Appendix B

Air Quality and GHG Emissions Technical Report

SoCalGas

Ventura Compressor Station Modernization Project

1555 N. Olive St.
Ventura, CA 93001

~~April~~ November 2023

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Ventura Compressor Station Modernization Project Air Quality and Greenhouse Gas Emissions Technical Report

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Prepared for:

SoCalGas
Ventura Compressor Station
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List of Acronyms and Abbreviations

AAQS	Ambient Air Quality Standard
AERMOD	American Meteorological Society/EPA Regulatory Model
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
ATC	Authority to Construct
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BHP	Brake Horsepower
BMP	Best Management Practice
Btu	British Thermal Unit
CAAQS	California Ambient Air Quality Standard
CalEEMod	California Emissions Estimator Model®
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
DPM	Diesel Particulate Matter
EDC	Electric-Driven Compressor
EIA	[United States] Energy Information Administration
EPA	[United States] Environmental Protection Agency
GHG	Greenhouse Gas
GLC	Ground Level Concentration
GWP	Global Warming Potential
HAE	Historic Actual Emissions
HARP2	Hotspots Analysis and Reporting Program, Version 2
HHDT	Heavy-Heavy Duty Truck
HIA	Acute Hazard Index
HIC	Chronic Hazard Index
HP	Horsepower
HRA	Health Risk Assessment
hr	Hour
IPCC	Intergovernmental Panel on Climate Change
kW	Kilowatt
lb	Pound

LDA	Light Duty Automobile
LDAR	Leak Detection and Reporting
LDT	Light Duty Truck
MEIR	Maximally Exposed Individual Resident
MEIW	Maximally Exposed Individual Worker
MHDT	Medium Heavy-Duty Truck
MICR	Maximum Individual Cancer Risk
MMBtu	Million British Thermal Units
MMscf	Million Standard Cubic Feet
MT	Metric Ton
MWh	Megawatt-hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standard
NEI	Net Emissions Increase
N_2O	Nitrous Oxide
NO_x	Nitrogen Oxides
NSCR	Non-Selective Catalytic Reduction
NSR	New Source Review
OEHHA	[California] Office of Environmental Health Hazard Assessment
OPR	[California] Office of Planning and Research
PEA	Proponents Environmental Assessment
PM_{10}	Respirable Particulate Matter
$PM_{2.5}$	Fine Particulate Matter
PTE	Potential to Emit
ROC	Reactive Organic Compound
R/ODS	Refrigerants/Ozone-Depleting Substances
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SIL	Significant Impact Level
SJVAPCD	San Joaquin Valley Air Pollution Control District
SoCalGas	Southern California Gas Company
SO_2	Sulfur Dioxide
SO_x	Oxides of Sulfur
TAC	Toxic Air Contaminant
TCR	The Climate Registry
VCAPCD	Ventura County Air Pollution Control District
VCS	Ventura Compressor Station
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
yr	year
$\mu g/m^3$	micrograms per cubic meter

Ventura Compressor Station Modernization Project Air Quality and Greenhouse Gas Emissions Technical Report

1.0 BACKGROUND

1.1 Project Components

SoCalGas is proposing a project to modernize the Ventura Compressor Station (VCS) by replacing the existing gas compression equipment at this site with new compression equipment that has state of the art air emission controls. The VCS is a natural gas gathering and boosting station with high-pressure gas transmission pipelines entering and leaving the station to move gas to the SoCalGas La Goleta Storage Field, as well as provide service to customers in the system. The VCS is located at 1555 North Olive Street, Ventura, CA 93001.

The existing facility consists of three 1,100 horsepower (HP) natural gas-fired reciprocating internal combustion engines that drive high-pressure gas compressors (natural gas compressors) and one 68 HP diesel-fired emergency generator engine. The existing equipment will be decommissioned and demolished approximately 1 year after the replacement equipment is fully operational with demonstrated reliability.

The proposed VCS Modernization Project (Project) includes installation of four new reciprocating compressors: two each driven by 1,900-HP natural gas engines with non-selective catalytic reduction (NSCR) emission control equipment and two each nominal up to 2,500 HP (1,963 kilowatts [kW]) electric-driven compressors (EDCs), as well as one new 840-HP natural gas-fired standby generator engine, rated at approximately 560 kW peak output power. New structures include the compressor building, office building, warehouse, and standby generator enclosure. Additional ancillary equipment includes gas filtration equipment, supporting mechanical equipment, and storage tanks/drums, where the engine oil, oil waste, and oily waste storage drums are anticipated to be the only ancillary equipment that could have air pollutant emissions, albeit the emissions would be negligible. The proposed facility enhancements would increase electric power demand, primarily for operation of the new EDCs. No off-site road improvements, pipeline extensions, or other permanent infrastructure would be necessary to construct the Project.

SoCalGas submitted an Authority to Construct (ATC) application package for a prior proposed Project that consisted of four replacement natural gas-fired engines in March 2020 and a preliminary draft ATC was provided by the Ventura County Air Pollution Control District (VCAPCD) in November 2020. That application has been withdrawn pending development of this revised Project.

1.2 Report Contents

This technical report analyzes impacts from air quality and greenhouse gas (GHG) emissions related to construction and operation of the proposed Project. The proposed Project criteria pollutant and GHG emissions and the effect of emissions on air quality are compared to relevant California Environmental Quality Act (CEQA) significance thresholds to determine the significance of the potential impacts.

