Gas Leak Abatement Rulemaking
R. 15-01-008
Workshop # 2

Safety & Enforcement Division
Risk Assessment Section
September, 23, 2015
Safety and Emergency Information

• In the event of an emergency, please calmly proceed out the exits. Our assembly point is in the Civic Center park area, near corner of McAllister and Polk (across from City Hall).

• In the event that we do need to evacuate the building:
  – Head out through the courtyard, and down the front steps. Continue east on McAllister Street and across Polk St

• Please wait until Security/Safety officers give signal to return.
Agenda

• 9:30  Intro, Logistics, Status of R.15-01-008, Objectives of Workshop

• 9:45  Status of data analysis – Chuck Magee (CPUC)

• 10:00 Presentation by Sempra Utilities on Quantification Methods

• 10:20 Q&A

• 10:30 Break

• 10:45 Presentation by ARB on Quantification Methods (Winardi Setiawan)

• 11:00 Quantification Methods Discussion

• 12:00 Lunch

• 1:15 How to improve future reporting

• 2:45 Break

• 3:00 Caucus on consensus items

• 3:45 Reconvene and next steps for October workshop on Best Practices
## Proceeding Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/22/14</td>
<td>SED Issues DRs to Utilities Requesting Gas Leak Information</td>
</tr>
<tr>
<td>8/21/14</td>
<td>Open OIR and Preliminary Scoping Memo</td>
</tr>
<tr>
<td>10/20/14</td>
<td>Write Best Practices SED Staff Report, ALJ Issues and Solicits Comments</td>
</tr>
<tr>
<td>12/19/14</td>
<td>Initial Comments on Best Practices Staff Report</td>
</tr>
<tr>
<td>2/17/15</td>
<td>SED Workshop on Best Practices Staff Report and Related Recommendations</td>
</tr>
<tr>
<td>4/18/15</td>
<td>Reply Comments on Best Practices Staff Report</td>
</tr>
<tr>
<td>6/17/15</td>
<td>Gas Corporations Prepare and Submit Gas Leak Reports (aka May 15th Report)</td>
</tr>
<tr>
<td>8/16/15</td>
<td>Pre Hearing Conference (PHC)</td>
</tr>
<tr>
<td>10/15/15</td>
<td>Gas Leak Technology Forum Hosted by SoCal Gas for Leak Detection Vendors</td>
</tr>
<tr>
<td>12/14/15</td>
<td>Phase 1 Scoping Memo</td>
</tr>
<tr>
<td>2/12/16</td>
<td>SED Hosted Workshop on May 15th Report - Analysis of Leaks, Quantification</td>
</tr>
<tr>
<td>4/12/16</td>
<td>Working Group Workshop on Best Practices Based on &quot;Target&quot; Emission Sources</td>
</tr>
<tr>
<td>6/11/16</td>
<td>SED/CARB Prepare Staff Summary of May 15, 2015 Gas Leak Reports, ALJ...</td>
</tr>
<tr>
<td>8/10/16</td>
<td>Initial and Reply Comments on Staff Summary Report and Phase 1 Scoping Q - #1</td>
</tr>
<tr>
<td>10/9/16</td>
<td>Working Group Proposal on Analysis of Leaks and Best Practices</td>
</tr>
<tr>
<td>12/8/16</td>
<td>Initial and Reply Comments on Working Group Proposal on Best Practices and...</td>
</tr>
<tr>
<td>2/6/17</td>
<td>CPUC/ARB Workshop on Targets, Compliance and Enforcement</td>
</tr>
<tr>
<td>4/7/17</td>
<td>Initial and Reply Comments on CARB/CPUC Staff Proposal on Targets, etc. and...</td>
</tr>
<tr>
<td>6/6/17</td>
<td>Commission Issues Phase 1 Decision</td>
</tr>
<tr>
<td>8/5/17</td>
<td>Phase 2 - Ratemaking and Performance Based Financial Incentives - Duration</td>
</tr>
<tr>
<td>10/9/17</td>
<td>Phase 2 Scoping Ruling</td>
</tr>
<tr>
<td>12/8/17</td>
<td>Initial and Reply Comments on Phase 2 Scoping Ruling and Phase 2 Scoping Q ....</td>
</tr>
<tr>
<td>2/6/18</td>
<td>SED/ED/CARB Workshop on Ratemaking / Performance Based Financial...</td>
</tr>
<tr>
<td>4/7/18</td>
<td>ALJ Ruling Issuing Staff Proposal on Ratemaking / Performance Based Financial...</td>
</tr>
<tr>
<td>6/6/18</td>
<td>Initial and Reply Comments on Staff Proposal for Ratemaking / Performance...</td>
</tr>
<tr>
<td>8/5/18</td>
<td>Commission Issues Phase 2 Decision</td>
</tr>
</tbody>
</table>

