

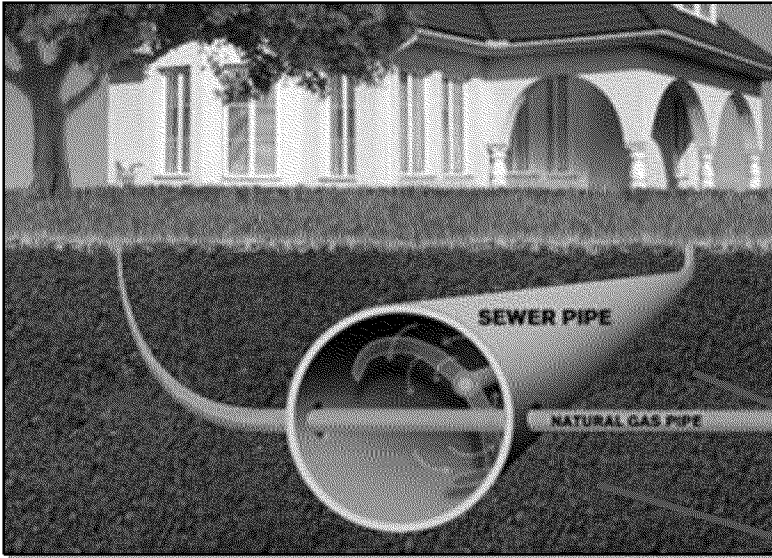
# Cross Bores Inspections

**Distribution Integrity Management**

May, 2014

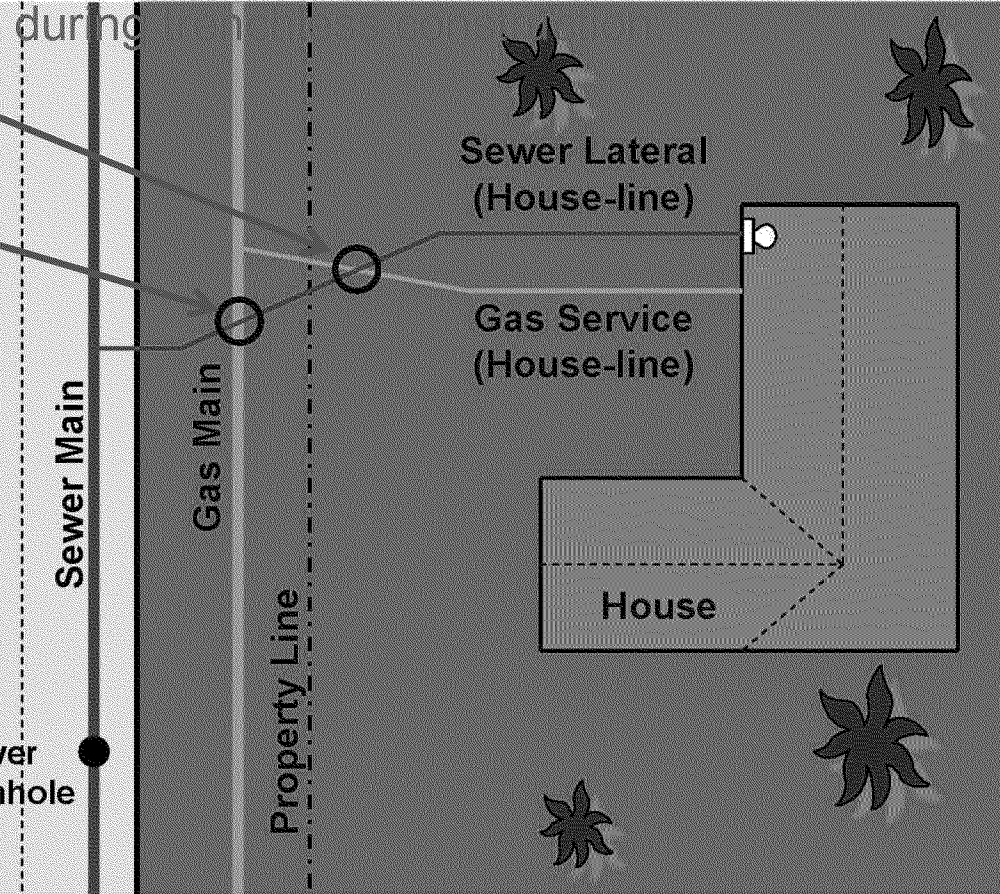


# What is a Cross Bore?



## What is a cross bore?

A cross bore is the inadvertent placement of a gas main or service through a sewer line. Sewer cross bores typically occur



## What can happen as a result of a cross bore?

The sewer line may become blocked and need to be cleaned by a plumber or the building owner with mechanical cleaning tools. This may cause the gas line to be cut which could cause a release of gas.



