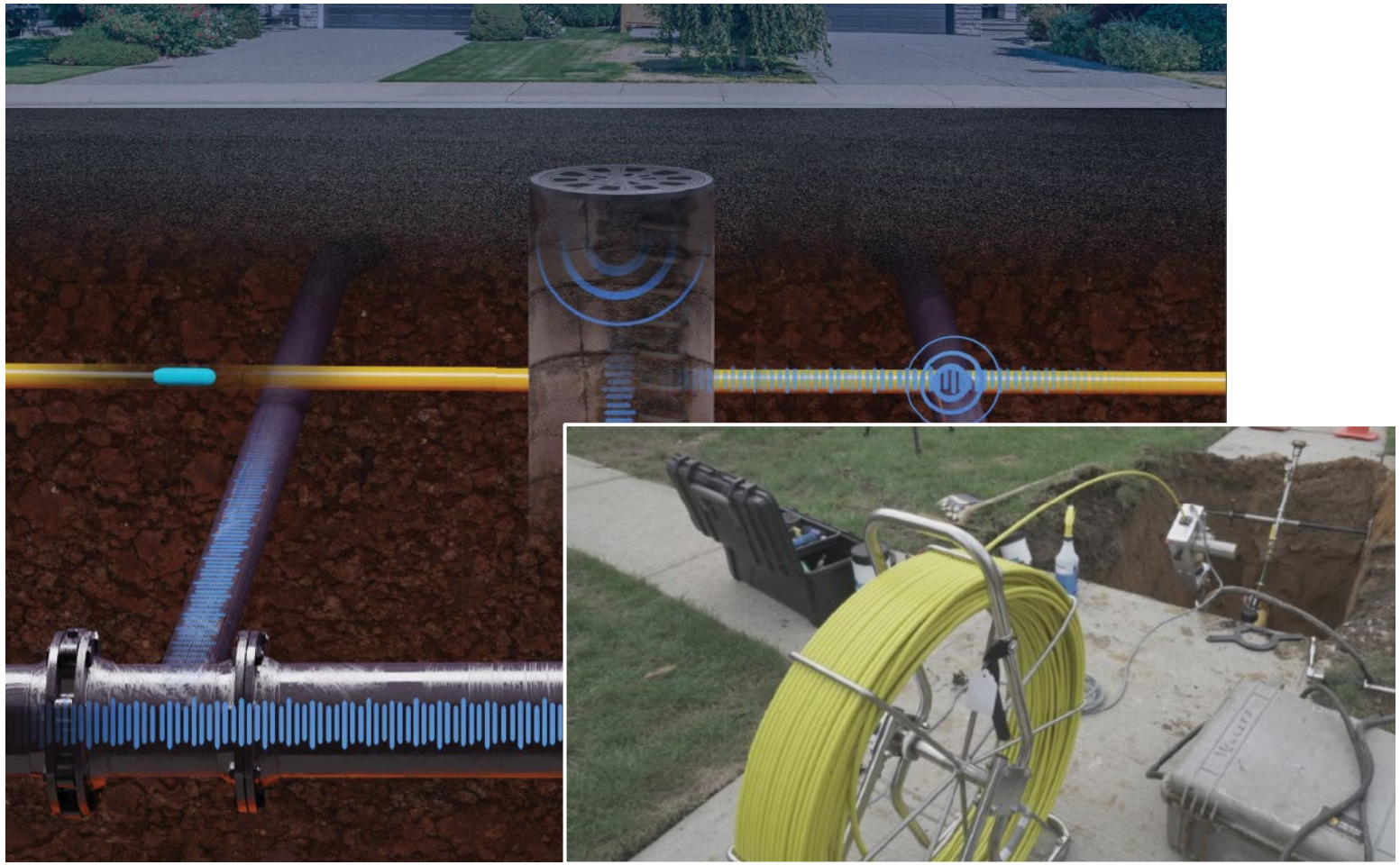
- Acoustic transmitters installed under manhole covers
  - Minimal time
  - Reduced lane closure
- Acoustic pattern travels hundreds of feet
- Transmitter fits under manhole cover to minimize time in street



