Feasibility Study of Potential Alternatives

Ventura Compressor Station Modernization Project

MARCH 2022

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with technical input from
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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AACE	American Association of Cost Engineers
ALUC	Airport Land Use Commission
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CPUC	California Public Utilities Commission
CUP	conditional use permit
CWA	Clean Water Act
DOT	U.S. Department of Transportation
ESD	emergency shutdown
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
GO	General Order
GRC	General Rate Case
HP	horsepower
kV	kilovolt
MM	million
MW	megawatt
NAS	Naval Air Station
NPDES	National Pollutant Discharge Elimination System
NWP	Nationwide Permit
OEM	original equipment manufacturer's
psi	pounds per square inch
PSPS	Public Safety Power Shutoffs
PTC	permit to construct
RP	Recommended Practice
SAA	streambed alteration agreement
SCE	Southern California Edison Company
SOAR	Save Open-Space and Agricultural Resources
SR	State Route
VCAPCD	Ventura County Air Pollution Control District
VCFD	Ventura City Fire Department

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Executive Summary

SoCalGas®[1] operates an integrated energy delivery system composed of pipelines, compressor stations, storage fields, and regulator stations, designed to provide safe and reliable service to its customers. SoCalGas relies on this as part of a network to deliver energy to residential, business, industrial, and agricultural customers throughout Southern California. Notably, the integrated energy system's reliance on the reliability and resiliency attributes of the gas system, including to meet the peak ramping demands of dispatchable electric generation when renewables are otherwise unavailable, is expected to increase even though overall gas throughput may decline. The gas system similarly provides an existing mechanism capable of transporting increasingly cleaner gaseous fuels in alignment with decarbonization goals. SoCalGas also emphasizes that activities necessary to maintain and enhance safety cannot be compromised. SoCalGas' core mission is to provide safe and reliable gas service. Safety is at the foundation of its operational activities, which are grounded in federal and state law as well as CPUC decisions. The planned project, as further described below, is necessary to support the safe operation of the gas system and provision of reliable gas service that is essential to customers.

The Ventura Compressor Station, located at 1555 North Olive Street in the City of Ventura, is one of these critical components, which has safely and reliably operated to meet local demand within Ventura and the Central Coast, as well as to supply the La Goleta Storage Field. The California Public Utilities Commission (CPUC), which has primary regulatory authority over SoCalGas' integrated natural gas system, has recognized the critical importance of storage to maintaining a reliable energy system, including providing fuel for electric generation and meeting the needs of residential customers, especially during winter months (Abdelaziz et al. 2021).

The existing compression equipment was installed in the 1980s, and a compressor station has been in use since at least 1923. Due to the decreased functionality and reliability of the existing 40-year-old equipment, coupled with changes in system operations related to decreasing local supply and the need to support storage of natural gas, SoCalGas has proposed to modernize the Ventura Compressor Station. The planned Ventura Compressor Station Modernization Project (planned project), which was first contemplated in 2013, would replace three existing natural gas compressors with four new natural gas compressors to maintain the same annual supply flowing through the compressor station, and construct a new compressor building and other associated improvements at the current compressor station site.

In August of 2021, the CPUC requested that SoCalGas prepare a feasibility study of the planned project that: (1) fully analyzes all options considered for the compressor station upgrade; (2) provides the basis for rejecting any alternatives that were considered, including but not limited to electric compressors for all or part of the planned project (3) discusses all alternative sites that were considered but rejected and provides SoCalGas' reasons for rejecting them; and (4) provides an explanation of how the planned project factors into both local and statewide safe and reliable service and the state's decarbonization goals. SoCalGas continues to collaborate with the CPUC and stakeholders on California's energy transition in a comprehensive and transparent manner.

Through extensive stakeholder engagement with the local community, including public meetings, community canvasing, stakeholder briefings, station tours for local officials,

[1] SoCalGas is a wholly owned subsidiary of Sempra Energy.

informational newsletters, and social media posts and dedicated project website updates, SoCalGas requested input and identified seventeen (17) potential alternatives as part of this feasibility study. Of these alternatives, seven (7) were dismissed from further consideration for failing to meet the purpose, need and objectives of the planned project or for failing to meet essential site criteria, which are criteria that must be met to construct and operate a compressor station. The potential alternatives are shown in Table ES-1 below.

The ten (10) remaining alternatives were evaluated based on operational considerations; environmental considerations; project cost; operational cost; and schedule duration. In order to assess each potential alternative option according to the same criteria, a scoring rubric was developed. These alternatives were assessed based on a desktop level analysis with cost estimates developed to a Class 5[2] and schedule estimates to a Level 1.[3] Given the relatively high-level assessment that was performed on the 10 alternatives, please note the potential for wide accuracy ranges with respect to cost and schedule. The schedule for each alternative was determined using industry standards and consulting with industry experts to determine durations for engineering, procurement, and construction. Without engaging in preliminary negotiations with the landowners, a common 24-month period was used for the land and/or right-of-way acquisition duration for each alternate location other than for the current site, which SoCalGas already owns. The duration for the alternative site locations could easily be extended due to lengthy negotiations if a voluntary transfer cannot be agreed upon or the property is currently under use by the owner(s). A duration extending beyond 24 months would impact the schedule and delay the progress of the engineering, procurement of long-lead-time equipment, and construction. These delays could add years to the estimated schedules.

The environmental analysis was performed by Dudek, a third-party environmental consulting firm, and their analysis is included in Appendix A. The criteria within the environmental rubric address topic areas that the CPUC examined in data requests as well as some other categories that are typically evaluated in a California Environmental Quality Act (CEQA) environmental impact report (EIR).[4] The scoring rubric for all five considerations – operational, environmental, project cost, operational cost, and schedule – is included in Appendix B.

Table ES-1. Ventura Compressor Modernization Project Potential Alternatives

Alternative	Identified By	Location
No Project	Community	Current site – Maintain existing site configuration and operational profile
Compressor Station Removal	Community	Current site – Remove compressor station and do not replace compression

[2] In accordance with AACE RP 87R-14 (AACE 2020), a Class 5 cost estimates is "generally prepared based on very limited information, and subsequently have wide accuracy ranges. Class 5 estimates are generally based on unclarified contingent resources…"

[3] In accordance with AACE RP 91R-16 (AACE 2020), a Level 1 schedule is "a high-level schedule that reflects key milestones and summary activities by major phase, stage or project being executed. …. Level 1 schedules provide high-level information that assist in the decision making process (go/no go prioritization and criticality of projects)."

[4] There is no discretionary permit required for the planned modernization project and consequently, environmental review under CEQA is not required. Environmental considerations evaluated by Dudek include topic areas such as, but not limited to, land use, air quality, traffic, and wildfire, which are topic areas in CEQA Guidelines Appendix G, Environmental Checklist Form.

Table ES-1. Ventura Compressor Modernization Project Potential Alternatives

Alternative	Identified By	Location
3/1 Hybrid	SoCalGas	Install a hybrid equipment configuration consisting of three electric compressors and one natural gas compressor at current site or other alternative sites
All Electric Compression	CPUC	Install an all-electric equipment configuration consisting of four new electric compressors at current site or other alternative sites
Goleta Storage Field	SoCalGas	Remove the existing horsepower from the compressor station and replace with new compression equipment at the La Goleta Storage Field approximately 40 miles north within the County of Santa Barbara
Petrochem	SoCalGas	Approximately 15-acre industrial site designated and zoned for industrial uses located approximately 13,500 feet northwest of the compressor station on the west side of State Route (SR) 33 within the County of Ventura
Petrochem – Hybrid	SoCalGas	
Planned Project	SoCalGas	Current site – Approximately 8-acre parcel located on land designated and zoned for industrial uses on the west side of City of Ventura
Current Site – Hybrid	SoCalGas	
Avocado Site – Natural Gas	Community	Approximately 15-acre agricultural site designated for open space uses and zoned for agriculture located approximately 3,000 feet west of the compressor station within the County of Ventura
Avocado Site – Hybrid	Community	
Ventura Steel – Natural Gas	SoCalGas	Approximately 10-acre industrial site with oil extraction infrastructure designated and zoned for industrial uses located approximately 8,000 feet north of the compressor station within the County of Ventura
Ventura Steel – Hybrid	SoCalGas	
Devil's Canyon Road – Natural Gas	Community	Approximately 12.88-acre oil extraction site located approximately 6,000 feet to the north of the compressor station on west side of SR-33 within the County of Ventura
Devil's Canyon Road – Hybrid	Community	
County Line – Natural Gas	SoCalGas	Approximately 12.33-acre vacant parcel of land designated and zoned for agriculture located within County of Ventura at the county line between Santa Barbara/Ventura counties approximately 12 miles northwest of the existing compressor station
County Line – Hybrid	SoCalGas	

The top three alternatives for each of the five categories are shown in Table ES-2: Results of Evaluation, below.

Table ES-2. Results of Evaluation

Ranking Order	Operational Considerations	Environmental Considerations	Project Cost	Operational Cost	Schedule
1	1A Planned Project	4B Devil's Canyon Road – Hybrid	1A Planned Project	1A Planned Project	1A Planned Project
2	3A Ventura Steel – Natural Gas	1B Current Site – Hybrid	1B Current Site – Hybrid	3A Ventura Steel – Natural Gas	1B Current Site – Hybrid
3	1B Current Site – Hybrid	3B Ventura Steel – Hybrid	4A Devil's Canyon Road – Natural Gas	4A Devil's Canyon Road – Natural Gas	4A Devil's Canyon Road – Natural Gas

Based on the analysis, Alternative 1.A: Planned Project received the highest rankings in the most categories. However, SoCalGas has selected Alternative 1.B: Current Site – Hybrid, which received the second highest rankings in the most categories, as the preferred alternative. The Devil's Canyon Road – Hybrid alternative received the highest score in the environmental considerations. However, it did so with less than 1 percent difference between it and the current site when equipped with hybrid compression technology. Further, it does not achieve high rankings in the other four categories.

SoCalGas determined that the Current Site – Hybrid alternative (1) provides greater reliability benefits due to project duration as compared to the alternative site locations; (2) provides greater oxides of nitrogen (NO_x) emissions reductions as compared to an all-gas option; and (3) reduces the project cost burden to our customers as compared to the alternative site locations.

1 Introduction

SoCalGas®[5] operates an integrated energy delivery system composed of pipelines, compressor stations, storage fields, and regulator stations, designed to provide safe and reliable service to its customers. SoCalGas relies on this network to deliver energy to residential, business, industrial, and agricultural customers throughout Southern California. As the nation's largest natural gas distribution utility, SoCalGas serves 21.8 million consumers through 5.9 million meters in more than 500 communities within its 24,000-square-mile service territory.

The Ventura Compressor Station, located at 1555 North Olive Street in the City of Ventura, has safely and reliably operated to meet local distribution needs within Ventura and the Central Coast, as well as to supply the La Goleta Storage Field. Figure 1 shows an overview of the site's location in SoCalGas' service area. However, the existing compression equipment was installed in the 1980s, and the compressor station has been in use since at least 1923. As discussed further herein, due to changes to the operating environment of SoCalGas' integrated natural gas transmission system, the functionality of the existing 40-year-old equipment, the ability to maintain system reliability, and the critical importance of maintaining adequate inventory in the La Goleta storage field, SoCalGas has proposed to modernize the compressor station, by replacing three existing natural gas compressors with four new natural gas compressors within a new compressor building and other associated improvements (planned project). The California Public Utilities Commission (CPUC) has recognized the role of compressor stations in maintaining the operational reliability and safety of the gas transmission system (CPUC 2019).

Figure 1. Regional Overview

The CPUC, which has primary regulatory authority over SoCalGas' integrated natural gas transmission system, requested[6] that SoCalGas prepare a feasibility study that: (1) fully

[5] SoCalGas is a wholly owned subsidiary of Sempra Energy.

[6] California Public Utility Commission letters dated August 5, 2021, and August 20, 2021 (CPUC 2021a, 2021b).

analyzes all options considered for the compressor station upgrade; (2) provides the basis for rejecting any alternatives that were considered, including but not limited to electric compressors for all or part of the planned project (3) discusses all alternative sites that were considered but rejected and provides SoCalGas' reasons for rejecting them; and (4) provides an explanation of how the planned project factors into both local and statewide safe and reliable service and the state's decarbonization goals.

This feasibility study for the Ventura Compressor Station analyzes potential project alternatives to determine if they meet the purpose and need of the planned project and most of the project objectives; determine if they meet essential site criteria; assess operational and environmental criteria; and finally, assess cost and schedule. In order to assess each potential alternative option according to the same criteria, a scoring rubric was developed for operational, environmental and schedule considerations. The rubric assigns point values from 0 to 9. Cost was evaluated based on the lowest to highest cost.

The criteria within the rubric address several topic areas that the CPUC examined in multiple data requests[7] regarding the Ventura Compressor Modernization Project as well as categories typically evaluated in a CEQA EIR or topic areas relevant to operational needs.[8] Operational considerations include topic areas such as safety and resiliency, electrification and power requirements, control systems, system maintenance and gas releases, and siting considerations. Environmental considerations include topic areas such as, but not limited to, air quality, greenhouse gas emissions, traffic, noise, aesthetics/visual resources, land use designation, and wildfire. Additional topic areas were added to expand the environmental evaluation to address cultural resources, natural resources, and CalEnviroScreen pollution burden.

Dudek was retained by SoCalGas to prepare an environmental evaluation as part of this feasibility study (see Appendix A). Dudek is a 700-person national, multidisciplinary environmental and engineering firm founded in 1980 and is ranked as one of the top 120 U.S. Environmental Firms (Engineering News-Record 2021). Additional technical support for SoCalGas' feasibility study analysis was provided by Burns and McDonnell (BMCD) and SPEC Services. BMCD is a 7,500-person family of companies consisting of engineers, construction professionals, architects, planners, technologists, and scientists to design and build infrastructure. SPEC Services is an engineering firm that includes over 200 people covering a broad range of disciplines, including process, mechanical, electrical, controls, civil/ structural, and pipeline engineering and design,

[7] CPUC Data Requests/SoCalGas Responses include:
- CPUC–Energy Division Data Request 1, RE: Ventura Compressor Station, Date Requested: May 12, 2021; Date Responded: May 14, 2021 (SoCalGas 2021a)
- CPUC–Energy Division Data Request 2, RE: Ventura Compressor Station, Date Requested: May 17, 2021; Date Responded: May 24, 2021 (SoCalGas 2021b)
- CPUC–Energy Division Data Request 3, RE: Ventura Compressor Station, Date Requested: June 1, 2021; Date Responded: June 4, 2021 (SoCalGas 2021c)
- CPUC–Energy Division Data Request 4, RE: Ventura Compressor Station, Date Requested: June 23, 2021; Date Responded: July 7, 2021 (SoCalGas 2021d)
- CPUC–Energy Division Data Request 5, RE: Ventura Compressor Station, Date Requested: July 23, 2021; Date Responded: August 6, 2021 (SoCalGas 2021e)
- CPUC–Safety and Enforcement Division Data Request 1, RE: Ventura Compressor Station, Date Requested: August 19, 2021; Date Responded: August 19, 2021 (SoCalGas 2021f)

[8] There is no discretionary permit required for the planned modernization project and consequently, environmental review under CEQA is not required. Environmental considerations evaluated by Dudek include topic areas such as but not limited to land use, air quality, traffic, and wildfire, which are topic areas in CEQA Guidelines Appendix G, Environmental Checklist Form.

procurement, construction management, project controls, survey, and land services, and permits.

As discussed more fully herein, the natural gas system and the planned project are integrally related to local and statewide safe and reliable energy service and the state's decarbonization goals.

1.1 System Overview, Safety, Reliability, and Decarbonization Goals

This section provides an overview of SoCalGas' natural gas system, system safety, Ventura Compressor Station safety and reliability and provides an explanation of how the planned project factors into both local and statewide safe and reliable service and the state's decarbonization goals, as requested by the CPUC in letters dated August 5, 2021, and August 20, 2021.

1.1.1 Gas System Overview

SoCalGas' service territory encompasses approximately 24,000 square miles throughout Central and Southern California, from Visalia to the Mexican border. Most of the natural gas used in California—more than 90 percent—is produced out of state including from basins in Texas and New Mexico. Transmission pipelines transport natural gas supplies from the California/Arizona border and other receipt points in Central and Southern California to areas throughout SoCalGas' service territories. Nine compressor stations located along the transmission pipelines, including the Ventura Compressor Station, provide the pressurization needed to move the gas through the pipelines.[9] Natural gas may be moved into four underground storage fields within the SoCalGas system.[10] Since out-of-state supplies of natural gas may not be enough to meet customers' needs, gas from the storage facilities is used to make up the difference. Storage fields play a critical role in providing gas supplies during colder months for heating and warmer months to support electricity generation. Natural gas may be withdrawn from storage fields and moved into transmission pipelines and then into smaller, lower-pressure distribution mains that transport the natural gas around the region and directly to commercial and industrial customers. The natural gas is then moved into even smaller and lower-pressure pipelines for delivery to homes and businesses throughout SoCalGas' service territory.

1.1.2 System Safety

At SoCalGas, the safety of our customers, employees, contractors, and the communities we serve has been, and will remain, our core value. Our tradition of safety spans more than 150 years and is the foundation of our business. As the nation's largest natural gas utility, we take our safety commitment very seriously. Our longstanding commitment to safety focuses on three primary areas – employee and contractor safety, customer and public safety, and the safety of

[9] As noted by the U.S. Energy Information Administration, "The U.S. interstate natural gas pipeline network relies on more than 1,200 natural gas compressor stations to maintain the continuous flow of natural gas between supply area and consumers. Compressor stations are 'pumping' facilities that advance the flow of natural gas. They are usually situated between 50 and 100 miles apart along the length of a natural gas pipeline system and are designed to operate on a nonstop basis" (USEIA 2007).

[10] The four natural gas storage fields are Aliso Canyon (northern San Fernando Valley near Porter Ranch), Honor Rancho (Santa Clarita near the State Route 126 and Interstate 5 interchange), La Goleta (Goleta south of University of California, Santa Barbara), and Playa del Rey (north of Los Angeles International Airport).

our gas system. This safety focus is embedded in all we do and is the foundation for who we are – from initial employee training, to the installation, operation and maintenance of our utility infrastructure, and to our commitment to provide safe and reliable service to our customers. We strive to continuously improve and strengthen our safety performance by setting clear measurable goals, assessing our safety performance, reviewing and questioning approaches and assumptions, integrating people and activities to promote a common approach to safety, and learning from and sharing best practices and lessons learned with our stakeholders, including our peers. This safety commitment has guided SoCalGas' past and current practice and will continue to guide our future direction. SoCalGas' overarching safety program is called the Safety Management System (SMS).

Safety Features

Natural gas energy providers, such as SoCalGas, are regulated, monitored, and inspected by a number of government agencies. Pipeline operators must comply with the Code of Federal Regulations requirements, Department of Transportation Pipeline and Hazardous Materials Safety Administration requirements (PHMSA 2018), National Code Standard requirements, and CPUC General Orders and regulations when engineering, designing, and constructing compressor stations. SoCalGas also incorporates best available technology and safety systems when retrofitting or redesigning its facilities and equipment to provide multiple layers of redundancy when it comes to system safety and reliability. Figure 2 presents a overview of the components of the SoCalGas pipeline system.

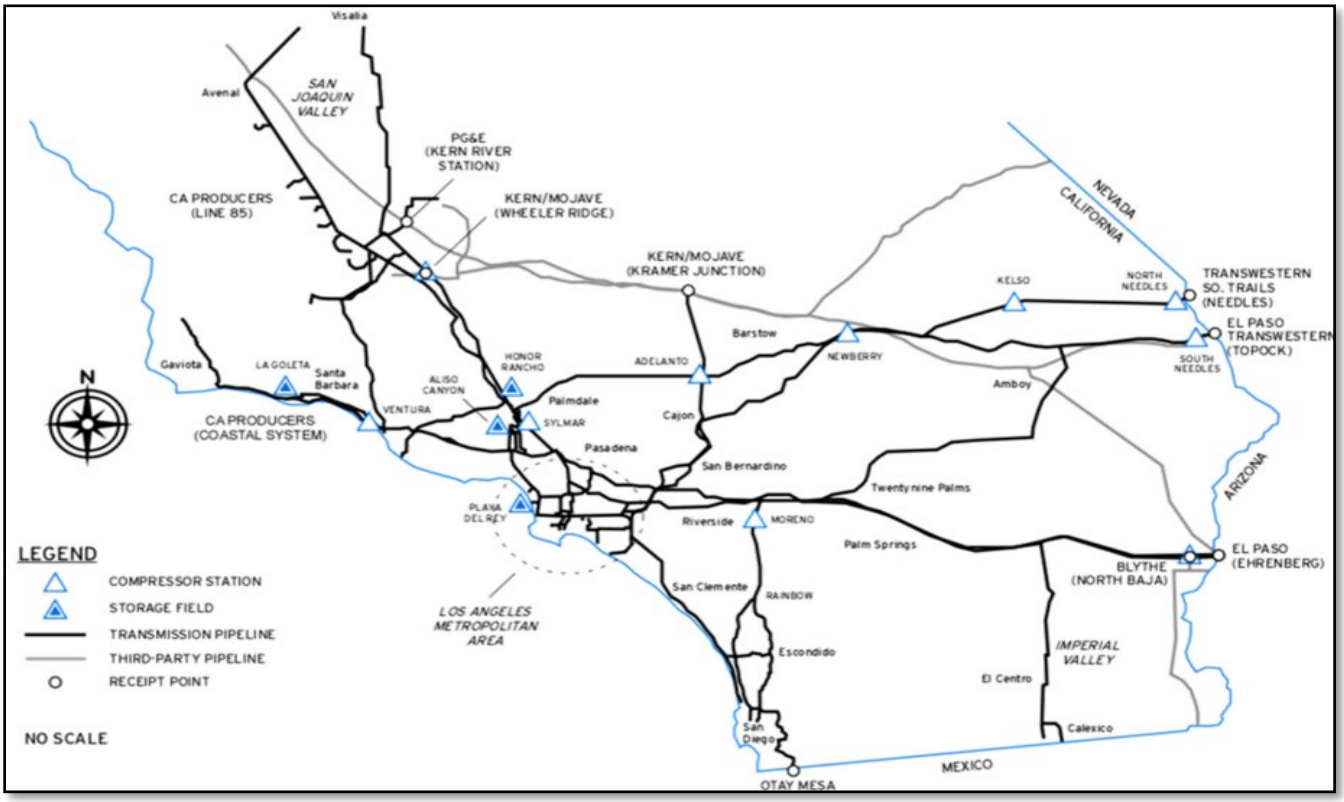


Figure 2. Gas Transmission System

The integrity of the pipeline systems that bring natural gas to homes and businesses is also under careful and routine surveillance. SoCalGas has approximately 5,000 trained employees

to respond quickly to incidents throughout the service territory. Additional safety measures include the following:

- **Leak Surveys:** SoCalGas conducts regular leak surveys by trained and qualified individuals of its pipelines and compressor stations, typically using sensitive natural gas detection equipment, and addresses leak indications found as a result of a leak survey.
- **Pipeline Patrols**: Pipeline patrols are performed by trained and qualified individuals within structured scheduled times that meet or exceed federal and state requirements to look for indications of any abnormal conditions, such as missing pipeline markers, construction activity, potential gas leaks, and other factors that can affect the safety and operation of the pipeline.
- **Corrosion Control**: In order to protect pipelines from external corrosion, SoCalGas uses pipeline coating and cathodic protection. SoCalGas also manages the quality of the natural gas in its system and manages the system's operation to prevent internal corrosion.
- **Valve Inspection**: Valves utilized for isolating pipeline segments are inspected once each year and serviced for valve casing leak detection, proper valve identification, adequate lubrication, and valve operation. There are approximately 8,500 of these valves in the transmission pipeline system.
- **Underground Vaults**: Once a year, SoCalGas performs routine maintenance and inspection on all underground vaults within its service area, which typically contain pressure-regulating or pressure-limiting equipment. Maintenance and inspection include proper operation of ventilation equipment, inspection of structural conditions, correction of water presence, and removal of trash or other foreign substances.