2.0 AIR QUALITY IMPACT ANALYSES

The air quality impact analyses were prepared in accordance with the VCAPCD's Ventura County Air Quality Assessment Guidelines (VCAPCD Guidelines) (VCAPCD 2003).

2.1 Air Quality Thresholds of Significance

2.1.1 Criteria Pollutant Emissions

"Criteria" pollutants are those for which health-based standards have been established on either the national or State level. Ventura County has been designated as being over the established health-based ambient air quality standards (AAQS) at both the State and national levels for ozone and over the State standards for respirable particulate matter (PM_{10}). Ozone is not typically a directly emitted pollutant, but rather is a result of atmospheric photochemical reactions of nitrogen oxides (NO_x) and reactive organic compounds (ROC) "precursor" emissions in the presence of sunlight. Therefore, these "nonattainment" pollutants are of the most concern in determining the potential for a project in Ventura County to impact air quality.

2.1.1.1 Construction Emissions Significance Thresholds

The VCAPCD Guidelines provide significance thresholds for the ozone precursors NO_x and ROC of 25 pounds per day of emissions from construction activities related to a project as shown in Table 2-1 (VCAPCD 2003).

Table 2-1: VCAPCD CEQA Mass Daily Significance Thresholds

Pollutant	Project Emissions Significance Threshold (lbs/day)
ROC	25
NO_x	25

Source: VCAPCD 2003

For construction impacts, rather than having numeric significance thresholds for respirable particulate matter (PM_{10}), the VCAPCD Guidelines recommend minimizing fugitive dust through dust control measures.

Impacts related to fugitive dust are mitigated by the application of Best Management Practices (BMPs) such as watering, limiting track-out, covering haul trucks carrying bulk materials with a tarp, and reducing speed on unpaved areas. These measures are required by VCAPCD Rule 55, Fugitive Dust, which minimizes fugitive dust generation. Other BMPs such as limiting construction activities during high wind events are recommended by the California Public Utilities Commission (CPUC) Guidelines (2019). The BMPs that will be implemented for the Project are discussed in Section 5.3, Air Quality, of the Proponents Environmental Assessment (PEA).

2.1.1.2 Operational Emissions Significance Thresholds

According to the VCAPCD Guidelines, the thresholds shown in Table 2-1 are applied to unpermitted sources of NO_x and ROC emissions associated with operation of the Project. Emissions from equipment requiring VCAPCD permits, specifically stationary equipment, are not counted towards these air quality significance thresholds because they are subject to rigorous New Source Review (NSR) permit requirements. Unpermitted sources are not subject to these NSR rules but could contribute to ozone precursor emissions, which would exacerbate exceedances of the State and national ozone AAQS.

The VCAPCD Guidelines do not provide numeric thresholds for operational emissions of PM_{10} or other criteria pollutants. The VCAPCD's NSR program and other rules and regulations would limit criteria pollutant emissions from stationary sources and minimize the potential for emissions of other pollutants to lead to significant impacts. A modeling analysis of air quality impacts may also be needed as discussed below.

2.1.2 Criteria Pollutants – Air Quality Impact Analysis

VCAPCD Guidelines indicate that for criteria pollutants other than NO_x and ROC, an Air Quality Impact Analysis (AQIA) based on dispersion modeling may be needed to demonstrate that the emissions will not cause a substantial contribution to an existing exceedance of an air quality standard. "Substantial" is defined as making measurably worse an existing exceedance of a National or California Ambient Air Quality Standard (NAAQS/CAAQS). Because Ventura County is designated as nonattainment for the PM_{10} CAAQS, a demonstration that the Project will not contribute to an exceedance is needed.

The California Office of Planning and Research (OPR) CEQA Guidelines (Title 14, Division 6, Chapter 3 of the California Code of Regulations) Appendix G checklist questions (OPR 2022) require assessment of any criteria pollutant for which the project region is designated as nonattainment under an applicable NAAQS or CAAQS to determine if there would be a cumulatively considerable net increase of that pollutant. Ventura County is designated as attainment for the NAAQS and CAAQS for carbon monoxide (CO), sulfur dioxide (SO_2), and fine particulate matter ($PM_{2.5}$), as well as other pollutants for which there are CAAQS, but is designated as nonattainment of the CAAQS for PM_{10}. Based on the OPR CEQA Guidelines, AQIA modeling is only needed for PM_{10}.

Since Ventura County is nonattainment for PM_{10}, the background concentration is greater than the CAAQS; thus, the AQIA modeling results are compared to Significant Impact Levels (SILs) to determine if the Project will have a "significant contribution" to an existing exceedance. Because the VCAPCD Guidelines do not identify SILs for PM_{10}, the PM_{10} SILs provided in the San Joaquin Valley Air Pollution Control District (SJVAPCD) Policy APR 1925 were used to assess the PM_{10} impacts for the proposed Project and are shown in Table 2-2.

Table 2-2: AQIA Significant Impact Levels for PM_{10}

Pollutant	Averaging Time	Significant Impact Level (SIL)[1] ($\mu g/m^3$)
PM_{10}	24 Hour	5.0
	Annual	1.0

Note:

1. SJVAPCD Policy APR 1925 (2014)

2.1.3 Toxic Air Contaminants

In addition to criteria pollutants, carcinogenic and other health effects can be caused by toxic air contaminant (TAC) emissions. Impacts from TAC emissions are estimated by conducting a health risk assessment (HRA). The VCAPCD Guidelines (2003) have defined significance criteria for health risks as shown in Table 2-3.

