

Assembly California Legislature

Assembly Committee on Utilities & Commerce Mike Gatto, Chair

Informational Hearing: Aliso Canyon Gas Leak January 21, 2016

This hearing will examine the status of efforts to stop the leak at the Aliso Canyon Gas Storage Facility and to hear from local residents and businesses about its impact on them and the community. Questions have been raised about the role and response of state agencies including who responded and how quickly and how issues of concern will be addressed. These issues include, but are not limited to, public health and safety, electric reliability and affordability, air quality, greenhouse gas (GHG) emissions, emergency response notification and procedures, and whether existing wells meet current standards of construction.

The Aliso Canyon Storage Facility is owned by the Southern California Gas Company (SoCalGas) and is located in Los Angeles County just north of Porter Ranch, California. SoCalGas is a subsidiary of Sempra Energy, based in San Diego. SoCalGas is a gas corporation regulated by the California Public Utilities Commission (CPUC). The CPUC reviews and approves charges to ensure that they are just and reasonable and necessary to promote the safety, health, comfort, and convenience of the utility's patrons, employees, and the public.

As an owner and operator of natural gas well, SoCalGas is also partially regulated by the California Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR). DOGGR oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells.

The roles of the CPUC and the Department of Conservation, as well as several other state agencies involved in addressing the response to this leak are discussed later in this report.

I. Background on the Aliso Canyon and the Gas Leak

On October 23, 2015, SoCalGas detected a leak at its Aliso Canyon Gas Storage Facility at Well # SS-25. Following an initial evaluation and several attempts to stop the leak, SoCalGas began drilling a relief well in order to plug the leaking well. SoCalGas estimates it will attempt to plug the well using the relief well in February 2016. According to the California Governor's Office of

Emergency Services (Cal OES), SoCalGas notified the State Warning Center on October 26, 2015, three days after first detecting the leak.

The SS-25 well has a vertical depth of approximately 8,500 feet. SoCalGas made several attempts to stop the leak by plugging the well from the surface. . The initial attempts to plug the leak were to pump fluid down the well. When these attempts failed to stop the leak, SoCalGas began drilling a "relief well," to plug the leaking well from the bottom. SoCalGas is also constructing a second relief well in the event the first well is unable to facilitate stopping the leak.

In addition to the relief well, SoCalGas is drawing down the volume of gas stored at Aliso Canyon in order to reduce the rate at which the well is leaking. According to SoCalGas, measured inventory of natural gas in the storage facility has been reduced from 77 billion cubic feet (bcf) to 32 bcf, as of January 11, 2016. Estimates of GHG emissions from the leak indicate that they are 23,400 kilograms per hour on January 8, 2016, down from a high estimate of 58,000 kilograms on November. 28, 2015.

SoCalGas is currently providing temporary housing and offering air filtration and air purification systems for those affected by the gas leak. SoCalGas opened a community resource center located at Porter Ranch Town Center and provides weekly customer bulletins by mail and email, as well as calls and text notification for significant events, and has established a community advisory committee.

Chronology of Events	
October 23, 2015	Leak detected at Aliso Canyon Gas Storage Facility
November 1, 2015	Office of Environmental Health Hazard Assessment (OEHHA) begins air sampling in Porter Ranch neighborhood
November 7, 2015	The California Air Resources Board (CARB) begins aerial testing to measure potential GHG emissions impacts from the Aliso Canyon gas leak
December 4, 2015	Relief well drilling begins
January 6, 2016	Governor issues Proclamation (https://www.gov.ca.gov/news.php?id=19264) mobilizing relevant state agencies and protecting ratepayers from costs related to the leak, specifically: <ul style="list-style-type: none"> • Stopping the Leak: All necessary and viable actions will be taken to

Chronology of Events

ensure Southern California Gas Company: maximizes daily withdrawals of natural gas from the Aliso Canyon Storage Facility for use or storage elsewhere; captures leaking gas and odorants while relief wells are being completed; and identifies how it will stop the gas leak if relief wells fail to seal the leaking well, or if the existing leak worsens.