# Cross Bores – An Industry Issue

**1976: First recorded instance of a Cross Bore**

- Kenosha Wisconsin
- Fire, explosion, four injuries, one home destroyed and two adjacent homes damaged
- Investigated by NTSB

**2004: Phoenix Arizona**

- Fire, explosion, four injuries one home destroyed

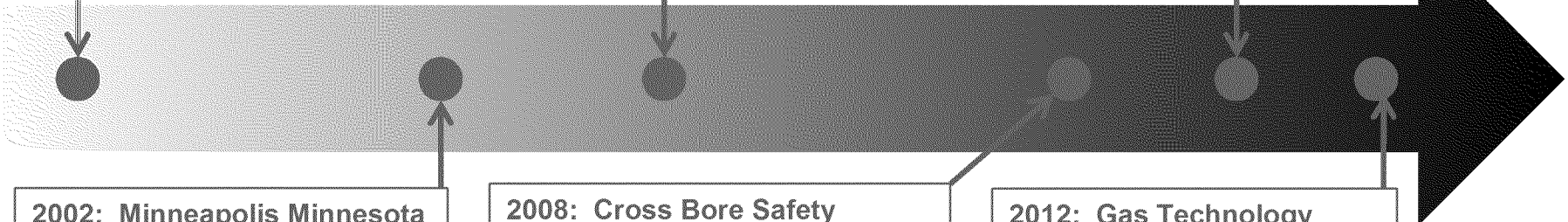
**New York State**

- Fire, explosion, one fatality, one home destroyed

**2010: St. Paul Minnesota**

- Fire, explosion, one injury, one home destroyed

**AGA publishes report on Gas Pipelines and Unmarked Sewer Lines.**



**2002: Minneapolis Minnesota**

- Fire, explosion and two homes destroyed

**2008: Cross Bore Safety Association** formed, a non-profit organization of construction, pipe manufacturer, inspectors and utility professionals

**2012: Gas Technology Institute (GTI) publishes report on Cross-Bores Best Practice and Outreach Program**

Best practices focus on:

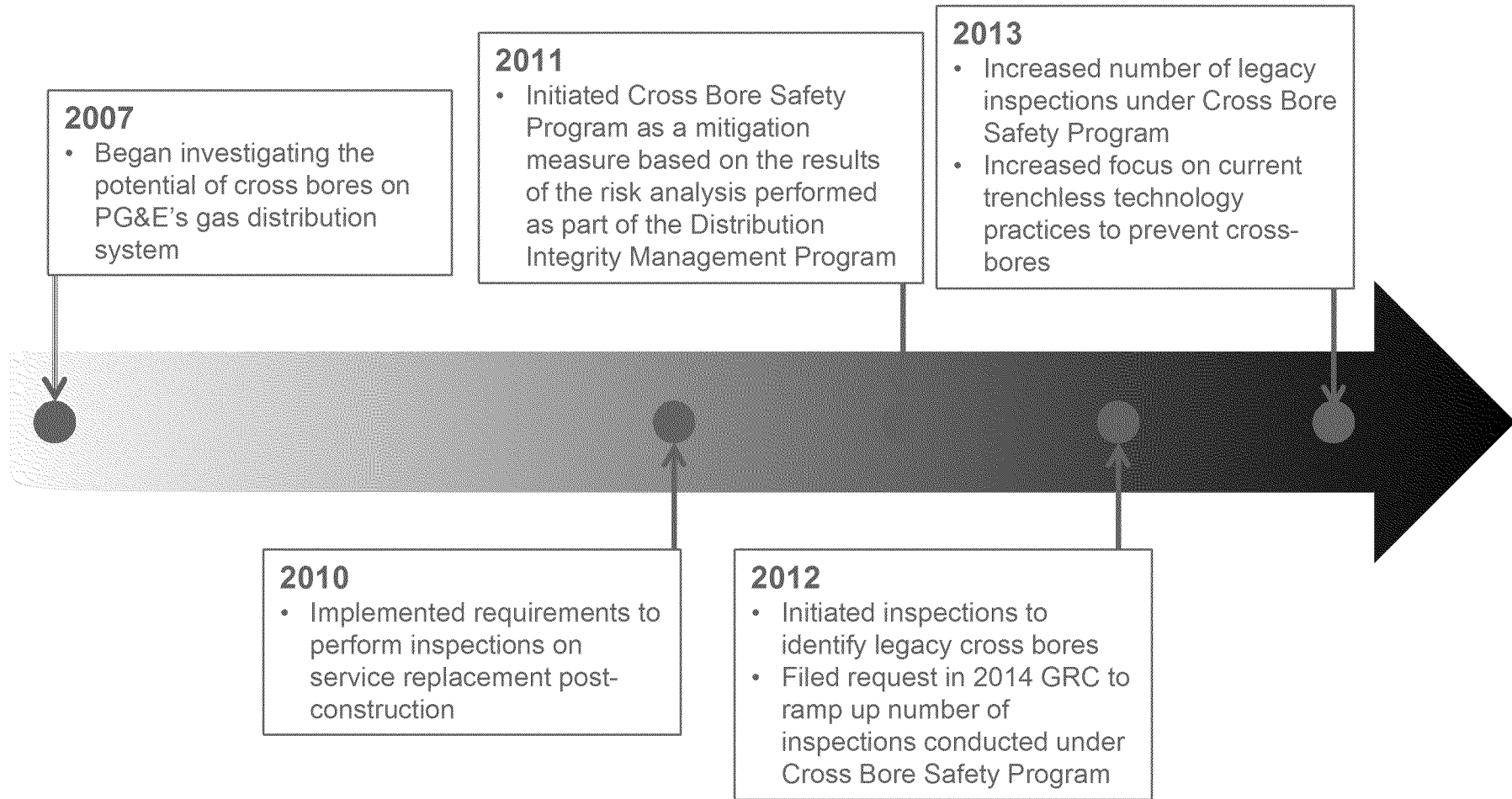
- Compliance, resources, awareness, records and risk assessment and mitigation

- Eighteen known cross bore incidents in U.S. since 2002<sup>1</sup>
- Industry average cross bores estimated at 2-3 per mile of gas pipe and can be higher regionally, especially if sewer and gas lines are installed at the same depth<sup>2</sup>
- Incident in Minnesota resulted in a state mandated program to address cross bores<sup>3</sup>

<sup>1</sup> GTI "Mitigating the Risk of Cross-Bores", presentation to Northeast Gas Association, October 4, 2012  
<sup>2</sup> Cross Bore Safety Association (CBSA), Legacy Cross Bores  
<sup>3</sup> Minnesota Department of Public Safety, State Fire Marshal and Pipeline Safety, Alert Notice, May 10, 2010



# PG&E's History with Cross Bores<sup>4</sup>



There have been 5 near hits since 2012 where cross bores were damaged and gas was released; however, the leak was mitigated before any property damage occurred.