1.1.3 Ventura Compressor Station Safety and Reliability

SoCalGas' SMS encompasses all aspects of safety relevant to SoCalGas' business, including employee safety, contractor safety, customer safety, public safety, and system safety. It applies to all SoCalGas assets and operations as well as to all employees, from senior management to those on the frontline. Our staff at the Ventura Compressor Station work and live in the Ventura community and impart the value of safety in every task.

Safety

The Ventura Compressor Station meets all applicable federal and state requirements for safety. SoCalGas performs specific testing and inspections at the Ventura Compressor Station as required by the Code of Federal Regulations, California Air Resources Board (CARB) and CPUC General Order 112-E and other relevant local regulations (e.g., Ventura County Air Pollution Control District [VCAPCD]). The station, including its piping, safety, and fire equipment, is equipped with continuous remote/onsite monitoring equipment, and is also subject to in-person testing and inspection, as further described below. SoCalGas also is in regular communication with first responders, including the Ventura City Fire Department (VCFD), which is the primary emergency response agency for an emergency natural-gas-related incident at the Ventura Compressor Station. The VCFD also reviews and approves the facility's hazardous materials business plan and spill prevention, control, and countermeasure plan. In advance of routine maintenance activities, SoCalGas contacts the VCFD to maintain open communication. Additionally, SoCalGas' Emergency Services Department conducts annual briefings with first

responders in Ventura and across its service territory so that they are educated about how to respond to a natural gas incident.

The Ventura Compressor Station is among the many SoCalGas facilities subject to the statewide California Air Resources Board (CARB) Oil and Gas Methane Regulation, 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, which has been in effect since January 1, 2018. This regulation includes 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 serve the purposes of the California Global Warming Solutions Act, Assembly Bill 32, as codified in Sections 38500–38599 of the California Health and Safety Code. The rule is intended to minimize methane leakage associated with gas storage, processing, and transmission. The rule also includes time frames for conducting timely repairs and re-inspections should a component be found to be leaking methane.

There are a multitude of regular tests and inspections that occur at the Ventura Compressor Station, which include the following:

- **Daily**: Facility rounds/remote monitoring
- **Weekly**: Hazardous materials storage area audio-visual inspections
- **Monthly**: Fire and safety equipment inspection; preventive maintenance and inspections per original equipment manufacturer's (OEM) specifications; spill prevention, control, and countermeasure inspections
- **Quarterly**: Fire and gas detector testing and inspections; emission testing; third-party leak inspections per CARB's statewide Oil and Gas Methane Regulation; preventive maintenance and inspections per OEM specifications
- **Semi-annual**: Structural support integrity inspections; preventive maintenance and inspections per OEM specifications; internal environmental compliance audits and inspections
- **Annual**: Third-party fire equipment inspections, servicing, and testing; emergency shutdown (ESD) system testing and inspections; third-party emission testing; preventive maintenance and inspections per OEM specifications; valve maintenance and inspections; relief valve and transmitter inspections and testing; internal leak inspections
- **Other as needed**: Stormwater compliance evaluations every rain event

When performing system testing, natural gas is released into onsite piping that feeds into SoCalGas' local distribution system. When a compressor or onsite pipeline is taken out of service for scheduled maintenance SoCalGas uses state of the art technology to reduce/eliminate the venting of natural gas to atmosphere. Releases are accounted for in SoCalGas' greenhouse gas annual emission report.

Reliability

The Ventura Compressor Station is situated to support the Central Coast and meet reliability needs. It is the last compressor station on SoCalGas' Coastal System and the main feed to customers in Ventura and on the Central Coast. A compressor station has been in use at the planned project site since 1923 and the current equipment has been onsite since the 1980s. Customer demand on the Coastal System has been relatively stable over the last 10 years;

however, locally produced gas supplies have decreased significantly over the same period.[11] With the loss of local supply and performance constraints due to aging equipment, the compressor station has had to run more frequently in order to meet customer demand and maintain gas storage supply in the La Goleta Storage Field. SoCalGas has made use of natural gas supply from Pacific Gas and Electric Company (PG&E) that is delivered to the distribution system at Morro Bay to supplement the local demand, thereby facilitating injection at the La Goleta Storage Field. However, these operational modifications are not sufficient to address the long-term changes, such as the loss of local production, to the system. Gas supplies transported through the Ventura Compressor Station are now the primary source of supply for the La Goleta Storage Field because local supplies no longer meet injection needs. For these reasons, SoCalGas sought CPUC authorization for compressor station modernization in the 2016 and 2019 General Rate Case (GRC).[12]

1.1.4 Decarbonization Goals

Reducing carbon intensity across all economic sectors is foundational to achieving California's net zero GHG emission goals. It requires energy efficiency, renewable electricity, renewable gases, long duration storage, carbon management, and other technologies to be viable at scale. A successful energy transition requires leadership, innovation, effective policy, and broad collaboration. SoCalGas set a goal to achieve net zero greenhouse emissions in its operations and the energy it delivers by 2045. These steps are in alignment with the State of California.

The State is working on many decarbonization efforts with the goal of achieving carbon neutrality by 2045. The Ventura Compressor Station Modernization Project, along with the others recognized by Commission Decision D.19-09-051 on SoCalGas' integrated gas transmission system, will support both local and statewide decarbonization efforts. Furthermore, SoCalGas continues to integrate electric equipment across its infrastructure to create hybrid operating systems that further reduce potential emissions.

The reliability services and capabilities provided by the gas grid are increasingly being called upon to support decarbonization goals and complement renewable resource deployment. For example, "renewable natural gas (RNG) is produced from food waste, farms, landfills, and even sewer systems. It can rapidly cut greenhouse gas emissions because it takes more climate

[11] Over time, locally produced gas supplies on SoCalGas' transmission system downstream of the Ventura Compressor Station have dropped from approximately 15,029,633 million cubic feet in 2011 to 1,534,807 million cubic feet in 2020 (SoCalGas 2021a).

[12] As noted in Commission Decision D.19-09-051 on SoCalGas' 2019 GRC application, the CPUC authorized the planned compressor modernization project and the necessary funding, recognizing the importance of maintaining operational reliability and safety of the gas transmission system, and finding that: "With respect to the requested amounts for this GRC, we note that other largescale projects are being planned specifically for the Ventura Compressor Station and the Honor Rancho Compressor Station (and the Moreno Compressor station for SDG&E [San Diego Gas & Electric®]). Because we recognize the importance of the proposed projects and the role of compressor stations in maintaining operational reliability and safety of the gas transmission system, we find that it is prudent and reasonable to authorize the proposed projects and for SoCalGas to have the necessary funding to conduct these projects (and Moreno Compressor station for SDG&E). At this point, we do not find it necessary to deviate from current GRC practice and authorize funding only for specific projects because of the large scope covered in the GRC and because of the many challenges associated with planning and executing multiple and large projects within a specified timeframe. We do however encourage SoCalGas to place a high priority on critical projects under this category as most of its compressors are over 50 years old and because of key risks that need to be mitigated in this area. Therefore, we find that the requested amounts for Compressor Stations should be authorized" (D.19-09-051 at pp. 116–117).

pollution out of the air" (Kovaleski 2019). The CPUC recently issued Decision 22-02-025 on biomethane standards to implement Senate Bill 1440 Biomethane Procurement Program which sets "biomethane (i.e., renewable natural gas and/or bio-synthetic natural gas) procurement targets to reduce short-lived climate pollutant emissions ... establish a cost-effective means of procurement and adopt provisions to achieve additional co-benefits, as well as timetables for each investor-owned utility providing gas service in California to achieve specified procurement targets" (CPUC 2022). California's Low-Carbon Fuel Standard, which requires companies that sell transportation fuels in the state to lower their products' carbon intensity, is causing increased interest in dairy renewable natural gas to address the emissions linked to climate change (Dvorak 2022). Biogas from cow manure, which is around 60% methane, is piped to a processing facility that collects gas and purifies it for injection into the pipeline (Dvorak 2022). Calgren Dairy Fuels completed a dairy renewable natural gas facility in Pixley, California, the first of its kind in the state. The biogas captured by the facility is processed and piped into the SoCalGas system. As noted by Walt Dwelle, principal owner of Calgren Renewable Fuels: "This facility alone will eventually capture methane produced from the manure of more than 75,000 cows, preventing about 130,000 tons of greenhouse gas from entering the atmosphere each year, the equivalent of taking more than 25,000 passenger cars off the road for a year" (Kovaleski 2019).

SoCalGas is integrating green hydrogen into the pipeline network to support hard to electrify industries – like dispatchable electric generation, high heat industries and heavy-duty trucks. There's a growing consensus among academics, industry leaders, community stakeholders and regulators that solar, wind and batteries alone cannot achieve California's target of carbon neutrality by 2045 – a goal SoCalGas shares for its own operations.

The California Energy Commission (CEC) observed that the gas system is integral to the electric grid because the gas system is "being used to integrate renewables" by "meet[ing] peak and net peak demand."[13] Advancement of renewable resources has changed the way electricity is generated and driven increased "inter-dependencies between gas and electric systems."[14] As noted by Katherine Blunt in the Wall Street Journal, "grid operators around the country have recently raised concerns that the intermittence of some electricity sources is making it harder for them to balance supply and demand, and could result in more shortages" (Blunt 2022). As the electric grid incorporates an increasing amount of renewable resources, it is likely less natural gas will be used for electric generation on an annualized basis. Despite this, the gas system will be called upon to fill gaps when renewable resources cannot meet demand due to intermittent supply, increased levels of end-use electrification, increases in extreme weather events, and wildfires such as the 2018 Thomas Fire that affected both Ventura and Santa Barbara Counties.

As such, deliveries of just–in-time natural gas are increasing for thermal generation, albeit overall generation is decreasing. In recent years due to changes in regulations related to cooling systems for natural gas electric generation, in-state gas fired generation has decreased by almost 13,000 megawatts (MW).[15] Despite this decline in gas generation capacity, gas throughput on SoCalGas' integrated transmission system has risen largely to support

[13] *See* CEC, "Overview of California Gas Reliability Issues," presented at the Integrated Energy Policy Report Joint Agency Workshop on Summer 2021 Reliability, Session 3: Gas Reliability Issues and Polar Vortex, held on July 9, 2021. Available at: https://www.energy.ca.gov/event/workshop/2021-07/iepr-joint-agency-workshop-summer-2021-electric-and-natural-gas-0.

[14] Ibid.

[15] See 2021 Draft IEPR, Volume II, p. 33.

dispatchable generation.[16] For example, in 2020, in significant measure most peak hour gas deliveries from SoCalGas' system were to serve dispatchable electric generators and electric system ramping needs more so than to serve peak hour core customer thermal load. For example, of the 77 hours in 2020 when deliveries to either core customers or dispatchable electric generators exceeded 100,000 Dekatherms/hour (Dths/hr) (equivalent to ~ 2.4 billion cubic feet/day (Bcf/d) of capacity), 62 hours were to serve dispatchable electric generators while 15 hours served core customers. This requires consistent and reliable compression of gas in the pipelines to be able to move high quantities of gas quickly.

1.2 Feasibility Study Methodology

SoCalGas appreciates the collaboration with the community and CPUC on the Ventura Compressor Station Project. We understand the public's concern for safety at this facility and all SoCalGas facilities. SoCalGas is committed to clear, open, transparent, and frequent communication to work collaboratively with the communities and local municipalities in which our facilities are located and with regulatory agencies with oversight of our facilities. This feasibility study represents SoCalGas' diligent and earnest assessment of the Ventura Compressor Station and the feasibility of potential alternative site locations and equipment configurations.

There is no prescriptive format or template for a feasibility study. As such, SoCalGas developed this study based on the foundational purpose, need and objectives of the project, essential site criteria and five core considerations – operational, environmental, project cost, operational cost, and schedule – described herein.

1.2.1 Purpose, Need, and Objectives of the Project

SoCalGas considered project alternatives based on safety, reliability, resiliency, environmental, and community considerations; ratepayer impacts; and cost and schedule in relationship to the planned project's objectives. The purpose of the planned Ventura Compressor Modernization Project is to:

1. Continue providing reliable compression to supply residential, business, industrial, and agricultural customers with gas in Ventura and along the Central Coast of California;
2. Enhance reliability by modernizing aging infrastructure; and
3. Support gas deliveries to the La Goleta Storage Field, a critical part of the region's energy infrastructure.

The need for the planned project is driven by changes to the operating environment of SoCalGas' integrated gas transmission system, the functionality of the existing 40-year-old equipment, the ability to maintain sufficient pressure in the existing pipelines, and the critical importance of maintaining adequate inventory in the La Goleta Storage Field.

The objectives of the planned project are to:

- Replace compression infrastructure installed in the 1980s with new equipment that complies with applicable Ventura County Air Pollution Control District (VCAPCD)

[16] SoCalGas' internal modeling analysis.

requirements and supports California's climate goals and SoCalGas' climate goals to reach net zero carbon emissions by 2045.

- Meet system operational requirements, including adequate horsepower to compress gas, and address changes in the natural gas transmission system that necessitate flexibility such that the equipment can provide sufficient compression to supply the La Goleta Storage Field and customers north of the Ventura Compressor Station as well as meeting local distribution needs in Ventura.
- Safely construct and operate the compressor station by complying with safety regulations including, but not limited to, U.S. Department of Transportation (DOT) regulations.
- Maintain compatibility with local agency land use designations and zoning by utilizing existing industrial land with adequate acreage to minimize land use conflicts and minimize disturbance to undeveloped land as practicable.
- Minimize environmental impacts, such as loss of environmentally sensitive habitat, impacts to sensitive wildlife species, and impacts to historical and Native American resources.
- Minimize significant hillside grading, dust generation, and installation of retaining walls.
- Minimize the need to relocate pipelines and other infrastructure and maintain adequate separation to reduce potential landslide risk and maintain resiliency.
- Consider availability of electric infrastructure if a hybrid natural gas and electric compressor configuration is contemplated.
- Consider proximity to and the design pressure of the existing pipeline system.
- Safeguard ratepayer funds by evaluating project costs in a prudent manner and in accordance with CPUC direction.

1.2.2 Essential Site Criteria

Essential site criteria are those criteria that must be met to construct and operate a compressor station. They include the following:

1. Property acreage is at least 8 acres but ideally 10 acres or larger, especially for sites with slopes greater than an average of 15% to account for graded cut/fill slopes. The site must also be held by private property owners or SoCalGas (not a local, state, or federal agency).

   SoCalGas operates nine (9) compressor stations on its integrated gas transmission system. The property acreage of these compressor stations vary in size from less than an acre to more than 100 acres, with a median size of 39 acres and an average size of roughly 40 acres. To safely operate a compressor station, adequate space within and around buildings and pipelines is necessary, which is dependent on the operational needs of the particular facility. The existing station is operating on 8 acres but given that the median compressor station size for SoCalGas' 9 compressor stations is 39 acres and the average compressor station size is 40 acres, at least 10 acres is needed for a new compressor station to provide for operational needs and to address slopes/grading.

2. The site is compatible with Federal Aviation Administration (FAA) requirements for land use.

   The FAA sets forth guidance for development near airports and land use compatibility. This guidance is typically implemented at the regional level by Airport Land Use Commissions (ALUC).[17] Certain types of land uses are limited or prohibited near airports for safety reasons, such as industrial-scale land uses and utility-scale solar arrays, due to glare. The compressor station location must comply with FAA requirements.

3. The site is not within a Federal Emergency Management Agency (FEMA) mapped floodway.

   FEMA regulatory floodways are defined as "the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height" (FEMA 2020). Further, "[t]he community is responsible for maintaining the floodway to mitigate flood hazards; the community must not allow any activities causing a rise in the Base Flood Elevation (BFE) in the regulatory floodway" (FEMA 2019). Development within a floodway is typically restricted and as such, placing a compressor station in a regulatory floodway would be inconsistent with FEMA flood requirements.

1.2.3 Five Core Considerations

The evaluation of alternative options accounts for operational and environmental considerations that go beyond the foundational elements of the purpose, need, and objectives of the planned project and the essential site criteria. In addition, the feasibility study evaluates project cost, operational cost, and schedule. Cost is evaluated because as stated in the California Public Utilities Code Section 701.1(a)1, "a principal goal of electric and natural gas utilities' resource planning and investment shall be to minimize the cost to society of the reliable energy services that are provided by natural gas and electricity." Schedule is also evaluated because as stated in the CPUC's Decision D.19-09-051 on SoCalGas' 2019 GRC application, "We do however encourage SoCalGas to place a high priority on critical projects under this category as most of its compressors are over 50 years old and because of key risks that need to be mitigated in this area" (D.19-09-051 at pp. 116-117). The consideration of schedule aligns with the CPUC's input.

Operational, environmental, and schedule subcategories were rated on a scale of 0-9, with 9 being the highest score an alternative could receive and 0 being the lowest score. The point values for each subcategory were added together to come up with a separate total score for the operational, environmental, and schedule considerations. The project cost and operational cost were ranked from lowest cost to highest cost based on total dollar value.

- **Operational Considerations**: there are five subcategories: (1) auxiliary and control systems, (2) backup power requirements, (3) emergency access, (4) geotechnical engineering constraints, and (5) proximity to distribution system.

[17] The California Public Utilities Code, Sections 21670 et seq., requires the County Board of Supervisors to establish an ALUC in each county with an airport operated for the benefit of the public. The Code also sets forth the range of responsibilities, duties, and powers of the ALUC. In Ventura County, the Board of Supervisors has designated the Ventura County Transportation Commission to act as the ALUC for the County (VCALUC 2000).

The operational considerations evaluation process included a team of six SoCalGas staff members with subject matter expertise in pipeline operations, mechanical engineering, and civil engineering. Each staff member evaluated each alternative and assigned a point score in accordance with the rubric (Appendix B).

- **Environmental Considerations**: there are three categories within which environmental topic areas are addressed:

    - *Operational Subcategories*: (1) air quality, (2) greenhouse gas emissions, (3) land use designation, (4) CalEnviroScreen pollution burden, (5) wildfire, (6) aesthetics/visual, and (7) noise.

    - *Onsite Construction Subcategories*: (1) slope/topography/grading, (2) traffic – construction, (3) air quality, (4) greenhouse gas emissions, (5) cultural resources, (6) natural resources, and (7) noise.

    - *Offsite Construction Subcategories*: (1) traffic – roadway construction, (2) utilities/service systems, (3) noise, (4) air quality, (5) greenhouse gas emissions, (6) natural resources, and (7) cultural resources.

  Environmental considerations were evaluated by Dudek – see Appendix A – and are based on topic areas that the CPUC examined in multiple data requests as well as categories typically evaluated in a CEQA EIR.[18] Dudek assigned a point score for each subcategory that was subtotaled by category (Operational, Onsite Construction, Offsite Construction) and then the total score was calculated.

- **Project Cost**: project cost estimates using American Association of Cost Engineers (AACE) accepted industry practices for two subcategories: (1) property / right-of-way acquisition and (2) engineering and procurement.

  Project costs were developed by SoCalGas, with support from BMCD and SPEC Services, and in accordance with AACE Recommended Practices (RP) 10S-90 for the various alternatives. Project costs were normalized and assigned a score.

- **Operational Cost**: operational cost estimates using AACE accepted industry practices for three subcategories: (1) fuel costs; (2) annual maintenance costs, and (3) fuel modification.

  Operational costs were developed by SoCalGas, with support from BMCD and SPEC Services, and in accordance with AACE RP 10S-90 for the various alternatives. Operational costs were normalized and assigned a score.

- **Schedule**: project duration to assess most timely process for three subcategories: (1) project permitting complexity; (2) property/ROW acquisition; and (3) construction duration.

  Schedules were developed by SoCalGas, with technical support from BMCD and SPEC Services, for each alternative. Schedule estimates were also based on accepted industry

[18] There is no discretionary permit required for the planned modernization project and as a result, environmental review under CEQA is not required.

standards using AACE RP 91R-16, "Schedule Development" (AACE 2020). Schedules were normalized and assigned a score.

1.2.4 Evaluation Process

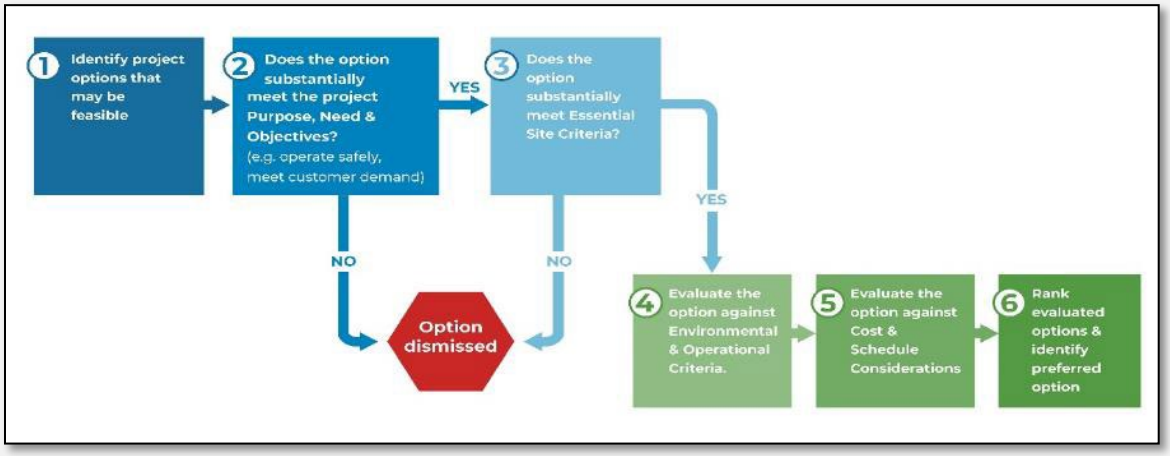
The feasibility study identifies potential alternatives to the planned project for further evaluation, shown in Table 1: Ventura Compressor Station Modernization Project Potential Alternative Options, and on Figure 1: Potential Alternative Site Locations. These potential alternatives take into consideration direction from the CPUC and conversations with the community as a part of SoCalGas' Town Halls hosted in October 2021.[19] All alternatives suggested by the community and the CPUC were considered as part of this analysis.

In addition to the alternative options suggested by the community, SoCalGas identified potential new sites by considering the essential site criteria and purpose, need, and objectives. Because urbanized areas generally do not have 10-acre parcels (or larger acreage with the potential to subdivide into a smaller 10-acre parcel), the screening process focused on more rural areas with larger parcel sizes outside city limits. These areas tended to be west-northwest of the compressor station or southeast within the agricultural areas near the cities of Oxnard and Camarillo. Steep slopes are also a consideration for the hillsides adjacent to the City of Ventura due to grading and visibility. Several mapped FEMA flood hazard areas are associated with the Arundell Barranca, the Santa Clara River and its tributaries, and coastal marine wetlands that are southeast of the compressor station and with the Ventura River to the northwest of the compressor station (FEMA 2022). Proximity to the Oxnard, Camarillo, and Naval Air Station (NAS) Point Mugu airports also constrains land use due to compliance with FAA requirements. Finally, although not identified as essential site criteria, proximity to and the design pressure of the existing pipeline system were considered at a macro level related to constructability and cost.[20] Alternatives have been evaluated according to the feasibility study process shown in Exhibit 1: Feasibility Study Evaluation Flowchart.