- **Protecting Public Health and Safety:** The state will: continue its prohibition against Southern California Gas Company injecting any gas into the Aliso Canyon Storage Facility until a comprehensive review of the safety of the storage wells and the air quality of the surrounding community utilizing independent experts is completed; expand its real-time monitoring of emissions in the community; convene an independent panel of scientific and medical experts to review public health concerns; and take all actions necessary to ensure the continued reliability of natural gas and electricity supplies in the coming months.
- **Ensuring Accountability:** The California Public Utilities Commission will ensure that Southern California Gas Company covers costs related to the natural gas leak and its response, while protecting ratepayers; and the state will develop a program to fully mitigate the leak's emissions of methane funded by the Southern California Gas Company.
- **Strengthening Oversight:** The state will promulgate emergency regulations for gas storage facility operators throughout the state, requiring: at least daily inspection of gas storage well heads using gas leak detection technology such as infrared imaging; ongoing verification of the mechanical integrity of all gas storage wells; ongoing measurement of annular gas pressure or annular gas flow within wells; regular testing of all safety valves used in wells; minimum and maximum pressure limits for each gas storage facility in the state; a comprehensive risk management plan for each facility that evaluates and prepares for risks, including corrosion potential of pipes and equipment. Additionally, the Division of Oil, Gas and Geothermal Resources, the California Public Utilities Commission, the California Air Resources Board and the California Energy Commission will submit to the Governor's Office a report that assesses the long-term viability of natural gas storage facilities in California.

And, at the direction of the Governor's Office of Emergency Services, all state agencies will utilize state personnel, equipment, and facilities to ensure a continuous and thorough state response to this incident. The Governor's Office of Emergency Services will also provide frequent and

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	timely updates to residents affected by the natural gas leak and the appropriate local officials, including convening community meetings in the coming weeks.

II. Background on Gas Storage Facilities in California

There are a number of gas storage facilities operating in California. Natural gas storage is used to ensure that sufficient supplies of natural gas are available to meet variable seasonal demand for natural gas. The Federal Energy Regulatory Commission publishes an Energy Primer¹ and a few excerpts from this Primer can help provide some context for why natural gas is stored:

- Retail consumers have few options for storing natural gas and electricity. For natural gas, large consumers and entities that sell to retail consumers may be able to store gas, but smaller consumers do not have this option. Without storage, consumers cannot buy when prices are low and use their stored product when prices rise. This limits consumers’ response to changes in prices.
- Because consumers have limited ability to reduce demand, supply must match demand instantaneously, in all locations.
- For natural gas, this means production, pipelines and storage need to be sized to meet the greatest potential demand, and deliveries need to move up and down to match changes in consumption. Natural gas has underground and above-ground storage options and "linepack," which involves raising the pressure in a pipeline to pack more molecules into the same space.
- Natural gas flows through a pipeline at velocities averaging 25 mph, depending on the pipeline and the configuration of related facilities, so new supply can take hours or days to reach its destination. That increases the value of market-area storage, which vastly reduces the distance and time needed for gas to reach consumers.

Natural gas is an odorless, flammable gas consisting primarily of methane. It also contains hydrogen sulfide, sulfur dioxide, benzene, toluene, ethylbenzene, and xylenes in small amounts. Mercaptan is added to natural gas in order to aid in the detection of natural gas by smell. Mercaptan is an organic substance that is one of the chemicals responsible for bad breath and flatulence (Some people can detect the presence of mercaptan in their urine after eating asparagus). The product SoCalGas uses to scent natural gas contains the sulfur compounds tetrahydrothiophene and tertiary-butyl mercaptan. Radon gas is naturally present in geologic formations and may be present as a result of the leak.

Natural gas is used by residential, commercial, and industrial customers on a daily basis for cooking, water heating, heating, and manufacturing processes. In addition, natural gas is used to generate electricity in California.

Gas is delivered via pipelines to gas storage facilities, which store the gas until it is used. Gas storage facilities located in California provide an important hedge against shortages of natural gas supplies, providing both supply and price stability.

California has a number of gas storage facilities in operation, as shown in Table 1. Each has varying levels of construction dates, well casing and safety valve construction, storage capacity, reservoir depths, and maximum withdrawal rates.

Table 1: Active Gas Storage Wells in California

County	Field Name	Operator	Active Well Count	Working Capacity (Mcf)	Max Daily Delivery (Mcf)
Los Angeles	Playa del Rey	So Cal Gas	22	2,400,000	480,000
Los Angeles	Aliso Canyon	So Cal Gas	92	86,000,000	1,860,000
Los Angeles	Honor Rancho	So Cal Gas	32	24,200,000	1,000,000
Santa Barbara	La Goleta Gas	So Cal Gas	17	21,500,000	420,000
Madera	Gill Ranch Gas	Gill Ranch Storage LLC	12	2,000,000	650,000
Butte	Wild Goose Gas	Wild Goose Storage LLC	17	75,000,000	950,000
Colusa	Princeton Gas	Central Valley Gas	8	11,000,000	300,000
Contra Costa	Los Medanos Gas	PG&E	20	17,946,000	400,000
San Joaquin	Lodi Gas	Lodi Gas Storage	9	8,500,000	250,000
San Joaquin	Lodi Gas	Lodi Gas Storage	8	8,500,000	250,000
San Joaquin	McDonald Island	PG&E	81	82,000,000	1,680,000
Solano	Kirby Hill Gas	Lodi Gas Storage	9	10,000,000	200,000
Solano	Kirby Hills Gas	Lodi Gas Storage	9	5,000,000	50,000
Yolo	Pleasant Creek Gas	PG&E	7	2,250,000	70,000
9 Counties	12 Fields	6 Operators	343 Active Wells		

