

SCAQMD Proposed Rule 1148.3

Natural Gas Underground Storage Facilities

Working Group Meeting #1
January 26, 2017



Agenda

- Rule Development Process
- Aliso Canyon Leak
- Underground Natural Gas Storage Process
- State and Local Agency Response to Aliso Canyon Leak
- Development Approach for SCAQMD Proposed Rule (PR) 1148.3
- Next Steps
- Comments



Rule Development Process

Information Gathering



Stakeholder Meetings

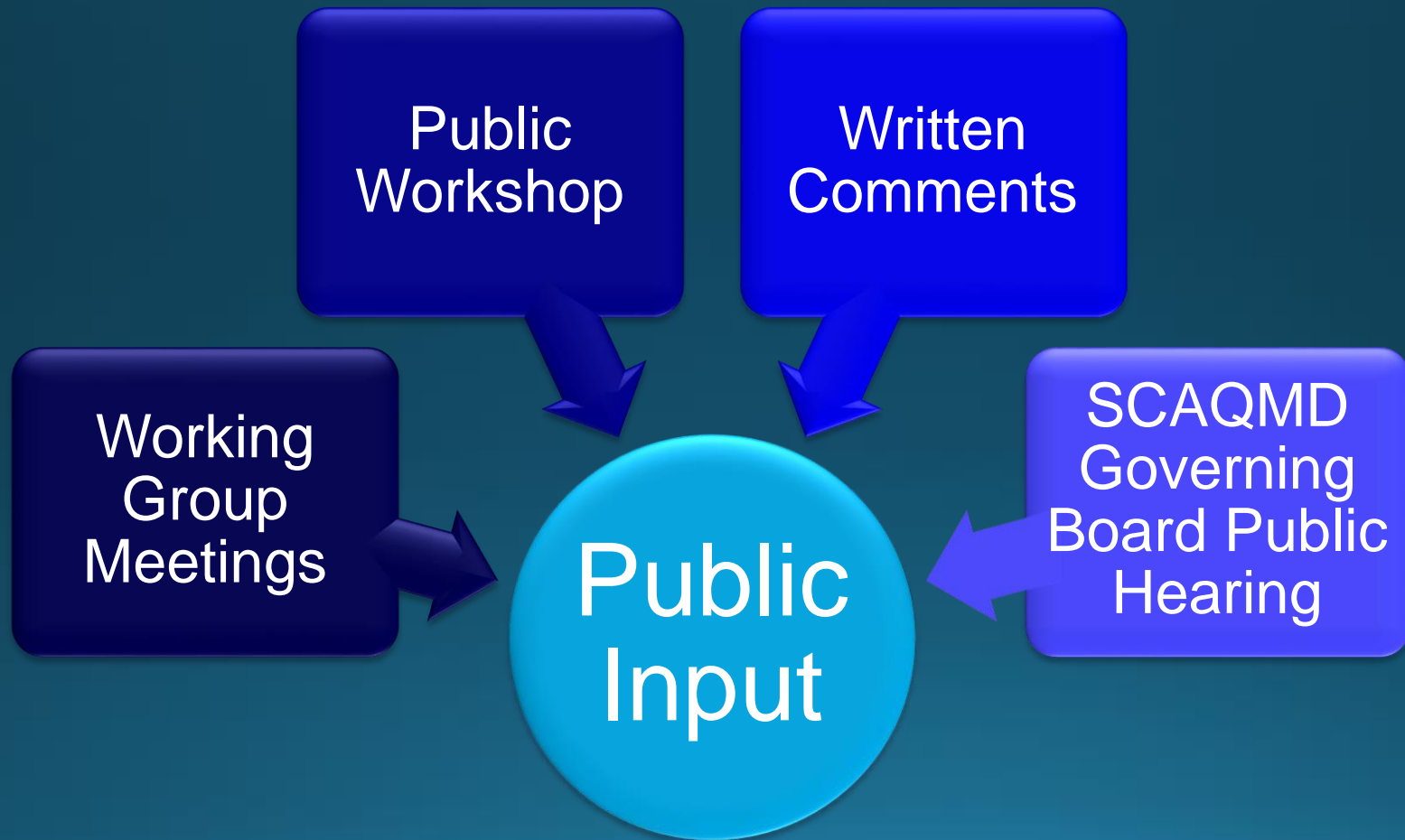


Develop Rule Concepts



Draft Proposed Rule Language

Rule Development Process – Public Input



Working Group Meetings

- Comprised of stakeholders including industry, environmental groups, community members, and agencies
- Provides stakeholders opportunity to discuss elements of proposed rule with staff
- Assist staff in understanding
 - Key issues and concerns
 - Industry terms, industry practices, etc.
- Working group meetings held throughout the rule development process and open to the public
- Allows the rule development process to be transparent

