



Frequently Asked Questions: Aliso Canyon Gas Storage Facility
January 26, 2021

[What happened at the Aliso Canyon gas storage facility \(Aliso Canyon\)?](#)

[What have policy makers and regulators, such as the CPUC, done in response to the Aliso Canyon leak?](#)

[What is the Aliso Canyon Order Instituting Investigation \(I.17-02-002\)?](#)

[What consequences has SoCalGas faced for the gas leak?](#)

[What is gas storage, and what is its purpose?](#)

[Why doesn't SoCalGas deliver enough pipeline gas to meet demand?](#)

[Why hasn't Aliso Canyon been shut down yet?](#)

[Are there any rules or restrictions on when and how Aliso Canyon is used? What is the "Withdrawal Protocol"?](#)

[Why has SoCalGas recently increased withdrawals from Aliso Canyon?](#)

[Won't building electrification reduce the need for gas and make Aliso Canyon unnecessary?](#)

[How is the amount of gas that SoCalGas can store at Aliso Canyon determined?](#)

[Why doesn't SoCalGas use its other gas storage fields instead of relying on Aliso Canyon?](#)

What happened at the Aliso Canyon gas storage facility (Aliso Canyon)?

On October 23, 2015, the Southern California Gas Company (SoCalGas), the owner of Aliso Canyon, discovered a leak in a well at the field. An extensive root-cause analysis was developed by an independent third-party contractor and determined that the leak was the result of corrosion and metal loss, which caused the underground metal tubes to crack. Gas escaped through the cracks and made its way to the surface. The California Air Resources Board (CARB) determined that at least 109,000 metric tons of methane, a potent greenhouse gas, were released as a result of the leak. After several failed attempts, SoCalGas stopped the leak on February 12, 2016. The well was then plugged and abandoned. During the nearly four months the leak lasted, more than 8,300 nearby households were evacuated, and those exposed to the gas reported headaches, dizziness, and respiratory problems.

What have policy makers and regulators, such as the CPUC, done in response to the Aliso Canyon leak?

Several steps have been taken to respond to the environmental impact of the leak and to reduce the risk of future leaks.

In response to the environmental impact of the gas that leaked, then-Governor Brown issued a proclamation that a program be developed by the CARB and fully funded by SoCalGas to mitigate

the impacts of the leak. SoCalGas committed to mitigating the leak and to work with the CARB to achieve this objective.

With regard to safety and avoiding future leaks, there have been several new laws and regulatory changes. Most notably:

- The California Geologic Energy Management Division (CalGEM), the state agency responsible for overseeing the safety of the underground part of gas wells, now requires that all gas wells must be converted so that they do not operate with a single point of failure. California's storage regulations are now more stringent than the national standard. In the period from 2018 to 2020, SoCalGas spent roughly \$261 million at all four of its storage fields to comply with the new CalGEM regulations. In 2017-18, SoCalGas made additional expenditures on testing and remediation work required by SB 380 (Pavley, 2016) as well as well conversions in anticipation of the expected new CalGEM regulations.
- CalGEM established a maximum well pressure at Aliso Canyon, which translates to a maximum inventory of 68.6 billion cubic feet (Bcf) of gas or 80 percent of its previous capacity of 86 Bcf.
- In the short-term, the CPUC further restricted the amount of gas allowed in Aliso Canyon to 34 Bcf or 40 percent of its original capacity.
- SoCalGas cannot use gas from Aliso Canyon at its discretion; it can only withdraw from Aliso Canyon if defined conditions are met.
- The CPUC conducted extensive modeling of the Southern California electric and gas systems to determine if Aliso Canyon can be permanently minimized or eliminated given the current rules and existing infrastructure. A decision about Aliso Canyon's maximum storage inventory, based on that modeling, is expected in the first half of 2021.
- The CPUC hired a third-party expert to suggest changes to the rules and infrastructure that would allow Aliso Canyon to be shut down.

[What is the Aliso Canyon Order Instituting Investigation \(I.17-02-002\)?](#)

The Aliso Canyon Order Instituting Investigation (I.17-02-002) is a proceeding at the CPUC to determine whether usage of Aliso Canyon can be minimized or eliminated while still maintaining gas and electric service reliability at just and reasonable rates. The proceeding was opened by the CPUC on February 9, 2017.