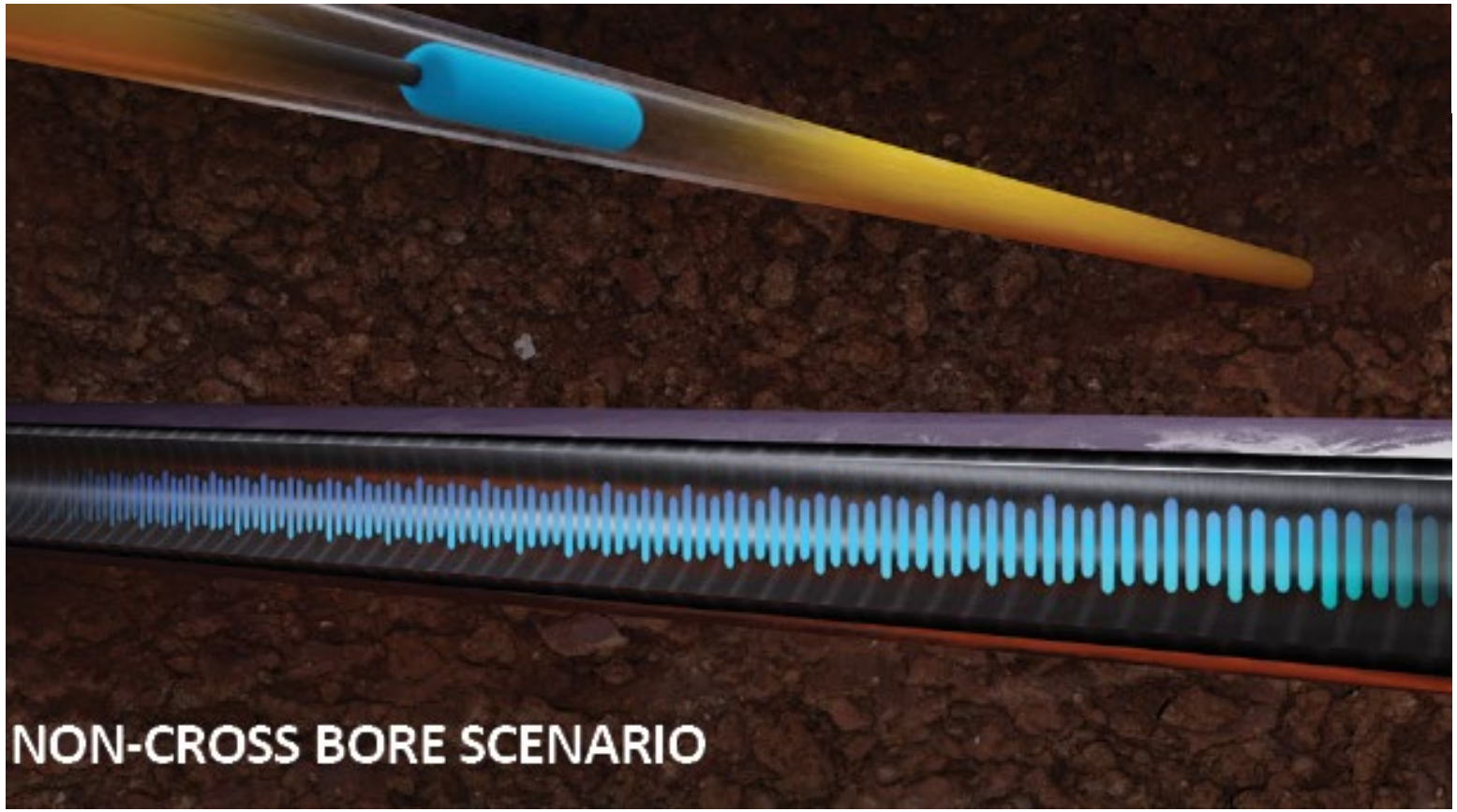
How it Works?