Table 2-3: VCAPCD HRA Significance Thresholds

Risk	Threshold
Maximum Individual Cancer Risk (MICR)	10 in one million
Chronic Hazard Index (HIC)	1
Acute Hazard Index (HIA)	1

2.2 Proposed Project Construction and Operations Emissions Analyses

2.2.1 Construction and Demolition Emissions Impact Analysis

2.2.1.1 Construction and Demolition Emissions Calculation Methodology

The analysis of offroad construction/demolition emissions was performed using the California Emissions Estimator Model® (CalEEMod) version 2022.1.1.19, the official statewide land use computer model designed to provide a uniform platform for estimating potential criteria pollutant and GHG emissions associated with both construction and operations of projects under CEQA. The model quantifies direct emissions from construction (including demolition) and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from electricity use, solid waste disposal, vegetation planting and/or removal, and water use.

The mobile source emission factors used in the model – published by the California Air Resources Board (CARB) – include the Pavley standards and Low Carbon Fuel standards. The emissions model also identifies project design features, regulatory measures, and mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from the selected measures. CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the South Coast Air Quality Management District (SCAQMD), the Bay Area Air Quality Management District (BAAQMD), the SJVAPCD, and other California air districts. Default land use data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) were provided by the various California air districts to account for local requirements and conditions. As the official assessment methodology for land use projects in California, CalEEMod is relied upon herein for construction offroad emissions quantification, which forms the basis for the emissions impact analyses.

2.2.1.2 Proposed Project Construction and Demolition Description

The proposed Project is expected to require up to approximately ~~25~~ 31 months of planned work activities (i.e., from mobilization to substantial completion) comprising of the following construction phases, with demolition of existing equipment in Phase 12:

1) Subsurface Exploration
2) Existing Project Site Demo
3) Site Preparation/ Rough Grading
4) Foundations
5) Trenching/Undergrounds
6) Equipment, Structural Steel & Building Erection, Piping
7) Electrical & Instrumentation
8) Paving
9) Painting/Insulation
10) Pre-Commissioning/Commissioning/ Startup and Testing
11) Post Construction/Site Restoration
~~11)~~12) Demolition

Phase 2, Existing Project Site Demo, includes demolition of existing paved (asphalt and concrete) surfaces at the southern half of the Project site as well as other infrastructure around the site. Approximately 1 year after the proposed new compressors are fully operational, the existing equipment will be decommissioned and removed from the site (Phase 12). A description of the activities planned for each of these phases is provided in Chapter 3, Project Description, of the PEA.

Based on information received from SoCalGas, land use type and area data used for CalEEMod inputs for construction are presented in Table 2-4. Since demolition of the existing structures will be done approximately 1 year after the replacement compressors are fully operational, the estimated square footages of the structures to be demolished during the decommissioning demolition phase (Phase 12) are presented separately in Table 2-45. A preliminary construction/demolition schedule is shown in Table 2-56.

Table 2-4: Proposed Project Construction/Demolition Land Use Data for CalEEMod Input

Phase	Project Element	CalEEMod Land Use Type	Land Use Subtype	Square Feet	Acres Disturbed
Construction	Office	Commercial	General Office Building	4,641	0.11
	Warehouse	Industrial	General Heavy Industry	5,459	0.13
	Compressor Station	Industrial	General Heavy Industry	10,458	0.24
	Power Distribution Center (PDC) Building	Industrial	General Heavy Industry	2,016	0.05
	Standby Generator Enclosure	Industrial	General Heavy Industry	442	0.01
	Paved Areas	Parking	Other Asphalt Surfaces	343,759	7.89
	All Project Total Construction AreasSites			**366,775**	**8.42**
Demolition	Office Trailer	--	--	1,500	0.03
	Storage Containers	--	--	1,500	0.03
	Compressor Building, Piping, and Equipment	--	--	19,000	0.44
	Total Demolition Areas			**22,000**	**0.51**

Source: SoCalGas, CalEEMod version 2022.1.1.19

Notes:

Climate Zone 8 – Ventura, Ventura County

Electric Utility: SCE

The totals of Acres Disturbed for construction and demolition do not match the total exactly due to rounding, but match the conversion of the total square feet to acres.

~~**Table 2-5: Proposed Structure Demolition Data for CalEEMod Input**~~

~~Project Element~~	~~Square Feet~~	~~Acres~~
~~Office Trailer~~	~~1,500~~	~~0.03~~
~~Storage Containers~~	~~1,500~~	~~0.03~~
~~Compressor Building, Piping, and Equipment~~	~~19,000~~	~~0.44~~
~~**All Project Sites**~~	~~**22,000**~~	~~**0.51**~~

~~Source: SoCalGas~~

~~Notes:~~

~~Climate Zone 8 – Ventura, Ventura County~~

~~Electric Utility: SCE~~

Table 2-5~~6~~: Proposed Project Preliminary Construction/Demolition Schedule by Phase

