**SOUTHERN CALIFORNIA GAS COMPANY**

**CPUC-ENERGY DIVISION DATA REQUEST 5**
**RE: VENTURA COMPRESSOR STATION**
**DATE REQUESTED: July 23, 2021**
**DATE RESPONDED: August 6, 2021**

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On August 5, 2021, SoCalGas received a letter from the CPUC's Executive Director, Rachel Peterson, and shares the CPUC's commitment expressed therein to hear from the community and explore solutions to address its concerns about the Ventura compressor station, including different potential compression options. We appreciate the Commission's continuing guidance on this matter and are working towards meeting the goals set out in its letter.

**QUESTION 1:**

JPL NASA detected methane emissions on October 16, 2017, at or near the Ventura Compressor Station site. Please provide details of the incident, including, but not limited to the questions below:

a) Where did the leak or venting of methane occur?

b) Did any sensors (including air/emissions monitoring and/or pressure-loss sensors) get activated?

c) Was it a blowdown purge? (Evacuating trapped gas when shutting compressor station.)

d) How often does SoCalGas have to purge the blowdown stack?

e) If it wasn't a blowdown purge, what caused the incident?

f) What equipment was leaking?

g) What measures were taken to fix the methane leak?

h) What activities were performed at the Ventura Compressor Station on about October 16, 2017. Please include a list of all Operation and Maintenance on that date.

**RESPONSE 1:**

It is SoCalGas's understanding that JPL NASA conducted two flights over the facility during times relevant to this response and provides information based on this understanding. The first flight occurred on September 7, 2017, approximately one month before the October 2017 flyover, and did not identify any methane emissions at the facility. The second flight occurred on October 16, 2017, which did identify methane emissions that appeared to be related to the facility.

SoCalGas notes that the methane emission event identified on October 16, 2017 does not meet the definition of an "incident" under 49 Code of Federal Regulations (CFR) §191.3.[1]

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[1] 49 CFR §191.3 defines an incident as:

Notwithstanding, for purposes of this data request response, SoCalGas provides the following information relating to the methane emissions detected by the JPL NASA flight on October 16, 2017. SoCalGas believes such indications were most likely related to methane emissions on station metering equipment, as further described below.

a) The measured methane emissions occurred at the northern portion of the facility from station metering equipment near the existing compressor building.

b) No.

c) No.

d) In addition to the compressor equipment, there are several pipelines that enter the station and utilize one of several blowdown stacks in order to purge the pipelines out of service. These pipeline blowdown stacks are utilized on an as needed basis to accommodate emergencies and maintenance work. The compressor station has its own blowdown stack to accommodate its emergency shutdown (ESD) system and maintenance work.

   A compressor station's ESD is a critical safety system that quickly evacuates natural gas from the station's piping and equipment in order to remove the potential for ignition. The system is required to be tested on an annual basis. The Ventura Compressor Station's ESD is designed to completely evacuate all the gas within the station within three minutes after an ESD is initiated, which is consistent with pipeline safety regulations. During the testing of the ESD, the gas is captured and not released to atmosphere. Additionally, in the past four years there have been 10 events that have triggered the ESD (8 were unplanned and two were planned), which resulted in the venting of methane.

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*(1) An event that involves a release of gas from a pipeline, gas from an underground natural gas storage facility (UNGSF), liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences*

*(i) A death, or personal injury necessitating in-patient hospitalization;*

*(ii) Estimated property damage of $122,000 or more, including loss to the operator and others, or both, but excluding the cost of gas lost. For adjustments for inflation observed in calendar year 2021 onwards, changes to the reporting threshold will be posted on PHMSA's website. These changes will be determined in accordance with the procedures in appendix A to part 191.*

*(iii) Unintentional estimated gas loss of three million cubic feet or more.*

*(2) An event that results in an emergency shutdown of an LNG facility or a UNGSF. Activation of an emergency shutdown system for reasons other than an actual emergency within the facility does not constitute an incident.*

*(3) An event that is significant in the judgment of the operator, even though it did not meet the criteria of paragraph (1) or (2) of this definition*