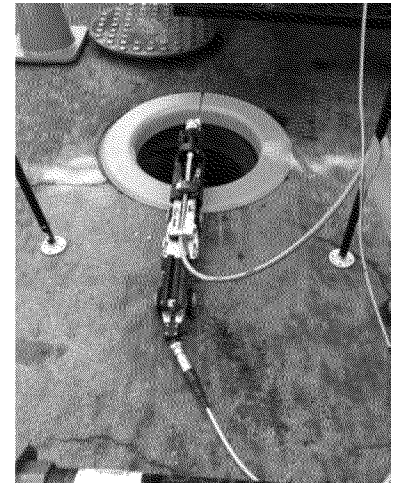




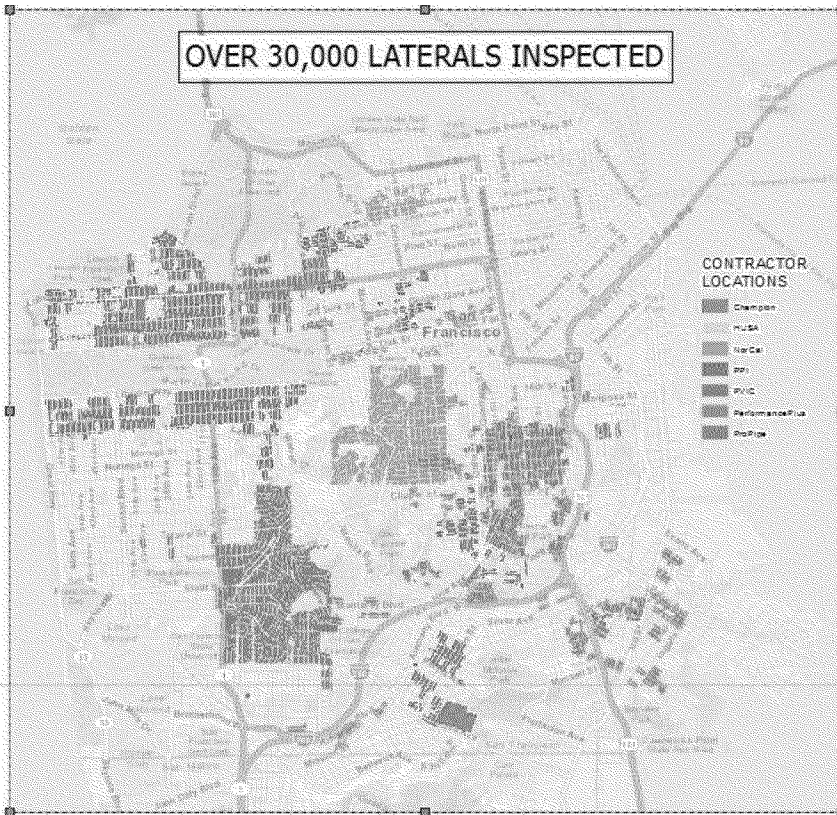
# Inspection Methods

Camera equipment is either

- Inserted into a sewer manhole and launched up each individual sewer lateral
- Inserted through a toilet, trap, or cleanout at the house and pushed to the street

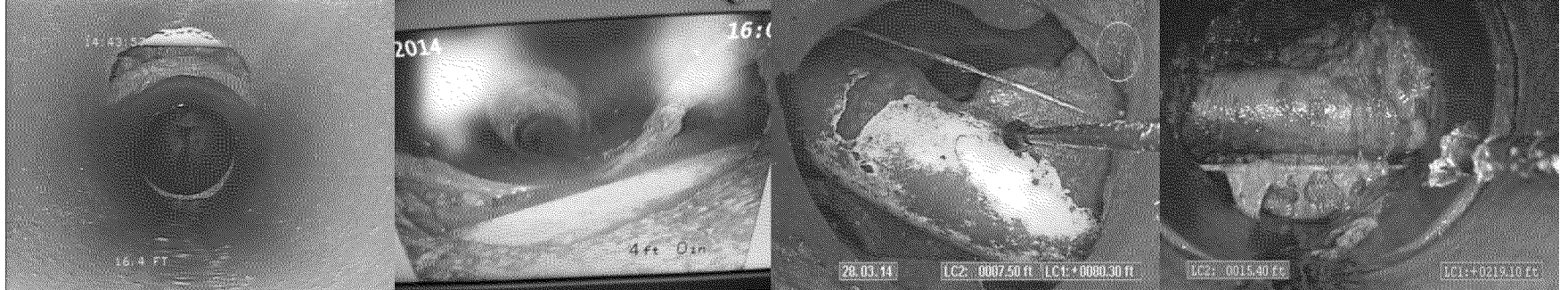


# Tracking, Notification and Repair Process



When a cross bore is identified:

- Owner of sewer notified
- PG&E crews dispatched if blockage condition exists
- Gas line relocated out of sewer lateral
- Sewer repaired by licensed plumber
- Find rate is approximately 1 per 1,000 inspections or roughly 2 per mile of main, consistent with industry experience