Sources: California Department of Conservation, January 2016, Energy Information Administrationⁱⁱ

III. Natural Gas Uses and Sources in California

a. Statewide Natural Gas Uses

The primary use of natural gas in homes and businesses is for heating, water heating, and cooking. Industrial uses include on-site power generation, heat for industrial processes (such as kilns). Natural gas is also used in substantial amounts for generating electricity in California. Table 2 provides an overview of the amount of natural gas that is used in

California for various types of customers. Table 3 breaks down average natural gas use in typical homes.

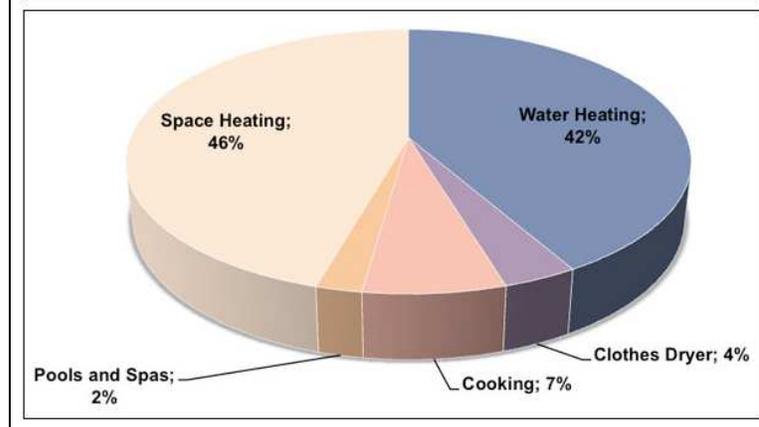
Table 2: Natural Gas Demand in California by End Use from 2010 to 2012

Natural Gas Demand by End Use (Billions of cubic feet per year)	2010	2011	2012
Residential	509	519	485
Commercial	199	201	201
Industrial	548	559	577
Natural Gas Vehicles	18	16	17
Electric Power Generation	922	796	1032
Total Natural Gas Demand	2196	2091	2313

Source: California Energy Commissionⁱⁱⁱ

Table 3: Residential Natural Gas Consumption in 2012

Residential Natural Gas Consumption	Thousand of Therms Per Year (Mtherms/y)	Percentage
Water Heating	2,633	41.71%
Clothes Dryer	228	3.61%
Cooking	434	6.88%
Pools and Spas	141	2.24%
Space Heating	2,876	45.56%
TOTAL	6,312	100%

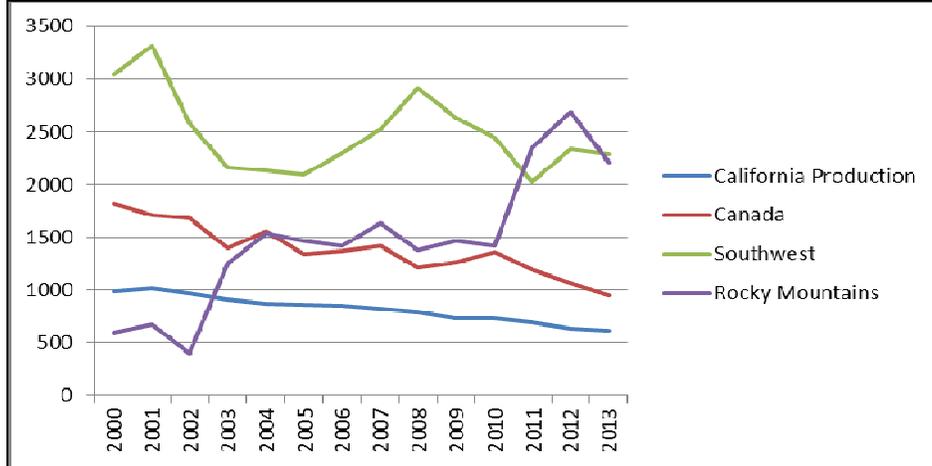


Source: California Energy Commission^{iv}

b. Statewide Sources of California's Natural Gas

California relies on natural gas from in-state and out-of-state resources. Figure 1 shows California's demand for natural gas from various North American locations.

