Infrastructure Changes to Reduce Methane Emissions

September 2019
Ed Newton
California leads the nation in setting climate goals and policy

**Governing Law SB32**

- GHG Emission reduction by 2030 below 1990 levels across all sectors
  - 60%

**Governing Law SB138**

- Methane emission reduction by 2030 below 1990 levels across all sectors
  - 40%

**Governing Law SB137**

- Reduce methane emissions from natural gas operations 25% by 2025, giving priority to safety, reliability, and affordability of service
  - 25%
SB1371 Overview and Goals

Overview
- Senate Bill 1371 passed in September 2014
- CPUC opened a proceeding to adopt rules and procedures governing commission-regulated gas pipeline facilities to minimize methane emissions
- Utilities filed Compliance Plans in 2018, including implementation plans to meet the requirements of 26 Mandatory Best Practices

Goals
1. Minimize methane emissions from operations by 20% by 2025 and 40% by 2030
2. Give priority to safety, reliability, and affordability of service

26 Best Practice Categories
- Delivering Policy
- Training Development
- Blowdown Reduction
- Information Technology
- Leak Detection & Repair
- Public Education
Facility Replacement or Reduction

01. System-Wide High Bleed Pneumatics
   - 7 devices replaced YTD (from 2015 baseline)
   - 9,833 Mscf annual emission reduction

02. Distribution Main & Service
   - 749 miles of vintage pipe replaced – est. 74 leaks prevented annually
   - 2,313 Mscf annual emission reduction

03. Distribution Leakage Inventory
   - 7% reduction in total # of leaks & 60% reduction of leaks over 3yr old
   - 50,892 Mscf annual emissions reduction (8% from 2015 baseline)
Blowdown Reduction Program

MITIGATION OPTIONS

01 Draw Down Pressure
02 Cross Compression
03 Project Bundling
04 Divert into other Local Lines
05 CNG Capture

CONSIDERATIONS

01 Various Options have Limited Applications
02 Safety
03 Reliability of Service
Increase the frequency of leak survey allows utilities to find leaks faster, repair leaks more quickly, and reduce emissions.

**Unprotected Steel** (No Cathodic Protection)
- 3 year to 1 year survey
- $34/MCF

**“State of the Art” Plastic**
- 5 year to 3 year survey
- $421/MCF

**Protected Steel**
- 5 year to 3 year survey
- $611/MCF
ACCELERATED SURVEY

**INCREASED ANNUAL LEAK SURVEY**

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<thead>
<tr>
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<th>Before Change</th>
<th>After Change</th>
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<tbody>
<tr>
<td>Annual</td>
<td>51%</td>
<td>33%</td>
</tr>
<tr>
<td>Multi-Year</td>
<td>14%</td>
<td>9%</td>
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<tr>
<td>Unsurveyed</td>
<td>34%</td>
<td>58%</td>
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**INCREASED % OF LEAKS DETECTED**

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<th>Before Change</th>
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<tr>
<td>Detected Leaks</td>
<td>46%</td>
<td>8%</td>
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<tr>
<td>Estimated Unknown*</td>
<td>54%</td>
<td>92%</td>
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**BEFORE CHANGE**

**AFTER CHANGE**

**STRATEGY**
- Reduce number of unknown leaks

**SOLUTION**
- Change in survey rate from 3 years to annual

**RESULTS**
- Reduction in inventory of unknown leaks
- Reduction in associated emissions
- Allows for analysis of potential locations of large leaks

* Number of leaks are estimated in areas not surveyed in the report year
Large Leak Mitigation Strategy

01 DATA
Collect Field Data
Leverage data collected during routine leak survey

02 ANALYTICS
Data Analytics
Algorithms identify leaks with highest probability to be “large” (10 CFH or more)

03 MEASUREMENT
Measure Subset of Leaks
Measure approximately 20% of all leaks detected

04 REPAIR
Prioritize Large Leaks for Repair
Expecting 2% of total leak inventory to be “large”.

Benefits

1. Avoid measuring 80% of leaks detected
2. Minimize cost of implementation
3. Leverage accurate leak measurement methods
Progress to Date

SUCCESSFULLY BIASED THE SAMPLE POPULATION DISTRIBUTION

R&D completed developing data analytics approach to screen leak data

650+ leaks processed through data analytics with 102 leaks flagged for measurement (16%)

14 large leaks found out of 102 leaks measured (2% of the 650+ leaks processed)

Additional 180 leaks measured that were not flagged for measurement with only 2 large leaks found (1% - both on low end of “Large”)

Leak Flow Rate Population Distribution