[19] As part of SoCalGas' effort to hear from and respond to the community's concerns, allow for feedback, and answer questions, SoCalGas convened a series of town hall meetings in October 2021 to engage with the greater Ventura area community. Four of the sessions were held in person at the Museum of Ventura County and three were held virtually on the Microsoft Teams platform. All sessions provided the presentations and questions and answers in both English and Spanish. A total of 44 individuals participated in the town hall meetings.

[20] Pipelines are designed to a certain maximum allowable operating pressure in accordance with federal and state requirements.

Exhibit 1. Feasibility Study Evaluation Flowchart



Source: SoCalGas.

Feasibility Study Evaluation Process

- Step 1: Potential alternative site locations and equipment configurations are identified.
- Step 2: The alternatives are analyzed to determine if they meet the purpose and need of the planned project and most (though not necessarily all) of the project objectives. If an alternative does not, it is dismissed from further consideration.
- Step 3: The remaining alternatives are analyzed to determine if they meet essential site criteria, such as minimum site acreage. If an alternative does not, it is dismissed from further consideration.
- Step 4: Those alternatives that meet the purpose, need, and most objectives and meet essential site criteria are assessed based on operational and environmental criteria and assigned a total technical score. The scoring rubric is provided in Appendix B: Feasibility Study Scoring Rubric.
- Step 5: The alternatives are then considered based on cost and schedule to implement and are assigned a total cost/schedule score according to the rubric.
- Step 6: At the conclusion of the analysis, the alternatives are ranked based on a total score and then the preferred option is identified.

The alternatives that have been developed are shown in Table 1.

Table 1. Ventura Compressor Modernization Project Potential Alternatives

Alternative	Identified By	Location/Configuration
Alternatives Considered and Dismissed		
No Project	Community	Current site – Maintain existing site configuration and operational profile

Table 1. Ventura Compressor Modernization Project Potential Alternatives

Alternative	Identified By	Location/Configuration
Compressor Station Removal	Community	Current site – Remove compressor station and do not replace compression
3/1 Hybrid	SoCalGas	Install a hybrid equipment configuration consisting of three electric compressors and one natural gas compressor at current site or other alternative sites
All Electric Compression	CPUC	Install an all-electric equipment configuration consisting of four new electric compressors at current site or other alternative sites
Goleta Storage Field	SoCalGas	Remove the existing horsepower from the compressor station and replace with new compression equipment at the La Goleta Storage Field approximately 40 miles north within the County of Santa Barbara
Petrochem	SoCalGas	Approximately 15-acre industrial site designated and zoned for industrial uses located approximately 13,500 feet northwest of the compressor station on the west side of State Route 33 within the County of Ventura
Petrochem – Hybrid	SoCalGas	
Alternatives Carried Forward for Analysis		
1.A: Planned Project	SoCalGas	Current site – Approximately 8-acre parcel located on land designated and zoned for industrial uses on the west side of City of Ventura
1.B: Current Site – Hybrid	SoCalGas	
2.A: Avocado Site – Natural Gas	Community	Approximately 15-acre agricultural site designated for open space uses and zoned for agriculture located approximately 3,000 feet west of the compressor station within the County of Ventura
2.B: Avocado Site – Hybrid	Community	
3.A: Ventura Steel – Natural Gas	SoCalGas	Approximately 10-acre industrial site with oil extraction infrastructure designated and zoned for industrial uses located approximately 8,000 feet north of the compressor station within the County of Ventura
3.B: Ventura Steel – Hybrid	SoCalGas	
4.A: Devil's Canyon Road – Natural Gas	Community	Approximately 12.88-acre oil extraction site designated for open space uses and zoned for agriculture located approximately 6,000 feet to the north of the compressor station on west side of SR-33 within the County of Ventura
4.B: Devil's Canyon Road – Hybrid	Community	
5.A: County Line – Natural Gas	SoCalGas	Approximately 12.33-acre vacant parcel of land designated and zoned for agriculture located within County of Ventura at the county line between Santa Barbara/Ventura counties approximately 12 miles northwest of the existing compressor station
5.B: County Line – Hybrid	SoCalGas	

*Reasons for dismissing alternatives are discussed in Section 2.

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2 Alternatives Considered and Dismissed or Outside Scope of Analysis

This section provides an overview of alternatives to the planned project that were considered by SoCalGas but dismissed from further consideration for reasons described in greater detail in the following sections.

2.1 Alternatives Dismissed for Failing to Achieve Purpose/Need/Objectives

Certain alternatives were considered and dismissed from further evaluation because they do not meet the purpose, need, and most objectives of the planned project as identified in Step 2 of the evaluation process.

2.1.1 No Project

The No Project Alternative would result in maintaining the existing compressor station as it is currently configured (existing baseline setting). The existing compression equipment, consisting of three 1,100-horsepower (HP) compressors installed in the 1980s, would continue to be housed in the existing compressor building and would operate based on similar or reduced natural gas operational system demand.[21] The office trailer would provide office and administrative facilities for station staff; warehousing/storage would remain in the temporary storage containers. Piping and other supporting onsite infrastructure for both the transmission system and the distribution system would remain the same.

Rationale for Dismissing Alternative

The No Project Alternative would not meet the stated purpose and need of the planned project. The existing three 1,100 HP compressors were installed in the 1980s. Over time, locally produced gas supplies on SoCalGas' transmission system downstream of the Ventura Compressor Station have dropped from approximately 15,029,633 million cubic feet in 2011 to 1,534,807 million cubic feet in 2020 (SoCalGas 2021a). The loss in local production causes the Ventura Compressor Station to operate more frequently and with greater variability to move gas north, placing greater strain on already aging equipment. Maintenance events and days per year where one or more compressors were out of service for maintenance as of May 19, 2021,

[21] The basis for natural gas requirements and supplies in California are mandated by the California Public Utilities Commission (CPUC) in Decision 95-01-039, which defined the requirement for SoCalGas, Pacific Gas and Electric Company, San Diego Gas & Electric®, Southwest Gas Corporation, City of Long Beach Energy Resources Department, and Southern California Edison to publish the California Gas Report. The most recent edition is the 2020 California Gas Report, which forecasts natural gas usage through 2035, accounting for energy efficiency and building electrification (reach codes). The report states that "utility-driven, statewide natural gas demand is projected to decline at an average rate of 1.0 percent each year through 2035" but "Nevertheless, gas-fired generation and energy storage will continue to be primary technologies to support long-term increases in electricity usage and integrate increasing quantities of intermittent renewable electric generation into the electric grid" (CGEU 2020). See also SoCalGas' Data Request 4 (SoCalGas 2021b).

were 73 and 461, respectively (SoCalGas 2021a).[22] In addition, replacement parts are becoming more difficult to obtain because of the age of the equipment. SoCalGas has already made changes to how it operates the main units in an effort to maximize the station's availability. Based on the natural gas forecast of the 2020 California Gas Report (CGEU 2020), natural gas use is anticipated to slowly decline with greater emphasis on renewable sources such as solar and wind, placing a greater emphasis on operational flexibility and the ability of equipment to ramp up and down quickly.

In 2012, SoCalGas retained a consultant to evaluate three compressor stations on SoCalGas' integrated transmission system, specifically Blythe, Moreno, and Ventura. Compression equipment at Ventura in 2012 consisted of three natural gas compressors at 1,100 HP each, the same equipment that is currently onsite. The results of the engineering analysis concluded that future operations will likely require a wide range of operating points, making flexibility for the station paramount. Additional horsepower is needed for daily fluctuations in loads, not to expand the system beyond existing levels of service. Without replacing the aging compressors and adding more horsepower, future operational needs would not be met and supplies at the La Goleta Storage Field would be affected. Storage fields play a critical role in providing gas supplies when supplies are not available from the out of state sources. The significant decrease in the local gas production and relatively stable demand has placed additional reliance on the La Goleta Storage Field to reliably provide service. Gas supplies transported through the Ventura Compressor Station (including supply from PG&E that is delivered at Morro Bay to supplement the local demand) are the primary source of supply for the La Goleta Storage Field, because local supplies no longer meet injection needs. The No Project Alternative would meet some of the stated objectives. The facility would continue to comply with safety and air quality regulations. The use of the property would remain consistent with the City of Ventura land use designation of "Industry" and zoning of "M-2 General Industrial," and the property size is sufficient for a compressor station (City of Ventura 2019, 2020). Potential environmental impacts would be minimized because there would be no construction or operational changes, and no grading would occur, because pipeline or other infrastructure relocation would be unnecessary. However, the No Project Alternative would not replace older compression infrastructure, causing potential impacts to reliability because the equipment would not meet changing system operational requirements.

As described above, the No Project Alternative would not provide sufficient compression to meet future operational needs, would not modernize aging infrastructure, would not maintain supplies to the La Goleta Storage Field, and would meet only some of the stated objectives. For these reasons, the No Project Alternative was dismissed.

2.1.2 Compressor Station Removal

The Compressor Station Removal Alternative would result in the decommissioning of the existing compressor station and removal of the onsite infrastructure, without relocating compression to

[22] SoCalGas interprets a "maintenance event" as an event where operations needed to perform planned or unplanned maintenance activities on a specific compressor unit or any equipment related to a specific compressor unit or an event that may result in a reduction in the station gas throughput.

a new location. Compression from the Ventura Compressor Station to move natural gas north to Santa Barbara and San Luis Obispo counties would no longer be provided.[23]

Rationale for Dismissing Alternative

The Compressor Station Removal Alternative would not meet the stated purpose and need of the planned project. SoCalGas is required to provide firm natural gas service, including to core customers (primarily residences and small businesses). As a result, SoCalGas must maintain reliable service to customers across its service territory. The Ventura Compressor Station is sited specifically to support the Central Coast, supplying natural gas to more than a quarter-million people for activities such as cooking and heating. It is the last compressor station on SoCalGas' system and is the main feed to customers in Ventura and on the Central Coast to meet reliability needs. The removal of compression would eliminate the ability to supply natural gas to customers in Ventura and along the Central Coast, would fail to modernize existing infrastructure (although the existing infrastructure would be removed), and would not enable deliveries to the La Goleta Storage Field.

The Compressor Station Removal Alternative would meet some of the stated objectives. The removal of the compressor station would be performed in accordance with all applicable safety requirements and the use of the property would remain consistent with the City of Ventura land use designation and zoning (City of Ventura 2019, 2020). However, this option would not meet the gas system's operational requirements. In addition, potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, could occur due to grading, trenching, and removal/disposal of pipeline materials and soil spoils. Additionally, future use of the property could be developed in accordance with the Ventura Municipal Code, which allows by right many industrial uses that could also cause environmental impacts (e.g., noise, lighting, glare, emissions).

As described above, the Compressor Station Removal Alternative would not provide sufficient compression to meet operational needs, would not modernize aging infrastructure, would not maintain supplies to the La Goleta Storage Field, and would meet only some of the stated objectives. For these reasons, the Compressor Station Removal Alternative was dismissed.

2.1.3 3/1 Hybrid Compression

The 3/1 Hybrid Compression option would result in the installation of three new 1,900 HP electric compressors and one 1,900 HP natural gas compressor. Electricity would be provided by the Southern California Edison (SCE) electric grid and require a new onsite substation and potentially one new circuit, with an additional circuit for redundancy. Some onsite electric generation could be provided from rooftop-mounted solar panels and electric storage could be provided by an onsite battery energy storage system (BESS). One new natural gas compressor would be installed. A new compressor building would be constructed to house the equipment. As with the

[23] M-2 General Industrial land uses allowed by Ventura Municipal Code Section 24.262.020 – Uses – Permitted include but are not limited to administrative, business, and professional services; automotive and accessories; drinking establishments; equipment rentals and sales; government services; food and fish processing; oil equipment services; recreation services; wholesaling and distribution; and major wireless telecommunication facilities. Additional land uses may be permitted under a director permit (e.g., farmer's market) or a use permit (e.g., farm employee housing, recycling services) (City of Ventura 2021).

planned project, a new office building and a new warehouse would be constructed and any structures currently onsite would be removed.

Rationale for Dismissing Alternative

The 3/1 Hybrid Compression Alternative would not meet the stated purpose and need of the planned project. As discussed in Section 2.1.2: Compressor Station Removal Alternative, SoCalGas has a mandate to provide natural gas service to customers on the Central Coast and within its entire service area. Locally, wildfire risk is an ever-present threat. The 2017/2018 Thomas Fire was started during a high wind event that caused energized SCE power lines to arc and emit molten aluminum particles on dry vegetation igniting the fire (CALFIRE/VCFPD 2019). "Unlike electric systems in Europe, distribution and transmission lines in the U.S. were typically built overhead instead of buried underground, which makes them more vulnerable to high winds and other weather" (Blunt 2022). SCE has initiated Public Safety Power Shutoffs (PSPS) events during subsequent high wind conditions. An equipment configuration with three electric compressors affected by a PSPS event or disrupted due to fire damage or destroyed power lines would leave only one compressor functional. Under most operational conditions, the customers cannot be served with only one compressor in service and this situation could jeopardize the ability for long-term storage injection. Moreover, although unlikely, if the one natural gas compressor was also out of service during a PSPS event, reliability would be further compromised and supplies to the Coastal System and customers would be affected.

Offsite and onsite design features to offset the potential risk of PSPS events were considered. Based on preliminary analysis, approximately 5 MW of electric power would be needed and may be available on SCE distribution-level service. To minimize the risk of loss of power during a PSPS event, two unique power lines of at least 12 kilovolts (kV) that interconnect to two different circuits at two different substations could be installed. The exact size and location would need to be developed in consultation with SCE. This option presents several challenges due to SCE circuit availability and need to construct additional offsite electrical infrastructure.

Onsite generation would require approximately 5 MW. Solar, battery energy storage and fuel cells were evaluated. A utility-scale solar power plant may require between 5 and 10 acres per megawatt (MW) of generating capacity (USEIA 2021). Given the baseline power needed, a minimum of 30 acres to 60 acres would be necessary, which would not be feasible on the existing or potential alternative locations. A battery energy storage system (BESS) could offer onsite generation capabilities. BESS consist of individual batteries grouped into modules that are housed in climate-controlled containers typically 20 to 40 feet in length, about 10 feet in height and 10 feet in width. Data varies for the available capacity of a container and the longevity with which a BESS system can continue to function within design parameters, but the operational lifetime of the BESS could exceed 15 years (Dubarry et al. 2021). Based on these parameters, a BESS could be incorporated for supplemental power for administrative needs (e.g., office building) and potentially to provide supplemental power to electric compressors in the event of a power failure. However, "most large-scale batteries currently use lithium-ion technology, and can discharge for about four hours at most" (Blunt 2022). The length of time that a BESS could supply power would be contingent on the size and capacity of the BESS, likely between 3 to 5 days at most. Fuel cells, which directly convert chemical energy to electricity with pure water and heat as the only byproducts (USDOEEERE 2015), also could offer redundant power supply in the event of a power failure.

Even with design features incorporated to minimize risk from loss of power of the three electric compressors, the higher potential to lose all service with one natural gas compressor would

conflict with the mandate to provide natural gas service to customers on the Central Coast and within its entire service area. As a mainline compressor station, the station's ability to continue to serve customers at a rate sufficient to avoid a widespread disruption is paramount. In the event of a PSPS or prolonged power outage, service would be dependent on the capacity of the supplemental electric sources and amount of natural gas contained in the La Goleta Storage Field at the time of the outage.

The 3/1 Hybrid Compression option would meet some of the stated objectives. Three new electric and one natural gas compressors would meet VCAPCD and safety regulations and would be capable of meeting operating requirements when not impacted by a loss of electric power. Some potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, could occur due to grading, trenching, and installation of new electric infrastructure. Consistency with the land use designation and zoning and site size would be dependent on the site selected. New or reconductored offsite electric lines would be required.

As described above, the 3/1 Hybrid Compression Alternative would not provide reliable compression in the event of a power failure, would not enhance reliability, could jeopardize supplies to the La Goleta Storage Field, and would meet only some of the stated objectives. For these reasons, the 3/1 Hybrid Compression Alternative was dismissed.

2.1.4 All-Electric Compression

The All-Electric Compression option would result in the installation of four new 1,900 HP electric compressors. Electricity would be provided by the SCE electric grid and require a new onsite substation and potentially one new circuit, with an additional circuit for redundancy. Some onsite electric generation could be provided from rooftop-mounted solar panels and electric storage could be provided by an onsite BESS that would be sufficient to support the office/administrative electric load. No natural gas compressors would remain or be installed. A new compressor building would be constructed to house the equipment. As with the planned project, a new office building and a new warehouse would be constructed and any structures currently onsite would be removed.

Rationale for Dismissing Alternative

The All-Electric Compression option would not meet the stated purpose and need of the planned project. As discussed in Section 2.1.2: Compressor Station Removal Alternative, SoCalGas has a mandate to provide natural gas service to customers on the Central Coast and within its entire service area. The reliability of the Ventura Compressor Station is critical. If SoCalGas lost electric power with an all-electric compressor option, this could impact customers due to the inability to move gas up the Central Coast to serve customer demand and to replenish the La Goleta Storage Field. With increasing frequency, PSPS on the SCE electric grid destabilize the energy delivery system and compromise reliability. Locally, wildfire risk is an ever-present threat. The Ventura community was affected by the Thomas Fire that began in December 2017, resulting in damage to more than 280,000 acres and destroying more than 1,000 buildings. Power was lost during the fire for several hours and subsequently SCE has initiated PSPS events during high wind conditions.

Additionally, the electrical load for four new electric compressors would require onsite infrastructure, such as a substation. Based on preliminary analysis, approximately 8 MW of electric power would be needed, which would require distribution-level service on two unique power lines of at least 12 kV or 16 kV each, or 8 MW of backup generation onsite. According to

the Solar Energy Industries Association, "depending on the specific technology, a utility-scale solar power plant may require between 5 and 10 acres per megawatt (MW) of generating capacity" (SEIA 2021). The existing site is only 8 acres in size and proposed new locations are roughly 15 acres in size, rendering utility-scale solar onsite infeasible. Also, as discussed above, BESS and fuel cells could provide supplemental power but the duration the power would be available is likely no longer than 5 days.

As a mainline compressor station, the station's ability to continue to serve customers at a rate sufficient to avoid a widespread disruption is paramount. In the event of a PSPS or prolonged power outage, service would be dependent on the capacity of supplemental electric sources and the amount of natural gas contained in the La Goleta Storage Field at the time of the outage.

The All-Electric Compression Alternative would meet some of the stated objectives. New electric compressors would meet safety regulations and would be capable of meeting operating requirements when not impacted by a loss of electric power. Some environmental impacts, especially related to dust generation, noise, and visual/aesthetics, could occur due to grading, trenching, and installation of new electric infrastructure. Consistency with the land use designation and zoning and site size would be dependent on the site selected. New or reconductored offsite electric lines would be required.

As described above, the All-Electric Compression Alternative would not provide reliable compression in the event of a power failure, would not enhance reliability, could jeopardize supplies to the La Goleta Storage Field, and would meet only some of the stated objectives. For these reasons, the All-Electric Compression Alternative was dismissed.

2.1.5 La Goleta Storage Field

The La Goleta Storage Field Alternative ("Goleta Alternative") would result in the installation of new compression equipment at the La Goleta Storage Field. The Ventura Compressor Station provides the necessary pressure to supply the Coastal System north of the Ventura Compressor Station and to support injection at the La Goleta Storage Field. Natural gas currently enters the La Goleta Storage Field at a pressure that enables the existing onsite equipment to boost pressure to overcome the differential between the storage field and pipeline. With the loss of compression at the Ventura Compression Station, new compression equipment would be installed to offset the loss of pipeline pressure currently provided by the Ventura Compressor Station and support injection.

Rationale for Dismissing Alternative

The Goleta Alternative would not meet the stated purpose and need of the planned project. 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 planned project. In general, it is less efficient and requires greater horsepower to compress at the end of a pipeline system rather than at the beginning. Additionally, the loss of pressure on the transmission lines serving the Coastal System north of the Ventura Compressor Station could impact the distribution pipeline systems north of the Ventura Compressor Station under winter demand conditions. Additional improvements to the Coastal System, such as rebuilding or replacing regulator stations and large customer meter sets or installing new pipelines, may be required. SoCalGas' current design for the planned project 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 to preserve the inventory at the storage field for the winter heating season. Simply replacing the Ventura Compressor Station with incremental compression at the La Goleta Storage Field for injection purposes would not achieve this function; the extent of the additional improvements that would be required are unknown, but it may include new transmission pipeline between the compressors and the transmission mainline, an assessment of the capability of the existing compressors at the La Goleta Storage Field to perform this new transmission function, and a complex control system to operate the compressors in injection or transmission mode.

The Goleta Alternative would meet some of the stated objectives. The alternative would comply with applicable safety regulations, Santa Barbara County Air Pollution Control District requirements and maintain compatibility with the County of Santa Barbara land use designation and zoning as well as the County of Santa Barbara land use designation and zoning of the La Goleta Storage Field ("UT – Public Utility" and "PU – Public Utilities," respectively) (County of Santa Barbara 2022). However, potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, could occur due to grading, trenching, and installation of new infrastructure. Environmental resource constraints, such as cultural and natural resources, that are known to be present at the La Goleta Storage Field, could be impacted by the installation of new compression equipment.

As described above, the Goleta Alternative would not provide sufficient compression to meet operational needs, would not enhance reliability, and would meet only some of the stated objectives. For these reasons, the Goleta Alternative was dismissed.

2.2 Alternatives Dismissed for Failing to Meet Essential Site Criteria

One alternative was considered and dismissed from further evaluation because it does not meet the essential site criteria as identified in Step 3 of the evaluation process. The alternative that was considered and the rationale for why it was dismissed are identified in Section 2.2.1.

2.2.1 Petrochem Site

The Petrochem Site option was developed by SoCalGas. This site is located approximately 12,000 feet north of the compressor station property to the west of State Route (SR) 33 within the jurisdiction of the County of Ventura. This site is not located on the existing transmission pipeline corridor and is privately owned; therefore, any future project would require the involvement of the landowner, either through easement acquisition, property purchase, or exercise of eminent domain. The property is approximately 15 acres on land currently developed with industrial uses, including oil extraction infrastructure, and is designated "Industrial" and zoned by the County of Ventura as "M3-10,000 sf – General Industrial, 10,000 sf minimum parcel size" (Ventura County 2020, 2021b). The slope of the property is less than 5 percent and would require onsite grading related to over-excavation and recompaction for structural foundations and grading to relocate and install pipelines. Access to the site is provided by multiple driveways off Crooked Palm Road that meet SoCalGas and emergency responder access requirements.

Transmission and distribution pipelines would need to be rerouted from the existing compressor station property to the new site location, requiring grading, trenching, and pipeline installation, and would potentially require acquisition of additional pipeline right-of-way. Given the fact that the site is developed with existing industrial uses, other utility connections for electrical, potable

water, sewer, and telecommunications are assumed to be available onsite and would require minimal upgrades. Water, sewer service, electricity, and telecommunications demand would be anticipated to be consistent with the existing compressor station.

A new office and a warehouse similar in size to the planned project structures would be constructed onsite. A perimeter block wall 8 feet in height would be required for security purposes. Cameras and lighting would also be required for operational needs and security. Landscaping, such as trees or hedges, would be installed to help screen the perimeter wall and minimize visibility of the compressor station.