Figure 1: California Gas Supply, Millions of Cubic Feet (MMcf) per day per year



Source: California Energy Commission^v

The California Energy Commission (CEC) prepares a forecast of natural gas demand and examines the potential demand for natural gas in California using scenarios of high demand, mid-demand, and low demand between now and 2030. According to the CEC's *2015 Staff Draft Natural Gas Outlook* report, total demand for natural gas is forecasted to grow by as much as 18% between now and 2030 if demand for natural gas is high or decrease 8% to 13% (between now and 2030 if demand for natural gas is low or moderate).

The CEC report also points out that:

- California has 13 operating natural gas storage facilities, all of which are depleted oil or gas production fields. The total current working gas capacity of these facilities is 349.3 billion cubic feet, with a maximum daily delivery of 8.56 billion cubic feet when the fields are full. These storage facilities, however, cannot all deliver at the maximum rate at any one time. In addition, some operate for purposes of supplier price arbitrage and others for utility reliability.^{vi}
- California imports about 90 percent of its natural gas demand, and staff expects imports to be about 98 percent in 2025.

c. Southern California Gas Company Customers

Southern California Gas deliveries, as a percent of total delivered gas end use are shown in Table 4.

Table 4: Southern California Gas Company Deliveries

Customer Sector	Percent of Total Delivered Gas End Use (%)	Number of Customers
Electric Generation	27	52
Commercial/Industrial	25	209,000
Residential	24	5,500,000
Wholesale	16	5
Refineries	7	34
Natural Gas Vehicle Stations	1	312

IV. SoCalGas Storage Well Integrity Proposal

The gas wells at each of SoCalGas' Storage Facilities are of varying ages. According to SoCalGas' testimony in its 2014 General Rate Case Application to the CPUC, "Aliso Canyon began storage operations in 1973, although many of its wells date back to the 1940s." Their other storage facilities also date back to the 1940s and some have similarly older wells.

In this application, SoCalGas filed a request to establish a Storage Integrity Management Program (SIMP). In SoCalGas' testimony, it states:^{vii}

"While we have historically managed risk at our storage facilities by relying on more traditional monitoring activities and identification of potential component failures, we believe that it is critical that we adopt a more proactive and in-depth approach. Historically, safety and risk considerations for wells and their associated valves and piping components have not been addressed in past rate cases to the same extent that distribution and transmission facilities have been under the Distribution and Transmission integrity management programs."

Furthermore, SoCalGas also states elsewhere in this testimony:

"The SIMP would launch an accelerated and robust assessment of the inspected storage well facilities (approximately 50% of the SoCalGas wells) over the rate case period. The initial SIMP work, which will likely target wells older than fifty years of age, would enhance ongoing safety, system integrity, support reliability of service, and provide additional confidence that wells, down-hole equipment, and associated pipe laterals maintain their compliance with DOGGR regulations."

Specific to Aliso Canyon, SoCalGas states:

"Presently, most major O&M [Operation and Maintenance] and capital funded activities conducted on storage wells are typically reactive-type work, in response to corrosion or other problems identified through routine pressure surveillance and temperature surveys. For example in 2008 at Aliso Canyon, it was discovered during routine weekly pressure surveillance that the surface annulus of well Porter 50A had a pressure of over 400 psig [pounds per square inch gauge]. In most cases, situations like this can be indicative of production casing leaks from either internal or external corrosion where high pressure gas can migrate to the surface in a matter of hours. External corrosion has also been observed in other wells at the field.

Routine surveillance and temperature survey work identifies problems that have already occurred, and well integrity may have already been severely compromised requiring immediate attention to maintain safety, integrity and reliability. For example in 2013, again at Aliso Canyon, two wells were found to have leaks in the production casing at depths adjacent to the shallower oil production sands. In these situations, there was no evidence of the leaks at the surface or surface casing."

Note: SoCalGas immediately took the well named Porter 50A out of service

SoCalGas also states that:

"Reactive-type work in response to identified safety-related conditions observed as part of routine operations has increased in recent years. In fact, a negative well integrity trend seems to have developed since 2008. The increasing number of safety and integrity conditions summarized in Table PEB-8 below is attributed primarily to the frequency of use, exposure to the environment, and length of time the wells have been in service."