Please refer to Table 1: Ventura Compressor Station ESD Information (Unplanned Events) which provides the dates and the amounts vented during those unplanned events.

| Table 1: Ventura Compressor Station ESD Information (Unplanned Events) | |
|---|---|
| **Date** | **Amount Vented (Mscf)** |
| 3/1/2017 | 49.7 |
| 5/9/2017 | 54.2 |
| 5/22/2017 | 54.2 |
| 7/27/2017 | 56.8 |
| 12/7/2018 | 35.3 |
| 9/14/2019 | 56.3 |
| 1/19/2021 | 46 |
| 7/2/2021 | 5.4 |

e) Subject to the clarification of an incident in this response as noted above, the methane emissions detected by the JPL NASA flight on October 16, 2017 were most likely released from threaded connection fittings on station metering equipment.

f) Please see the response to Question 1.e above.

g) SoCalGas investigated and identified the source of methane emissions. The repair was made by tightening multiple threaded connection fittings on the station metering equipment.

The Ventura Compressor Station is among the many SoCalGas facilities subject to the stringent statewide California Air Resource Board (CARB) Oil & Gas methane rule, per California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 13: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities, has been in effect since January 1, 2018. These regulations include quarterly third-party leak detection and repair (LDAR) inspections. The purpose of this regulation is to establish greenhouse gas emission standards for natural gas facilities and is designed to serve the purposes of the California Global Warming Solutions Act, AB 32, as codified in sections 38500-38599 of the Health and Safety Code. The rule is intended to minimize methane associated with compressor operations and components in fugitive

service. The rule also includes timeframes for conducting timely repairs and re-inspections should a component be found to be leaking methane.

h) Please note this subpart to Question 1 was requested as a supplement to the original data request on August 2, 2021.

Table 2 below lists the operation and maintenance activities performed at Ventura Compressor Station on October 16, 2017.

| **Table 2: Ventura Compressor Station Operation and Maintenance Activities on October 16, 2017** | |
|---|---|
| **Activity** | **Activity Status** |
| HAZMAT Storage Area Inspection | Activity completed on 10/16/17 |
| Quarterly Compliance Emission Testing | Activity completed on 10/16/17 |
| Compressor Unit #3 Critical Parts Inventory | Activity completed on 10/16/17 |
| Compressor Unit #1 Replacement of Ring Gear on Flywheel | Activity started on 10/16/17 |

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**QUESTION 2:**

Please provide specific analyses of technical feasibility, costs, metrics, and engineering constraints that were conducted for considering the use of electric-driven compressors. If no formal analysis was done, please explain in detail why not and what barriers exist to using electric compressors at this site.

a. SoCalGas has stated that one reason it decided not to use electric compressors was the local risk of public safety power shut-off (PSPS) events. If electric compressors were used and the power went out for an extended period, can the La Goleta storage field provide enough withdrawal capacity and/or pressure to keep gas flowing to customers at a rate sufficient to avoid a widespread need to relight customer pilot lights? If so, how many hours/days could La Goleta supply adequate gas/pressure?

b. Can back-up electricity generation be installed at Ventura to support electric-driven compressors during PSPS events or other outages e.g., batteries, hydrogen fuel cells, or natural gas fuel cells? Can a dedicated and/or redundant electric line be brought into the compressor station to ensure continued service during a PSPS event?.

c. Is it possible to install a hybrid half-electric, half-gas driven compressor configuration in Ventura, similar to what is planned for the Moreno Compressor Station?

    i. What horsepower are the proposed gas and electric compressors at Moreno Compressor Station?

**RESPONSE 2:**

SoCalGas shares the CPUC's commitment, as expressed in their August 5, 2021 letter, to hear from the community and explore potential solutions to address its concerns, including exploring the use of electric driven compressors. As noted in SoCalGas's response to Question 7 of Data Request 4, SoCalGas did not initially consider the use of electric driven compressors at the Ventura Compressor Station during its development of the project. This is primarily because electronic driven compressors rely predominantly on electricity obtained from the electric grid. As previously noted, PSPS events on the Southern California Edison Company (SCE) electric grid, which serves the Ventura Compressor Station, can destabilize the energy delivery system and compromise reliability.