Phase		Construction Phase	Phase Start Date[1]	Phase End Date	Expected Working Days Per Phase
Construction	1	Subsurface Exploration	10/1/2029~~5/1/2029~~	12/3/2029~~7/3/2029~~	46
	2	Existing Project Site Demolition	11/15/2029~~6/15/2029~~	11/29/2029~~6/29/2029~~	11
	3	Site Preparation/Rough Grading	12/4/2029~~7/4/2029~~	12/26/2029~~7/25/2029~~	17~~16~~
	4	Foundations	1/2/2030~~8/1/2029~~	8/22/2030~~3/20/2030~~	167~~166~~
	5	Trenching/Undergrounds	7/15/2030~~2/1/2030~~	10/1/2030~~4/19/2030~~	57~~56~~
	6	Equipment, Structural Steel & Building Erection, Piping	3/15/2030~~10/1/2029~~	1/6/2031~~7/22/2030~~	212~~211~~
	7	Electrical & Instrumentation	11/27/2030~~6/1/2030~~	10/1/2031~~4/5/2031~~	221~~220~~
	8	Paving	11/3/2031~~6/1/2031~~	12/29/2031~~7/27/2031~~	41~~40~~
	9	Painting/Insulation	12/5/2031~~7/1/2031~~	1/31/2032~~8/26/2031~~	41
	10	Commissioning/Startup and Testing	10/30/2031~~5/1/2031~~	4/1/2032~~9/30/2031~~	111~~109~~
	11	Site Restoration[1~~2~~]	4/7/2032~~–~~	5/5/2032~~–~~	21~~20~~
Demolition[2~~3~~]	12	Decommissioning Demolition	4/1/2033~~10/1/2032~~	7/1/2033~~12/30/2032~~	66~~65~~

Notes:

~~1. This analysis assumed construction would start in May 2029. Current expectation is that construction will start in July or August 2029. The analysis was not revised because the earlier start date is conservative.~~

~~2.~~1. No offroad equipment are expected to be used for Phase 11~~, so specific start and end dates are not included~~, however, approximately 50% of equipment hauling for demobilization will be taking place during Phase 11.

~~3.~~2. Decommissioning demolition is assumed to be done approximately one year after the new replacement compressors are fully operational.

The proposed list of offroad construction/demolition equipment for each individual phase is shown in Table 2-67. CalEEMod defaults were used for the offroad construction/demolition equipment load factor. CalEEMod defaults were also used for the HP of the electric and some diesel offroad equipment when the HP was not available. For equipment for which CalEEMod defaults were not available (i.e., Bore/Drill Rigs, Off-Highway Trucks, Skid Steer Loaders, and Aerial Lifts), a value of 8 hours per day was used. As shown by the dates in Table 2-6, some of the construction phases will be overlapping. The criteria pollutant emissions of the overlapping phases were estimated in a separate CalEEMod run (Attachment A.2) to ensure that equipment that would remain on-site during the overlapping phases was not double (or triple) counted. The proposed list of offroad construction/demolition equipment for the overlapping phases is shown in Table 2-7.

Table 2-67: Proposed Project Offroad Construction Equipment Used for Individual Phases for CalEEMod Input

Phase Name		Equipment Type	HP[1]	No. per Day	Fuel Type[2]	Hours Per Day[3]	Load Factor[4]
1	Subsurface Exploration (Site Preparation)	Tractors/Loaders/Backhoes	107	1	Diesel	[8]9	0.37
		Excavators	45	1	Diesel	[8]9	0.38
		Air Compressors	2	1	Diesel	[6]9	0.48
		Off-Highway Trucks	500	1	Diesel	89	0.38
		Tractors/Loaders/Backhoes	321	1	Diesel	[8]9	0.37
		Bore/Drill Rigs	300	1	Diesel	89	0.50
2	Existing Project Site Demolition (Demolition A)	Concrete/Industrial Saws	33	1	Diesel	[8]9	0.73
		Tractors/Loaders/Backhoes	107	1	Diesel	[8]9	0.37
		Excavators	45	1	Diesel	[8]9	0.38
		Air Compressors	2	1	Diesel	[6]9	0.48
		Off-Highway Trucks	500	1	Diesel	89	0.38
		Tractors/Loaders/Backhoes	321	1	Diesel	[8]9	0.37
		Skid Steer Loaders	65	1	Diesel	89	0.37
3	Site Preparation/ Rough Grading (Grading)	Excavators	45	1	Diesel	[8]9	0.38
		Tractors/Loaders/Backhoes	107	1	Diesel	[8]9	0.37
		Air Compressors	2	1	Diesel	[6]9	0.48
		Off-Highway Trucks	500	1	Diesel	89	0.38
4	Foundations (Building Construction 1)	Air Compressors	10	1	Diesel	[6]9	0.48
		Cranes	275	1	Diesel	[7]9	0.29
		Excavators	45	1	Diesel	[8]9	0.38
		Excavators	346	1	Diesel	[8]9	0.38
		Forklifts	74	1	Diesel	[8]9	0.20
		Forklifts	[82]	1	Electric	[8]9	0.20
		Generator Sets	49	43	Diesel	[8]9	0.74
		Off-Highway Trucks	500	1	Diesel	89	0.38
		Rubber Tired Dozers	170	1	Diesel	[8]9	0.40
		Tractors/Loaders/Backhoes	225	1	Diesel	[7]9	0.37
		Tractors/Loaders/Backhoes	321	1	Diesel	[7]9	0.37
		Tractors/Loaders/Backhoes	107	21	Diesel	[7]9	0.37