Figure 2: Excerpt from SoCalGas General Rate Case Testimony

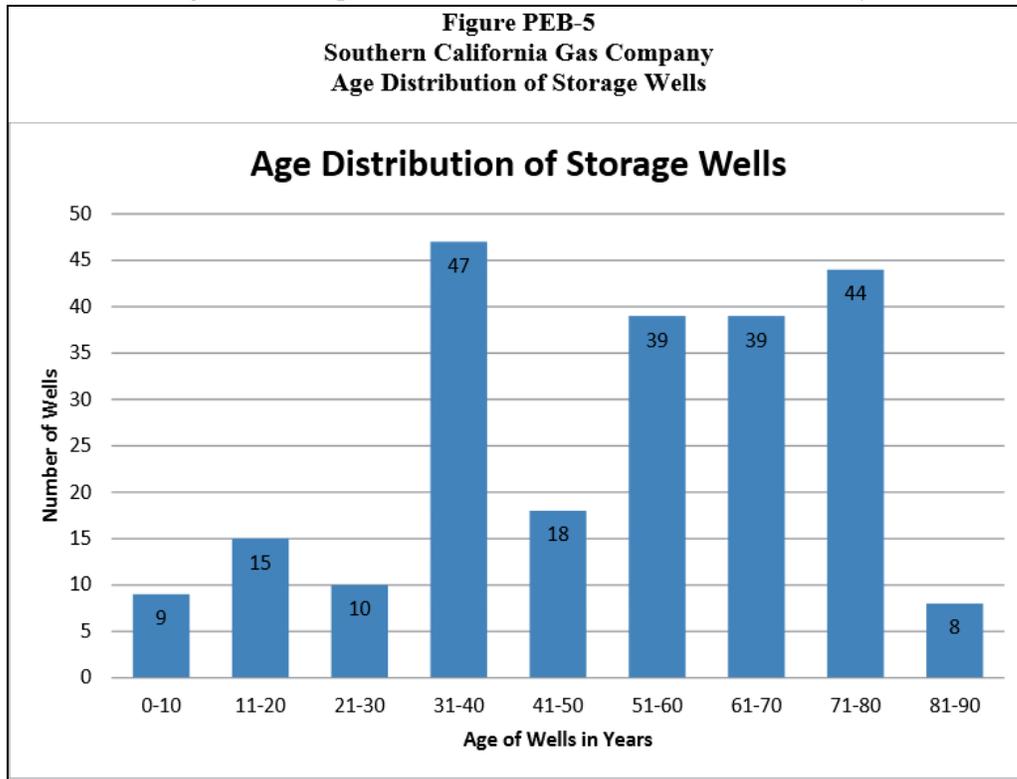
Well Integrity Category	Year					
	2008	2009	2010	2011	2012	2013
Casing Leak	-	-	-	2	3	2
Tubing Leak	1	1	5	3	3	4
Wellhead Leak	-	-	1	2	-	2
Casing Shoe Leak	-	1	-	1	-	-
Sub-surface Safety Valve	2	-	-	-	2	1
Total	3	2	6	8	8	9

The following excerpt discusses additional issues with the condition of existing wells at SoCalGas Storage facilities:

"Ultrasonic surveys conducted in storage wells as part of well repair work from 2008 to 2013 identified internal/external casing corrosion, or mechanical damage in 15 wells. External casing corrosion has been observed at relatively shallow depths in the production casing, and at deeper intervals near the Aliso Canyon shallow oil production zone at which is being water-flooded. Internal mechanical wear has been observed in production casings, likely as a result of drilling operations that took place when the well was originally drilled. In addition, external tubing corrosion has been observed on tubing in the joint above the packer most likely as a result of stagnant fluid.

In addition to the 36 well-related conditions presented in Table 8, and the corrosion or mechanically damaged wells that were previously identified, SoCalGas has 52 storage wells in service that are more than 70 years old. Half of the 229 storage wells are more than 57 years old as of July 2014. Figure PEB-5 below displays the age distribution visually. "

Figure 3: Excerpt from SoCalGas General Rate Case Testimony



V. Issues of Concern

A number of issues have been raised by numerous stakeholders including, most importantly, the community directly affected by the leak: Porter Ranch. A definitive assessment of the impacts of the leak, and how to mitigate them, cannot be determined until after the leak is plugged and investigations are completed. Below is list of a few of the concerns raised regarding the leak:

- a. Public Health and Safety – What are the short term and long term health impacts resulting from this leak and the ongoing operation of the storage facility?
- b. Electric Reliability and Affordability – What are the short term and long term impacts of the reliability of gas storage to provide natural gas to electric generation facilities in the local region?
- c. Air Quality – What are the short and long term impacts on air quality in the region?