Background – Aliso Canyon Natural Gas Underground Storage Field

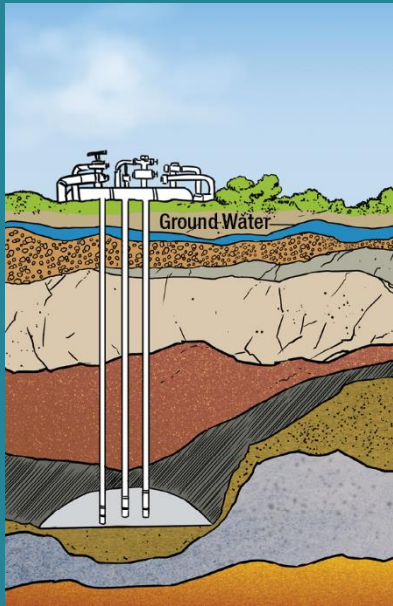
- Owned and operated by Southern California Gas Company (SoCalGas)
- Oil reservoir modified into an injection/withdrawal field for natural gas
- Provides natural gas to residential, industrial, and commercial customers
- Largest storage capacity in South Coast Air Basin
 - ~90 billion cubic feet of natural gas
 - ~115 wells



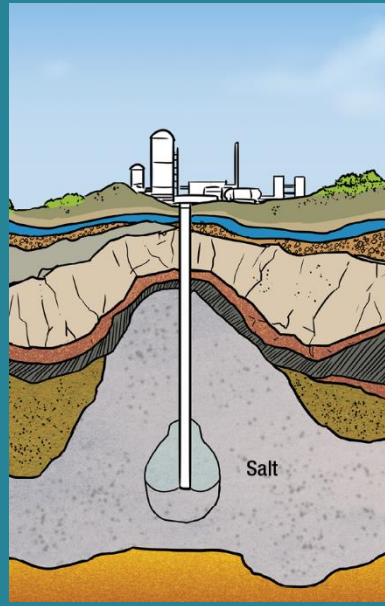
Background – Aliso Canyon Leak

- October 2015, SoCalGas discovered a leaking injection/withdrawal well
- Leak determined to be from surface casing located 500 feet below the surface
- SCAQMD received over 2,000 complaints alleging odors related to the leak
- Emitted an estimated 94,500 tons of non-combusted gas into the atmosphere
- Natural Gas Underground Storage is mostly an unregulated air quality source

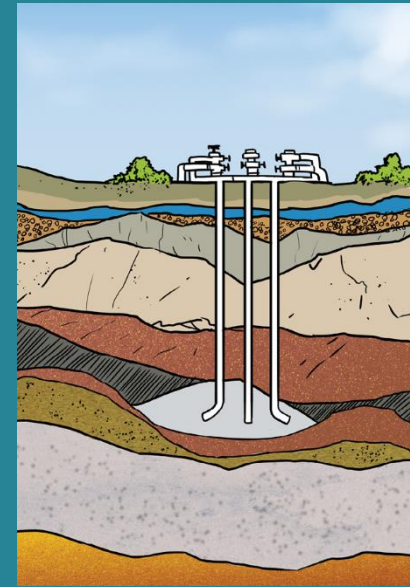
Types of Natural Gas Underground Storage Fields