Purpose and Need

The Petrochem Site option would meet the stated purpose and need for the planned project. Four new compressors (either four gas or two gas and two electric) would replace the existing aging equipment and would meet the VCAPCD air emission and DOT safety requirements. Both transmission and distribution pipelines would need to be routed to the new location, which would be feasible predicated on detailed engineering design. The proposed 7,600 HP would also maintain sufficient pressure in the existing pipelines and adequate inventory in the La Goleta Storage Field.

The Petrochem Site Alternative would meet some of the stated objectives. This alternative would replace existing infrastructure with new equipment that would meet VCAPCD and safety regulations and be capable of meeting operating requirements, including during power outages. The 15-acre site is sufficient to build a new compressor station. The use of the property would be consistent with the Ventura County land use designation of "Industrial" and the zoning "M3-10,000 sf." However, potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, would occur due to grading, trenching, and installation of new infrastructure.

As described above, the Petrochem Site Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives. For these reasons, the Petrochem Site Alternative was carried forward for consideration related to essential site criteria.

Essential Site Criteria

The Petrochem Site option does not meet all the essential site criteria, as noted below and shown on Figure 3.

- The existing property is at least 10 acres in size for a new compressor station.
- The nearest airport to the property is the Oxnard Airport, which is approximately 9.85 miles to the southeast (VCALUC 2000). The use as a compressor station is compatible with the FAA land use regulations as stated in the *Airport Comprehensive Land Use Plan for Ventura County Final Report* (VCALUC 2000).[24]
- The site has several areas of mapped FEMA floodway (Zone AE) and areas without a base flood elevation identified (FEMA 2021b). The floodway occupies a significant portion of the site and as such, this site does not meet the essential site criteria.

[24] The Airport Comprehensive Land Use Plan for Ventura County Final Report addresses the Camarillo, Oxnard, Santa Paula, and NAS Point Mugu airports (VCALUC 2000).

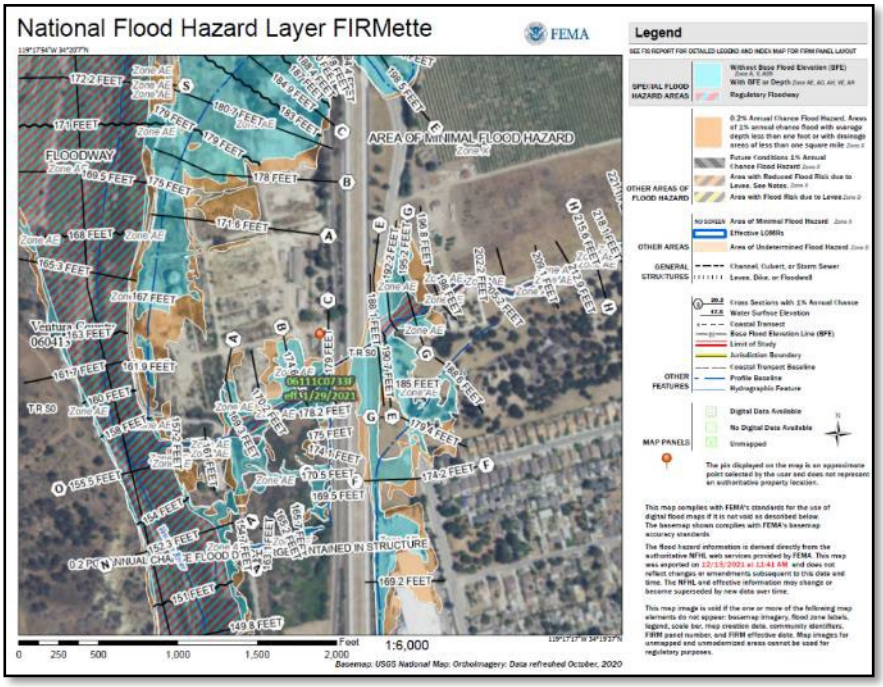

Figure 3. National Flood Hazard Layer FIRMette

Source: FEMA 2021b.

As such, the Petrochem Site option was dismissed from further consideration because of mapped FEMA floodway.

2.3 Other Alternatives Outside the Scope of the Feasibility Study

As previously noted, this feasibility study has been prepared in response to CPUC letters dated August 5, 2021, and August 20, 2021, which specifically request that SoCalGas "hold a public forum to present (1) full analysis of all options considered for the compressor station upgrade, (2) the basis for rejecting all alternatives, including but not limited to electric compressors for all or part of the project, (3) all alternative sites that were considered and SoCalGas' reasons for rejecting them, and (4) an explanation of how this project factors into both local and statewide safe and reliable service and the state's decarbonization efforts" (CPUC 2021). There are potential alternatives outside the scope of this feasibility study, such as relocating to non-industrial land uses farther away from the compressor station, that have not been evaluated given the focus of this analysis.

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3 Alternatives Carried Forward for Further Analysis

This section provides a description of each alternative option, including the planned project, that was carried forward for detailed environmental and operational analysis. For the purpose of developing the alternative options, certain general construction assumptions are provided based on regulatory requirements, industry best management practices, and SoCalGas gas standards.[25] Specific construction assumptions for individual alternatives are described in the section for that respective alternative. For simplicity, measurements for linear distance, square footage, and grading (volume) have been rounded to the nearest hundred. Additionally, on January 6, 2022, representatives from SoCalGas' Construction Department, Gas Transmission Department, and Gas Engineering Department visited each alternative site location and viewed them from publicly accessible areas or from land with SoCalGas access rights to assess site conditions.

General Construction Assumptions

- Pipeline alignments and staging areas are conceptual and do not account for geotechnical, civil, environmental, utility, or other constraints. These factors would be addressed during preliminary engineering design.
- All quantities for linear distance, square footage, and grading are rounded to the nearest hundred.
- A hybrid compressor station would include two natural gas compressors and two electric compressors, with each unit having approximately 1,900 HP.
- A hybrid compressor station would require a 5 MW increase in the electric service capacity.
- New structures would be approximately 20,300 square feet total and the same approximate size (rounded to the nearest hundred square feet) and height for each alternative, as follows:
  - Compressor building: 10,000 square feet and 52.5 feet in height.
  - Warehouse: 5,200 square feet and 27.5 feet in height.
  - Office: 4,700 square feet and 16.5 feet in height.
  - Generator enclosure (850-kilowatt generator): 400 square feet and 16.5 feet in height.
- A perimeter block wall 8 feet in height would be required for security purposes.
- The new compressor station would require approximately 10 acres of land.
- Any new compressor station would require two suction pipelines and two discharge pipelines, consistent with the existing compressor station.
- Minimum easement width for ongoing operations (e.g., repair, maintenance, vehicular access, inspection, vegetation management) is 25 feet for one pipeline and 50 feet for two adjacent pipelines.
- A 25-foot temporary workspace easement would be required in addition to the 50-foot permanent non-exclusive easement.

[25] SoCalGas' gas standards, including operations and maintenance procedures, are developed to comply with federal and state pipeline safety regulations.

- A permanent exclusive easement of 50 feet by 75 feet would be required for mainline valves.
- A 50-foot by 75-foot workspace would be required for new mainline valves.
- Transmission pipeline requires a minimum trench width of 28 inches and a minimum trench depth of 64 inches.
- Pipeline spacing must be a minimum of 60 inches of horizontal separation and 24 inches of vertical separation between natural gas pipelines and electrical, water, sewer, and telecommunications pipelines/conduit.
- One staging area is required for each alternative option that would be used for pipe storage, parking, and, temporary offices, welding activities, and other such temporary activities.
- Consistent with Ventura County Fire Protection District (VCFPD) Standard 501, "Fire Apparatus Access Standard," emergency access roads must be a minimum of 24 feet wide and not exceed a slope greater than 20 percent, with turnouts every 150 feet.
- Grading cross slopes are dependent upon soil type and generally cannot exceed a 2:1 (horizontal:vertical) ratio.
- A disturbance footprint of 3.95 acres was assumed for the primary compressor station (exclusive of other site grading and utility connections), which includes over-excavation and recompaction.
- Subsurface utility potholing would be required for any new or relocated pipeline to identify potential conflicts and to address them in the engineering design.
- All grading quantities are estimates.[26] Ultimately, over-excavation, recompaction, rough grading, and other earthwork would be designed and implemented based on licensed geotechnical and civil engineers' recommendations.
- For cross-county pipeline installations, geotechnical borings will be required to validate slope stability for pipeline design and routing.
- To the extent feasible, new pipelines and infrastructure would be placed within existing SoCalGas easements/right-of-way or public right-of-way rather than private property or public land (e.g., parks, schools).
- If an alternative location is selected that is not currently owned by SoCalGas, the company would acquire in fee property on which the compressor station would be located.
- As part of any necessary site acquisition process, any prior industrial contamination and well abandonment would be addressed by the seller, not SoCalGas.[27] Easement and/or fee acquisition would require coordination with and concurrence of the affected landowners. Eminent domain would be used as a last resort.
- Construction equipment is addressed in Appendix A and specifically the air quality analysis and reflects the different equipment for hillside sites and for level sites.
- SCE Interconnection:

[26] Grading is defined by the City of Ventura as "removal of soil or deposition of fill or combination thereof, including but not limited to, overexcavation and recompaction" (City of Ventura 2017). Grading is defined by the County of Ventura as "excavation (cut), fill, or any combination of excavation and fill" (Ventura County 2016).

[27] It is assumed that remediation activities would be handled under the oversight of the California Department of Toxic Substances Control (DTSC 2022). Oil well abandonment may also require oversight and approval by the California Geologic Energy Management Division (CalGEM 2022).

- SCE assumptions were developed using SCE's Southern California Edison Power Site Search Tool (SCE 2022).
- Any electrical alignment, pole placement, or electrical infrastructure requires SCE review and approval, which typically occurs after a Method of Service agreement has been established.
- Interconnection to the SCE system is assumed to occur by installing new poles to connect to the nearest existing circuit that runs from the site location to the Casitas Substation or to the Carpinteria Substation (County Line site only).
- For new poles, lightweight steel poles approximately 50 feet in height and spaced approximately every 100 to 150 feet would be required.
- Foundations would be approximately 2 feet in diameter and 7 feet in depth and require approximately 2 cubic yards of grading.
- Pole placement would be based on engineering design and field conditions but are assumed to be sited to avoid environmental resources to the extent feasible.
- Any new power pole inset is expected to require a temporary construction workspace of 50 feet by 50 feet (2,500 square feet) around each pole, which may result in temporary disturbance to ground cover.
- Vehicular access would be required to each pole location.

3.1 Alternative 1.A: Planned Project

The planned project was developed by SoCalGas at the existing Ventura Compressor Station site, located within the City of Ventura. The site is owned by SoCalGas and land use onsite consists of a compressor station, which has been present in some form since at least 1923 and has existed in its current configuration since the 1980s. The site is designated by the Ventura City General Plan as "Industry" and is zoned by the Ventura City municipal code as "M-2 General Industrial." Industrial uses surround the site on the north, west, and south. The EP Foster Elementary School is located across Olive Street to the east of the site.

This alternative would result in the construction of a new compressor building and installation of four new natural gas engine-driven compressors (referred to throughout as "natural gas compressors") at 1,900 HP each at the site. The existing three 1,100 HP natural gas reciprocating compressors would remain in operation until the new equipment is commissioned and in service. The existing compressors would then be decommissioned and removed and the old compressor building demolished. The existing office trailer and storage containers would be demolished/removed after a new office and a warehouse are constructed onsite. A perimeter block wall 8 feet in height would be required for security purposes. Cameras and lighting would also be required for operational needs and security. Landscaping, such as trees or hedges, would be installed to help screen the perimeter wall and minimize visibility of the compressor station. Access to the site via a driveway at least 24 feet wide is currently available and would be maintained to meet SoCalGas and emergency responder access requirements.

3.1.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 1.A: Planned Project are presented below and in Table 2.

- Other than ingress and egress to the site, construction activities would occur onsite or on an immediately adjacent eastern staging area.
- Construction of the compressor station, including pad grading, buildings, and compressors, would take approximately 24 to 36 months.

Table 2. Alternative 1.A Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	8.42 acres
Project Site – Demolition	22,000 square feet Office Trailer: 1,500 square feet Storage Containers: 1,500 square feet Compressor Building, Piping, and Equipment: 19,000 square feet
Project Site - Grading	6,375 cubic yards
Offsite – New Pipeline	0
Offsite – Roads	0
Offsite – Staging Area	2.5 acres
SCE Circuit, Substation, and System Name	Grandad Circuit 16 kilovolts Casitas Substation Santa Clara 220/66 System
Offsite – New Electrical Poles	0 Existing electrical service sufficient for natural gas option
Estimated Number of Properties Affected*	3

Note:
* Properties affected include the site, access, infrastructure, and staging areas.

3.1.2 Purpose, Need, and Objectives

The Alternative 1.A, the planned project, would meet the stated purpose and need for the planned project. The planned project would replace the existing aging equipment with four new natural gas compressors. The new equipment would meet the VCAPCD air emission requirements and safety requirements. The natural gas compressors would continue to operate even if there was a loss of power and would be available to move gas up the Central Coast and into the La Goleta Storage Field. As the overall energy delivery system in California continues to change due to the dispatching of renewable resources and electrification of buildings and vehicles, the ability of equipment to operate under variable conditions is critical. Solar and wind energy are intermittent and storage technology is not yet sufficient to store utility-scale power, which makes the resilience of the natural gas system for direct customer use and to support electric power generation imperative. The proposed combined 7,600 HP would maintain sufficient pressure in the existing pipelines and adequate inventory in the La Goleta Storage Field.

The planned project would meet all stated objectives. New natural gas compressors would replace existing infrastructure with new equipment that would meet VCAPCD and safety regulations and would be capable of meeting operating requirements, including during power outages. The use of the property would remain consistent with the City of Ventura land use designation and zoning. The property is sufficient in size for the equipment configuration. Potential environmental impacts from construction would be minimized because all work would occur on the existing property.

As described above, the planned project would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet all stated objectives. For these reasons, the planned project was carried forward for consideration related to essential site criteria.

3.1.3 Essential Site Criteria

The planned Ventura Compressor Station Project site would meet all the essential site criteria.

- The existing property is 8 acres in size.
- The nearest airport to the property is the Oxnard Airport, which is approximately 9 miles to the southeast. This airport is served by Runway 7-25, which is 5,950 feet long by 100 feet wide, is aligned east–west, and has a threshold of 1,372 feet for obstacle clearance safety (VCALUC 2000). The site's use as a compressor station is compatible with the FAA land use regulations as stated in the *Airport Comprehensive Land Use Plan for Ventura County Final Report* (VCALUC 2000).[28]
- The site is designated by FEMA as "Area with Reduced Flood Risk Due to Levee Zone X" and is not within a floodway (FEMA 2021a).

Therefore, the planned project was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4, Environmental and Operational Considerations.

3.2 Alternative 1.B: Current Site – Hybrid

The Ventura Compressor Station – Hybrid Alternative was proposed by the CPUC and would result in two new natural gas compressors at 1,900 HP each and two new electric compressors at 1,900 HP each at the existing Ventura Compressor Station property. The existing three 1,100 HP natural gas compressors would remain in operation until the new equipment is commissioned and in service. The existing compressors would then be decommissioned and removed and the old compressor building demolished. The new compressors would be installed in a new compressor building. The existing temporary office trailer and storage containers would be demolished/removed. A new office and a warehouse would be constructed onsite, similar to the planned project. New electric lines would be required to meet onsite electric demand from the new electric compressors. Based on preliminary analysis, approximately 5 MW of electric power are needed, which would require distribution-level service on one unique power line of at least 16 kV and potentially an onsite substation. It is assumed that this conduit could be placed on existing SCE poles that interconnect with the existing station.

[28] The Airport Comprehensive Land Use Plan for Ventura County Final Report addresses the Camarillo, Oxnard, Santa Paula, and NAS Point Mugu airports (VCALUC 2000).

3.2.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 1.B: Current Site – Hybrid are presented below and in Table 3.

- Construction of the compressor station, including pad grading, buildings, and compressors, and electrical interconnection would take approximately 30 to 36 months.

Table 3. Alternative 1.B Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	8.42 acres
Project Site – Demolition	22,000 square feet Office Trailer 1,500 square feet Storage Containers 1,500 square feet Compressor Building, Piping and Equipment: 19,000 square feet
Project Site - Grading	6,375 cubic yards
Offsite – New Pipeline	0
Offsite – Roads	0
Offsite – Staging Area	2.5 acres
Offsite – Pipeline Ground Disturbance	0
SCE Circuit, Substation, and System Name	San Nicholas Circuit 16 kilovolts Casitas Substation Santa Clara 220/66 System (SCE 2021a)
Offsite – New Electrical Poles	None required - existing electrical connection onsite assumed to be adequate to connect with San Nicholas Circuit
Estimated Number of Properties Affected*	3

Note:
* Properties affected include the site, access, infrastructure. and staging areas.

3.2.2 Purpose, Need, and Objectives

The Ventura Compressor Station – Hybrid Alternative would meet the stated purpose and need for the planned project. A hybrid compressor configuration would replace the existing aging equipment with two new natural gas compressors and two new electric compressors. The new gas compressors would meet the VCAPCD's air emission requirements and the electric driven compressors would be non-emitting equipment and therefore would not be subject to VCAPCD's requirements. By providing two natural gas and two electric compressors, the compressor station would have the redundancy needed in the event of a loss of electric power. The natural gas compressors would continue to operate even if the electric compressors were offline and would be available to move gas up the Central Coast and into the La Goleta Storage Field. As the overall energy delivery system in California continues to change due to the dispatching of renewable resources and electrification of buildings and vehicles, the ability of equipment to operate under variable conditions is critical. Solar and wind energy are intermittent and storage technology is not yet sufficient to store utility-scale power, which makes the resilience of the natural gas system for direct customer use and to support electric power generation imperative.

A hybrid compressor station with the proposed combined 7,600 HP would also maintain sufficient pressure in the existing pipelines and adequate inventory in the La Goleta Storage Field.

The Ventura Compressor Station – Hybrid Alternative would meet most of the stated objectives. New natural gas and electric compressors would replace existing infrastructure with new equipment that would meet VCAPCD and safety requirements and be capable of meeting operating requirements, including during power outages due to the redundancy with natural gas compressors. The use of the property would remain consistent with the City of Ventura land use designation and zoning. The property is sufficient in size for a hybrid equipment configuration. Potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, could occur due to installation of new electric infrastructure.

As described above, the Ventura Compressor Station – Hybrid Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet most of the stated objectives. For these reasons, the Ventura Compressor Station – Hybrid Alternative was carried forward for consideration related to essential site criteria.

3.2.3 Essential Site Criteria

As discussed in Section 3.1.3, the Ventura Compressor Station site would meet all the essential site criteria. As such, the Ventura Compressor Station – Hybrid Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

3.3 Alternative 2.A. Avocado Site – Natural Gas

The Avocado Site – Natural Gas Alternative was suggested by members of the public at SoCalGas' town hall in October 2021. This site is located approximately 3,000 feet west of the compressor station property on the existing transmission pipeline corridor within the jurisdiction of the County of Ventura. The site is privately owned; therefore, any future project would require the involvement of the landowner, either through a voluntary transfer of needed land rights or through the exercise of eminent domain.[29]

The property is approximately 15 acres and is designated "Open Space" and zoned by the County of Ventura as "AE-40 ac – Agricultural Exclusive, 40 acres minimum parcel size" (Ventura County 2020, 2021b). The Ventura County general plan "Open Space" land use designation encompasses land or water that is essentially unimproved and devoted to an open-space use, including land for preservation of natural resources, managed production of resources, outdoor recreation, public health and safety, and to promote efficient municipal services and avoid urban sprawl (Ventura County 2020). The Ventura County zoning ordinance AE-40 zone "is to preserve and protect commercial agricultural lands as a limited and irreplaceable resource, to preserve and maintain agriculture as a major industry in Ventura County and to protect these areas from the encroachment of nonrelated uses which, by their nature, would have detrimental effects

[29] As a public utility, SoCalGas has the ability to condemn land through the eminent domain process. Eminent domain is the process by which a government agency or utility can take property for public benefit as long as the property owner is adequately compensated. The eminent domain process is usually exercised only as a last resort.

upon the agriculture industry" (Ventura County 2021a). Additionally, the property is within an area governed by the Save Open-Space and Agricultural Resources (SOAR) initiative.[30]

The surrounding area is primarily developed with agricultural uses and low-density residential development (the nearest residence is approximately 0.7 miles away) and the specific site is used for agricultural purposes, including a portion of which is an avocado orchard. The slope of the property ranges from 0 percent to 70 percent and would require grading and potentially the installation of retaining walls or soil nails to create a level pad for compressor equipment and operational needs. To meet acceptable engineering design standards, a 2:1 slope is typically required, which requires a larger footprint than the actual building pad ("catch points"); given the slope of the site, significant grading to create a level site would be required.

Access to the site via a driveway at least 24 feet wide would be needed to meet SoCalGas and emergency responder access requirements. The access road would require grading and potentially retaining walls to achieve an acceptable grade suitable for fire truck access.

Distribution pipelines would need to be rerouted from the existing compressor station property to the new site location, requiring grading, trenching, pipeline installation, and potentially acquisition of additional pipeline right-of-way. Additionally, other utility connections for electricity, potable water, sewer, and telecommunications would be required. These may be able to be collocated in a utility trench if minimum separation between the utilities can be maintained. It may be feasible to locate the utility trench within the new access road. Otherwise, multiple trenches would be necessary. Electric and telecommunications lines may be located on aboveground utility poles. Water, sewer service, electricity, and telecommunications demand would be anticipated to be consistent with the existing compressor station.

Once access, site grading, and utilities are provided, four new natural gas compressors with 1,900 HP each would be installed in a new compressor building similar to the planned project. A new office and a warehouse similar in size to the planned project structures would be constructed onsite. A perimeter block wall 8 feet in height would be required for security purposes. Cameras and lighting would also be required for operational needs and security. Landscaping, such as trees or hedges, would be installed to help screen the perimeter wall and minimize visibility of the compressor station.

3.3.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 2.A: Avocado Site – Natural Gas are presented below and in Table 4.

- Construction of the compressor station, including pad grading, access road, onsite utility installations, buildings, and compressors, would take approximately 60 to 70 months.
- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the Avocado Site would take approximately 6 to 12 months, which would happen concurrently with the onsite work.

[30] Ventura County voters first approved the countywide SOAR initiative in 1998. In general, and subject to certain exceptions, SOAR requires countywide voter approval of any (1) substantive change to the General Plan's Agricultural, Open Space, or Rural land use goals or policies and (2) re-designation of land with these General Plan land use designations. In November 2016, Ventura County voters renewed the County's SOAR initiative and extended its provisions through 2050 (Ventura County 2020).

- Additional acreage would be added to account for required slope cutbacks. Soil nail walls would potentially be used to minimize need for slopes and onsite fill/compaction. Fill soil creates challenges for structural and equipment foundations. Soil nails would allow for a level site with fewer slopes to procure, grade, and maintain.
- Site grading and layout would be performed to integrate into the existing site contours to the extent feasible.