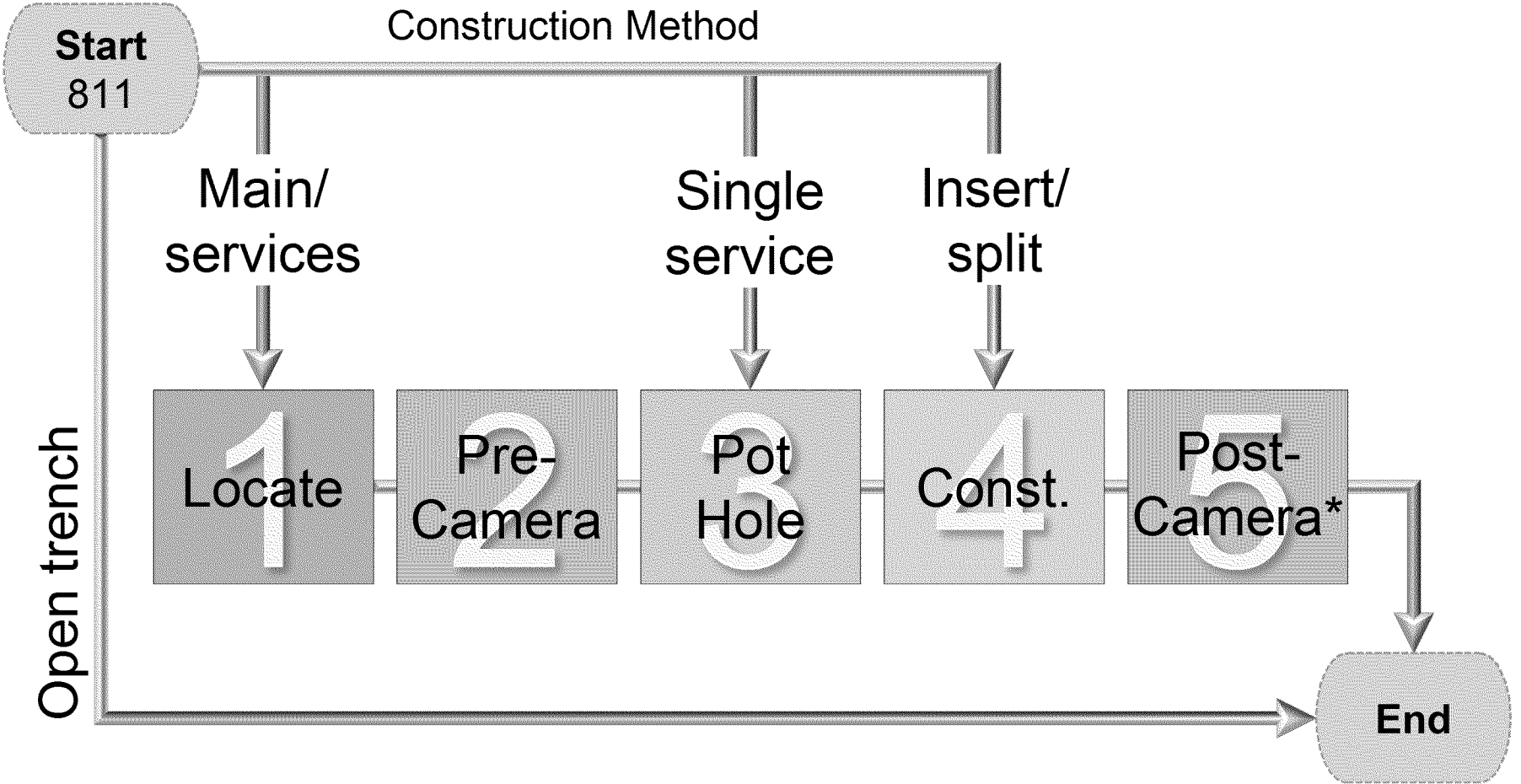






# Cross Bore Prevention Process

(Currently being piloted in San Francisco and Peninsula regions)



\* Perform before job closeout if pre-locate was completed.  
Perform within 24 hours if NO pre-locate was completed.



# Benchmark Results

Program	Benchmark Source	Comments
Legacy	American Gas Association Survey	PG&E provides public outreach consistent with the industry best practices.  Not all utilities have legacy inspection programs.
Prevention	American Gas Association Survey Gas Technology Institute (GTI) Local and National Contractors	PG&E's new procedures implements best practices to ensure crossbores are not created as we require 100% post-construction inspection.
	Other Major US Utilities	PG&E is not only consistent with practices followed by other major US utilities but also meets best practices outlined in GTI's "Cross Bore Best Practices – Best Practices Guide".