California State Senate

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OVERSIGHT HEARING

Aliso Canyon and Southern California Energy Reliability

State Capitol, Room 2040
May 10, 2016
9:30 a.m.

On October 23, 2015, the Southern California Gas Company (SoCalGas) discovered a leak from a well at the company's Aliso Canyon Gas Storage Facility. For more than 100 days, the well continued to dump tons of methane gas into the atmosphere, along with irritants and other substances. According to the California Air Resources Board, the leak emitted almost 100,000 tons of methane, a potent greenhouse gas, adding approximately 20 percent to statewide methane emissions over its duration.[1] Many residents from nearby Porter Ranch suffered noxious odors. Others reported more serious health effects, including nose bleeds, rashes and respiratory problems. Hundreds were relocated from their homes. Despite assurances from public health agencies, many fear the leak's long term effects on health and wellbeing.

While the Aliso Canyon leak continued unabated, Governor Brown issued an emergency proclamation. Among other things, the proclamation ordered the Division of Oil, Gas, and Geothermal Resources (DOGGR, the agency responsible for regulation of the storage facility and wells) to prohibit SoCalGas from injecting any gas into the Aliso Canyon Storage Facility until completion of a comprehensive review, utilizing independent experts, of the safety of the storage

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[1] http://www.arb.ca.gov/research/aliso_canyon/arb_aliso_canyon_methane_leak_climate_impacts_mitigation_program.pdf

wells and the air quality of the surrounding community.[2] In addition, the proclamation directed the state's energy agencies – the California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) – in coordination with the California Independent System Operator (CAISO), to take all actions necessary to ensure the continued reliability of natural gas and electricity supplies in the coming months during the moratorium on gas injections into the Aliso Canyon Storage Facility.

In keeping with the governor's proclamation of emergency, in early April of this year, the CPUC, CEC and CAISO, along with the Los Angeles Department of Water and Power (LADWP), released two key documents. The first document is the *Aliso Canyon Risk Assessment Technical Report*, in which the four agencies, along with the technical assistance of SoCalGas, assess the threat to electric service and energy reliability during the summer of 2016, given the constraints upon Aliso Canyon. In the second document, the *Aliso Canyon Action Plan to Preserver Gas and Electric Reliability for the Los Angeles Basin*, the four agencies recommend actions that they conclude lessen the risk of reducing or restricting of gas service – referred to as gas "curtailment" – this summer. The purpose of this committee hearing is twofold: (1) to better understand the *Technical Report* and *Action Plan* and the assumptions and methodology behind them; and (2) to hear from the electrical and gas utilities that will need to provide energy service to Southern California this summer under the constrained conditions described in the plan and report.

Summary of Technical Report and Action Plan. The "Technical Assessment Group" (CEC, CPUC, CAISO, LADWP, and SoCalGas, collectively referred in this document as "TAG") describes its purpose in preparing the *Aliso Canyon Risk Assessment Technical Report* as an analysis of energy reliability for Southern California for summer of 2016. The TAG relied on operating and system data supplied by SoCalGas. In very general terms, TAG reports to understand the natural gas transmission system it analyzed as having the following characteristics:

- Owned and operated by SoCalGas.
- Serving 5.7 million accounts, or 22 million customers, 11 million of which are in the Los Angeles Basin.
- Ninety-nine percent of customers, representing 80 percent of load, are "core" customers – homes, small commercial operations, and small industrial customers – with the strongest guarantee of gas service.

[2] Each house of the Legislature has passed SB 380 (Pavley), which further defines and restricts the conditions under which SoCalGas may inject and withdraw gas from Aliso Canyon. At the time this background document was written, Governor Brown had not acted on the bill.

- One percent of service is to "noncore" customers – including 17 natural-gas-fired electricity generators, hospitals, oil refineries, and other large industrial and commercial customers – who have the least secure guarantee of gas service.
- Capable of accepting 3.875 billion cubic feet per day (Bcfd) of interstate and local supplies.
- An integrated system of pipelines and four storage fields – Aliso Canyon, Honor Rancho, La Goleta, and Playa del Rey – with a combined storage capacity of 135.6 Bcf, combined injection capacity of 850 million cubic feet per day (MMcfd), and a combined withdrawal capacity of 3.68 Bcfd

The *Technical Report* describes SoCalGas's system, unlike some other natural gas systems, as unable to function without storage. The basic details of each of SoCalGas's four storage fields are, as published by TAG, as follows:

SoCalGas Natural Gas Storage Facilities				
Field	**Location**	**Maximum Inventory of Working Gas (Bcf)**	**Withdrawal Rate (Bcfd)**	**Injection Rate (Bcfd)**
Aliso Canyon	San Fernando Valley	86.2	1.9	0.4
Honor Rancho	Santa Clarita	27.0	1.0	0.07
La Goleta	Santa Barbara	20.2	0.4	0.2
Playa del Rey	Marina del Rey	1.8	0.4	0.2
TOTALS		**136.1**	**3.8**	**1.1**

As can be seen above, the Aliso Canyon facility is, by far, the largest of the four SoCalGas natural gas storage fields. Because SoCalGas experiences its greatest demand for natural gas in the winter, and because that winter demand outstrips gas in SoCalGas's pipelines, the TAG states that SoCalGas's operations managers seek to fill Aliso Canyon to capacity in the summer (April through October) while relying on the facility's supplies to balance hourly summer demand.