- d. GHG Emissions – What are the immediate and ongoing impacts of increased GHG emissions?
- e. Emergency Response Notification and Response – Do operators of natural gas storage facilities have adequate emergency notification and response programs in place? How effectively do they communicate with local emergency responders? Are emergency responders sufficiently prepared for incidents involving natural gas storage facilities?
- f. Safety Standards for Existing Natural Gas Storage Wells – Do existing gas storage wells meet safety standards? Do older wells have adequate safety features to prevent or mitigate against well failures that could result in uncontrolled leaks?
- g. Economic Impacts – What are the economic impacts as a result of the natural gas leak, particularly small businesses and service industries in and around the Porter Ranch region?
- h. Possible Gaps in State Oversight of Natural Gas Storage Facilities – Do existing laws and regulations provide adequate oversight of natural gas storage facilities? Are safety regulations sufficiently enforced for natural gas storage wells? Are state agencies sufficiently communicating concerns about safety with each other?

VI. State Agency Oversight of Gas Storage Facilities

The agencies involved in oversight of the Aliso Canyon Gas Leak are summarized below:

- DOGGR within the Department of Conservation has launched an investigation to determine the cause of the gas leak and whether any regulatory or statutory violations occurred. This investigation will include studying the inner workings of the leaking well.
- The CPUC has launched a staff investigation of SoCalGas' actions before and after the incident, including whether proper public notification was provided and maintenance of the gas storage field in general. CPUC staff also requested information from the company on the costs of containing the leak. The CPUC website, with links to all of the agencies and more detailed information on the incident can be found at: <http://www.cpuc.ca.gov/aliso/>.
- CARB is monitoring total methane emissions-a powerful GHG- over the duration of the leak using measurements from the ground, airplane and satellites. The air board also has directed the SoCalGas to provide its data on the volumes of gas within the storage field in order to refine its estimates on total emissions.

- OEHHA with the California Environmental Protection Agency has reviewed air quality data collected in the community closest to the leaking well to confirm that actions ordered by local public health agencies are adequate to protect public health.
- The Division of Occupational Safety and Health (Cal/OSHA) within the Department of Industrial Relations has monitored the well breach site to ensure worker safety and compliance with workplace safety laws and regulations.
- The CEC is coordinating with the CPUC to ensure adequate energy supplies for homes and businesses through the winter.
- Cal OES has established an incident command structure to enable a systematic, coordinated response by all local, state and federal agencies. This effort includes an incident command post on-site at Aliso Canyon staffed by SoCalGas and other agency experts and representatives. Cal OES also is coordinating information sharing among governmental agencies.

In 1994, the California Legislature passed Assembly Bill 3261 providing oversight authority to the California Department of Conservation with respect to safety jurisdiction over pipelines that are integrally associated with oil and gas production and lie within oil and gas fields. Consequently, both the CPUC and the Department of Conservation have jurisdiction over the safety of certain natural gas pipelines (e.g., gathering systems) located in oil and gas fields. The agencies executed a Memorandum of Agreement to clarify regulatory responsibilities. (A copy of the agreement is included with this briefing paper and posted on the committee website). It is unclear the extent to which the Department of Conservation and the CPUC have been conferring with each other with respect to safe operation of gas storage facilities and, more specifically, safety requirements for gas wells.

According to DOGGR, they do not usually participate in CPUC proceedings. Prior to the leak DOGGR was in the process of updating underground injection control regulations, which includes underground gas storage facilities. The DOGGR “renewal Plan for Oil and Gas, released in August of last year, contemplated a wider review of all Underground Injection Control rules.

Appendix A

State Statutes and Administrative Laws Applicable to Gas Storage in California
Statutes and Rules are enforced by the California Department of Conservation (State & Federal)

California Public Resources Code Section 3106:

- Directs the Department of Conservation to supervise the drilling, operation, maintenance, and abandonment of wells and the operation, maintenance, and removal or abandonment of tanks and facilities attendant to oil and gas production so as to prevent, as far as possible, damage to life, health, property, and natural resources; damage to underground oil and gas deposits from infiltrating water and other causes; loss of oil, gas, or reservoir energy, and damage to underground and surface waters suitable for irrigation or domestic purposes by the infiltration of, or the addition of, detrimental substances.
- Also directs the Department of Conservation to supervise the drilling, operation, maintenance, and abandonment of wells so as to permit the owners or operators of the wells to utilize all methods and practices known to the oil industry for the purpose of increasing the ultimate recovery of underground hydrocarbons and which, in the opinion of the supervisor, are suitable for this purpose in each proposed case.
- Requires the Department of Conservation to encourage the wise development of oil and gas resources to best meet oil and gas needs in this state.