Table 4. Alternative 2.A Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	15.06 acres
Project Site – Demolition	0
Project Site – Grading	1.3 million cubic yards Assumes cut and fill balance onsite
Offsite – Pipeline Corridor 1	3,019 square feet
Offsite - Pipeline Corridor 2	1,563 square feet
Offsite - Water/Sewer Lines	36,945 square feet
Main Line Valve Connection 1	3,750 square feet
Main Line Valve Connection 2	3,750 square feet
Offsite – Roads	Resurface and widen 12,315 linear feet of Taylor Ranch Road to 24 feet, with assumed existing width of 12 feet
Offsite – Staging Area	5.63 acres
SCE Circuit, Substation, and System Name	Grandad Circuit 16 kilovolts Casitas Substation Santa Clara 220/66 System (SCE 2021a)
Offsite – New Electrical Poles	0 Assumes collocated utility trench because electrical demand would not be significant
Estimated Number of Properties Affected*	4

3.3.2 Purpose and Need

The Avocado Site – Natural Gas Alternative would meet the stated purpose and need for the planned project. Four new 1,900 HP natural gas compressors would replace the existing aging equipment and would meet the VCAPCD air emission and safety requirements. The proposed 7,600 HP would also maintain sufficient pressure in the existing pipelines and adequate inventory in the La Goleta Storage Field.

The Avocado Site – Natural Gas Alternative would meet some of the stated objectives. New natural gas compressors would replace existing infrastructure with new equipment that would meet VCAPCD and safety regulations and would be capable of meeting operating requirements,

including during power outages. The 15-acre site is sufficient to build a new compressor station. However, the use of the property would not be consistent with the Ventura County land use designation of Open Space or the zoning AE-40 acres. Additionally, the property is within an area governed by the SOAR initiative. Potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, would occur due to grading, trenching, and installation of new infrastructure. The location is highly visible from the surrounding community because the site is on a hillside above West Ventura.

As described above, the Avocado Site – Natural Gas Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives. For these reasons, the Ventura Compressor Station – Hybrid Alternative was carried forward for consideration related to essential site criteria.

3.3.3 Essential Site Criteria

The Avocado Site would meet all the essential site criteria.

- The existing property is approximately 15 acres in size.
- The nearest airport to the property is the Oxnard Airport, which is approximately 9.5 miles to the southeast. The use as a compressor station is compatible with the FAA land use regulations as stated in the Airport Comprehensive Land Use Plan for Ventura County Final Report (VCALUC 2000).[31]
- The site is designated by FEMA as having no flood risk (FEMA 2021a).

As such, the Avocado Site – Natural Gas Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

3.4 Alternative 2.B: Avocado Site – Hybrid

The Avocado Site – Hybrid Alternative was proposed by SoCalGas to take into consideration feedback provided during town halls in October 2021 and CPUC input to consider electric compressors. This alternative would be identical to the Avocado Site – Natural Gas Alternative except that compression would be provided by two 1,900 HP natural gas compressors and two 1,900 HP electric compressors. Installation of electric compressors would increase the electric demand for the compressor station. Based on preliminary analysis, approximately 5 MW of electric power would be needed, which would require distribution-level service on one unique power line of at least 16 kV. An onsite substation would also be required.

3.4.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 2.B: Avocado Site – Hybrid are presented below and in Table 5.

- Construction of the compressor station, including pad grading, access road, onsite utility installations, buildings, and compressors, would take approximately 60 to 70 months.

[31] The Airport Comprehensive Land Use Plan for Ventura County Final Report addresses the Camarillo, Oxnard, Santa Paula, and NAS Point Mugu airports (VCALUC 2000).

- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the Avocado site would take approximately 6 to 12 months, which would happen concurrently with the onsite work.
- Additional acreage would be added to account for required slope cutbacks. Soil nail walls would potentially be used to minimize need for slopes and onsite fill/compaction. Fill soil creates challenges for structural and equipment foundations. Soil nails would allow for a level site with fewer slopes to procure, grade, and maintain.
- Site grading and layout would be performed to integrate into the existing site contours.

Table 5. Alternative 2.B Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	15.06 acres
Project Site – Demolition	0
Project Site – Grading	1.3 million cubic yards Assumes cut and fill balance onsite
Offsite – Pipeline Corridor 1	3,019 square feet
Offsite - Pipeline Corridor 2	1,563 square feet
Offsite - Water/Sewer Lines	36,945 square feet
Main Line Valve Connection 1	3,750 square feet
Main Line Valve Connection 2	3,750 square feet
Offsite – Roads	Resurface and widen 12,315 linear feet of Taylor Ranch Road to 24 feet, with assumed existing width of 12 feet
Offsite – Staging Area	5.63 acres
SCE Circuit, Substation, and System Name	Grandad Circuit 16 kilovolts Casitas Substation Santa Clara 220/66 System (SCE 2021a)
Offsite – New Electrical Poles	30 poles
Offsite –Electric Poles – Grading	60 cubic yards
Estimated Number of Properties Affected*	4

Note:
* Properties affected include the site, access, infrastructure, and staging areas.

3.4.2 Purpose and Need

As with the Avocado Site – Natural Gas Alternative, the hybrid alternative would meet the stated purpose and need. The use of electric compressors with natural gas compressors would provide the necessary redundancy to meet operational needs. This alternative would provide sufficient compression to meet operational needs, would enhance reliability, and would maintain supplies to the La Goleta Storage Field.

As with the Avocado Site – Natural Gas Alternative, the hybrid alternative would meet some of the stated objectives. However, the use of electric compressors would increase electric demand and therefore require additional electric infrastructure to support the project, consequently requiring more grading and overhead electric conduit.

Because the Avocado Site – Hybrid Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives, this alternative was carried forward for consideration related to essential site criteria.

3.4.3 Essential Site Criteria

As noted in Section 3.3.3, the Avocado Site would meet all essential site criteria. Therefore, the Avocado Site – Hybrid Alternative was carried forward for consideration of environmental and operational criteria, as discussed in Section 4.

3.5 Alternative 3.A: Ventura Steel – Natural Gas

The Ventura Steel – Natural Gas Alternative was developed by SoCalGas. This site is located approximately 7,000 feet north of the compressor station property to the east of North Ventura Avenue within the jurisdiction of the County of Ventura. This site is not located on the existing transmission pipeline corridor and is privately owned; therefore, any future project would require the involvement of the landowner, either through a voluntary transfer of needed land rights or through the exercise of eminent domain. The property is approximately 10 acres, on land currently developed with industrial uses, including oil extraction infrastructure, and is designated "Industrial" by the Ventura County general plan and zoned by the Ventura County zoning ordinance as "M3-10,000 sf – General Industrial, 10,000 sf minimum parcel size" (Ventura County 2020. 2021b). The majority of the site is less than 10 percent slope and would require onsite grading related to over-excavation and recompaction for structural foundations and grading to relocate and install pipelines. Access to the site is provided by multiple driveways off North Ventura Avenue and East Shell Road that currently meet SoCalGas and emergency responder access requirements.

Transmission and distribution pipelines would need to be rerouted from the existing compressor station property to the new site location, requiring grading, trenching, pipeline installation, and potentially acquisition of additional pipeline right-of-way. Given the fact that the site is developed with existing industrial uses, other utility connections for electricity, potable water, sewer, and telecommunications are assumed to be available onsite and would require minimal upgrades. Water, sewer service, electricity, and telecommunications demand would be anticipated to be consistent with the existing compressor station.

Four new natural gas compressors with 1,900 HP each would be installed in a new compressor building similar to the planned project. A new office and a warehouse similar in size to the planned project structures would be constructed onsite. A perimeter block wall 8 feet in height would be required for security purposes. Cameras and lighting would also be required for operational needs and security. Landscaping, such as trees or hedges, could be installed to help screen the perimeter wall and minimize visibility of the compressor station.

3.5.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 3.A: Ventura Steel – Natural Gas are presented below and in Table 6.

- Construction of the compressor station, including pad grading, access road, onsite utility installations, buildings, and compressors, would take approximately 36 to 48 months.
- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the Ventura Steel site would take approximately 12 months, which would happen concurrently with the onsite work.
- Road closures Ventura Avenue would be necessary, and in order to maintain traffic flow, one lane would be closed for 6 months, then the alternate lane would be closed for 6 months, with traffic control measures in place for the duration of the work.

Table 6. Alternative 3.A Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	10 acres
Project Site – Demolition	49,850 square feet Building 1: 10,600 square feet Building 2: 11,130 square feet Building 3: 24,000 square feet Building 4: 4,200 square feet
Project Site – Grading	4,500 cubic yards
Pipeline Corridor 1	39,685 square feet
Pipeline Corridor 2	38,876 square feet
Water/Sewer Lines	0 square feet
Main Line Valve Connection	7,500 square feet
Depressurization Line	282 square feet
Offsite – Staging Area	4.69 acres
SCE Circuit, Substation, and System Name	Canet Circuit Casitas Substation Santa Clara 220/66 kilovolts (SCE 2021a)
Offsite – New Electrical Poles	0 Assumes existing electrical service is sufficient for natural gas option
Offsite – Electric Poles – Grading	0
Offsite – Roads	3,600 linear feet of new 12-foot-wide road for construction access to new pipeline corridor Assumes existing access from School Canyon Road and Crimea Street Fire Road is adequate

Table 6. Alternative 3.A Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Estimated Number of Properties Affected*	12

Note:
* Properties affected include the site, access, infrastructure. and staging areas.

3.5.2 Purpose and Need

The Ventura Steel – Natural Gas Alternative would meet the stated purpose and need for the planned project. Four new 1,900 HP natural gas compressors would replace the existing aging equipment and would meet the VCAPCD air emission requirements and safety requirements. Both transmission and distribution pipelines would need to be routed to the new location, which would be feasible predicated on detailed engineering design and availability of right-of-way. The proposed 7,600 HP would also maintain sufficient pressure in the existing pipelines and adequate inventory in the La Goleta Storage Field.

The Ventura Steel – Natural Gas Alternative would meet some of the stated objectives. New natural gas compressors would replace existing infrastructure with new equipment that would meet VCAPCD and safety requirements and would be capable of meeting operating requirements, including during power outages. The 10-acre site is sufficient to build a new compressor station. The use of the property would be consistent with the Ventura County land use designation of "Industrial" and the zoning "M3-10,000 sf." However, potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, would occur due to grading, trenching, and installation of new infrastructure.

As described above, the Ventura Steel – Natural Gas Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives. For these reasons, the Ventura Steel – Natural Gas Alternative was carried forward for consideration related to essential site criteria.

3.5.3 Essential Site Criteria

The Ventura Steel site would meet all the essential site criteria.

- The existing property is approximately 10 acres in size.
- The nearest airport to the property is the Oxnard Airport, which is approximately 8.75 miles to the southeast (VCALUC 2000). The use as a compressor station is compatible with the FAA land use regulations as stated in the *Airport Comprehensive Land Use Plan for Ventura County Final Report* (VCALUC 2000).[32]
- The site is designated by FEMA as having no flood risk (FEMA 2021b).

[32] The Airport Comprehensive Land Use Plan for Ventura County Final Report addresses the Camarillo, Oxnard, Santa Paula, and NAS Point Mugu airports (VCALUC 2000).

As such, the Ventura Steel – Natural Gas Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

3.6 Alternative 3.B: Ventura Steel – Hybrid

The Ventura Steel – Hybrid Alternative was proposed by SoCalGas to take into consideration CPUC input to consider electric compressors. This alternative would be identical to the Ventura Steel – Natural Gas Alternative except that compression would be provided by two 1,900 HP natural gas compressors and two 1,900 HP electric compressors. Installation of electric compressors would increase the electric demand for the compressor station. Based on preliminary analysis, approximately 5 MW of electric power would be needed, which would require distribution-level service on one unique power line of at least 16 kV. An onsite substation would also be required.

3.6.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 3.B: Ventura Steel – Hybrid are presented below and in Table 7.

- Construction of the compressor station, including pad grading, access road, onsite utility installations, buildings, and compressors, would take approximately 36 to 48 months.
- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the Ventura Steel site would take approximately 12 months, which would happen concurrently with the onsite work.

Table 7. Alternative 3.B Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	10 acres
Project Site – Demolition	49,850 square feet Building 1: 10,600 square feet Building 2: 11,130 square feet Building 3: 24,000 square feet Building 4: 4,200 square feet
Project Site – Grading	4,500 cubic yards
Pipeline Corridor 1	39,685 square feet
Pipeline Corridor 2	38,876 square feet
Water/Sewer Lines	0 square feet
Main Line Valve Connection	7,500 square feet
Depressurization Line	282 square feet
Offsite – Staging Area	4.69 acres
SCE Circuit, Substation, and System Name	San Nicholas Circuit Casitas Substation Santa Clara 220/66 kilovolts
Offsite – New Electrical Poles	2 poles Interconnect to the San Nicholas Circuit

Table 7. Alternative 3.B Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Offsite – Electric Poles – Grading	4 cubic yards
Offsite – Roads	3,600 linear feet of new 12-foot-wide road for construction access to new pipeline corridor Assumes existing access from School Canyon Road and Crimea Street Fire Road is adequate
Estimated Number of Properties Affected*	12

Note:
* Properties affected include the site, access, infrastructure, and staging areas.

3.6.2 Purpose and Need

As with the Ventura Steel – Natural Gas Alternative, the hybrid alternative would meet the stated purpose and need. The use of electric compressors with natural gas compressors would provide the necessary redundancy to meet operational needs. This alternative would provide sufficient compression to meet operational needs, would enhance reliability, and would maintain supplies to the La Goleta Storage Field.

As with the Ventura Steel – Natural Gas Alternative, the hybrid alternative would meet some of the stated objectives. However, the use of electric compressors would increase electric demand and therefore require additional electric infrastructure to support the project, consequently requiring more grading and overhead electric conduit.

Because the Ventura Steel – Hybrid Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives, this alternative was carried forward for consideration related to essential site criteria.

3.6.3 Essential Site Criteria

As noted in Section 3.5.3, the Ventura Steel site would meet all essential site criteria. Therefore, the Ventura Steel – Hybrid Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

3.7 Alternative 4.A: Devil's Canyon Road – Natural Gas

The Devil's Canyon Road – Natural Gas Alternative was suggested by members of the public at SoCalGas' town hall in October 2021. This site is located approximately 5,300 feet northwest of the compressor station property within the jurisdiction of the County of Ventura. The site is privately owned; therefore, any future project would require the involvement of the landowner, either through a voluntary transfer of needed land rights or through the exercise of eminent domain.

The property is approximately 12.88 acres, privately owned, currently used for oil extraction, and designated by the Ventura County general plan as "Open Space" and zoned by the Ventura

County zoning ordinance as "OS-160 ac, Open Space, 160 acres minimum parcel size" with a Habitat Connectivity Corridor mapped along the Ventura River (Ventura County 2020, 2021b). The Ventura County general plan states that the Open Space land use designation encompasses land or water that is essentially unimproved and devoted to an open-space use, including land for preservation of natural resources, managed production of resources, outdoor recreation, public health and safety, and to promote efficient municipal services and avoid urban sprawl (Ventura County 2020). The Ventura County Code states that "the purpose of [the OS] zone is to provide for any of the following on parcels or areas of land or water that are essentially unimproved: … The managed production of resources, including but not limited to: forest lands, rangeland, agricultural lands and areas of economic importance for the production of food or fiber; areas required for recharge of groundwater basins; bays, estuaries, marshes, rivers and streams which are important for the management of commercial fisheries; and, areas containing major mineral deposits, including those in short supply" (Ventura County 2021a). The area is developed with oil extraction uses. The slope of the property ranges between 0 percent and 30 percent, with the majority of the site less than 10 percent, and would require grading for over-excavation and recompaction for building foundations and utility trenching.

Access to the site is provided by multiple driveways off Shell Road that meet SoCalGas and emergency responder access requirements. Transmission and distribution pipelines would need to be rerouted from the existing compressor station property to the new site location, requiring grading, trenching, pipeline installation, and potentially acquisition of additional pipeline right-of-way. Given the fact that the site is developed with existing industrial uses, other utility connections for electricity, potable water, sewer, and telecommunications are assumed to be available onsite and would require minimal upgrades. Water, sewer service, electricity, and telecommunications demand would be anticipated to be consistent with the existing compressor station.

Once access, site grading, and utilities are provided, four new 1,900 HP natural gas compressors would be installed in a new compressor building similar to the planned project. A new office and a warehouse similar in size to the planned project structures would be constructed onsite. A perimeter block wall 8 feet in height would be required for security purposes. Cameras and lighting would also be required for operational needs and security. Landscaping, such as trees or hedges, could be installed to help screen the perimeter wall and minimize visibility of the compressor station.

3.7.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 4.A: Devil's Canyon Road – Natural Gas are presented below and in Table 8.

- Construction of the compressor station, including pad grading, access road, onsite utility installations, buildings, and compressors, would take approximately 24 to 30 months.
- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the Devil's Canyon Road site would take approximately 6 to 12 months, which would happen concurrently with the onsite work.

Table 8. Alternative 4.A Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	12.88 acres
Project Site – Demolition	156,645 square feet Piping/Equipment/Building
Project Site – Grading	4,500 cubic yards
Pipeline Route 1	23,963 square feet
Pipeline Route 2	23,963 square feet
Water/Sewer Lines	0 square feet
Main Line Valve Connection	7,500 square feet
Depressurization Line	0 square feet
Offsite – Staging Area	6.27 acres
SCE Circuit, Substation, and System Name	Circuit 00423 Casitas Substation Subtransmission 66 kilovolts
Offsite – New Electrical Poles	0 Assumes existing electrical service is sufficient for natural gas option
Offsite –Electric Poles – Grading	0 cubic yards
Offsite – Roads	1,892 linear feet Assumes existing access serving facility requires minor leveling and resurfacing
Estimated Number of Properties Affected*	5

Notes:
* Properties affected include the site, access, infrastructure, and staging areas

3.7.2 Purpose and Need

The Devil's Canyon Road – Natural Gas Alternative would meet the stated purpose and need for the planned project. Four new 1,900 HP natural gas compressors would replace the existing aging equipment and would meet the VCAPCD air emission and safety requirements. Both transmission and distribution pipelines would need to be routed to the new location, which would be feasible predicated on detailed engineering design. The proposed 7,600 HP would also maintain sufficient pressure in the existing pipelines and adequate inventory in the La Goleta Storage Field.

The Devil's Canyon Road – Natural Gas Alternative would meet some of the stated objectives. New natural gas compressors would replace existing infrastructure with new equipment that would meet VCAPCD and safety regulations and be capable of meeting operating requirements, including during power outages. The 12.88-acre site is sufficient to build a new compressor station. The property is designated by the Ventura County general plan as "Open Space" and zoned "OS-160-acres, Open Space 160 acres minimum parcel size" with the Habitat Connectivity and Wildlife Corridors overlay zone. The use of the property would not be consistent with the intent of the Ventura County general plan OS designation or the Ventura County OS-160-acre

zoning because the intent of both the land use designation and the zoning is to preserve land or water that is essentially unimproved and devoted to an open-space use (Ventura County 2021). Potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, would occur due to grading, trenching, and installation of new infrastructure.

As described above, the Devil's Canyon Road – Natural Gas Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives. For these reasons, the Devil's Canyon Road – Natural Gas Alternative was carried forward for consideration related to essential site criteria.

3.7.3 Essential Site Criteria

The Devil's Canyon Road site would meet all the essential site criteria.

- The existing property is approximately 12.88 acres in size.
- The nearest airport to the property is the Oxnard Airport, which is approximately 8.90 miles to the southeast. The use as a compressor station is compatible with the FAA land use regulations as stated in the *Airport Comprehensive Land Use Plan for Ventura County Final Report* (VCALUC 2000).[33]
- The site is designated by FEMA as having no flood risk; however, the eastern property is adjacent to the Ventura River and the access road crosses the river and is mapped Zone AE, which is a regulatory floodway (FEMA 2021d).

As such, the Devil's Canyon Road – Natural Gas Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

3.8 Alternative 4.B: Devil's Canyon Road – Hybrid

The Devil's Canyon Road – Hybrid Alternative was proposed by SoCalGas to take into consideration CPUC input to consider electric compressors. This alternative would be identical to the Devil's Canyon Road – Natural Gas Alternative except that compression would be provided by two 1,900 HP natural gas compressors and two 1,900 HP electric compressors. Installation of electric compressors would increase the electric demand for the compressor station. Based on preliminary analysis, approximately 5 MW of electric power would be needed, which would require distribution-level service on one unique power line of at least 16 kV. An onsite substation would also be required.

3.8.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 4.B: Devil's Canyon Road – Hybrid are presented below and in Table 9.

- Construction of the compressor station, including pad grading, access road, onsite utility installations, buildings, and compressors, would take approximately 24 to 30 months.

[33] The *Airport Comprehensive Land Use Plan for Ventura County Final Report* addresses the Camarillo, Oxnard, Santa Paula, and NAS Point Mugu airports (VCALUC 2000).

- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the Devil's Canyon Road site would take approximately 6 to 12 months, which would happen concurrently with the onsite work.

Table 9. Alternative 4.B Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	12.88 acres
Project Site – Demolition	156,645 square feet Piping/Equipment/Building
Project Site – Grading	4,500 cubic yards
Pipeline Route 1	23,963 square feet
Pipeline Route 2	23,963 square feet
Water/Sewer Lines	0 square feet
Main Line Valve Connection	7,500 square feet
Depressurization Line	0 square feet
Offsite – Staging Area	6.27 acres
SCE Circuit, Substation, and System Name	Circuit 00423 Casitas Substation Subtransmission 66 kilovolts
Offsite – New Electrical Poles	40 Assumes existing electrical service is sufficient for natural gas option
Offsite –Electric Poles – Grading	80 cubic yards
Offsite – Roads	1,892 linear feet Assumes existing access serving facility requires minor leveling and resurfacing
Estimated Number of Properties Affected*	5

Notes: SCE = Southern California Edison.
* Properties affected include the site, access, infrastructure, and staging areas.

3.8.2 Purpose and Need

As with the Devil's Canyon Road – Natural Gas Alternative, the hybrid alternative would meet the stated purpose and need. The use of electric compressors with natural gas compressors would provide the necessary redundancy to meet operational needs. This alternative would provide sufficient compression to meet operational needs, would enhance reliability, and would maintain supplies to the La Goleta Storage Field.

As with the Devil's Canyon Road – Natural Gas Alternative, the hybrid alternative would meet some of the stated objectives. However, the use of electric compressors would increase electric demand and therefore require additional electric infrastructure to support the project, consequently requiring more grading and overhead electric conduit.

Because the Devil's Canyon Road – Hybrid Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives, this alternative was carried forward for consideration related to essential site criteria.

3.8.3 Essential Site Criteria

As noted in Section 3.7.3, the Devil's Canyon Road site would meet all essential site criteria; therefore, the Devil's Canyon Road – Hybrid Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

3.9 Alternative 5.A: County Line – Natural Gas

The County Line – Natural Gas Alternative was developed by SoCalGas. This site is located within Ventura County at the county line between Santa Barbara and Ventura counties. It is approximately 11 miles northwest of the compressor station property, generally on the existing transmission pipeline corridor. The site is privately owned; therefore, any future project would require the involvement of the landowner, either through a voluntary transfer of needed land rights or through the exercise of eminent domain. The property is approximately 12.33 acres and vacant, although it appears to have been used for agricultural purposes historically. The property is designated by the Ventura County general plan as "Open Space" and zoned by the Ventura County zoning ordinance as "AE-40 ac – Agricultural Exclusive, 40 acres minimum parcel size" and is within the area governed by the SOAR initiative (Ventura County 2020, 2021a). The area is primarily developed with agricultural uses and low-density residential development. The slope of the property ranges from 0 percent to 70 percent, with the majority between 10 and 40 percent, and would require grading and potentially the installation of retaining walls to create a level pad for compressor equipment and operational needs. To meet acceptable engineering design standards, a 2:1 slope is typically required, which requires a larger footprint than the actual building pad ("catch points").