Phase Name		Equipment Type	HP[1]	No. per Day	Fuel Type[2]	Hours Per Day[3]	Load Factor[4]
		Welders	24	~~4~~2	Diesel	[8]~~9~~	0.45
5	Trenching/ Undergrounds (Trenching)	Pumps[6]	[11]	4	Diesel	[8]~~9~~	0.74
		Excavators	45	1	Diesel	[8]~~9~~	0.38
6	Equipment, Structural Steel & Building Erection, Piping (Building Construction 2) Equipment, Structural Steel & Building Erection, Piping (Building Construction 2) (continued)	~~Aerial Lifts~~	~~84~~	~~1~~	~~Diesel~~	~~9~~	~~0.31~~
		Aerial Lifts	67	~~2~~1	Diesel	8~~9~~	0.31
		Aerial Lifts	[46]	5	Electric	8~~9~~	0.31
		Air Compressors	49	1	Diesel	[6]~~9~~	0.48
		Air Compressors	10	2	Diesel	[6]~~9~~	0.48
		Cranes	200	1	Diesel	[7]~~9~~	0.29
		Cranes	275	2	Diesel	[7]~~9~~	0.29
		Excavators	45	1	Diesel	[8]~~9~~	0.38
		Forklifts	[82]	1	Electric	[8]~~9~~	0.20
		Forklifts	122	1	Diesel	[8]~~9~~	0.20
		Forklifts	74	~~2~~1	Diesel	[8]~~9~~	0.20
		Generator Sets	49	~~5~~3	Diesel	[8]~~9~~	0.74
		Off-Highway Trucks	500	1	Diesel	8~~9~~	0.38
		Tractors/Loaders/Backhoes	225	2	Diesel	[7]~~9~~	0.37
		Welders	24	~~3~~2	Diesel	[8]~~9~~	0.45
		Welders	[46]	5	Electric	[8]~~9~~	0.45
7	Electrical & Instrumentation (Building Construction 3)	Aerial Lifts	[46]	4	Electric	8~~9~~	0.31
		Air Compressors	49	1	Diesel	[6]~~9~~	0.48
		Air Compressors	10	2	Diesel	[6]~~9~~	0.48
		Cranes	200	1	Diesel	[7]~~9~~	0.29
		Cranes	275	2	Diesel	[7]~~9~~	0.29
		Forklifts	[82]	1	Electric	[8]~~9~~	0.20
		Forklifts	74	~~2~~1	Diesel	[8]~~9~~	0.20
		Generator Sets	49	~~5~~3	Diesel	[8]~~9~~	0.74
		Off-Highway Trucks	500	1	Diesel	8~~9~~	0.38
		Tractors/Loaders/Backhoes	225	2	Diesel	[7]~~9~~	0.37
		Welders	[46]	5	Electric	[8]~~9~~	0.45
		Welders	24	~~5~~2	Diesel	[8]~~9~~	0.45
8	Paving (Paving)	Rollers	125	1	Diesel	[8]~~9~~	0.38
9	Painting/ Insulation (Architectural Coating)	Air Compressors	10	1	Diesel	[6]~~9~~	0.48
		Generator Sets	49	1	Diesel	[8]~~9~~	0.74
10	Commissioning / Startup and Testing (Building Construction 4)	Aerial Lifts	[46]	4	Electric	8~~9~~	0.31
		Air Compressors	49	1	Diesel	[6]~~9~~	0.48
		Cranes	275	1	Diesel	[7]~~9~~	0.29
		Forklifts	74	1	Diesel	[8]~~9~~	0.20
		Forklifts	[82]	1	Electric	[8]~~9~~	0.20

Phase Name		Equipment Type	HP[1]	No. per Day	Fuel Type[2]	Hours Per Day[3]	Load Factor[4]
		Generator Sets	49	3	Diesel	[8]~~9~~	0.74
		Tractors/Loaders/Backhoes	225	2	Diesel	[7]~~9~~	0.37
		Welders	[46]	2	Electric	[8]~~9~~	0.45
		Welders	24	3	Diesel	[8]~~9~~	0.45
12	Decommissioning Demolition (Demolition B)	Concrete/Industrial Saws	33	1	Diesel	[8]~~9~~	0.73
		Excavators	45	1	Diesel	[8]~~9~~	0.38
		Aerial Lifts	[46]	4	Electric	8~~9~~	0.31
		Air Compressors	49	1	Diesel	[6]~~9~~	0.48
		Cranes	275	1	Diesel	[7]~~9~~	0.29
		Forklifts	74	1	Diesel	[8]~~9~~	0.20
		Forklifts	[82]	1	Electric	[8]~~9~~	0.20
		Generator Sets	49	3	Diesel	[8]~~9~~	0.74
		Tractors/Loaders/Backhoes	225	2	Diesel	[8]~~9~~	0.37
		Welders	[46]	~~2~~3	Electric	[8]~~9~~	0.45
		Welders	24	~~3~~2	Diesel	[8]~~9~~	0.45

Notes:

1. Engine horsepower ratings in brackets are CalEEMod default values (version 2022.1.1.19).
2. All diesel engines are assumed to be EPA Tier 4 Final and Electric engines have an average electric mix.
3. Construction ~~is expected to occur for up to~~"Hours per Day" are CalEEMod default values. ~~10 hours/day, with equipment use up to 9 hours/day~~. A value of 8 hours per day is used for equipment for which there are no CalEEMod defaults (i.e., Bore/Drill Rigs, Off-Highway Trucks, Skid Steer Loaders, and Aerial Lifts).
4. Engine load factors are CalEEMod default values (version 2022.1.1.19).
5. ~~CalEEMod default value of 8 hours per day used for this equipment in Phase 3.~~

~~6.~~5. Pumps conservatively modeled as diesel units in Phase 5 rather than as electric units in Phase 4 as planned for construction.