The Ventura Compressor Station provides reliability that is crucial to safely and reliably deliver natural gas service to customers north of the facility given (1) the location of this facility (2) the

need to meet the La Goleta Storage Field's summer injection requirements to maintain core reliability, and (3) the need to meet gas demand on the coastal system, which has been impacted by reduced local gas production.

**a.** As noted, SoCalGas remains concerned that PSPS events on the SCE electric grid could destabilize the energy delivery system and compromise reliability. The ability to continue to serve customers at a rate sufficient to avoid a widespread disruption of service would be dependent on the amount of natural gas contained in the La Goleta Storage Field at the time of the prolonged power outage. The La Goleta Storage Field holds 21.5 billion cubic feet (bcf) when full and its ability to remain full is dependent on the Ventura Compressor Station to support injecting the natural gas for storage and subsequent later usage during peak demand periods.

Storage field levels will fluctuate over the year based on system demand, which is often predicated on weather patterns; cold weather during winter increases direct customer use and hot weather during the summer increases the demand for electric generation, which in turn increases natural gas demand to serve those customers. One billion cubic feet of gas is enough to supply about 5 million homes for a day. There are approximately a quarter million customers alone on SoCalGas' Coastal System north of the Ventura Compressor Station that are served by the La Goleta Storage Field, which also supports customers south of the compressor station including the City of Ventura as well as occasionally in the Los Angeles Basin.

b. SoCalGas is committed to conducting additional review and will evaluate different equipment configuration alternatives, such as configurations that include electrification measures, to further refine the scope of the project and reduce potential air emissions. SoCalGas has already commissioned engineering analysis on the use of hydrogen for blending of the fuel-gas for the new compressors. As currently designed, the new natural gas compressors can accommodate a hydrogen blend. We anticipate this analysis to be completed by Q1 2022.

SoCalGas did not previously conduct a quantitative analysis of the potential use of electric driven compressors at the Ventura Compressor Station. As such, at this time we are unable to provide specific analyses of technical feasibility or costs.

The ability to provide a dedicated and/or redundant electric line to the Ventura Compressor Station would require detailed engineering analysis in coordination with SCE. The Ventura region is served by SCE through a series of overhead transmission lines that carry power from generating sources primarily outside of the area. The placement of additional electric infrastructure, such as new poles or towers, may result in potential environmental impacts, depending on the location.

C. As previously noted, SoCalGas did not conduct a quantitative analysis regarding the use of electric driven compressors. As such, at this time we are unable to provide specific analyses of technical feasibility, costs, metrics, and engineering constraints to determine if it is possible to install a hybrid -gas and electric driven compressor configuration in Ventura, similar to what is

planned for the Moreno Compressor Station. However, as noted above, SoCalGas is committed to conducting additional review and will evaluate different equipment configuration alternatives, such as configurations that include electrification measures.

i. To comply with South Coast Air Quality Management District's Regional Clean Air Incentives Market (RECLAIM) sunset requirements, the Moreno Compressor Station Modernization Project includes decommissioning three reciprocating compressors rated at 995 HP each and four turbine-driven centrifugal compressors rated at 1,100 HP each and two reciprocating compressors rated at 3,000 HP each. A new hybrid compression plant will include two new gas turbine-driven centrifugal compressors rated at 5,825 HP each and two new electric motor-driven reciprocating compressors rated at 4,000 HP each. An existing reciprocating natural gas compressor rated at 3,200 HP will be retrofit with selective catalytic reduction equipment and will remain in use at the facility.

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**QUESTION 3:**

Do the existing compressor safety devices have dual-system controls (electronics and air pneumatic)? Would the new compressors have the same safety devices and controls as the old compressors, fewer safety devices and controls, or more safety devices and controls?