Phase 1 of the proceeding determined which models and assumptions would be used to evaluate the effects of minimizing or eliminating the use of Aliso Canyon given current system rules and infrastructure. In Phase 2, CPUC staff (staff) conducted the modeling that was agreed to in Phase 1. Staff completed the modeling in October 2020. The CPUC will consider staff's report on the modeling as well as input from interested parties in reaching a decision on what amount of gas, if any, should be kept in Aliso Canyon until a final decision is issued in Phase 3. For Phase 3 a consultant has been selected to propose changes to the rules and infrastructure that could allow Aliso Canyon to be closed and to estimate the cost and feasibility of those changes. The consultants will release their study in mid-2021, and the CPUC should reach a decision in Phase 3 by the end of that year.

What consequences has SoCalGas faced for the gas leak?

As noted above, there have been multiple regulatory and legal consequences as a result of the leak. Several apply to the safe use of storage facilities generally and, as such, impact SoCalGas. There have also been several measures that are specific to SoCalGas and the failure at Aliso Canyon. The most significant of these is the [2019 Settlement](#) announced by CARB. The settlement in the amount of \$119.5 million addresses several leak-related lawsuits from the state and the City and County of Los Angeles. The settlement was approved by the Los Angeles Superior Court in February 2019. It includes at least \$26.5 million to meet the requirement of former Governor Brown that SoCalGas fully fund a program to mitigate the impacts of the estimated 109,000 metric tons of methane released during the leak. Additional monies will go to an environmental project run by the City of Los Angeles (\$45.4 million); penalties due to the City, County, and the California Attorney General's Office (\$21 million); expenses for leak response and litigation costs incurred by the City, County, and Attorney General's office (\$19 million); and a reserve for mitigation (\$7.6 million).

At the time of the settlement announced by CARB in 2019, SoCalGas indicated that it was still facing 292 lawsuits including 48,000 plaintiffs. Most recently, on January 6, 2021, a Los Angeles County Superior Court judge ruled that residents, firefighters, and others can seek money for damages they experienced as a result of the leak.

In 2017 the company entered into an agreement with the South Coast Air Quality Management District (AQMD) to pay \$8.5 million for a health study and a local environmental project. The company also agreed to reimburse AQMD for monitoring costs related to the leak. In 2016 SoCalGas entered a settlement with the District Attorney's office of the County of Los Angeles whereby the company pleaded guilty to failing to timely report the Aliso leak and will pay the County \$4.3 million. As part of the agreement the County dismissed other remaining counts.

In addition to these consequences, on June 27, 2019, the CPUC issued an "Order Instituting Investigation" (OII), [I.19-06-016](#), which will determine whether SoCalGas violated federal law, state law, and/or Commission orders, Decisions, rules, or requirements pertaining to the maintenance of Aliso Canyon. The OII was opened in response to a root-cause analysis that identified several deficiencies concerning the operation of Aliso Canyon. The ongoing OII will determine whether SoCalGas should be sanctioned for allowing the uncontrolled release of gas from Aliso Canyon and what penalties in the form of fines, remedies and other corrective actions should be imposed for any proven violations.

What is gas storage, and what is its purpose?

Gas storage is, simply put, gas kept in a facility, i.e., an underground storage field, for future use. In California there are 13 gas storage fields. All of these are depleted petroleum fields. The fields have been converted to gas storage with gas being injected under pressure to fill the space previously occupied by petroleum. The injection and withdrawal of the gas takes place using wells. Some of these wells were previously used to extract petroleum and have been repurposed to withdraw and/or inject gas into the field. The wells can be several thousand feet deep. Pipelines above ground carry gas to the well for injection. When gas is withdrawn, other pipelines take the gas from the well to the SoCalGas pipeline system.

Storing gas ensures there is enough gas supply during high demand times when not enough gas supply is flowing into the state rapidly enough to meet demand. These high demand times typically occur on cold weather days when gas is needed for home heating. They can also occur during the summer when hot days drive cooling demand, and gas is needed to fuel electric generators. Additionally, when the sun sets and solar panels stop producing electricity, gas-fired generation can rely on stored gas to help meet electric demand.

Storage is also used as a hedge against high gas prices. Gas is purchased during the non-winter months when overall demand and prices are typically lower. It is stored for use in winter when demand and prices are typically higher. These savings on gas commodity costs are passed on directly to residential gas customers, who rely on the utility to supply their gas. Similarly, gas consumers who do not rely on the utility for gas supply (typically large industrial and commercial customers) can purchase gas for their own use and store it for a fee in the utility-owned gas storage field. Note: Since the restrictions at Aliso Canyon were put in place, the program allowing these customers to buy storage has been eliminated because there is not enough storage space to support the program.