Depleted Oil or Gas Reservoir



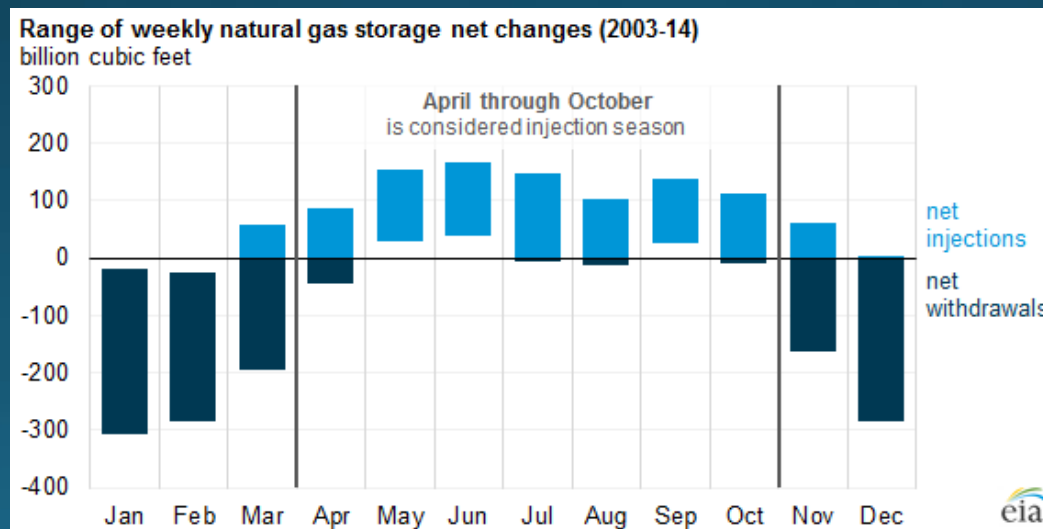
Salt Caverns



Depleted Aquifers

Purpose of Natural Gas Underground Storage Fields

- 90% of natural gas stored underground in Southern California comes from out of state
- Used to balance gas supply with demand
- Gas is injected when there is less demand and withdrawn when demand is high
- Storage enables gas to be purchased during low demand periods when price is lower



California Agency Response to Aliso Canyon Leak

DOGGR

- Emergency Regulations for Underground Natural Gas Storage (order specific to Aliso Canyon)
- Amended Section 1724.9 Underground Natural Gas Storage Projects
 - Effective 2/5/2016
 - New requirements for subsurface testing and monitoring
- Proposed Section 1726 Underground Natural Gas Storage Projects
 - Released 7/8/2016; Proposal planned for 2017
 - New subsurface requirements to compliment Section 1724.9

CARB

- Proposed GHG Emission Standards for Oil & Gas Sources (includes Natural Gas Underground Storage)

SCAQMD

- Proposed Rule 1148.3 – will focus on regulating aboveground operations at Natural Gas Underground Storage facilities

CARB Proposed Regulation – Greenhouse Gas Emission Standards for Crude Oil & Natural Gas Facilities

- Reduces methane emissions from oil and gas production, processing, storage, and transmission compressor stations by limiting vented and fugitive emissions
- Some methane reductions are already achieved as co-benefits of local air district regulations governing emissions of volatile organic compounds
- Public Hearing held on July 21, 2016
- Board Proposal scheduled for Spring 2017



CARB Proposed Regulation – Key Natural Gas Underground Storage Requirements

- Submittal of monitoring plan
 - Install & operate continuous ambient methane monitors
 - Perform daily screening (Optical Gas Imaging (OGI) or Method 21), or install continuous monitoring of wellhead/surrounding areas *(more details in next slide)*
- Monitoring at wellhead using EPA Method 21
- Notification to agencies upon methane exceedance detected by:
 - Ambient monitors
 - Method 21 inspections

Leak Detection – EPA Method 21

- Currently, most common acceptable method used to detect VOC leaks
- Determination of VOC leaks from process equipment from sources such as valves, flanges, pumps, compressors
- Detection by use of portable instrument that typically utilized flame ionization, infrared absorption, and photoionization
- Measures in parts per million (ppm)
- Requires that instrument physically measures directly at the source of the leak



Leak Detection – Optical Gas Imaging (OGI)