**RESPONSE 3:**

Yes, the existing compressor safety devices have dual-system controls. The new compressors will have similar safety devices and enhanced electronics and air pneumatic controls. The new compressors are designed with more robust controls and will be equipped with a state-of-the-art emissions control system.

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**QUESTION 4:**

Are there any other sites where this compressor station could be located while still providing its essential functions? If so, please explain in detail what the relative pros and cons are for the alternative site(s) compared to the existing site. If not, please explain in detail what barriers exist to locating this compressor station elsewhere.

**RESPONSE 4:**

As noted in the response to Data Request 4, Question 7, SoCalGas retained a consultant to evaluate the Ventura Compressor Station. At a conceptual level, any alternative location considered would be evaluated based on a number of factors including:

- System operational requirements, including adequate horsepower to compress gas;
- Safety considerations such as compliance with DOT regulations;
- Compatibility with local agency land use designation and zoning (Ventura Compressor Station is located on land designated by the Ventura General Plan as "Industry" and zoned "M-2, General Industrial."[2]);
- Minimizing resource impacts, such as loss of environmentally sensitive habitat, impact to sensitive wildlife species, impacts to historical and Native American resources, and avoidance of creeks and waterways;
- Minimizing significant hillside grading, dust generation and need for retaining walls
- Adequate property acreage;
- Minimizing the need to relocate pipelines and other infrastructure and maintain adequate separation to reduce potential landslide risk; and
- If a hybrid gas and electric driven compressor configuration is contemplated, the availability of electric infrastructure to serve electric driven compressors.

SoCalGas is committed to conducting additional review and will continue to evaluate alternative sites for the compressor station, consistent with the request in the CPUC's August 5, 2021 letter.

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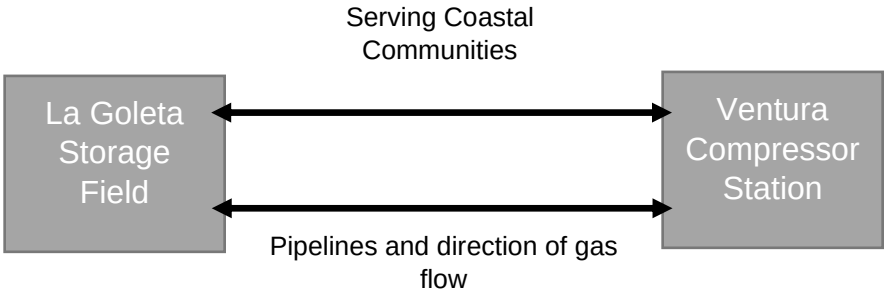
[2] Notwithstanding, the CPUC has general regulatory authority over public utilities such as SoCalGas. Courts have recognized that the CPUC has exclusive jurisdiction over utility matters because the construction, design, operation, and maintenance of public utilities are matters of state-wide concern and cannot be subject to a checkerboard of regulations by local governments. San Diego Gas & Electric v. City of Carlsbad, 64 Cal.App.4th 785, 798 (1998).

**Alternative Site: Compression at La Goleta Storage Field**

SoCalGas has conceptually evaluated the potential option to install compression at the La Goleta Storage Field. The installation of new compression equipment at the La Goleta Storage Field would serve some of the essential functions of the Ventura Compressor Station, but would not achieve the same operational benefits as the proposed Ventura Compressor Modernization Project, as further described herein. Any potential relocation of the Ventura Compressor Station would require detailed engineering and environmental analysis and obtaining required permits and authorizations from applicable agencies. The applicable agency permits would be dependent on the scope of the project and the location selected.

**Figure 1**




There are several considerations regarding relocating the compression equipment at the Ventura Compressor Station to the La Goleta Storage Field. The Ventura Compressor Station discharges into two high pressure pipelines, which are typically operated at a common pressure (see Figure 1). In other words, the pressure of gas flowing into the station from the south is lower than that of gas flowing out of the station and therefore requires compression to overcome the pressure differential and move gas north. The two pipelines, running between Ventura and La Goleta Storage Field, diverge upon leaving Ventura Compressor Station, ranging from being located 0.25 to 3.3 miles apart, and do not converge until reaching the La Goleta Storage Field, approximately 40 miles away. This pipeline spacing provides greater system reliability against pipeline outages caused by land movement than if the two pipelines shared a common pipeline route.