~~7.~~6. No offroad equipment are expected to be used for Phase 11, Site Restoration, so this phase is not included.

Table 2-7: Proposed Project Offroad Construction Equipment Used for Overlapping Phases for CalEEMod Input

Phase Name		Equipment Type	HP	No. per Day	Fuel Type	Hours Per Day	Load Factor
1	Subsurface Exploration (Site Preparation)	Bore/Drill Rigs	300	1	Diesel	8	0.5
2	Existing Project Site Demo (Demolition A)	Concrete/Industrial Saws	33	1	Diesel	[8]	0.73
		Tractors/Loaders/Backhoes	107	1	Diesel	[6]	0.37
		Excavators	45	1	Diesel	[8]	0.38
		Air Compressors	2	1	Diesel	[6]	0.48
		Off-Highway Trucks	500	1	Diesel	8	0.38
		Tractors/Loaders/Backhoes	321	1	Diesel	[6]	0.37
		Skid Steer Loaders	65	1	Diesel	8	0.37
4		Cranes	275	1	Diesel	[7]	0.29

Phase Name		Equipment Type	HP	No. per Day	Fuel Type	Hours Per Day	Load Factor
	Foundations (Building Construction 1)	Excavators	45	1	Diesel	[8]	0.38
		Excavators	346	1	Diesel	[8]	0.38
		Off-Highway Trucks	500	1	Diesel	8	0.38
		Rubber Tired Dozers	170	1	Diesel	[8]	0.4
		Tractors/Loaders/Backhoes	321	1	Diesel	[7]	0.37
		Tractors/Loaders/Backhoes	107	1	Diesel	[7]	0.37
5	Trenching/Undergrounds (Trenching)	Pumps	[11]	2	Diesel	[8]	0.74
		Excavators	45	1	Diesel	[8]	0.38
6	Equipment, Structural Steel & Building Erection, Piping (Building Construction 2)	Aerial Lifts	67	1	Diesel	8	0.31
		Aerial Lifts	[46]	5	Electric	8	0.31
		Air Compressors	49	1	Diesel	[6]	0.48
		Air Compressors	10	1	Diesel	[6]	0.48
		Cranes	200	1	Diesel	[7]	0.29
		Cranes	275	2	Diesel	[7]	0.29
		Excavators	45	1	Diesel	[8]	0.38
		Forklifts	[82]	1	Electric	[8]	0.2
		Forklifts	122	1	Diesel	[8]	0.2
		Forklifts	74	1	Diesel	[8]	0.2
		Generator Sets	49	3	Diesel	[8]	0.74
		Tractors/Loaders/Backhoes	225	2	Diesel	[7]	0.37
		Welders	24	2	Diesel	[8]	0.45
		Welders	[46]	5	Electric	[8]	0.45
7	Electrical & Instrumentation (Building Construction 3)	Aerial Lifts	[46]	4	Electric	8	0.31
		Air Compressors	10	1	Diesel	[6]	0.48
		Forklifts	74	1	Diesel	[8]	0.2
		Off-Highway Trucks	500	1	Diesel	8	0.38
		Tractors/Loaders/Backhoes	225	1	Diesel	[7]	0.37
8	Paving (Paving)	Rollers	125	1	Diesel	[8]	0.38
9	Painting/Insulation (Architectural Coating)	Air Compressors	10	1	Diesel	[6]	0.48
10	Commissioning / Startup and Testing (Building Construction 4)	Aerial Lifts	[46]	4	Electric	8	0.31
		Air Compressors	49	1	Diesel	[6]	0.48
		Cranes	275	1	Diesel	[7]	0.29
		Forklifts	74	1	Diesel	[8]	0.2
		Forklifts	[82]	1	Electric	[8]	0.2
		Generator Sets	49	3	Diesel	[8]	0.74

Phase Name		Equipment Type	HP	No. per Day	Fuel Type	Hours Per Day	Load Factor
		Tractors/Loaders/Backhoes	225	2	Diesel	[7]	0.37
		Welders	[46]	3	Electric	[8]	0.45
		Welders	24	2	Diesel	[8]	0.45

Notes:

Same notes as Table 2-6.

Only the phases which have some overlap with other phases are included in this table.

Generally speaking, impacts of criteria pollutant emissions are analyzed within the local area or air basin, in this case within Ventura County. GHG emissions, on the other hand, are global impacts and are usually assessed anywhere within California for CEQA analyses. Therefore, the criteria pollutant emissions and GHG emissions from construction and demolition were estimated in two separate CalEEMod runs. In the first CalEEMod run (Attachment A.1), the criteria pollutant emissions for the hauling trips for each individual phase for subsurface exploration, site preparation/rough grading, foundation, and trenching phases 1 through 11 were estimated using a one-way distance of 42 miles (the average distance from the Project site to the County line (e.g., going northeast toward Bakersfield, east toward Simi Valley, or southeast toward Westlake Village, CA). In the second CalEEMod run (Attachment A.2), the criteria pollutant emissions of the overlapping phases from were also estimated using a one-way distance of 42 miles. In the second third CalEEMod run (Attachment A.32), the GHG emissions were estimated for the hauling trips for these phases Phase 6 using a distance of 296 miles (distance from the VCS site to the Arizona State line). These distances are based on a conservative estimate that some of the supplies may come from outside of Ventura County and that some of the equipment may come from outside of California. The CalEEMod default distance of 20 miles was used for the demolition phase hauling trips. Table 2-8 summarizes the construction and demolition trip rates and mileages.