Access to the site via a driveway at least 24 feet wide would be needed to meet SoCalGas and emergency responder access requirements. There is an existing access road; however, because its width varies some sections of the road would need to be widened. The access road would require minimal grading to achieve an acceptable grade suitable for fire truck access.

Distribution pipelines would need to be rerouted from the existing compressor station property to the new site location, requiring trenching and pipeline installation, and potentially acquisition of additional pipeline right-of-way. Additionally, other utility connections for electricity, potable water, sewer, and telecommunications would be required. These may be able to be collocated in a utility trench if minimum separation between the utilities can be maintained. Otherwise, multiple trenches would be necessary. Electric and telecommunications lines may be located on aboveground utility poles. Water, sewer service, electricity, and telecommunications demand would be anticipated to be consistent with the existing compressor station.

Once access, site grading, and utilities are provided, five new 1,900 HP natural gas compressors would be installed in a new compressor building similar to the planned project. An additional compressor would be required for this site to overcome a greater pressure differential due to the location being farther north than the other alternative sites (approximately 11 miles). A new office and a warehouse similar in size to the planned project structures would be constructed onsite. A perimeter block wall 8 feet in height would be required for security purposes. Cameras

and lighting would also be required for operational needs and security. Landscaping, such as trees or hedges, could be installed to help screen the perimeter wall and minimize visibility of the compressor station.

3.9.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 5.A: County Line – Natural Gas are presented below and in Table 10.

- Construction of the compressor station, including pad grading, onsite utility installations, buildings, and compressors, would take approximately 60 to 70 months.
- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the County Line site would take approximately 6 months, which would happen concurrently with the onsite work.

Table 10. Alternative 5.A: County Line – Natural Gas – Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	12.33 acres
Project Site – Demolition	0 square feet Existing agricultural field
Project Site – Grading	600,000 cubic yards Cut and fill balance onsite
Pipeline Route 1	19,973 square feet
Water/Sewer Lines	7,497 square feet
Main Line Valve Connection	7,500 square feet
Depressurization Line	3,197 square feet
Offsite – Staging Area	3.92 acres
SCE Circuit, Substation, and System Name	Circuit 01950 Carpinteria Substation Subtransmission 66 kilovolts
Offsite – New Electrical Poles	0 Assumes collocated utility trench because electrical demand would not be significant
Offsite –Electric Poles – Grading	0 cubic yards
Offsite – Roads	2,499 linear feet Assumes existing access serving site requires minor leveling and resurfacing
Estimated Number of Properties Affected*	5

Note:
* Properties affected include the site, access, infrastructure, and staging areas.

3.9.2 Purpose and Need

The County Line – Natural Gas Alternative would meet the stated purpose and need for the planned project. Five new 1,900 HP natural gas compressors would replace the existing aging equipment and would meet the VCAPCD air emission and safety requirements. The proposed 9,500 HP would also maintain sufficient pressure in the existing pipelines and adequate inventory in the La Goleta Storage Field.

The County Line – Natural Gas Alternative would meet some of the stated objectives. New natural gas compressors would replace existing infrastructure with new equipment that would meet VCAPCD and DOT safety regulations and would be capable of meeting operating requirements, including during power outages. The 12.33-acre site is sufficient to build a new compressor station. However, the use of the property would not be consistent with the Ventura County land use designation of Open Space or the zoning AE-40 acres. Additionally, the property is within an area governed by the SOAR initiative. Potential environmental impacts, especially related to dust generation, noise, and visual/aesthetics, would occur due to grading, trenching, and installation of new infrastructure. The location is visible from the surrounding community because the site is on a hillside to the southeast of SR-150.

As described above, the County Line – Natural Gas Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives. For these reasons, the County Line – Natural Gas Alternative was carried forward for consideration related to essential site criteria.

3.9.3 Essential Site Criteria

The County Line site would meet all the essential site criteria.

- The existing property is approximately 12.33 acres in size.
- The nearest airport to the property is the Oxnard Airport, which is approximately 19 miles to the southeast. The use as a compressor station is compatible with the FAA land use regulations as stated in the *Airport Comprehensive Land Use Plan for Ventura County Final Report* (VCALUC 2000).[34]
- The site is designated by FEMA as having no flood risk; however, the northwesterly perimeter along an existing access road is mapped Zone A, a special flood hazard area without a base flood elevation (FEMA 2021c).

As such, the County Line – Natural Gas Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

3.10 Alternative 5.B: County Line – Hybrid

The County Line – Hybrid Alternative was proposed by SoCalGas to take into consideration CPUC input to consider electric compressors. This alternative would be identical to the County Line – Natural Gas Alternative except that compression would be provided by two 1,900 HP natural gas compressors and

[34] The Airport Comprehensive Land Use Plan for Ventura County Final Report addresses the Camarillo, Oxnard, Santa Paula, and NAS Point Mugu airports (VCALUC 2000).

three 1,900 HP electric compressors. Installation of electric compressors would increase the electric demand for the compressor station. Based on preliminary analysis, approximately 5 MW of electric power would be needed, which would require distribution-level service on one unique power line of at least 16 kV. An onsite substation would also be required.

3.10.1 Alternative-Specific Construction Assumptions

The construction assumptions for Alternative 5.B: County Line – Hybrid are presented below and in Table 11.

- Construction of the compressor station, including pad grading, access road, onsite utility installations, buildings, and compressors, would take approximately 60 to 70 months.
- Given the location of the existing transmission pipelines, installation/interconnection of the pipelines to a new compressor station at the County Line site would take approximately 6 to 12 months, which would happen concurrently with the onsite work.

Table 11. Alternative 5.B: County Line – Hybrid – Construction Assumptions/Estimates

Project Component	Assumptions and Estimates
Project Site Acreage	12.33 acres
Project Site – Demolition	0 square feet Existing agricultural field
Project Site – Grading	600,000 cubic yards Cut and fill balance onsite
Pipeline Route 1	19,973 square feet
Water/Sewer Lines	7,497 square feet
Main Line Valve Connection	7,500 square feet
Depressurization Line	3,197 square feet
Offsite – Staging Area	3.92 acres
SCE Circuit, Substation, and System Name	Circuit 01950 Carpinteria Substation Subtransmission 66 kilovolts
Offsite – New Electrical Poles	15 Assumes collocated utility trench because electrical demand would not be significant
Offsite –Electric Poles – Grading	30 cubic yards
Offsite – Roads	2,499 linear feet Assumes existing access serving site requires minor leveling and resurfacing
Estimated Number of Properties Affected*	5

Note:
* Properties affected include the site, access, infrastructure, and staging areas.

3.10.2 Purpose and Need

As with the County Line – Natural Gas Alternative, the hybrid alternative would meet the stated purpose and need. The use of electric compressors with natural gas compressors would provide the necessary redundancy to meet operational needs. This alternative would provide sufficient compression to meet operational needs, would enhance reliability, and would maintain supplies to the La Goleta Storage Field.

As with the County Line – Natural Gas Alternative, the hybrid alternative would meet some of the stated objectives. However, the use of electric compressors would increase electric demand and therefore require additional electric infrastructure to support the project, consequently requiring more grading and overhead electric conduit.

Because the County Line – Hybrid Alternative would provide sufficient compression to meet operational needs, would enhance reliability, would maintain supplies to the La Goleta Storage Field, and would meet some of the stated objectives, this alternative was carried forward for consideration related to essential site criteria.

3.10.3 Essential Site Criteria

As noted in Section 3.9.3, the County Line site would meet all essential site criteria. Therefore, the County Line – Hybrid Alternative was carried forward for consideration related to environmental and operational criteria, as discussed in Section 4.

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4 Operational and Environmental Considerations

The evaluation of alternative options necessarily accounts for operational and environmental considerations that go beyond the foundational elements of the purpose, need, and objectives of the planned project and the essential site criteria. This section provides an evaluation of the alternatives relative to five supplemental operational criteria. Environmental considerations have been evaluated by Dudek. Their analysis is incorporated in Appendix A.

In order to assess each potential alternative option according to the same criteria, a scoring rubric was developed for both the operational and environmental considerations. The rubric assigns point values from 0 to 9. The criteria within the rubric address topic areas that the CPUC examined in multiple data requests regarding the Ventura Compressor Modernization Project. Operational considerations include topic areas such as safety and resiliency, electrification and power requirements, control systems, system maintenance and gas releases, and siting considerations. Environmental considerations include topic areas such as emissions, climate change, traffic, noise, aesthetics, land use, construction impacts, and wildfire. Additional topic areas were added to expand the environmental evaluation to address cultural resources, natural resources, and CalEnviroScreen pollution burden.

4.1 Evaluation Methodology

The operational considerations evaluation process included a team of six SoCalGas staff members with subject matter expertise in pipeline operations, mechanical engineering, and civil engineering. Each staff member evaluated each alternative and assigned a point score in accordance with the rubric (included as Appendix B) and with the specific category shown in the relevant subsection below. The evaluation was based on a desktop-level analysis that was field-verified by SoCalGas' Construction Department, Gas Transmission Department, and Gas Engineering Department on January 6, 2022. The rubric scores are the average of the scores assigned by each staff member for each line item. Please refer to Appendix B for the complete scoring rubric.

4.2 Operational Assessment

This section provides an analysis of the operational considerations and each alternative option's assigned score in accordance with the scoring rubric (Appendix B).

4.2.1 Auxiliary and Control Systems

The complexity of auxiliary and control systems relates to alternative options with one operational system instead of two. With a hybrid gas and electric station, the control panel would need to be able to interface with two unique types of unit control panels, instead of one panel with one set of command controls. It would also necessitate two control philosophies, which is the directive of how to run the station based on the system needs at that time (see Table 12).

Table 12. Auxiliary and Control Systems

	0	1-2-3	4-5-6	7-8-9
Topic Area	Hybrid option that relies on SCE power for running 50% compressors	Hybrid option that does not rely on SCE power for running 50% compressors	Non-hybrid with backup power feed from SCE to run 50% compressors	Non-hybrid option with onsite backup power generation to run 50% compressors

Note: SCE = Southern California Edison.

All Natural Gas Alternatives

The natural gas alternatives would operate with only natural gas equipment, which would require one operational system. Table 13 presents the auxiliary and control systems point assessments for the natural gas alternatives. Since each option below assumes one operational system, a total of 9 points each was assigned.

Table 13. Auxiliary and Control Systems – All Natural Gas Alternatives

Alternative	Auxiliary and Control Systems Total
1.A: Planned Project	9 points
2.A: Avocado Site – Natural Gas	9 points
3.A: Ventura Steel – Natural Gas	9 points
4.A: Devil's Canyon Road – Natural Gas	9 points
5.A: County Line – Natural Gas	9 points

All Hybrid Alternatives

The hybrid alternatives would operate with both natural gas equipment and electric equipment, requiring two operational systems, which creates greater challenges when operating the compressor station. Table 14 presents the auxiliary and control systems point assessments for the hybrid alternatives. Since each option below assumes a hybrid operational system creating greater operating complexity, a total of 5 points each was assigned.

Table 14. Auxiliary and Control Systems – All Hybrid Alternatives

Alternative	Auxiliary and Control Systems Total
1.B: Ventura Compressor Station – Hybrid	5 points
2.B: Avocado Site – Hybrid	5 points
3.B: Ventura Steel – Hybrid	5 points
4.B: Devil's Canyon Road – Hybrid	5 points
5.B: County Line – Hybrid	5 points

4.2.2 Backup Power Requirements

Backup power requirements relates to the ability for the compressor station to provide sufficient horsepower to move gas into the Coastal System depending on the availability of natural gas and electric infrastructure, especially in black start conditions (see Table 15). Black start is the ability to restart the electric system after a blackout/loss of power. It is used when the grid experiences a blackout and must be restarted from scratch. Black start is central to system restoration and recovery plans for system operators (NREL 2021).

Table 15. Backup Power Requirements

	0	1-2-3	4-5-6	7-8-9
Topic Area	No operation possible without SCE power in service	Black start capability and ability to provide less than 50% horsepower without SCE power in service	Black start capability and ability to provide less than 100% down to 50% horsepower without SCE in service	Black start capability and ability to provide 100% horsepower without SCE in service

Note: SCE = Southern California Edison.

All Natural Gas Alternatives

All natural gas alternatives would be only natural gas compression and have black start capability and full compression without SCE service available. Table 16 presents the backup power requirements point assessments for the natural gas alternatives. Since each option below could have black start capability from 50% to 100% capability, a total of 6 points each was assigned.

Table 16. Backup Power Requirements – All Natural Gas Alternatives

Alternative	Backup Power Requirements Total
1.A: Planned Project	6 points
2.A: Avocado Site – Natural Gas	6 points
3.A: Ventura Steel – Natural Gas	6 points
4.A: Devil's Canyon Road – Natural Gas	6 points
5.A: County Line – Natural Gas	6 points

All Hybrid Alternatives

Hybrid alternatives would have natural gas compression and electric compression. A hybrid option would have black start capability and with backup power available could also have full compression available if power on the SCE system is lost. Table 17 presents the backup power requirements point assessments for the hybrid alternatives. Since each option below could have black start capability from 50% to 100% capability, a total of 6 points each was assigned.

Table 17. Backup Power Requirements – All Hybrid Alternatives

Alternative	Backup Power Requirements Total
1.B: Ventura Compressor Station – Hybrid	6 points
2.B: Avocado Site – Hybrid	6 points
3.B: Ventura Steel – Hybrid	6 points
4.B: Devil's Canyon Road – Hybrid	6 points
5.B: County Line – Hybrid	6 points

4.2.3 Emergency Access

Emergency access is related to roadway access for first responders, such as the fire department. The VCFPD Standard 501 "Fire Apparatus Access Standard" requires that emergency access roads be a minimum of 24 feet wide and not exceed a slope of 20 percent, with turnouts every 150 feet (VCFPD 2019). The evaluation of alternatives considers the existing site access and the extent to which roadway improvements must occur to comply with fire department requirements (see Table 18). The availability of onsite or nearby fire water infrastructure may allow the fire department to grant limited waivers for some requirements, such as turnout spacing.

Table 18. Emergency Access

	0	1-2-3	4-5-6	7-8-9
Topic Area	Emergency access exceeds 20% grade even with engineered design (including retaining walls)	New access road required or substantial improvements to existing access road	Minor modification to existing access road	No new road improvements

Note: Assessment based on desktop analysis using Google Earth field-verified by SoCalGas staff January 6, 2022.

Alternative 1.A: Planned Project/Alternative 1.B: Ventura Compressor Station – Hybrid

The planned project and a hybrid alternative at the existing compressor station would meet all applicable emergency access and safety requirements because the existing compressor station meets all access requirements. The site has access points that connect to Olive Street. The primary entrance (and main access point) is 36 feet wide. A secondary access point is 20 feet wide. The primary entrance is sufficient for fire trucks and other emergency response vehicles that connect to Olive Street. The existing facility also has fire water infrastructure onsite that meets fire department requirements. Table 19 presents the emergency access point assessments for these alternatives. This site scored a 9 because existing access meets fire department requirements and fire water infrastructure is present.

Table 19. Emergency Access – Alternatives 1.A and 1.B: Ventura Compressor Station

Alternative	Emergency Access Total
1.A: Planned Project	9 points
1.B: Ventura Compressor Station – Hybrid	9 points

Alternative 2.A: Avocado Site – Natural Gas/Alternative 2.B: Avocado Site – Hybrid

The Avocado Site would require a new access road with at least a 24-foot width and slope not exceeding 20 percent. The site has existing agricultural roads for crop access that could be widened and improved with asphalt or other paving. Given the topography of the site, grading, and potentially retaining walls, to establish an acceptable slope would be needed. A fire hydrant may also be required, which would require a new fire water line at a minimum water pressure sufficient for firefighting (typically 20 pounds per square inch [psi]). Table 20 presents the emergency access point assessments for these alternatives. This site scored a 4 because an existing access road (Taylor Ranch Road) is available however substantial grading to establish a 20 percent slope or less and sufficient width would be required.

Table 20. Emergency Access – Alternatives 2.A and 2.B: Avocado Site

Alternative	Emergency Access Total
2.A: Avocado Site – Natural Gas	4 points
2.B: Avocado Site – Hybrid	4 points

Alternative 3.A: Ventura Steel – Natural Gas/Alternative 3.B: Ventura Steel – Hybrid

The Ventura Steel site is located on an existing industrial property and as such is assumed to meet all applicable emergency access and safety requirements. The site has two access points that are sufficient for fire trucks and other emergency response vehicles and that connect to North Ventura Avenue. A fire hydrant is located at the northeast corner of Shell Road and North Ventura Avenue, approximately 100 feet from the property boundary. Table 21 presents the emergency access point assessments for these alternatives. This site scored a 9 because existing access meets fire department requirements and fire water infrastructure is present.

Table 21. Emergency Access – Alternatives 3.A and 3.B: Ventura Steel

Alternative	Emergency Access Total
3.A: Ventura Steel – Natural Gas	9 points
3.B: Ventura Steel – Hybrid	9 points

Alternative 4.A: Devil's Canyon Road – Natural Gas/Alternative 4.B: Devil's Canyon Road – Hybrid

The Devil's Canyon Road site has site access provided by an existing bridge approximately 28 feet in width that crosses the Ventura River. The bridge is sufficient in width for fire apparatus. Fire water infrastructure is located onsite. Table 22 presents the emergency access point assessments for these alternatives. This site scored a 7 because existing access meets fire department requirements however, in the event of a significant rainfall, bridge access could be affected and emergency access would have to be provided elsewhere, likely across adjacent property to the west.

Table 22. Emergency Access – Alternatives 4.A and 4.B: Devil's Canyon Road

Alternative	Emergency Access Total
4.A: Devil's Canyon Road – Natural Gas	7 points
4.B: Devil's Canyon Road – Hybrid	7 points

Alternative 5.A: County Line – Natural Gas/Alternative 5.B: County Line – Hybrid

The County Line site would require a new access road with at least a 24-foot width and slope not exceeding 20 percent. The site has existing agricultural roads for crop access that could be widened and improved with asphalt or other paving. A fire hydrant may also be required, which would require a new fire water line at a minimum water pressure sufficient for firefighting (typically 20 psi). Table 23 presents the emergency access point assessments for these alternatives. This site scored a 5 because an existing access road is available and however it would require some widening along sections of the road and surface improvements.

Table 23. Emergency Access – Alternatives 5.A and 5.B: County Line

Alternative	Emergency Access Total
5.A: County Line – Natural Gas	5 points
5.B: County Line – Hybrid	5 points

4.2.4 Geotechnical Engineering Constraints

Soil stability and underlying geology can contribute to soil movement and pipeline damage. Although detailed geologic and geotechnical evaluation under the direction of a licensed geologist, geotechnical engineer, and civil engineer is outside the scope of this feasibility study, a desktop-level evaluation using the County of Ventura's GIS-based "County View" system has been performed to determine whether known geotechnical constraints associated with high risk of faulting/seismicity, liquefaction, and subsidence are present for each alternative (Ventura

County 2021b).[35,36] Most geotechnical constraints can be addressed by implementing measures at the recommendation of a geologist, geotechnical engineer, and/or civil engineer and following standard building code requirements, such as over-excavating and recompacting soil or installing special building foundations (e.g., piers, caissons). However, significant geotechnical constraints (see Table 24) can cause greater long-term risk to infrastructure and increase overall project cost, including for long-term maintenance. As such, siting of new pipelines and infrastructure should avoid these constraints to the extent feasible.

Table 24. Geotechnical Engineering Constraints

	0	1-2-3	4-5-6	7-8-9
Topic Area	Substantial geotechnical constraints	Moderate geotechnical constraints	Minimal geotechnical constraints	No known geotechnical constraints

Note: Assessment based on desktop analysis using County of Ventura's GIS based "County View" system to evaluate liquefaction, faulting/seismicity, and landslide risk.

Alternative 1.A: Planned Project/Alternative 1.B: Ventura Compressor Station – Hybrid

The Ventura Compressor Station site is not mapped with any known earthquake faults, earthquake fault hazards, potential earthquake-induced landslide areas, or subsidence zones. The site is mapped with potential risk for soil liquefaction (Ventura County 2021b). Existing pipelines serving the compressor station also fall within the soil liquefaction area. However, the existing compressor station has not experienced any settling or foundation cracking associated with subsidence or liquefaction. No new natural gas pipelines would be required offsite for this location. New utility connections, such as aboveground electrical and telecommunication conduit, for a hybrid alternative could be sited and installed based on geotechnical field conditions. Table 25 presents the geotechnical engineering constraint point assessments for these two alternative options. This site scored a 6 because of mapped potential risk for soil liquefaction however, standard engineering design and compliance with building code requirements can reduce liquefaction risk. Furthermore, a compressor station has been onsite for almost 100 years with no known challenges from liquefaction.

Table 25. Geotechnical Engineering Constraints – Alternatives 1.A and 1.B: Ventura Compressor Station

Alternative	Geotechnical Engineering Constraints Total
1.A: Planned Project	6 points
1.B: Ventura Compressor Station – Hybrid	6 points

[35] As defined by the U.S. Geological Survey, "Liquefaction takes place when loosely packed, water-logged sediments at or near the ground surface lose their strength in response to strong ground shaking. Liquefaction occurring beneath buildings and other structures can cause major damage during earthquakes" (USGS 2021).

[36] As defined by the U.S. Geological Survey, "Land subsidence is a gradual settling or sudden sinking of the Earth's surface due to removal or displacement of subsurface earth materials. The principal causes include: aquifer-system compaction associated with groundwater withdrawals; drainage of organic soils; underground mining; natural compaction or collapse, such as with sinkholes or thawing permafrost" (USGS 2019).

Alternative 2.A: Avocado Site – Natural Gas/ Alternative 2.B: Avocado Site – Hybrid

The Avocado Site is not mapped with any known earthquake faults, earthquake fault hazards, liquefaction risk, or subsidence zones. The site is mapped with potential earthquake-induced landslide areas. New pipeline infrastructure and new utility connections would be required within the area mapped as a potential earthquake-induced landslide area. Table 26 presents the geotechnical engineering constraint point assessments for these alternatives. This site scored a 4 because of mapped potential landside risk from an earthquake. While engineering design and compliance with building code requirements will reduce risk, an earthquake induced landslide could cause significant damage to a compressor station.

Table 26. Geotechnical Engineering Constraints – Alternatives 2.A and 2.B: Avocado Site

Alternative	Geotechnical Engineering Constraints Total
2.A: Avocado Site – Natural Gas	4 points
2.B: Avocado Site – Hybrid	4 points

Alternative 3.A: Ventura Steel – Natural Gas/Alternative 3.B: Ventura Steel – Hybrid

The Ventura Steel site is not mapped with any known earthquake faults, earthquake fault hazards, or subsidence zones. However, there is a mapped earthquake fault to the west of SR-33/Ventura River approximately 2,500 feet from the property boundary. The site is also mapped with liquefaction risk. New pipeline infrastructure and new utility connections would be required within the area mapped with liquefaction risk. Table 27 presents the geotechnical engineering constraint point assessments for these alternatives. This site scored a 6 because of mapped potential risk for soil liquefaction however, standard engineering design and compliance with building code requirements can reduce liquefaction risk.

