

Harmonizing Methodologies & Regs

- Mandatory GHG Emissions Reporting Regulation (CARB, MRR)
- Natural Gas Leak Abatement (CPUC, SB 1371)
- GHG Standards for Crude Oil and Natural Gas Facilities (CARB, Oil & Gas Reg)
- Requirements for California Underground Gas Storage Projects (DOGGR, Underground Storage Reg)

CARB

Mandatory GHG Reporting Regulation

- Applies to entities emitting $\geq 25,000$ metric tons CO_{2e} annually, including major gas utilities
- Also applies to some entities emitting $< 25,000$ metric tons CO_{2e}
- Methodologies vary by source category;
Example for gas distribution mains and services:

$$\sum E_i = L_i * EF_i$$

where:

E_i = Emission from pipe material i

L_i = Length of pipe material i

EF_i = Emission factor for pipe material i

CPUC

Natural Gas Leak Abatement

- Higher tier methodology & California-specific EFs
- For comparison, methodology for gas distribution mains and services:

$$\sum E_{ij} = EF_j * D_i$$

where:

E_{ij} = Emission for leak i & pipe material j

EF_j = Emission factor for pipe material j

D_i = Duration for leak i

Comparison of Two Methodologies For Distribution Pipeline Emissions

➤ Pros (higher tier):

- Provides more accurate emissions estimate
- Allows easier emissions reduction accounting
- Utilizes updated EFs, new equipment, & communication technology

➤ Cons (higher tier):

- Requires more detailed data
- Creates a challenging emissions verification process

Application to Other Population-Based Emission Sources

- Metering set assemblies (MSAs):
 - GTI completed the 2018 Residential MSAs Study
 - Objectives:
 - Update California-specific EFs
 - Determine leak proportion
 - Identify troublesome MSA components
 - The report is under review
- Other leak sources:
 - Compressor stations
 - Meter & regulating stations

CARB

Oil and Gas Regulation

- The regulation reduces fugitive and vented emissions of methane from both new and existing oil and gas facilities:
 - Oil and Gas Production, Processing, and Storage
 - Gathering and Boosting Compressor Stations
 - Natural Gas Underground Storage Facilities
 - Natural Gas Transmission Compressor Stations
- Standards include:
 - Leak Detection and Repair (LDAR)
 - Compressor rod packing or seal leak rate limits
 - No bleed pneumatic devices

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- Monitoring Plans for Natural Gas Underground Storage Facilities:
 - Continuous or daily wellhead monitoring
 - Ambient air monitoring
 - Optical Gas Imaging in case of blow out
 - Once approved, these plans replace DOGGR protocols

- Beginning in July 2019, annual reporting to CARB of:
 - All quarterly LDAR results
 - Compressor rod packing or seal leak amounts
 - Other reporting requirements

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- Consider bundling concerns on a case-by-case basis, with the district input
- Critical components and other delay of repair provisions may also address indirectly blowdown concerns