2. ULC Sensor Deployed into the Gas Main or Service

- Acoustic receiver listens for the acoustic pattern
  - New HDD installations
  - Legacy Inspections
- Sensor picks up crossbore presence
- Sensor is fed through the pipe using a motorized cable feeder
  - Push > Stop > Listen > Repeat

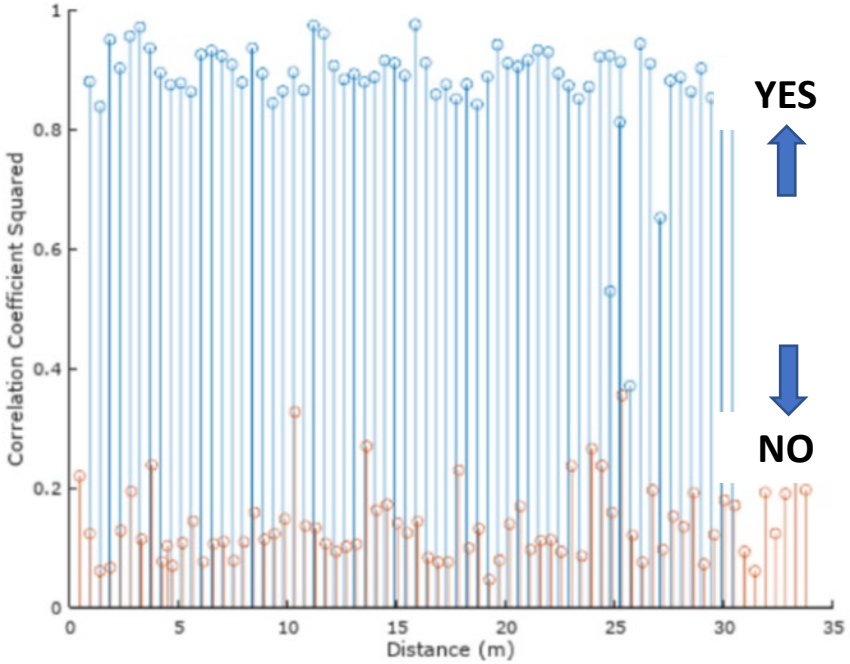


Detection: Sound Match Graph

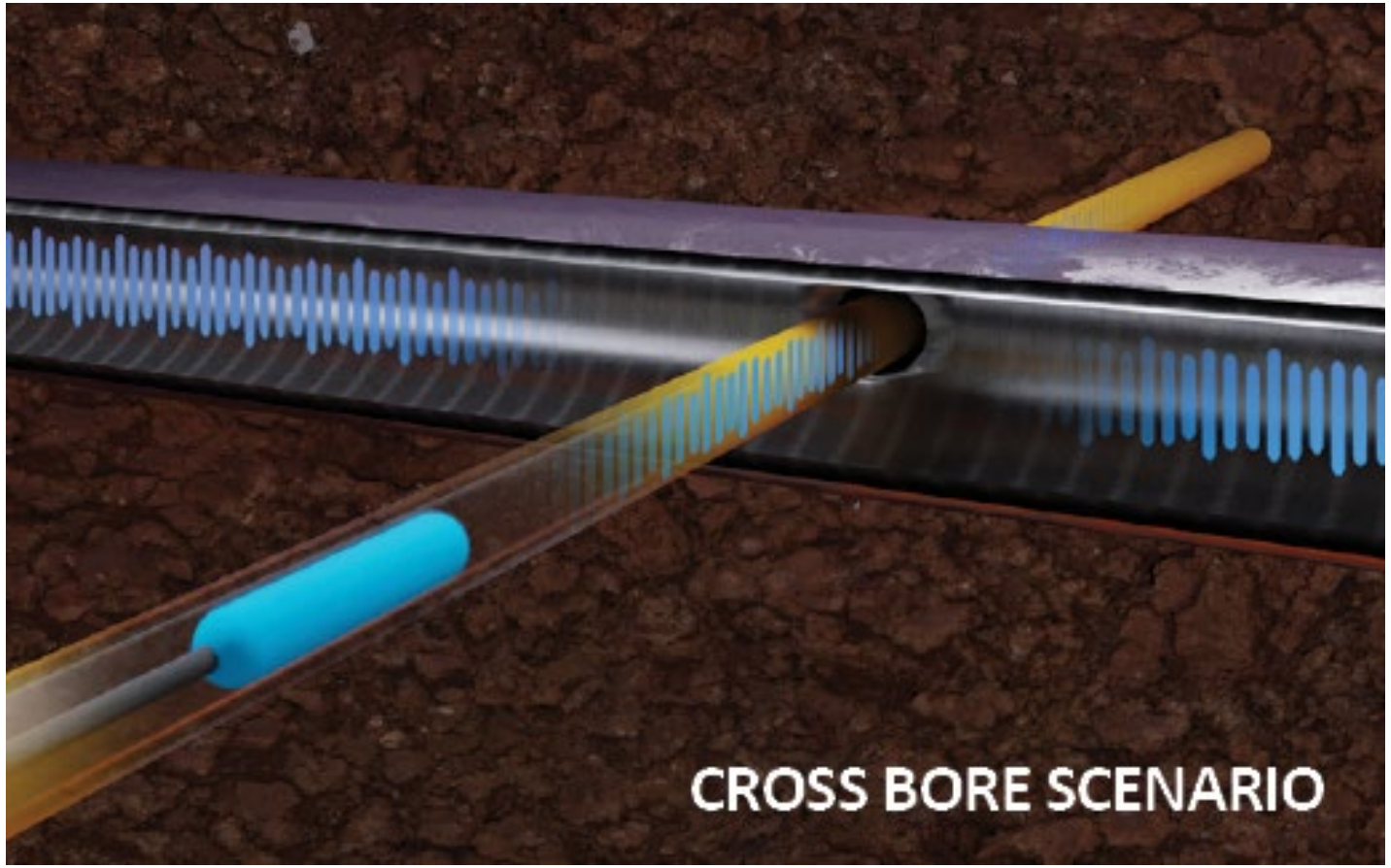


SOUND MATCH GRAPH

DO WE HEAR OUR ACOUSTIC PATTERN?