California Public Resources Code Section 3403.5:

- Requires the Department of Conservation to maintain surveillance over underground gas storage facilities to insure that the original reserves are not lost, that drilling of new wells is conducted properly, and that no damage occurs to the environment by reason of injection and withdrawal of gas.

California Code of Regulations, Title 14, Sections 1714, 1724.6, 1724.7, and 1724.9, 1724.10 :

- Requires written approval from the Department of Conservation before any subsurface injection associated with underground gas storage can begin. The Division's regulations specify requirements that an applicant must satisfy before the Division will approve a subsurface injection project. These requirements include submission of engineering studies (including reservoir characteristics and casing diagrams), geologic studies (including structural contour and isopachous maps), and injection plans (including identification of the proposed maximum anticipated surface injection pressure and proposed monitoring system or methods to ensure no damage is occurring).

- For underground gas storage projects, the applicant must also submit additional information about the proposed storage reservoir, a list of proposed surface and subsurface safety devices and measures to ensure the safety of the project, and the proposed waste water disposal method.
- Approved injection projects are subject to additional filing, notification, operating and testing requirements throughout their operational lifespan. Among other requirements, Division regulations provide that all piping, valves and facilities shall meet or exceed design standards for the maximum anticipated injection pressure, and shall be maintained in a safe and leak-free condition. Accurate operating pressure gauges or recording devices must be available at all times, and wells must be equipped for installation and operation of such devices. The operator must perform tests to establish the maximum allowable surface injection pressure and mechanical integrity of the well, and maintain data to establish that no damage to life, health, property or natural resources is occurring by reason of the injection project.

United States Code of Federal Regulations Section 144.6(b):

- California has primary responsibility for regulating “Class II” underground injection wells within its jurisdiction pursuant to a program approved by the United States Environmental Protection Agency under the federal Safe Drinking Water Act. Class II injection wells include wells that inject fluids brought to the surface in connection with natural gas storage operations, and wells that inject fluids for storage of hydrocarbons which are liquid at standard temperature and pressure.

Appendix B

State Statutes and Administrative Laws Applicable to Gas Storage in California Statutes and Rules are enforced by the California Public Utilities Commission

California Constitution - Article 12 Public Utilities

- SEC. 3. Private corporations and persons that own, operate, control, or manage a line, plant, or system for the transportation of people or property, the transmission of telephone and telegraph messages, or the production, generation, transmission, or furnishing of heat, light, water, power, storage, or wharfage directly or indirectly to or for the public, and common carriers, are public utilities subject to control by the Legislature. The Legislature may prescribe that additional classes of private corporations or other persons are public utilities.
- SEC. 5. The Legislature has plenary power, unlimited by the other provisions of this constitution but consistent with this article, to confer additional authority and jurisdiction upon the commission, to establish the manner and scope of review of commission action in a court of record, and to enable it to fix just compensation for utility property taken by eminent domain.

California Public Utilities Code Sections related to general regulation of a gas corporation

- Section 216. (a) "Public utility" includes every common carrier, toll bridge corporation, pipeline corporation, gas corporation, electrical corporation, telephone corporation, telegraph corporation, water corporation, sewer system corporation, and heat corporation, where the service is performed for, or the commodity is delivered to, the public or any portion thereof.
- Section 221. "Gas plant" includes all real estate, fixtures, and personal property, owned, controlled, operated, or managed in connection with or to facilitate the production, generation, transmission, delivery, underground storage, or furnishing of gas, natural or manufactured, except propane, for light, heat, or power.
- Section 222. "Gas corporation" includes every corporation or person owning, controlling, operating, or managing any gas plant for compensation within this state, except where gas is made or produced on and distributed by the maker or producer through private property alone solely for his own use or the use of his tenants and not for sale to others.
- Section 227. "Pipe line" includes all real estate, fixtures, and personal property, owned, controlled, operated, or managed in connection with or to facilitate the transmission, storage, distribution, or delivery of crude oil or other fluid substances except water through pipe lines.

- Section 228. "Pipeline corporation" includes every corporation or person owning, controlling, operating, or managing any pipeline for compensation within this state.
- Section 451. All charges demanded or received by any public utility, or by any two or more public utilities, for any product or commodity furnished or to be furnished or any service rendered or to be rendered shall be just and reasonable. Every unjust or unreasonable charge demanded or received for such product or commodity or service is unlawful.