If compression was relocated to the La Goleta Storage Field, the existing compressors at the La Goleta Storage Field would need to be reworked or replaced to accommodate lower pressures to meet its firm injection requirements. In general, it is less efficient and requires greater horsepower requirements to compress at the end of a pipeline system rather than at the beginning. SoCalGas would also need to review if infrastructure improvements are required to meet customer demand on the distribution pipeline systems north of the current Ventura Compressor Station site. These

improvements could range from rebuilding or replacing regulator stations and large customer meter sets to installing new pipelines. SoCalGas' current design for the compression equipment at Ventura Compressor Station would allow the station to support customer demand north of Ventura during a high-sendout condition should gas supply from the La Goleta Storage Field be unavailable, or during milder demand conditions in order to preserve the inventory at the storage field for the winter heating season.

Permitting requirements for a project at the La Goleta Storage Field are also a consideration. The La Goleta Storage Field falls within the Appeals Jurisdiction Area[3] of the Coastal Zone,[4] where the Coastal Commission has delegated authority to the County of Santa Barbara, (County) (upper portion of the property where main facility is located) and the Permit Jurisdiction of the Coastal Zone, where the State retains permitting authority (lower portion of the property near Atascadero Creek). The facility is governed by a County Development Plan permit and Coastal Development Permit. Depending on the scope of any proposed compression equipment and associated facility improvements, a discretionary Revised Development Plan and Coastal Development Permit subject to approval by the California Coastal Commission and/or County Planning Commission would be anticipated. These permits may take up to 24 months (occasionally longer) from application submittal to decision-maker hearing and additional permit compliance activities may be required, further extending the start of construction. Environmental resource constraints, such as cultural and natural resources, which are known to be present at the La Goleta Storage Field, would be evaluated in the context of any permit process.

As with the Ventura Compressor Station, La Goleta Storge Field is currently subject to local, state, and federal air quality rules and regulations. If a project were to be pursued at the facility, an Authority to Construct and Title V permit modification application package would need to be submitted to the Santa Barbara County Air Pollution Control District. The draft Title V permit modification would be subject to review by the EPA as part of the approval process.

**Other Site Alternatives**

While SoCalGas believes that the modernization project meets safety and reliability needs while minimizing air emissions and other potential environmental impacts and optimizing a property that has been a compressor station since 1923, SoCalGas shares the CPUC's commitment to hear

[3] An Appeal Jurisdiction include lands where the California Coastal Commission has delegated original permit jurisdiction to the local government for areas subject to the public trust but which are determined by the California Coastal Commission to be filled, developed and committed to urban use (California Public Resources Code Section 30613).
[4] Santa Barbara County ArcGIS Land Use and Zoning Map. Accessed online August 3, 2021: arcgis.com/home/webmap/viewer.html?webmap=fa3545a29dac49aeacc81669b956e3e5&extent=-120.9142,34.093,-118.9408,35.4355

from the community and explore solutions to address their concerns. We appreciate the Commission's continuing guidance on this matter and are working towards meeting the goals set out in its letter dated August 5, 2021.

Notwithstanding the information provided herein, SoCalGas has not conducted a comprehensive environmental and operational analysis or associated studies regarding relocation of the Ventura Compressor Station, and any potential relocation would require detailed engineering and environmental analysis. However, as noted above, SoCalGas is committed to conducting additional review, and will continue to evaluate alternative sites for the compressor station.