- OGI allows for a visual observation of emissions invisible to the naked eye from much further distances than EPA Method 21
- 2008 – U.S. EPA *Alternative Work Practice* allowed use of OGI in place of EPA Method 21
- SCAQMD staff uses OGI technology to assist in identifying leaks at oil fields, refineries, tank farms, and natural gas underground storage facilities

CARB Regulation – Leak Detection and Repair (LDAR)

- Audio-visual inspection of various components once every 24 hours
- Operator shall conduct quarterly inspection of components and repaired in accordance to the schedule

Effective 2018	
Leak Rate (ppm)	Repair Time
10,000-49,999	14 calendar days
>50,000	5 calendar days
Critical Components	Next shutdown or 180 calendar days

Effective 2020	
Leak Rate (ppm)	Repair Time
1,000-9,999	14 calendar days
10,000-49,999	5 calendar days
>50,000	2 calendar days
Critical Components	Next shutdown or 180 calendar days

SCAQMD Existing Oil and Gas Regulations

- SCAQMD regulates air emissions for much of the oil and gas industry, however, existing rules do not regulate all aspects of natural gas underground storage
- Implementation of VOC rules has co-benefits of decreasing odor nuisance
- PR 1148.3 will consider elements of existing VOC rules such as:
 - Rule 1148.1 – *Oil and Gas Production Wells*
 - Rule 1173 – *Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities*

SCAQMD Existing Oil and Gas Regulation – Natural Gas

- Rule 1148.1 – Natural gas distribution, transmission and associated storage operations are not subject to the requirements of rule
- Rule 1173 – Components exclusively handling commercial natural gas are exempt

Gas Processing at Natural Gas Underground Storage Facilities

- Many aboveground natural gas processing operations are permitted
 - Internal Combustion Engines used at the facility are required to meet emission limits
 - Components for storage tanks associated with oil and gas production are required to be inspected periodically
- Regulated emissions include VOCs, NO_x, CO, sulfur compounds and refrigerants
- Existing SCAQMD regulations do not apply to natural gas emissions
- PR 1148.3 will address natural gas emissions at natural gas underground storage facilities

PR 1148.3 Approach

- Build on CARB's *Oil and Gas Regulation*
 - Requiring additional specificity to monitoring plan
 - More stringent leak thresholds
 - More stringent repair periods
 - More immediate implementation dates
 - Provide monitoring data to the public
 - Requirements will also consider standards established at the Aliso Canyon Storage Field
- Scope of PR 1148.3 is aboveground operations at natural gas underground storage facilities
 - Underground operations related to the integrity of the well casing are within DOGGR's jurisdiction

Purpose of PR 1148.3

Purpose

- Reduce TOCs and toxics emissions from Natural Gas Underground Storage facilities, and additionally prevent public nuisance to nearby receptors
- Will utilize TOC emissions as an indicator of leaks to identify issues and correct them before they become significant

Applicability

- This rule applies to any operator of a natural gas underground storage facility

PR 1148.3 Affected Sources

- Four natural gas underground storage facilities in the South Coast Air Basin
 - Aliso Canyon
 - Honor Rancho
 - Montebello (being phased out)
 - Playa del Rey
- All four owned and operated by SoCal Gas