Every public utility shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities, including telephone facilities, as defined in Section 54.1 of the Civil Code, as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees, and the public.

All rules made by public utility affecting or pertaining to its charges or service to the public shall be just and reasonable.

- Section 701. The commission may supervise and regulate every public utility in the State and may do all things, whether specifically designated in this part or in addition thereto, which are necessary and convenient in the exercise of such power and jurisdiction.

California Public Utilities Code Sections related to Pipeline Safety

- Section 955(b). The CPUC is the state authority responsible for regulating and enforcing intrastate gas pipeline transportation and pipeline facilities pursuant to Chapter 601 (commencing with Section 60101) of Subtitle VIII of Title 49 of the United States Code, including the development, submission, and administration of a state pipeline safety program certification for natural gas pipelines pursuant to Section 60105 of that chapter.

California Public Utilities Code Sections related to permitting New Gas Storage Facilities

- Sections 1001 et seq., require that before Applicants can construct gas storage facilities, the Commission must grant a Certificate of Public Convenience and Necessity on the grounds that the present or future public convenience and necessity require or will require construction of the Proposed Project.

California Public Utilities Code Sections related to encouraging purchase of natural gas produced in California

- Section 785. To the extent consistent with federal law and regulation and contractual obligations regarding other available gas, the commission shall, in consultation with the

Division of Oil and Gas of the Department of Conservation and with the State Energy Resources Conservation and Development Commission, encourage, as a first priority, the increased production of gas in this state, including gas produced from that area of the Pacific Ocean along the coast of California commonly known as the outer continental shelf, and shall require, after a hearing, every gas corporation to purchase that gas which is compatible with the corporation's gas plant and which is produced in this state having an actual delivered cost, measured in equivalent heat units, equal to or less than other available gas, unless this requirement will result in higher overall costs of gas or other consequences adverse to the interests of gas customers.

- 785.1. (a) The commission shall require, after a hearing, every gas corporation to revise its transportation tariffs and conditions of service to eliminate all components that assess shippers of gas produced in California for the costs of interstate transmission of gas produced outside of this state. These revisions shall eliminate direct or indirect charges for the interstate transportation of gas produced outside of this state, commonly referred to as "double demand" charges.
(b) The commission shall consider and approve tariffs consistent with subdivision (a) on or before October 1, 1994.
(c) Nothing in this section shall be construed to prohibit the commission from approving intrastate transmission tariffs which include interstate transition cost surcharges, as described in commission decisions 91-11-025 and 92-07-025, in an appropriate manner.
- 785.2. The commission shall investigate, as part of the rate proceeding for any gas corporation, impediments to the in-state production and storage of natural gas. The commission may adopt a tariff that encourages in-state production or storage of natural gas, including, but not limited to, reducing local transmission rates applicable to in-state gas blends, unless the commission finds that adopting the tariff will likely result in consequences adverse to the interests of gas customers.

California Public Utilities Commission General Orders (regulations)

- General Order No. 112-E - State of California Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems.
- General Order 112-5 specifies emergency response requirements for gas companies ("State of California Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems"). Note that Commission General Order 166 "Standards for Operation, Reliability, and Safety During Emergencies and Disasters" applies to electric utilities only.

California Public Utilities Commission Decision

- The CPUC adopted a Decision (D.) 93-02-013 (along with subsequent decisions) that allow gas utilities to file off-system storage contracts under an advice letter process approved by CPUC resolution. (Off system storage refers to facilities not directly connected to a gas corporation's system. Service is offered via an agreement with interconnecting pipeline and storage operators.)

ⁱ Federal Energy Regulatory Commission Energy Primer <https://www.ferc.gov/market-oversight/guide/energy-primer.pdf>

ⁱⁱ https://www.eia.gov/cfapps/ngqs/ngqs.cfm?f_report=RP7

ⁱⁱⁱ <http://energyalmanac.ca.gov/naturalgas/overview.html>

^{iv} *ibid*

^v http://energyalmanac.ca.gov/naturalgas/natural_gas_supply.html

^{vi} Staff Draft 2015 Natural Gas Outlook, CEC-200-2015-007-SD,

<http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR->

03/TN206491_20151102T140915_Draft_Staff_Report_2015_Natural_Gas_Outlook.pdf, pg. 5

^{vii} https://www.socalgas.com/regulatory/documents/a-14-11-004/SCG-06_P_Baker_Testimony.pdf