Why doesn't SoCalGas deliver enough pipeline gas to meet demand?

SoCalGas is not solely in charge of arranging for the delivery of gas to its system. SoCalGas provides and maintains the large pipelines to bring gas into Southern California, but SoCalGas is not responsible for filling up those pipelines for all its customers. SoCalGas' central role is managing the gas system and making sure supply and demand stay in balance. Many large customers, like factories and electric generators (known as noncore customers), purchase and deliver their own gas. It is up to all the combined customers to bring enough gas onto the system to meet their demand. Ideally, everyone is bringing enough gas into the system to meet their demand—no more, no less. However, it is difficult for customers to perfectly forecast how much gas they will use.

If the difference between supply and demand is too large, SoCalGas calls an Operational Flow Order (OFO). During an OFO, customers must better match the amount of gas they are delivering with the amount they are using or pay a penalty.

If customers still don't deliver enough gas, and there isn't enough to go around, noncore customers can be curtailed, which means they get less gas than they need. SoCalGas Rule 23 defines the circumstances and order in which customers will be curtailed. In recent years with restrictions on Aliso Canyon and some pipelines being out of service or operating at reduced capacity due to potential safety problems, it has sometimes been hard for customers to deliver enough gas. In winter 2018-19, for example, large electric generation customers were subject to 43 days of voluntary curtailments and five days of mandatory curtailments. Due to these shortages, Southern California gas prices, which had been in the range of \$3 to \$4 per million British thermal units (MMBtu) went as high as \$26/MMBtu.

Why hasn't Aliso Canyon been shut down yet?

Aliso Canyon remains a critical part of maintaining reliable and affordable electric and gas service in Southern California. Aliso Canyon serves 17 electric generators and is therefore a critical part of electric reliability. The California Council on Science and Technology, a nonprofit organization established by the Legislature, stated in its [2019 report](#) that although the need to store gas

underground might be reduced in the future, “we found no immediate measures that would overcome California’s demand of natural gas during peak periods in the winter—a demand that currently exceeds the state’s pipeline capacity to import gas.” However, several key steps have been taken to make the field safer for use, and operation of the field remains restricted.

At the same time, the CPUC is examining potential options to close the facility. In November 2019 Governor Newsom called on the CPUC to “immediately engage an independent third-party expert to identify viable alternatives to the facility and scenarios that can inform a shorter path to closure.” The CPUC hired FTI Consulting to conduct the study required by the governor, and the results of the study will be reviewed in a formal CPUC proceeding, I.17-02-002, in 2021.

[Are there any rules or restrictions on when and how Aliso Canyon is used? What is the “Withdrawal Protocol”?](#)

Withdrawals from Aliso Canyon are subject to the [Aliso Canyon Withdrawal Protocol](#). It describes the process SoCalGas must follow before making a withdrawal. The [first Withdrawal Protocol](#), issued in June 2016, actually required SoCalGas to use gas from Aliso Canyon to support electricity providers in the summer. Then, in late 2017, it was changed to make Aliso Canyon an “asset of last resort,” which meant the storage field could only be used when the gas and/or electric systems were at risk of curtailment.

Using Aliso Canyon only as an asset of last resort, combined with pipeline outages on the SoCalGas system, led to reliability issues as well as repeated gas price spikes. Increased gas prices in turn contributed to electric price spikes. Both increased utility customers’ bills. For example, during a 15-day cold snap in February 2018, gas-fired electric generators were asked to voluntarily curtail gas usage for 14 days. Gas prices spiked from around \$3 per million British thermal units (MMBtu) to \$25/MMBtu, causing electric prices to hit a high of \$90 per megawatt hour (MWh). During a heat wave in summer 2018, gas prices went as high as \$39/MMBtu, pushing hourly electric prices up to \$278.50/MWh. These electric price spikes were a major contributor to Southern California Edison’s (SCE) \$825 million cost overrun for 2018. Another example is winter 2018-19, during which electric generators were subject to 43 days of voluntary curtailments and five days of mandatory curtailments. February 2019 was particularly cold, and Southern California gas prices went as high as \$26/MMBtu while California’s hourly electric price hit \$150/MWh.