Table 2-8: Proposed Project Construction Traffic Summary

Phase Work Description		Trip Type	One-Way Trips per Day	Miles per One-Way Trip	Vehicle Mix[3]
1	Subsurface Exploration Subsurface Exploration Subsurface Exploration [1]	Worker	28	10	LDA, LDT1, LDT2
		Vendor	8	10	HHDT, MHDT
		Hauling[2]	135	42 (296)	HHDT
2	Existing Project Site Demo Existing Project Site Demo Existing Project Site Demo [2]	Worker	22	10	LDA, LDT1, LDT2
		Vendor	8	10	HHDT, MHDT
		Hauling	4852	20	HHDT
3	Site Preparation/Rough Grading Site Preparation/Rough Grading Site Preparation/Rough Grading [1]	Worker	30	10	LDA, LDT1, LDT2
		Vendor	10	10	HHDT, MHDT
		Hauling	852	42 (296)	HHDT
4	Foundations Foundations Foundations [1]	Worker	68	10	LDA, LDT1, LDT2
		Vendor	16	10	HHDT, MHDT
		Hauling	2510	42 (296)	HHDT
5	Trenching/Undergrounds	Worker	46	10	LDA, LDT1, LDT2

Phase Work Description		Trip Type	One-Way Trips per Day	Miles per One-Way Trip	Vehicle Mix[3]
	Trenching/Undergrounds ~~Trenching/Undergrounds~~ [1]	Vendor	2	10	HHDT, MHDT
		Hauling	~~16~~9	42 ~~(296)~~	HHDT
6	~~Equipment, Structural Steel & Building Erection, and Piping~~ Equipment, Structural Steel & Building Erection, and Piping ~~Equipment, Structural Steel & Building Erection, and Piping~~ [1]	Worker	78	10	LDA, LDT1, LDT2
		Vendor	22	10	HHDT, MHDT
		Hauling[1]	1	42 (*296*)	HHDT
7	~~Electrical & Instrumentation~~ ~~Electrical & Instrumentation~~ Electrical & Instrumentation	Worker	36	10	LDA, LDT1, LDT2
		Vendor	16	10	HHDT, MHDT
		Hauling	1	42	HHDT
8	~~Paving~~ Paving	Worker	22	10	LDA, LDT1, LDT2
		Hauling	12	42	HHDT
9	~~Painting/Insulation~~ Painting/Insulation	Worker	4	10	LDA, LDT1, LDT2
		Hauling	9	42	HHDT
10	~~Commissioning/Startup and Testing~~ ~~Commissioning/Startup and Testing~~ Commissioning/Startup and Testing	Worker	28	10	LDA, LDT1, LDT2
		Vendor	12	10	HHDT, MHDT
		Hauling	3	42	HHDT
11	Site Restoration	Hauling	14	42	HHDT
12	~~Decommissioning Demolition~~ ~~Decommissioning Demolition~~ Decommissioning Demolition [2]	Worker	28	10	LDA, LDT1, LDT2
		Vendor	18	10	HHDT, MHDT
		Hauling[2]	3	20	HHDT

Notes:

1. Hauling trip mileages for Equipment, Structural Steel & Building Erection, and Piping ~~Subsurface Exploration, Site Preparation/Rough Grading, Foundations, and Trenching~~ phases (Phase 6) are average one-way distances from the Project site to County Line for criteria pollutant emissions since the trip destinations/directions are not known. The second value in italics is the one-way hauling distances from the Project site to the Arizona State Line used to estimate GHG emissions.
2. Hauling trip mileages for Demolition phases (Phases 2 and 12) are CalEEMod defaults.
3. Vehicle mix: LDA=Light Duty Automobile, LDT1=Light Duty Trucks up to 3,750 lbs loaded vehicle weight (LVW), LDT2=Light Duty Trucks 3,750-8,500 lbs LVW, MHDT=Medium Heavy-Duty Trucks (8,500-14,000 lbs), HHDT=Heavy, Heavy-Duty Trucks (>14,000 lbs).

~~No offroad equipment are expected to be used for Phase 11, Site Restoration, so this phase is not included.~~

2.2.1.3 Results of Emissions Analysis for Project Construction and Demolition

The construction/demolition schedule and data shown in Tables 2-4 through 2-8 are preliminary/subject to change and are dependent on when the required permits are issued; the information presented above represents a reasonable construction scenario to be used for emissions estimation. ~~As noted in Table 2-6, this analysis assumed construction would start in May 2029. Current expectation is that construction will start in July or August 2029, however, the analysis was not revised because the earlier start date is conservative.~~

A project's construction/demolition phases produce many types of emissions. Particulate matter (i.e., PM_{10} and $PM_{2.5}$) is emitted from the construction equipment engine exhaust and also as fugitive dust that is caused by wind and construction activities on disturbed soil. The particulate matter emitted from diesel-powered construction equipment engine exhaust will primarily be diesel particulate matter (DPM). Construction-related emissions can cause temporary increases in localized concentrations of particulate matter, as well as affect compliance with the AAQS on a regional basis. The use of diesel-powered construction equipment also emits the ozone precursors NO_x and ROC. Use of architectural coatings and other materials associated with finishing buildings and equipment protection may also emit ROC and TACs. Table 2-9 presents the peak daily emissions of each criteria pollutant for each individual phase based on the CalEEMod outputs provided in Attachment A.1.