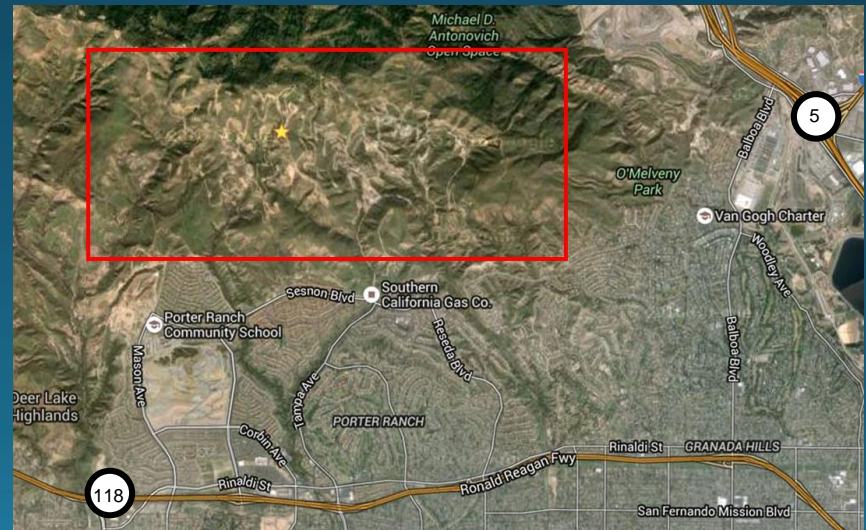
Source of Site Information

- Information regarding storage capacity and the number of wells for a facility are based on SCAQMD visits by Compliance Staff
- Total number of wells listed are a combination of different types of wells including:
 - Withdrawal and Injection Wells
 - Observation Wells
 - Water Injections Wells
 - Oil Production Wells
 - Gas Lift Wells
 - Brine Disposal Wells

Aliso Canyon

Site Details

- Total Storage Capacity: 90 BCF
- 129 wells (onsite)



Honor Rancho

Site Details

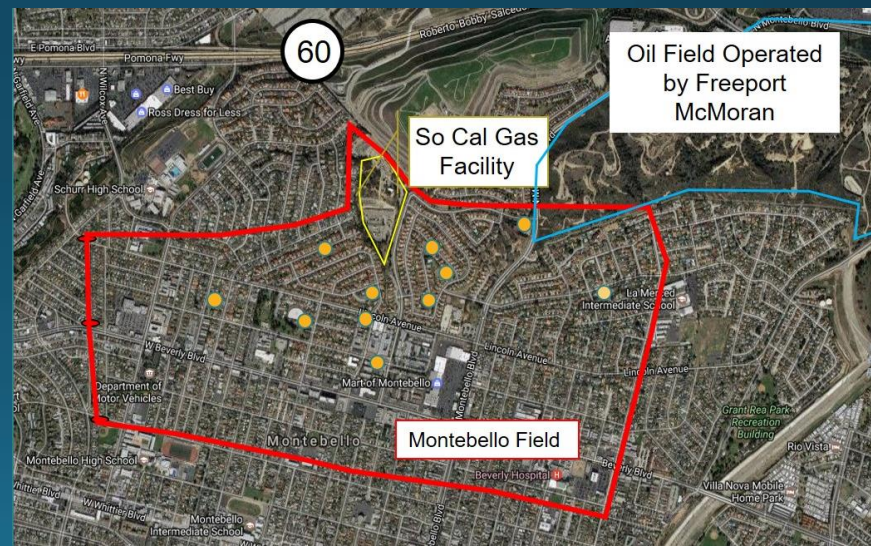
- Total Storage Capacity: 24.2 BCF
- 46 wells (onsite)



Montebello

Site Details

- Total Storage Capacity: 14 billion cubic feet (BCF)
- 51 wells (onsite and located in community)

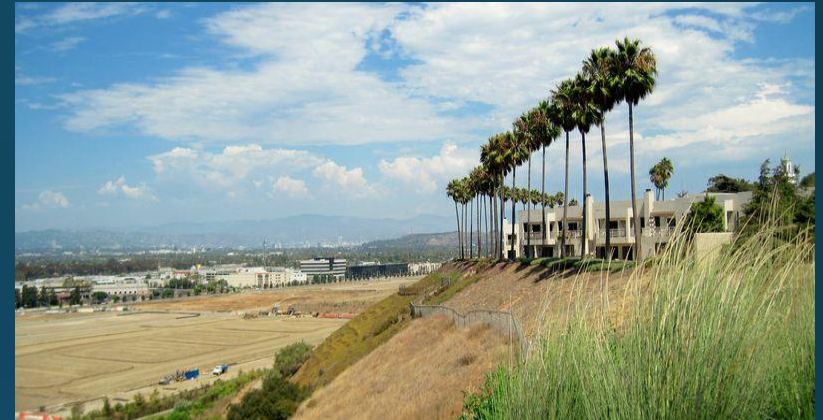


Community Wells

Playa del Rey

Site Details

- Total Storage Capacity: 7.06 BCF
- 54 wells (onsite and located in the community)