To conduct its analysis of energy reliability for Southern California in the summer of 2016, TAG relied wholly on SoCalGas to conduct a "hydraulic analysis" of its gas system.[3] In short, such an analysis, according to the *Technical Report*,

[3] According to the *Technical Report*, the analysis was conducted by DNV GL, under contract with SoCalGas, using its proprietary Synergi Gas software.

considers changing demand patterns and uses "industry-standard" flow equations to calculate the resulting pressure changes throughout the pipeline network. SoCalGas, under the direction of TAG, performed hydraulic analysis of four historical days that had stressed the system to understand how the system would have performed without gas supply from Aliso Canyon. The *Technical Report* identifies the following findings of the hydraulic analysis:

- Differences between supply and demand turn out to be the key predictor of whether SoCalGas will have to curtail gas service.
- Without supply available from Aliso Canyon, a loss of capacity or difference between expected supply and actual demand greater than five percent of the total demand is likely to lead to gas system curtailments.
- While the electric generating plants located in the Los Angeles Basin receive supply directly from Aliso Canyon, the loss of Aliso Canyon as a supply source impacts customers system-wide, particularly those located on SoCalGas' Southern System and on the San Diego Gas and Electric (SDG&E) system.
- Severe pressure drops in the Los Angeles Basin are also a possibility without supply from Aliso Canyon. It may result in a localized curtailment even with the system otherwise in balance.
- The loss of Aliso Canyon jeopardizes system reliability in both the summer (April to October) and winter (November to March) operating seasons, potentially even on days with only moderate overall customer demand.

The *Technical Report* describes the hydraulic testing as having established "triggers" that stressed the system. The analysis then layers on additional stresses and makes predictions about whether SoCalGas would curtail gas service under such conditions, absent gas supply from Aliso Canyon. Key among those triggers was a day in which (1) gas send out of the system exceeded 3.2 Bcf and (2) gas supplies fell short of demand by at least 150MMcf. According to SoCalGas, there are 23 to 32 days in the summer of 2016 when the SoCalGas system, and the interrelated SDG&E system, will be under significant stress without Aliso Canyon, thereby "placing uninterrupted service to noncore customers at risk."

Next, CAISO and LADWP, as the electricity balancing authorities in the Los Angeles basin, identified the amount of natural gas – 659 MMcf and 124 MMcf, respectively – they would each need to ensure uninterrupted electric service. Then, CAISO and LADWP used inputs from the SoCalGas analysis applied to the conditions experienced on September 9, 2015, which the balancing authorities describe as a typically high-demand summer day. The bottom-line result,

according to TAG: without gas supply from Aliso Canyon, there are 14 days in summer 2016 on which gas curtailments could be high enough to result in interruption of electric service to millions of utility customers.

With these findings in hand, the four energy agencies of the TAG, and without the participation of SoCalGas, developed a list of 18 measures to reduce the risk of gas curtailment this summer. Those measures, as presented in the *Action Plan*, are:

Category	Mitigation Measure
Prudent Aliso Canyon Use	• Utilize the 15 Bcf Currently Stored at Aliso Canyon to Prevent Summer Electricity Interruptions • Efficiently Complete the Required Safety Review at Aliso Canyon to Allow Safe Use of the Field
Tariff Changes	• Implement Tighter Gas Balancing Rules • Modify Operational Flow Order Rule • Call Operational Flow Orders Sooner in Gas Day • Provide Market Information to Generators Before Cycle 1 Gas Scheduling • Require CAISO Generators to Show Gas Lined UP before Bid into Day-Ahead Electricity Market
Operational Coordination	• Increase Electric and Gas Operational Coordination • Establish More Specific Gas Allocation among Electric Generators in Advance of Curtailment • Determine if Any Gas Maintenance Tasks Can Be Safely Deferred
LADWP Operational Flexibility	• Curtail Physical Gas Hedging • Stop Economic Dispatch • Curtail Block Energy and Capacity Sales
Reduce Natural Gas and Electricity Use	• Use New and Existing Programs Asking Customers to Reduce Natural Gas and Electricity Energy Consumption • Expand Gas and Electric Efficiency Programs Targeted at Low Income Customers • Expand Demand Response Programs that Target Air Conditioning and Large Commercial Use
	• Focus and Reprioritize Existing Energy Efficiency Towards Projects with Potential to Impact Usage this Summer and Coming Winter • Reprioritize Spending in Existing Solar Thermal Program to Fund Projects Installable this Summer and by end of 2017

As the general outline above makes clear, it will be difficult for policymakers to assess either the *Technical Report* or the *Action Plan*. The analysis is technical and complex, its methodology opaque. Nonetheless, this hearing should allow members of this committee a basic understanding of the TAG analysis. Witnesses

should be prepared to explain and, in some cases, justify its key assumptions and the mitigation measures.

It is important that committee members, as they work to understand and critique the TAG analysis and recommendations, keep in mind that the analysis and recommendations are meant only to better ensure energy reliability this summer. The work done by the energy agencies to date say nothing about the future reliance on natural gas in general or on Aliso Canyon in particular.