As part of I.17-02-002, [staff modeled the impact on customers’ gas bills](#) for the period from 2016 to 2018 due the combined Aliso Canyon restrictions and pipeline outages. Staff estimated that gas bill increases ranged from an average of \$1.32 per bill in 2016, prior to the rupture of Line 235-2, to \$2.25 per bill in 2018 when the full impact of both the pipeline outages and the Aliso Canyon restrictions were felt. Staff did a rough calculation of the residential bill impact caused by SCE’s 2018 overrun and estimate that it added \$6.10 to the average bill in 2019.

In response to these cost and reliability issues, the CPUC revised the Withdrawal Protocol in July 2019. Now Aliso Canyon can be used to avoid price spikes, keep the non-Aliso storage fields from reaching critically low inventory levels, ensure that storage injection capacity is available in the spring, and provide gas quickly in an emergency.

Why has SoCalGas recently increased withdrawals from Aliso Canyon?

The increased frequency of withdrawals reflects changes to the Aliso Canyon Withdrawal Protocol. The Withdrawal Protocol defines the circumstances under which withdrawals can be made from the field. It was revised in July 2019 due to large gas and electric cost increases and the curtailment of electric generation customers. The revisions removed the requirement that Aliso Canyon only be used as an asset of last resort and allowed withdrawals to be made when specific conditions are present that cause a heightened risk of price spikes or curtailments. The increased flexibility reduces both short term reliability risks and price volatility.

Won't building electrification reduce the need for gas and make Aliso Canyon unnecessary?

It is likely that, as end-use electrification grows, California's reliance on renewable power will also grow. In the near term, this will likely increase the need for gas storage generally to respond to the increasingly variable demand of the gas-fired electric generators that are needed to back up wind and solar. A combination of new clean energy resources and longer duration electric storage technologies may reduce the need for gas storage over a longer time horizon. In the short term, gas storage will still be needed to help maintain the balance between demand and supply. The CPUC will determine whether the storage at Aliso Canyon is needed in its investigation, I.17-02-002. Phase 2 of that proceeding is nearly complete and examines whether Aliso Canyon can be eliminated or reduced given current rules and infrastructure. In Phase 3, the CPUC will review FTI Consulting's study on what additional rules and/or infrastructure would be required to eliminate the need for the field.

How is the amount of gas that SoCalGas can store at Aliso Canyon determined?

The total amount of gas that can be stored in Aliso Canyon was determined by CalGEM, which determined that the field could be safely operated at an inventory of up to 68.6 billion cubic feet (Bcf) of gas. Its determination was based on engineering studies related to the safe pressure in the field and the amount of gas associated with that pressure.

Independent of CalGEM's determination, Senate Bill 380 added Section 715 to the Public Utilities Code. It required the CPUC to determine the range of inventory necessary at Aliso Canyon to ensure safety, reliability, and just and reasonable rates and to issue a report presenting those findings. That report, sometimes referred to as the "715 Report," was last updated in July 2018. The [2018 report](#) determined that the maximum allowable inventory in Aliso should be 34 Bcf based on the amount of gas needed from Aliso Canyon to meet system demand for all customers on a 1-in-10-year peak day. One-in-10-year peak day demand is essentially the demand that would occur on the coldest day in 10 years. Section 715 expired on January 1, 2021. In Investigation (I.) 17-02-002, the CPUC issued a decision keeping the 34 Bcf maximum inventory for the interim period between January 1, 2021, and the date that a decision is issued in Phase 2 of that proceeding.

In Phase 2 of I.17-02-002, the CPUC will decide what inventory level, if any, should be maintained at Aliso Canyon to preserve gas and electric reliability at just and reasonable rates given current rules and infrastructure. In Phase 3 of the proceeding, the CPUC will make a final determination on Aliso Canyon inventory based on an independent study that evaluates the costs and feasibility of changes to the rules and infrastructure that would allow for the field's closure.

Why doesn't SoCalGas use its other gas storage fields instead of relying on Aliso Canyon?

SoCalGas does use its other storage fields to meet demand, but they cannot completely replace the services provided by Aliso Canyon. The SoCalGas gas system was designed and built to meet defined reliability standards for customers. Consistently meeting those standards requires all its assets, both the pipelines and storage facilities. Historically, the Aliso Canyon storage facility played a uniquely critical role in serving the system due to its size, injection and withdrawal capacity, and location. Aliso Canyon's proximity to Los Angeles allows it to quickly respond to increases in demand in the LA Basin. Honor Rancho, located near Santa Clarita, can provide some of the same services, but it is smaller, more quickly depleted, and has far less injection capacity.