Comparison of Natural Gas Underground Storage Facilities

Natural Gas Underground Storage Facility	Storage Capacity	Number of Wells	Onsite or Community Wells
Aliso Canyon	90 BCF	129 wells	Onsite
Honor Rancho	24.2 BCF	46 wells	Onsite
Montebello	14 BCF	51 wells	Both
Playa del Rey	7.06 BCF	54 wells	Both

CARB's Monitoring Approach for Natural Gas Storage

Monitoring Plan

Two Parts

- Ambient Monitors and
- Choice of:
 - Daily screening using Method 21 or Optical Gas Imaging or other;
 - OR
 - Continuous monitors with audible and visible alarm system

Audio Visual Inspections

Daily audio visual inspections of components

Repair within 24 hours. If cannot be repaired within 24 hours

- Measure w/Method 21 and
- Repair times based on Leak Detection and Repair (LDAR) requirements

LDAR Requirements

Quarterly test all components using Method 21

- Repair times range from 2 to 14 days
- Two step compliance: Jan 2018 and Jan 2020
- Includes provision for critical components

Key Requirements – Ambient Monitoring Plan

Proposed CARB Regulation	PR 1148.3 Ambient Monitoring Plan
Submit a monitoring plan by January 1, 2018	Submit a monitoring plan by (XX) days after adoption.
Require submission of monitoring plan	Specific requirements of what is required to be part of monitoring plan
Requires onsite monitors that continuously monitor the facility	Specify minimum number of monitors necessary to continuously monitor the facility and location

Ambient Monitors

- Monitors used at Aliso Canyon are Infrared Open Path Detector for Hydrocarbon Gas Application
- SCAQMD staff is looking for input from stakeholders regarding other types of ambient monitors
 - Ambient Hydrocarbon Air Monitors
 - Other monitoring technology

Key Requirements – Daily Screening

Proposed CARB Regulation	PR 1148.3 Daily Screening
Perform daily screening <u>or</u> have continuous monitoring of the wellhead and the surrounding area	<ul style="list-style-type: none">• Perform daily screening of the wellhead and the surrounding area utilize OGI, Method 21, or approved inspection technology to detect leaks on an early basis• Continuous monitoring if well head is (XX) feet of a sensitive receptor
Leaks detected via OGI shall be inspected using Method 21	Same

Key Requirements – Leak Detection and Repair (LDAR)

Proposed CARB Regulation	PR 1148.3 LDAR Program
Quarterly leak inspection of components	Same
Daily audio-visual inspection of potential high emitting components, perform Method 21 to quantify leak	Same
Allowance for critical component's extension	Excludes allowance for critical component's extension

Key Requirements – Repairs of Leaks

- Leaks detected from either daily screening/inspection or quarterly are required to be repaired within a specific repair period
- Shorter repair times for larger leaks
- PR 1148.3 will pattern repair periods after SCAQMD R1173

Comparison of Rule 1173 and CARB's Final Leak Detection and Repair Times



SCAQMD Rule 1173



CARB's Proposed Regulation

Light Liquid Gas Vapor (ppm)	Repair Time	Extended Repair Time
500 to 10,000	7 calendar days	7 calendar days
10,000 to 25,000	2 calendar days	3 calendar days
>25,000	1 calendar day	None
Critical Components	N/A	N/A

Effective 2020	
Leak Rate (ppm)	Repair Time
1,000-9,999	14 calendar days
10,000-49,999	5 calendar days
>50,000	2 calendar days
Critical Components	Next shutdown or 180 calendar days

Key Requirements – Air Quality Notification Plan

Proposed CARB Regulation	PR 1148.3 Air Quality Notification Plan
Notify appropriate agencies when exceedances or malfunctions occur	Notify appropriate agencies <u>and local residents</u> of any event at the facility that results in a significant gas leak or elevated ambient air concentrations of TOC



PR 1148.3: Next Steps

- Working Group Meeting in February
- Governing Board Hearing – Summer 2017

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