Table 27. Geotechnical Engineering Constraints – Alternatives 3.A and 3.B: Ventura Steel

Alternative	Geotechnical Engineering Constraints Total
3.A: Ventura Steel – Natural Gas	6 points
3.B: Ventura Steel – Hybrid	6 points

Alternative 4.A: Devil's Canyon Road – Natural Gas/Alternative 4.B: Devil's Canyon Road – Hybrid

The Devil's Canyon Road site is mapped with a known earthquake fault approximately 700 feet north of the limits of ground disturbance. However, there is no mapped earthquake fault hazard zone or subsidence zone. The site is also mapped with liquefaction risk. New pipeline infrastructure and new utility connections would be required within the area mapped with liquefaction risk and could be in proximity to the fault, although engineering design could address most of the fault risk. Table 28 presents the geotechnical engineering constraint point assessments for these alternatives. This site scored a 5 because of mapped potential risk for

soil liquefaction and proximity to a known fault. Standard engineering design and compliance with building code requirements can reduce liquefaction and risk related to seismic shaking.

Table 28. Geotechnical Engineering Constraints – Alternatives 4.A and 4.B: Devil's Canyon Road

Alternative	Geotechnical Engineering Constraints Total
4.A: Devil's Canyon Road – Natural Gas	5 points
4.B: Devil's Canyon Road – Hybrid	5 points

Alternative 5.A: County Line – Natural Gas/Alternative 5.B: County Line – Hybrid

The County Line site is mapped with a known earthquake fault approximately 500 feet north of the limits of ground disturbance. Two additional mapped faults are located near a tie-in point to the existing distribution system. However, there is no mapped earthquake fault hazard zone, subsidence zone, or liquefaction hazard. New pipeline infrastructure and new utility connections would be required and could be in proximity to the fault, and may actually cross the fault, although engineering design could address most of the fault risk. Table 29 presents the geotechnical engineering constraint point assessments for these alternatives. This site scored a 6 because of proximity to a known fault. Standard engineering design and compliance with building code requirements can reduce risk related to seismic shaking

Table 29. Geotechnical Engineering Constraints – Alternatives 5.A and 5.B: County Line

Alternative	Geotechnical Engineering Constraints Total
5.A: County Line – Natural Gas	6 points
5.B: County Line – Hybrid	6 points

4.2.5 Proximity to Distribution System

The ability to mitigate or eliminate emissions from a gas release to atmosphere for operations and maintenance (referred to as a "blowdown") is heavily influenced by the type of system that is being blown down.[37] The operating pressure of a pipeline system is a critical factor when evaluating the ability to limit or eliminate emissions during a blowdown (see Table 30). Cross compression is a technique used to help minimize release of natural gas. Portable compression equipment is used to bring down gas pressure on an isolated pipeline segment and redirect the gas downstream of the isolated segment. Cross compression requires an adjacent pipeline with an operating pressure and capacity compatible with the existing pressure conditions of the line to be vacated (AGA 2020).

The location of the compressor station in relationship to the distribution pipeline system creates the option to engineer a system that can passively collect and redirect natural gas and route to

[37] Generally defined, a blowdown is the release of gas from a pipeline to the atmosphere to relieve pressure in the pipe so that maintenance, testing, or other activities can take place (MJB&A 2016).

the distribution system instead of needing to bring additional compression equipment onsite to perform cross compression.[38]

Table 30. Proximity to Distribution System

	0	1-2-3	4-5-6	7-8-9
Topic Area	No access to distribution system without substantial pipeline installation	Distribution system greater than 0.5 miles away	Distribution system access outside of the facility and less than 0.5 miles away	Distribution system is within the facility

Alternative 1.A: Planned Project/Alternative 1.B: Ventura Compressor Station – Hybrid

The Ventura Compressor Station site is already connected to the distribution system. The planned project and a hybrid alternative at the existing site would be able to connect to the distribution system enabling passive rerouting without the need to bring cross compression equipment onsite. Table 31 presents the proximity to distribution system point assessments for these alternatives. This site scored a 9 because existing distribution lines are located within the property enabling the ability to limit or eliminate emissions during a blowdown.

Table 31. Proximity to Distribution System – Alternatives 1.A and 1.B: Ventura Compressor Station

Alternative	Proximity to Distribution System Total
1.A: Planned Project	9 points
1.B: Ventura Compressor Station – Hybrid	9 points

Alternative 2.A: Avocado Site – Natural Gas/Alternative 2.B: Avocado Site – Hybrid

The Avocado Site could not be connected to the distribution pipeline system without significant pipeline installation. The new pipeline route would connect to the south at the junction of Taylor Ranch Road/US 101. Table 32 presents the proximity to distribution system point assessments for these alternatives. This site scored a 1 because access to the existing distribution lines is more than 0.5 mile away.

Table 32. Proximity to Distribution System – Alternatives 2.A and 2.B: Avocado Site

Alternative	Proximity to Distribution System Total
2.A: Avocado Site – Natural Gas	1 point
2.B: Avocado Site – Hybrid	1 point

[38] In the event of an unplanned release or emergency, the emergency shutdown (ESD) system is designed to automatically evacuate natural gas rapidly, which may not enable cross-compression. At the Ventura Compressor Station, the ESD stack vents to atmosphere. As noted by the EPA, "rerouting combustible gases eliminates potential hazards in the operating area as well as reducing methane emissions" (EPA 2011).

Alternative 3.A: Ventura Steel – Natural Gas/Alternative 3.B: Ventura Steel – Hybrid

The Ventura Steel site would require a connection to existing distribution pipe within Ventura Avenue or a new distribution pipeline would be required from the existing compressor station site and north within Ventura Avenue. Table 33 presents the proximity to distribution system point assessments for these alternatives. This site scored a 5 because the distribution system access outside of the facility and less than 0.5 miles away.

Table 33. Proximity to Distribution System – Alternatives 3.A and 3.B: Ventura Steel

Alternative	Proximity to Distribution System Total
3.A: Ventura Steel –Natural Gas	5 points
3.B: Ventura Steel – Hybrid	5 points

Alternative 4.A: Devil's Canyon Road – Natural Gas/Alternative 4.B: Devil's Canyon Road – Hybrid

The Devil's Canyon Road site would require a distribution system connection to the east across the Ventura River and SR-33 at the Shell Road exit. Existing infrastructure potentially could be adapted to support the distribution interconnection. Table 34 presents the proximity to distribution system point assessments for these alternatives. This site scored a 2 because the distribution system access is greater than 0.5 miles away but closer to the distribution system than the Avocado Site.

Table 34. Proximity to Distribution System – Alternatives 4.A and 4.B: Devil's Canyon Road

Alternative	Proximity to Distribution System Total
4.A: Devil's Canyon Road – Natural Gas	2 points
4.B: Devil's Canyon Road – Hybrid	2 points

Alternative 5.A: County Line – Natural Gas/Alternative 5.B: County Line – Hybrid

The County Line site would require a new connection that would extend from the site north to the existing distribution pipeline system. Table 35 presents the proximity to distribution system point assessments for these alternatives. This site scored a 5 because the distribution system access is outside of the facility and less than 0.5 miles away.

Table 35. Proximity to Distribution System – Alternatives 5.A and 5.B: County Line

Alternative	Proximity to Distribution System Total
5.A: County Line – Natural Gas	5 points
5.B: County Line – Hybrid	5 points

4.3 Operational Assessment Summary

Table 36 presents the results of Sections 4.2.1 through 4.2.5 regarding the relative point values assessed for each operational consideration discussed in Section 4.2.

Table 36. Operational Assessment Summary Table

Alternative	Points
Auxiliary and Control Systems – All Natural Gas Alternatives	
1.A: Planned Project	9 points
2.A: Avocado Site – Natural Gas	9 points
3.A: Ventura Steel – Natural Gas	9 points
4.A: Devil's Canyon Road – Natural Gas	9 points
5.A: County Line – Natural Gas	9 points
Auxiliary and Control Systems – All Hybrid Alternatives	
1.B: Ventura Compressor Station – Hybrid	5 points
2.B: Avocado Site – Hybrid	5 points
3.B: Ventura Steel – Hybrid	5 points
4.B: Devil's Canyon Road – Hybrid	5 points
5.B: County Line – Hybrid	5 points
Backup Power Requirements – All Natural Gas Alternatives	
1.A: Planned Project	6 points
2.A: Avocado Site – Natural Gas	6 points
3.A: Ventura Steel – Natural Gas	6 points
4.A: Devil's Canyon Road – Natural Gas	6 points
5.A: County Line – Natural Gas	6 points
Backup Power Requirements – All Hybrid Alternatives	
1.B: Ventura Compressor Station – Hybrid	6 points
2.B: Avocado Site – Hybrid	6 points
3.B: Ventura Steel – Hybrid	6 points
4.B: Devil's Canyon Road – Hybrid	6 points
5.B: County Line – Hybrid	6 points
Emergency Access – All Alternatives	
1.A: Planned Project	9 points
1.B: Ventura Compressor Station – Hybrid	9 points
2.A: Avocado Site – Natural Gas	4 points
2.B: Avocado Site – Hybrid	4 points
3.A: Ventura Steel – Natural Gas	9 points
3.B: Ventura Steel – Hybrid	9 points
4.A: Devil's Canyon Road – Natural Gas	7 points
4.B: Devil's Canyon Road – Hybrid	7 points

Table 36. Operational Assessment Summary Table

Alternative	Points
5.A: County Line – Natural Gas	5 points
5.B: County Line – Hybrid	5 points
Geotechnical Engineering Constraints – All Alternatives	
1.A: Planned Project	6 points
1.B: Ventura Compressor Station – Hybrid	6 points
2.A: Avocado Site – Natural Gas	4 points
2.B: Avocado Site – Hybrid	4 points
3.A: Ventura Steel – Natural Gas	6 points
3.B: Ventura Steel – Hybrid	6 points
4.A: Devil's Canyon Road – Natural Gas	5 points
4.B: Devil's Canyon Road – Hybrid	5 points
5.A: County Line – Natural Gas	6 points
5.B: County Line – Hybrid	6 points
Proximity to Distribution System – All Alternatives	
1.A: Planned Project	9 points
1.B: Ventura Compressor Station – Hybrid	9 points
2.A: Avocado Site – Natural Gas	1 point
2.B: Avocado Site – Hybrid	1 point
3.A: Ventura Steel – Natural Gas	5 points
3.B: Ventura Steel – Hybrid	5 points
4.A: Devil's Canyon Road – Natural Gas	2 points
4.B: Devil's Canyon Road – Hybrid	2 points
5.A: County Line – Natural Gas	5 points
5.B: County Line – Hybrid	5 points

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5 Cost Estimate and Schedule Analysis

This section provides an analysis of cost and project schedule for each alternative option carried forward. Detailed information regarding cost estimates is included in Appendix C and schedule is in Appendix D.

5.1 Cost Estimate

SoCalGas uses accepted industry practices when estimating cost. The recognized expert in cost estimating and scheduling is the American Association of Cost Engineers (AACE). The AACE has established Recommended Practices (RPs) that are "intended to be the main technical foundation of … educational, and certification products and services. The RPs are a series of documents that contain valuable reference information that has been subject to a rigorous review process and recommended for use by the [AACE] Technical Board" (AACE 2022). Cost estimating is based on characteristics that can be used to categorize project cost estimate types as outlined in AACE RP 10S-90, "Cost Engineering Terminology." The level of project definition determines the information available to the estimating process (AACE 2021). Cost estimates are designated within a particular class from 1 to 5, based on the level of project definition available at the time of estimation. A Class 1 estimate is the closest to full project definition and maturity and a Class 5 is based on the lowest level of project definition (AACE 2021).

SoCalGas, with support from BMCD and SPEC Services, developed cost estimates in accordance with AACE RP 10S-90 for the various alternatives. Given the level of information available as of the date of this feasibility study, the planned project (Alternative 1.A) cost estimate is at Class 3 because the engineering analysis has been completed to a greater level of detail. Cost estimates for all other alternatives have been developed based on preliminary site considerations, an average site size of 15 acres, and construction assumptions outlined in Section 3 and are at Class 5.[39]

Project development costs are related to the one-time cost to implement the alternative. These costs include, but are not limited to, compressors, piping, land and easement acquisition, building materials, site and roadway grading and retaining walls, electrical conduit, power poles, and engineering design. To normalize project cost, a standard contingency of 30 percent was applied to the estimated total cost for each option. This percent contingency may overstate the

[39] In accordance with AACE RP 10S-90 (AACE 2021), cost estimates are classified as follows:
3. COST ESTIMATE CLASSIFICATION SYSTEM, CLASS 3 ESTIMATE – (Typical level of project definition required: 10% to 40% of full project definition.) Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. Class 3 estimates are typically prepared to support full project funding requests and become the first of the project phase "control estimate" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control. …
5. COST ESTIMATE CLASSIFICATION SYSTEM, CLASS 1 ESTIMATE – (Typical level of project definition required: 65% to 100% of full project definition.) Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor's or vendor's bid estimate, or to evaluate/dispute claims or change orders (AACE 2021).

planned project's cost (Alternative 1.A) because the cost estimate is at a Class 3 and typically a lower contingency would be applied. However, this adjustment allows project cost to be evaluated consistent with other alternative options carried forward.

Operational costs are related to the ongoing annual cost incurred to operate the compressor station. A hybrid station requires more electric power; as such, SCE electricity is a greater portion of the operational cost. The County Line Alternative would require five compressors (either five natural gas [Alternative 5.A.] or two natural gas and three electric [Alternative 5.B.]), which is the reason for the greater cost differential compared to other sites with four compressors. Please refer to Appendix C for detailed cost estimate information and Table 37 below for summary costs.

Table 37. Ventura Compressor Station Alternatives – Cost Estimates

Alternative	Project Development Cost (Nonrecurring)	Operational Cost (Annual Recurring)
1.A: Planned Project	$421MM	$0.904MM
1.B: Current Site – Hybrid	$464MM	$1,778MM
2.A: Avocado Site – Natural Gas	$677MM	$0.949MM
2.B: Avocado Site – Hybrid	$707MM	$1,823MM
3.A: Ventura Steel – Natural Gas	$607MM	$0.909MM
3.B: Ventura Steel – Hybrid	$635MM	$1,783MM
4.A: Devil's Canyon Road – Natural Gas	$566MM	$0.919MM
4.B: Devil's Canyon Road – Hybrid	$594MM	$1,793MM
5.A: County Line – Natural Gas	$593MM	$1.124MM
5.B: County Line – Hybrid	$622MM	$2,522MM

Source: SCE 2019.
Notes: MM = million.
Costs are presented in 2022 dollars with escalation/inflation included.
Electric rates were based on SCE fixed tariff Schedule TOU-GS-2 (SCE 2019).

5.2 Schedule Analysis

SoCalGas, with technical support from BMCD and SPEC Services, developed schedule estimates for each alternative. Schedule estimates were also based on accepted industry standards using AACE RP 91R-16, "Schedule Development" (AACE 2020). Schedules are differentiated by the degree of detail available at the time of estimation, with the least detailed being a Level 1 schedule and the most detailed being a Level 5 schedule.[40] The schedule for the planned project

[40] In accordance with AACE RP 91R-16 (AACE 2020), schedules are classified as follows:
Level 1: A Level 1 schedule is a high-level schedule that reflects key milestones and summary activities by major phase, stage or project being executed. This schedule level may represent summary activities of an execution stage, specifically engineering, procurement, construction and start-up activities. Typically represented in Gantt format and depending upon when and how developed, a Level 1 schedule may or may not be the summary roll-up of a more detailed CPM schedule. Level 1 schedules provide high-level information that assist in the decision making process (go/no go prioritization and criticality of projects). …
Level 3: Level 3 schedules are generally prepared to communicate the execution of the deliverables for each of the contracting parties. The schedule should reflect the interfaces between key workgroups, disciplines,

(Alternative 1.A) is a Level 3 and all other alternatives are at a Level 1. Because schedule delays can have a variety of outcomes, including increased maintenance, obsolete replacement parts, lack of staffing and/or equipment resources, and increased cost, alternatives were evaluated based on three categories reflected in the scoring rubric related to schedule. Furthermore, as noted in the CPUC's Decision D.19-09-051 on SoCalGas' 2019 GRC application, "We do however encourage SoCalGas to place a high priority on critical projects under this category as most of its compressors are over 50 years old and because of key risks that need to be mitigated in this area" (D.19-09-051 at pp. 116-117). The consideration of schedule aligns with the CPUC's input.

Permitting assumptions are preliminary and are based on the level of detail available for each alternative at this time and could change depending on the ultimate selection of the site layout and equipment. Please refer to Appendix B for the scoring rubric and Appendix D for the schedule estimates.

5.2.1 Applicability of Local Agency Permits

An important consideration related to permitting and its impact on a particular alternative's schedule is the overarching authority of the CPUC to regulate natural gas utilities. Article XII, Section 8 of the California Constitution establishes the CPUC's preemptive authority over matters which the Legislature has granted the CPUC regulatory powers:

> A city, county, or other public body may not regulate matters over which the Legislature grants regulatory power to the Commission. This section does not affect power over public utilities relating to the making and enforcement of police, sanitary, and other regulations concerning municipal affairs pursuant to a city charter existing on October 10, 1911, unless that power has been revoked by the city's electors, or the right of any city to grant franchises for public utilities or other businesses on terms, conditions, and in the manner prescribed by law.

CPUC decisions,[41] as well as California courts, have confirmed the CPUC's preemptory powers. As such, no local discretionary (e.g., rezone, land use) permits would be required because the CPUC has preemptive jurisdiction over the siting, construction, maintenance, and operation of natural gas facilities in California. The CPUC's authority does not preempt special districts, such as air quality management districts, other state agencies, or the federal government. Additionally, SoCalGas would still have to obtain all ministerial permits from local jurisdictions. Local agency permits are discussed for each alternative to provide awareness to the reader.

5.2.2 Alternatives Evaluation of Schedule

This section evaluates the estimated schedule for each potential alternative. As noted above, permitting assumptions are preliminary and are based on the level of detail available for each

or crafts involved in the execution of the stage. Typically presented in Gantt or CPM network format and is generally the output of CPM scheduling software. Level 3 schedules provide enough detail to identify critical activities. Level 3 schedules assist the team in identifying activities that could potentially affect the outcome of a stage or phase of work, allowing for mitigation and course correction in short course. Audiences for this type of schedule include, but are not limited to program or project managers, CMs or owner's representatives, superintendents, and general foremen (AACE 2020).

41 In D.94-06-014 (CPUC 2019), "[t]he Commission has restated its exclusive jurisdiction over the location and construction of public utility facilities in numerous decisions."

alternative at this time and could change depending on the ultimate selection of the site layout and equipment (see Table 38).

Table 38. Alternatives Evaluation of Schedule

Scheduling Component	0	1-2-3	4-5-6	7-8-9
Project Permitting Complexity	Substantial permitting complexity	Moderate permitting complexity	Minimal permitting complexity	None or negligible permitting complexity
Property/Right-of-Way Acquisition Required	Greater than 10 properties/ROW acquisition	5 to 9 properties/ ROW acquisition	1 to 4 properties/ ROW acquisition	No permanent properties/ROW acquisition, only temporary construction access
Construction Duration	Longer than 4 years	3 to 4 years	2 to 3 years	Less than 2 years

Notes: ROW = right-of-way.
Permitting complexity relates to the number of agency permits anticipated for a particular alternative.
Construction duration is assumed to begin upon issuance of permits through commissioning of equipment.

Alternative 1.A: Planned Project

A permit to construct (PTC) was filed with the VCAPCD in March 2020. Coverage under the National Pollutant Discharge Elimination System (NDPES) would be required through filing a Notice of Intent with the Los Angeles Regional Water Quality Control Board as well as implementation of a Stormwater Pollution Prevention Plan during construction, since greater than one acre would be disturbed. Ministerial permits for site construction activities, such as building permits, will be required from the City of Ventura. These types of permits are typically granted within three to six months and applications would be filed upon completion of final engineering. Temporary construction and access easements will be required for two staging areas/laydown yards from private landowners adjacent to the facility, but no other offsite easements are anticipated. Construction would begin upon issuance of applicable permits and is anticipated to take 24 months due to site preparation, pipeline and utility modifications, and building construction and equipment installation. The points assessments of the three schedule components for this alternative are presented in Table 39.

Table 39. Evaluation of Schedule – Alternative 1.A: Planned Project

Scheduling Component	Points
Project Permitting	8
Property/Right-of-Way Acquisition	8
Construction Duration	8

Alternative 1.B: Ventura Compressor Station – Hybrid

As noted above, a PTC was filed with the VCAPCD in March 2020. However, the application addresses the planned project configuration of four new natural gas compressors, whereas Alternative 1B would include two natural gas and two electric compressors. As such, the PTC

application would need to be amended to modify the proposed equipment. The VCAPCD process typically takes 6 to 18 months from application filing to issuance of a permit. Coverage under the NDPES would be required through filing a Notice of Intent with the Los Angeles Regional Water Quality Control Board and the implementation of a Stormwater Pollution Prevention Plan during construction, since greater than one acre would be disturbed. Ministerial permits for site construction activities, such as building permits, would be required from the City of Ventura. Coordination with SCE would also be required to address any electrical upgrades, such as replacement of poles or conduit, which may require the filing of an advice letter with the CPUC in accordance with General Order 131-D.[42] Temporary construction and access easements will be required for staging areas/laydown yards and potentially for electrical lines if SCE does not already have easements/right-of-way in place. However, based on aerial imagery and publicly accessible SCE information, electrical infrastructure is located adjacent to the site. Construction would begin upon issuance of applicable permits and is anticipated to take 30 to 36 months due to site preparation, pipeline and utility modifications, minimal SCE electrical system modifications, and building construction and equipment installation. The points assessments of the three schedule components for this alternative are presented in Table 40.

Table 40. Evaluation of Schedule – Alternative 1.B: Ventura Compressor Station – Hybrid

Scheduling Component	Points
Project Permitting	7
Property/Right-of-Way Acquisition	8
Construction Duration	6

Alternative 2.A: Avocado Site – Natural Gas

Alternative 2.A would require a PTC from the VCAPCD for the four new natural gas compressors. The VCAPCD process typically takes 6 to 18 months from application filing to issuance of a permit. The site and potential pipeline and utility corridors may impact riparian habitat associated with tributaries that flow to the Ventura River, potentially requiring a U.S. Army

[42] General Order (GO) 131-D applies to the construction of electric power line and substation facilities designed to operate between 50 and 200 kV. Section III, Subsection B.1, exempts a utility from the CPUC's requirement to file an application requesting authority to construct if a project meets specific conditions, such as: replacing existing power line facilities or supporting structures with equivalent facilities or structures; minor relocation of existing power facilities up to 2,000 feet in length or intersetting of additional support structures between existing support structures. When electrical improvements are exempt from GO 131-D, a utility must file an informational advice letter with the Commission Advisory and Compliance Division (CACD) and the CPUC Public Advisor in accordance with GO 96-A.
GO131-D, Section III, A. requires a Certificate of Public Convenience and Necessity (CPCN) when "any new electric generating plant having in aggregate a net capacity available at the busbar in excess of 50 megawatts (MW), or of the modification, alteration, or addition to an existing electric generating plant that results in a 50 MW or more net increase in the electric generating capacity available at the busbar of the existing plant, or of major electric transmission line facilities which are designed for immediate or eventual operation at 200 kV or more… ."
GO131-D, Section III, B. requires a or Permit to Construct (PTC) when "any electric power line facilities or substations which are designed for immediate or eventual operation at any voltage between 50 kV or 200 kV or new or upgraded substations with high side voltage exceeding 50 kV."