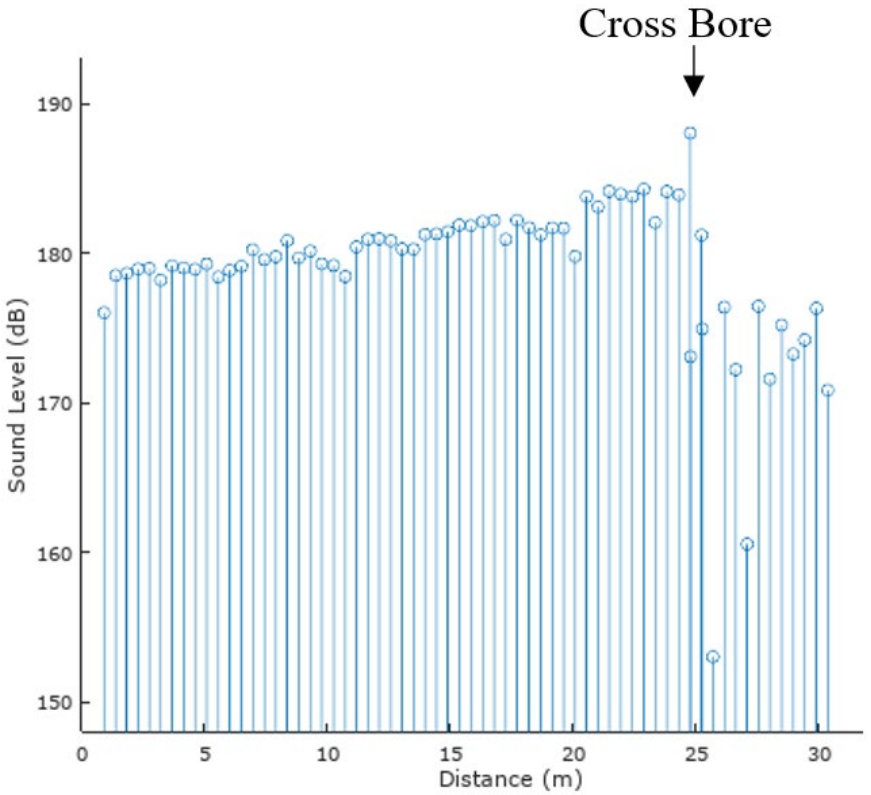


Detection: Sound Level Graph



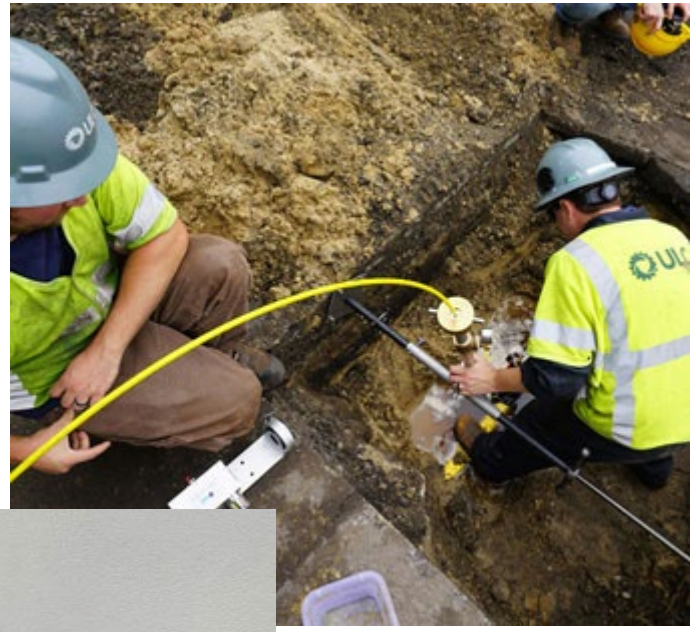
SOUND LEVEL GRAPH

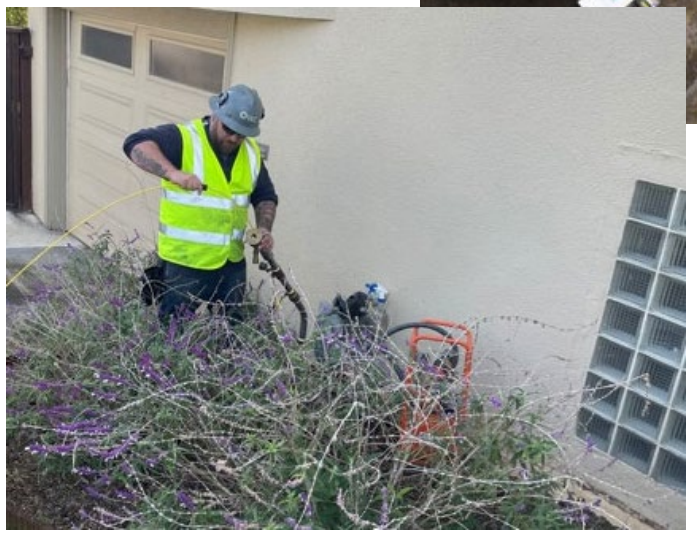
WHERE IS THE SOUND LOUDEST?



Capabilities

- Sensors developed for:
  - New construction
  - Legacy programs (live)
- Gas Main Sizes: 2” – 8” PE gas mains
  - Illuminated video camera for visual inspection
- Services: ½” – 2” services
  - Enter at the customer meter
- Integrated sonde for above ground locating and pipe mapping





Thank you

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