**Legend:**
- **Blue = Task Complete**
- **Red = Task In Progress**
Objectives of Workshop

- Provide first-cut staff analysis of data from May reports;
- Review and Discuss quantification methods;
- Discuss ways to improve future reporting;
- Attempt to reach consensus on issues.
Status of Data Analysis

• ARB and the CPUC have completed preliminary analysis of PG&E data. As a result of questions, PG&E will resubmit data.

• ARB and the CPUC are in the process of analyzing all other companies’ data and have questions. We will contact them.

• Data Issues:
  • Some companies unable to provide data back to 2009.
  • Some companies provided all open leaks no matter what year they were discovered. Other companies provided open leaks found in 2009 or later.
  • Missing data for various years or categories.
  • Mistakes in quantities or units.
  • Some companies did not provide System Wide Leak Rates.
Preliminary Findings

• Methane emissions and leaks reported are a combination of actual measurements and estimates.
• The majority of emissions and leaks are NOT graded leaks.
• Leaks and emissions are far less than 1% of total gas moving through the gas system making it difficult to detect on a system basis with meters.
• Lost and Unaccounted For Gas (LUAF) is many times larger than gas lost due to known leaks and emissions.
• Note: All data has been provided by the utilities and does not necessarily agree with data found in other methane emission studies.
The Big Picture

- We know a lot about Graded Leaks (location, size, volume, discovery and repair dates) but not much about Non-Graded Leaks and Emissions.
- Graded Leaks are the sum of all open leaks from 2009 (some before 2009, depending on the company reporting) to the year shown + new leaks found by surveying approx. 30% of the distribution system in the year shown.
- ARB estimates, based on ARB surveys and Mandatory Reporting Requirement (MRR) data, show different results. We will be investigating the reasons and the best approach to estimating emissions.
What is a Graded Leak?

• Federal Law, 49 CFR 192, requires gas utilities to survey their systems for leaks which could be hazardous to public safety or property. In addition, gas leaks may be reported to the utility by the public.

• The gas utilities developed graded leak programs to prioritize and repair these safety-related types of leaks.

• Please refer to CPUC General Order G.O. 112, Revision F for additional information.
Non-Graded Leak and Emission Sources

- Compressor station - leaks from valves, connections, vents, meters, packing, blowdowns, etc.
- Customer Meters & PHMSA "Minor" Releases
- Distribution Above grade M&R Station Leaks (assume > 300 psi)
- Distribution Below grade M&R Station Leaks (> 300 psi)
- Distribution Below grade M&R Station Leaks (100 - 300 psi)
- M&R Stations - Farm Taps & Direct Industrial Sales
- M&R Stations - Transmission-to-Transmission Company Interconnect
- Storage - control vents, leaks, blowdowns, storage compressors
- Transmission M&R Station Leaks
- Dehydrator Vents - Storage
- Distribution M&R Station Blowdowns
- Distribution Main & Service Pipeline Blowdowns
- Pressure Relief Valve Releases - Distribution Mains and Regulator emissions
- Transmission Blowdowns and M&R Station Blowdowns
Methane Leakage by Grade

- Grade 1
- Grade 2
- Grade 3

Methane Leakage (Mscf)

- 2013
- 2014
Count of Leaks by Grade

- Grade 1
- Grade 2
- Grade 3

<table>
<thead>
<tr>
<th>Count</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 2013
- 2014

Legend:
- Blue: 2013
- Red: 2014
Methane Leakage Volume by Component

Note: Service includes Above Ground Facilities (AGF) and Service to Main Connections (SMC). Other includes valves and unidentified components.
Count of Leaking Components

Note: Service includes Above Ground Facilities (AGF) and Service to Main Connections (SMC). Other includes valves and unidentified components.
100 Largest Graded Leaks Reported in 2014

Volume of Methane Emitted

Number of Leaks

Mscf

0  5  10  15  20  25  30  35

28  29  30  31  32  33  39  54  96
Average Number of Days to Repair Graded Leaks in 2014
Thank You!

For further information related to R.15-01-008 please contact:

Chuck Magee
Charles.magee@cpuc.ca.gov
415-806-2394

Arthur O’Donnell
ao1@cpuc.ca.gov
415-703-1184

www.cpuc.ca.gov