Corps of Engineers Clean Water Act (CWA) Section 404 Nationwide Permit (404 NWP),[43] CWA Section 401 Water Quality Certification (401 Certification),[44] and California Department of Fish and Wildlife (CDFW) streambed alteration agreement (SAA).[45] The southerly portion of the proposed Taylor Ranch Road roadway improvements would extend into the State Coastal Zone, potentially requiring a coastal development permit issued by the County of Ventura.[46]

Local agency discretionary permits would not apply, as discussed in Section 5.2.1. However, local agency permits are discussed to provide awareness to the reader. The property is zoned by the County of Ventura as "AE-40 ac – Agricultural Exclusive, 40 acres minimum parcel size" (Ventura County 2021b). Section 8105-4 – Permitted Uses in Open Space, Agricultural, Residential and Special Purpose Zones states that pipelines require a conditional use permit (CUP) subject to approval by the Planning Director and that "Public Service/Utility Facilities" that include "Public Service/Utility Offices And Service Yards, When Located On Lots Containing The Majority Of The Agency's Facilities" are not allowed in the AE zone. Additionally, the site is within the SOAR initiative area, which in general requires countywide voter approval of (1) any substantive change to the General Plan's Agricultural, Open Space, or Rural land use goals or policies and (2) re-designation of land with these General Plan land use designations.

Ministerial permits for site construction activities, such as building permits, will be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, such as new poles or conduit, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D.

Substantial property and access rights across adjacent properties to the nearest public right-of-way would need to be acquired. The land is currently planted with an active avocado orchard, affecting the value of the property. Temporary construction and access easements would also be required for a staging area/laydown yard and potentially for electrical lines if SCE does not already have easements/right-of-way in place. Construction would begin upon issuance of

[43] CWA Section 404 establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. For most discharges that will have only minimal adverse effects, a general permit may be suitable. General permits are issued on a nationwide, regional, or state basis for particular categories of activities. An NWP is a general permit that authorizes activities across the country, unless revoked by a district or division commander. NWPs authorize a wide variety of activities such as mooring buoys, residential developments, utility lines, road crossings, mining activities, wetland and stream restoration activities, and commercial shellfish aquaculture activities (EPA 2022).

[44] CWA Section 401 establishes the State Water Resources Control Board and the Regional Water Quality Control Boards' authority to regulate discharges of dredged or fill material to waters of the state; it also establishes the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). CWA Section 401 water quality certifications are issued to applicants for a federal license or permit for activities that may result in a discharge into waters of the United States, including but not limited to the discharge or dredged or fill material. Waste discharge requirements under the Porter-Cologne Act are issued for discharges of dredged or fill material to waters of the state (California Water Boards 2022).

[45] California Fish and Game Code Section 1602 requires any person, state or local governmental agency, or public utility to notify CDFW prior to beginning any activity that may do one or more of the following: divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; or deposit or dispose of material into any river, stream, or lake (CDFW 2022).

[46] The California Coastal Act established the California Coastal Commission (Coastal Commission) and requires certification by the Coastal Commission of a Local Coastal Program (LCP) to govern decisions that determine the short- and long-term conservation and use of coastal resources within a local agency's jurisdiction. After an LCP has been approved, state coastal permitting authority over most new development is transferred from the Coastal Commission to the local government, which then applies the requirements of the LCP in reviewing proposed development. Ventura County's LCP was certified by the Coastal Commission on June 7, 2017 (Coastal Commission 2022; Ventura County 2017).

applicable permits and is anticipated to take 60 to 70 months due to roadway installation, utility installation, significant site preparation and grading due to the slope of the property (see Table 4: Alternative 2.A Construction Assumptions/Estimates), SCE electrical system improvements, and building construction and equipment installation. The points assessments of the three schedule components for this alternative are presented in Table 41.

Table 41. Evaluation of Schedule – Alternative 2.A: Avocado Site – Natural Gas

Scheduling Component	Points
Project Permitting	5
Property/Right-of-Way Acquisition	4
Construction Duration	0

Alternative 2.B: Avocado Site – Hybrid

As discussed in Alternative 2.A above, a PTC from the VCAPCD would be required, however only for two natural gas compressors. All other federal and state permits noted in Alternative 2.A would be anticipated for Alternative 2.B. Local agency discretionary permits would not apply, as discussed in Section 5.2.1; however, local agency permits related to this site are discussed above in Alternative 2.A to provide awareness to the reader. Ministerial permits for site construction activities, such as building permits, would be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D. The electrical interconnection would require at least 5 MW, necessitating additional infrastructure.

Substantial property and access rights across adjacent properties to the nearest public right-of-way would need to be acquired. The land is currently planted with an active avocado orchard, affecting the value of the property. Temporary construction and access easements would also be required for a staging area/laydown yard and potentially for electrical lines if SCE does not already have easements/right-of-way in place. Construction would begin upon issuance of applicable permits and is anticipated to take 60 to 70 months due to roadway installation, utility installation, significant site preparation and grading due to the slope of the property (see Table 5: Alternative 2.B Construction Assumptions/Estimates), SCE electrical system improvements, and building construction and equipment installation. The points assessments of the three schedule components for this alternative are presented in Table 42.

Table 42. Evaluation of Schedule – Alternative 2.B: Avocado Site – Hybrid

Scheduling Component	Points
Project Permitting	4
Property/Right-of-Way Acquisition	4
Construction Duration	0

Alternative 3.A: Ventura Steel – Natural Gas

Alternative 3.A would require a PTC from the VCAPCD for the four new natural gas compressors. The property is currently developed with industrial uses, including oil extraction infrastructure, and is zoned by the Ventura County zoning ordinance as "M3-10,000 sf – General Industrial, 10,000 sf minimum parcel size" (Ventura County 2020, 2021b). The site and potential pipeline and utility corridors may impact riparian habitat associated with tributaries that flow to the Ventura River, potentially requiring a 404 NWP, 401 Certification, and SAA.

Local agency discretionary permits would not apply, as discussed in Section 5.2.1. However, local agency permits are discussed to provide awareness to the reader. Section 8105-5, Permitted Uses in Commercial and Industrial Zones, states that pipelines require a CUP subject to approval by the Planning Director and a Public Utility Facility requires a Planning Director approval.

Ministerial permits for site construction activities, such as building permits, would be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D.

The property would need to be acquired from the landowner although access to the site is immediately adjacent to a public right-of-way (Ventura Avenue). To install two new transmission pipelines, significant rights-of-way would be required (anticipated to be at least 12 properties). Land is currently developed with industrial land uses, including oil extraction. Construction would begin upon completion of oil extraction activity remediation, transfer of property and issuance of applicable permits and is anticipated to take 36 to 48 months due to roadway installation, utility installation, site preparation and grading, SCE electrical system modifications, and building construction and equipment installation (see Table 6: Alternative 3.A Construction Assumptions/Estimates). The points assessments of the three schedule components for this alternative are presented in Table 43.

Table 43. Evaluation of Schedule – Alternative 3.A: Ventura Steel – Natural Gas

Scheduling Component	Points
Project Permitting	6
Property/Right-of-Way Acquisition	0
Construction Duration	5

Alternative 3.B: Ventura Steel – Hybrid

As discussed in Alternative 3.A, a PTC from the VCAPCD would be required, however only for two new natural gas compressors. All other federal and state permits noted in Alternative 3.A would be anticipated for Alternative 3.B. Local agency discretionary permits would not apply, as discussed in Section 5.2.1; however, local agency permits related to this site are discussed in Alternative 3.A to provide awareness to the reader. Ministerial permits for site construction activities, such as building permits, would be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D. The electrical interconnection would require at least 5 MW, necessitating additional infrastructure.

Significant property would need to be acquired from the landowner although access to the site is immediately adjacent to a public right-of-way (Ventura Avenue). To install two new transmission pipelines, significant right-of-way would be required (anticipated to be at least 12 properties). The land is currently developed with industrial land uses, including oil extraction. Construction would begin upon completion of oil extraction activity remediation, transfer of property and issuance of applicable permits and is anticipated to take 36 to 48 months due to roadway installation, utility installation, site preparation and grading, SCE electrical system improvements, and building construction and equipment installation (see Table 7: Alternative 3.B Construction Assumptions/Estimates). The points assessments of the three schedule components for this alternative are presented in Table 44.

Table 44. Evaluation of Schedule – Alternative 3.B: Ventura Steel – Hybrid

Scheduling Component	Points
Project Permitting	5
Property/Right-of-Way Acquisition	0
Construction Duration	4

Alternative 4.A: Devil's Canyon Road – Natural Gas

Alternative 4.A would require a new application for a PTC from the VCAPCD for four new natural gas compressors. The property is currently used for oil extraction and is zoned by the Ventura County zoning ordinance as "OS-160 ac, Open Space, 160 acres minimum parcel size" with a Habitat Connectivity Corridor mapped along the Ventura River (Ventura County 2020, 2021b). The site and potential pipeline and utility corridors may impact riparian habitat associated with tributaries that flow to the Ventura River, potentially requiring a 404 NWP, 401 Certification, and SAA.

Local agency discretionary permits would not apply, as discussed in Section 5.2.1. However, local agency permits are discussed to provide awareness to the reader. Pursuant to Section 8105-4, Permitted Uses in Open Space, Agricultural, Residential and Special Purpose Zones, pipelines require a CUP subject to approval by the Planning Director and a Public Utility Facility requires a Planning Commission CUP approval. Ministerial permits for site construction activities, such as building permits, would be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D.

Significant property would need to be acquired from the landowner although access to the site is available from an existing driveway to a public right-of-way. To install new transmission pipelines, five properties are anticipated to require pipeline easements. The land is currently developed with industrial land uses, including oil extraction. Construction would begin upon completion of oil extraction activity remediation, transfer of property and issuance of applicable permits and is anticipated to take 24 to 30 months due to utility modifications, site preparation and grading, building construction, and equipment installation (see Table 8: Alternative 4.A Construction Assumptions/Estimates). The points assessments of the three schedule components for this alternative are presented in Table 45.

Table 45. Evaluation of Schedule – Alternative 4.A: Devil's Canyon Road – Natural Gas

Scheduling Component	Points
Project Permitting	6
Property/Right-of-Way Acquisition	2
Construction Duration	6

Alternative 4.B: Devil's Canyon Road – Hybrid

As discussed in Alternative 4.A, a new application for a PTC from the VCAPCD would be required, however only for two new natural gas compressors. All other federal and state permits noted in Alternative 4.A would be anticipated for Alternative 4.B. Local agency discretionary permits would not apply, as discussed in Section 5.2.1; however, local agency permits related to this site are discussed in Alternative 4.A to provide awareness to the reader. Ministerial permits for site construction activities, such as building permits, would be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D. The electrical interconnection would require at least 5 MW, necessitating additional infrastructure.

Significant property would need to be acquired from the landowner although access to the site is available from an existing driveway to a public right-of-way. To install new transmission pipelines, five properties are anticipated to require pipeline easements. The land is currently developed with industrial land uses. Construction would begin upon completion of oil extraction activity remediation, transfer of property and issuance of applicable permits and is anticipated to take 24 to 30 months due to utility modifications, site preparation and grading, SCE electrical system improvements, and building construction and equipment installation (see Table 9: Alternative 4.B Construction Assumptions/Estimates). The points assessments of the three schedule components for this alternative are presented in Table 46.

Table 46. Evaluation of Schedule – Alternative 4.B: Devil's Canyon Road – Hybrid

Scheduling Component	Points
Project Permitting	5
Property/Right-of-Way Acquisition	2
Construction Duration	5

Alternative 5.A: County Line – Natural Gas

Alternative 5.A would require a PTC from the VCAPCD for five new natural gas compressors. The site and potential pipeline and utility corridors may impact riparian habitat associated with Rincon Creek and/or tributaries that flow to Rincon Creek, potentially requiring a 404 NWP, 401 Certification, and SAA. The southerly portion of the project site and staging area may extend into the State Coastal Zone, potentially requiring a coastal development permit issued by the County of Ventura.

Local agency discretionary permits would not apply, as discussed in Section 5.2.1. However, local agency permits are discussed to provide awareness to the reader. The property is zoned by the Ventura County zoning ordinance as "AE-40 ac – Agricultural Exclusive, 40 acres minimum parcel size" and is within the area governed by SOAR initiative (Ventura County 2020, 2021a). Section 8105-4 – Permitted Uses in Open Space, Agricultural, Residential and Special Purpose Zones states that pipelines require a CUP subject to approval by the Planning Director and that "Public Service/Utility Facilities" that include "Public Service/Utility Offices And Service Yards, When Located On Lots Containing The Majority Of The Agency's Facilities" are not allowed in the AE zone. Ministerial permits for site construction activities, such as building permits, would be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, such as new poles or conduit, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D.

Moderate property and access rights across adjacent properties to the nearest public right-of-way would need to be acquired. To install new transmission pipelines, five properties are anticipated to require pipeline easements; the subject land is currently vacant. Construction would begin upon issuance of applicable permits and is anticipated to take 60 to 70 months due to roadway installation, utility installation, significant site preparation and grading due to the slope of the property (see Table 10: Alternative 5.A Construction Assumptions/Estimates), and building construction and equipment installation. The points assessments of the three schedule components for this alternative are presented in Table 47.

Table 47. Evaluation of Schedule – Alternative 5.A: County Line – Natural Gas

Scheduling Component	Points
Project Permitting	5
Property/Right-of-Way Acquisition	2
Construction Duration	0

Alternative 5.B: County Line – Hybrid

As discussed in Alternative 5.A, a new application for a PTC from the VCAPCD would be required, however only for two new natural gas compressors. Local agency discretionary permits would not apply, as discussed in Section 5.2.1; however, local agency permits related to this site are discussed in Alternative 5.A to provide awareness to the reader. All other federal and state permits noted in Alternative 5.A would be anticipated for Alternative 5.B. Ministerial permits for site construction activities, such as building permits, would be required from the County of Ventura. Coordination with SCE would also be required to address any electrical upgrades, which may require the filing of an advice letter with the CPUC or a PTC in accordance with General Order 131-D. The electrical interconnection would require at least 5 MW, necessitating additional infrastructure.

Moderate property would need to be acquired from the landowner. To install new transmission pipelines, five properties are anticipated to require pipeline easements; the subject land is currently vacant. Construction would begin upon issuance of applicable permits and is anticipated to take 60 to 70 months due to roadway installation, utility installation, significant site preparation and grading due to the slope of the property (see Table 11: Alternative 5.B Construction Assumptions/Estimates), SCE electrical system improvements, and building

construction and equipment installation. The points assessments of the three schedule components for this alternative are presented in Table 48.

Table 48. Evaluation of Schedule – Alternative 5.B: County Line – Hybrid

Scheduling Component	Points
Project Permitting	4
Property/Right-of-Way Acquisition	2
Construction Duration	0

6 Results of Evaluation

SoCalGas appreciates the community's and CPUC's collaboration regarding the Ventura Compressor Station. As discussed in Section 1.2 Feasibility Study Methodology, there is no prescriptive format or template for a feasibility study. As such, SoCalGas developed this study based on the foundational purpose, need and objectives of the project, essential site criteria and five supplemental considerations. If an alternative site or technology did not meet the foundational purpose, need and most objectives or essential site criteria, it was dismissed from further consideration. Those alternatives that were carried forward were analyzed in accordance with a scoring rubric (Appendix B) in five areas including: operational considerations, environmental considerations, project cost, operational cost, and schedule. The top three alternative options were identified in each of the five areas that were evaluated. As noted below, however, there are additional factors (such as age of facility equipment, timing, and ability to acquire alternative sites considered in this study) which are not captured by this feasibility analysis and impact the results of this evaluation. The results of the evaluation are shown in Table 49. Results of Evaluation.

Table 49. Results of Evaluation

Ranking Order	Operational Considerations	Environmental Considerations	Project Cost	Operational Cost	Schedule
1	1A Planned Project	4B Devil's Canyon Road – Hybrid	1A Planned Project	1A Planned Project	1A Planned Project
2	3A Ventura Steel – Natural Gas	1B Current Site – Hybrid	1B Current Site – Hybrid	3A Ventura Steel – Natural Gas	1B Current Site – Hybrid
3	1B Current Site – Hybrid	3B Ventura Steel – Hybrid	4A Devil's Canyon Road – Natural Gas	4A Devil's Canyon Road – Natural Gas	4A Devil's Canyon Road – Natural Gas

Note: Environmental considerations were evaluated by Dudek and the results in Table 49 reflect their analysis.

Overall, Alternative 1.A Planned Project received the highest scores in four of the five categories (operational considerations, project cost, operational cost, and schedule). Alternative 1.B Current Site- Hybrid received the second highest score in the most categories. Alternative 4.B Devil's Canyon Road – Hybrid received the highest score in the environmental considerations.

The results indicate that the top three alternative options for environmental considerations are existing industrial sites with a hybrid compressor configuration. The top three alternative options for long-term operational costs are existing industrial sites with a natural gas compressor configuration. The remaining categories include both natural gas and hybrid options at existing industrial sites as the top three alternative options.

6.1 Preferred Alternative

Although Alternative 1.A Planned Project received the highest rankings in the most categories, SoCalGas has selected Alternative 1.B Current Site – Hybrid, which received the second highest rankings in the most categories, as the preferred alternative.

6.1.1 Greater Reliability Benefits

Based on the natural gas forecast of the 2020 California Gas Report (CGEU 2020), natural gas use is anticipated to slowly decline with greater emphasis on renewable sources such as solar and wind, placing a greater emphasis on operational flexibility and the ability of equipment to ramp up and down quickly. The Ventura Compressor Station is situated to support the Central Coast and meet reliability needs. It is the last compressor station on SoCalGas' Coastal System and the main feed to support storage injection at the La Goleta Storage Field as well as support customers on the Central Coast. Gas stored at the La Goleta Storage Field ultimately is used by customers on the Central Coast, including Ventura.

A recent study performed by the CPUC confirms the importance of maintaining gas storage to support overall gas demand.[47] This study includes modeling forecasts that are based on six scenarios developed by the CPUC that account for receipt point utilization, (the percent of the total capacity used at locations where gas enters the SoCalGas system), unplanned outages and storage withdrawal capacity (Abdelaziz et al. 2021). The results of the study reinforce the need to maintain available storage capacity, especially during winter peak demand, through at least 2030.

SoCalGas identified the need to proceed with a modernization of the 1980s facility equipment in 2013 (see SoCalGas DR– 4). Since 2016, SoCalGas has had a collective total of 73 maintenance events and cumulative total of 461 days when a compressor unit has been out of service (see SoCalGas DR-2). SoCalGas' trained maintenance staff are routinely performing inspections of the compressor equipment, but the risk of equipment failure increases the longer the aging equipment remains in use. Alternative site locations, such as those discussed in this study, would require site acquisition and pipeline easements over multiple properties, and in the event a landowner did not voluntarily sell land, SoCalGas could be forced to condemn land, which may take years and is not certain to be approved through an adjudicative process. Additionally, the condemnation process would consider whether other feasible locations not requiring condemnation are available, and given that SoCalGas currently operates a compressor station in the current location, the ability to condemn is not straight forward. Consequently, the analysis of alternative site acquisition is uncertain and beyond the scope of this feasibility study.

Given the age of the existing infrastructure, the uncertainty associated with acquiring alternative sites, and the time it would take to, permit, and construct a compressor station at a new location, constructing the modernization project at the current site would best support the fundamental purpose of the project, which is to (1) continue providing reliable compression to customers in Ventura and along the central coast, (2) enhance reliability by modernizing aging infrastructure; and (3) support gas deliveries to the La Goleta Storage Field.

[47] "Gas demand falls into three categories: (1) core (residential, commercial, industrial, municipal, and wholesale); (2) noncore, non-electric generation (commercial, industrial, refinery, and enhanced oil recovery); and (3) noncore, electric generation (EG). SoCalGas sells gas to core customers, whereas noncore customers buy their gas from other sources and SoCalGas delivers it" (Abdelaziz et al. 2021).

6.1.2 Greater Emission Reductions

SoCalGas is committed to taking measurable steps to reduce emissions and decarbonize its operations. Ventura County, where the compressor station is located, is in nonattainment with both the 2008 and 2015 federal 8-hour ozone standards. Both the all-natural gas options and the hybrid options significantly reduce permitted oxides of nitrogen (NO_x) emissions as compared to the existing facility's permitted emissions. Moreover, a hybrid option will reduce permitted emissions beyond those of a natural gas option. Specifically, a hybrid option would result in approximately 75% reduction in permitted NO_x emissions as compared to the existing facility's permitted NO_x emissions.

In addition, the hybrid option will decrease potential carbon dioxide equivalent (CO_2e) emissions by approximately 30% as compared to the all-gas option. As discussed in Section 1.1.4, reducing carbon intensity across all economic sectors is foundational to achieving California's net zero GHG emission goals.

6.1.3 Cost

As a prudent operator, SoCalGas must consider the short-term project costs and the long-term operational costs in relationship to the associated effects on ratepayers. No additional weighting was given to operational cost in comparison to project development cost despite the fact that operational costs are recurring for the life of the project.

As discussed in Section 5.1, SoCalGas' cost estimates for the 10 alternatives were based on the accepted AACE cost estimating practices. The top three alternatives for project development cost are shown in Table 50. Alternative 1.A Planned Project is the lowest total cost because no land acquisition for site development or ancillary infrastructure (pipelines, electric lines) is required. Furthermore, the existing pipeline infrastructure within the footprint of the existing compressor station is in place and only requires minor modification to connect to the proposed compressor building. As with 1.A, Alternative 1.B Current Site – Hybrid minimizes costs because no land acquisition for site development is required and pipeline infrastructure is already in place. The incremental $43 million (MM) is related to the additional onsite infrastructure required for a hybrid option (substation, electric drop). The third lowest project development cost, Alternative 4.A Devil's Canyon Road – Natural Gas, is approximately $100MM greater in cost than 1.B and $145MM greater in cost than 1.A.

Table 50. Ventura Compressor Station Alternatives – Project Development Cost Estimates – Top 3

Alternative	Project Development Cost (Nonrecurring)
1.A: Planned Project	$421MM
1.B: Current Site – Hybrid	$464MM
4.A: Devil's Canyon Road – Natural Gas	$566MM

Note: MM = million.

Overall, natural gas options have significantly less overall operational costs. The primary operational cost driver for all hybrid alternatives is the cost of SCE electricity. The top three alternatives for operational cost are provided in Table 51. For the hybrid alternatives, 1.B is the lowest annual operating cost and it is still $1.685MM above 1.A. Estimates were developed by

SPEC Services and calculated the fuel/power usage required to operate the engine/motor and multiplied it by the SCE anticipated rate (SCE 2019).

Table 51. Ventura Compressor Station Alternatives – Operational Cost Estimates – Top 3

Alternative	Operational Cost (Recurring)
1.A: Planned Project	$0.904MM
3.A: Ventura Steel – Natural Gas	$0.909MM
4.A: Devil's Canyon Road – Natural Gas	$0.919MM

Note: MM = million.

Although the long-term operational costs of any hybrid option will be greater than a natural gas option, the emission reductions and overall progression towards a net zero future achieved with 1.B outweighs the lower cost of 1.A.

For the reasons noted above, SoCalGas believes that 1.B Current Site – Hybrid best achieves the project's purpose of continuing to provide reliable service, while supporting decarbonization and reducing emissions at the lowest cost to ratepayers.

6.2 Next Steps

This feasibility study will be shared on SoCalGas' Ventura project website accessible here: www.socalgas.com/ventura, no later than March 25, 2022. The feasibility study will be presented to the community and CPUC in March/April 2022 during Public Forum meetings. It is SoCalGas' intention to move forward with Alternative 1.B Current Site – Hybrid and continue to place a high priority on this critical project to address the fundamental needs of SoCalGas' transmission system and replace the aging equipment consistent with Commission Decision D.19-09-051.

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