In addition to operational and safety considerations, which are paramount, most land within the general vicinity of the Ventura Compressor Station is already developed with a mix of residential and commercial uses similar to those near the existing station. Extending away from the station in a radius of a mile, topography to the west becomes steep and rural, primarily agricultural land. Topography to the east within the City of Ventura also becomes steep and rural. In each case, a significant amount of earthwork would be required to establish a pad for the facility and to install access roads sufficient to meet operational, safety and first responder requirements (typically 16 to 24-feet in width). Pipelines would need to be routed into the new location, also causing a significant amount of earthwork and potentially requiring landowner easements and/or city/county franchise agreements. These areas are also less disturbed and therefore more likely to contain habitat for sensitive plant and wildlife species. Finally, land use and zoning designations in these areas are generally classified as agricultural, rather than industrial. Land north of the existing station along the coast would be within the Coastal Zone as well.

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**QUESTION 5:**

Please provide a map of pipelines going into and out of Ventura Compressor Station that includes the pipeline numbers, diameter, and maximum and minimum operating pressure.

**RESPONSE 5:**

Please note that the attachment submitted as part of this response contains confidential and protected material pursuant to PUC Section 583, GO 66-D, D.17-09-023 and the accompanying confidentiality declaration.

Please see the attachment submitted concurrently with this response.

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**QUESTION 6:**

Does the compressor station play a role in directing flow into different converging pipelines? If so, would relocating the compressors affect operations for directional flow management?

**RESPONSE 6:**

SoCalGas interprets “directional flow management” to mean the control of natural gas flowrate in the pipeline system. Please see response to Question 4 above. Additionally, relocating the compressor equipment as described above would not impact the directional flow management of the system. However, even if compression equipment were to be relocated, the pipelines, valves and other facilities at the Ventura Compressor Station that are not specifically related to compression, would need to remain at the location because they serve necessary pipeline operational control and safety functions.

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**QUESTION 7:**

What are the logistical requirements and cost for relocating Ventura Compressor Station to a different site.

**RESPONSE 7:**

Please note this question was requested as a supplement to the original data request on August 2, 2021.

SoCalGas has not yet conducted an assessment of the logistical requirements and costs for a potential relocation of the Ventura Compressor Station to a different site. As noted in response to Question 4 of this data request, the following are preliminary high-level considerations:

- System operational requirements, including adequate horsepower to compress gas;
- Safety considerations such as compliance with DOT regulations;
- Compatibility with local agency land use designation and zoning (Ventura Compressor Station is located on land designated by the Ventura General Plan as "Industry" and zoned "M-2, General Industrial."[5]);
- Minimizing resource impacts, such as loss of environmentally sensitive habitat, impact to sensitive wildlife species, impacts to historical and Native American resources, and avoidance of creeks and waterways;
- Minimizing significant hillside grading, dust generation and need for retaining walls
- Adequate property acreage;
- Minimizing the need to relocate pipelines and other infrastructure and maintain adequate separation to reduce potential landslide risk; and
- If a hybrid station is contemplated, the availability of electric infrastructure to serve electric driven compressors.

SoCalGas is evaluating the various considerations above and will provide an update within 90 days.

[5] Notwithstanding, the CPUC has general regulatory authority over public utilities such as SoCalGas. Courts have recognized that the CPUC has exclusive jurisdiction over utility matters because the construction, design, operation, and maintenance of public utilities are matters of state-wide concern and cannot be subject to a checkerboard of regulations by local governments. San Diego Gas & Electric v. City of Carlsbad, 64 Cal.App.4th 785, 798 (1998).

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**QUESTION 8:**

Please provide the estimated combined noise decibels for the new compressors compared to the existing compressors.

**RESPONSE 8:**

Please note this question was requested as a supplement to the original data request on August 2, 2021.

SoCalGas performed a noise study on the proposed compressor station modernization in January of 2020. The study evaluated the proposed equipment in the proposed configuration under the operating condition that generates the highest noise levels. The study analyzed the make/model of compressor and engine, building construction, location within the facility, perimeter fencing/walls, exhaust stack and silencer selection and the ancillary equipment. The study determined an upgrade was required to the exhaust silencer specified in the Front-End Engineering and Design Study (FEED). The engineering design was modified to redesign the silencer so that it meets the Ventura City noise ordinances.

SoCalGas will perform follow-up work to collect noise data on the existing station for a comparison as needed.

Please also refer to the response to Data Request 1, Question 4.