As shown in this table, the peak daily ROC emissions will occur during Phase 9, Painting/Insulation;~~,~~ the peak daily NO_x emissions during Phase 6, Equipment, Structural Steel & Building Erection, Piping;~~,~~ the peak daily ~~NO_x and~~ PM_{10} and $PM_{2.5}$ emissions during Phase 2, Existing Site Demo;~~,~~ and peak daily CO and SO_x during Phase 4, Foundations~~, and peak daily $PM_{2.5}$ during Phase 3, Site Preparation/Rough Grading~~. The ROC and NO_x peak daily emissions are below the 25 pounds per day significance threshold from the VCAPCD Guidelines (2003) shown in Table 2-1 for each individual phase.

Table 2-9: Estimated Peak Daily Emissions by Each Construction/Demolition Phase

Construction/Demolition[2] Phase		Year[3]	Emissions[1] (lbs/day)					
			ROC	NOx	CO	SOx	Total[4]~~[3]~~ PM_{10}	Total[4]~~[3]~~ $PM_{2.5}$
1	Subsurface Exploration	2029	0.56~~0.76~~	3.44~~6.33~~	25.72~~38.0~~	0.05~~0.08~~	0.36~~0.93~~	0.16~~0.37~~
2	Existing Project Site Demo	2029	0.54~~0.59~~	9.24~~9.31~~	23.08~~25.7~~	0.06~~0.07~~	3.97~~3.90~~	0.85~~0.83~~
3	Site Preparation/Rough Grading	2029	0.41~~0.59~~	10.18~~4.74~~	15.19~~27.8~~	0.07~~0.06~~	2.42~~3.27~~	0.77~~1.58~~
4	Foundations	~~2029-~~ 2030	1.04~~1.06~~	11.99~~9.28~~	45.17~~46.3~~	0.09~~0.13~~	1.16~~1.77~~	0.42~~0.61~~
5	Trenching/Undergrounds	2030	0.18~~0.21~~	2.30~~3.41~~	2.82~~3.2~~	0.01~~0.04~~	0.70~~1.01~~	0.20~~0.30~~
6	Equipment, Structural Steel & Building Erection, Piping	2030~~29-~~ 2031~~0~~	1.02~~0.97~~	12.19~~7.31~~	40.81~~40.2~~	0.08~~0.12~~	0.91~~0.88~~	0.33~~0.33~~
7	Electrical & Instrumentation	2030-2031	0.80~~0.69~~	9.97~~3.53~~	35.36~~30.8~~	0.07~~0.11~~	0.55~~0.50~~	0.23~~0.21~~
8	Paving	2031	0.63~~0.63~~	1.94~~0.29~~	4.03~~4.1~~	0.02~~0.01~~	0.64~~0.17~~	0.19~~0.05~~
9	Painting/Insulation	2031-2032	5.02~~4.95~~	3.02~~0.01~~	3.01~~0.1~~	0.01~~0.01~~	0.39~~0.03~~	0.13~~0.01~~
10	Commissioning/Startup and Testing	2031-2032	0.50~~0.68~~	8.66~~3.5~~	20.89~~30.7~~	0.04~~0.11~~	0.48~~0.50~~	0.18~~0.21~~
11	Site Restoration	2032	0.10	1.84	1.11	0.01	0.76	0.22

Construction/Demolition[2] Phase		Year[3]	Emissions[1] (lbs/day)					
			ROC	NOx	CO	SOx	Total[~~4~~3] PM_{10}	Total[~~4~~3] $PM_{2.5}$
12	Decommissioning Demolition	2033~~2~~	0.47~~0.33~~	7.10~~3.64~~	19.54~~12.6~~	0.04~~0.04~~	0.66~~0.58~~	0.20~~0.17~~
Proposed Project Single Phase Maximum			**5.02~~4.95~~**	**12.19~~9.31~~**	**45.17~~46.3~~**	**0.09~~0.13~~**	**3.97~~3.90~~**	**0.85~~1.58~~**

Notes:

1. Emissions include offroad construction equipment and onroad vehicles (hauling, vendors, workers).
2. Construction/Demolition daily emissions calculated ~~for maximum 9 hours per day operation~~ for all offroad equipment running simultaneously (winter peak NO_x).
3. ~~This analysis assumed construction would start in May 2029. Current expectation is that construction will start in July or August 2029. The analysis was not revised because the earlier start date is conservative.~~

~~4.~~3. Total PM_{10}/$PM_{2.5}$ consists of fugitive dust plus engine exhaust and includes application of Project BMPs.

~~5. No offroad equipment are expected to be used for Phase 11, Site Restoration, so this phase is not included.~~

The construction/demolition schedule provided in Table 2-6 indicated that some of the phases could overlap. ~~Even though it is unlikely that the peak day for a given phase would occur on the exact same peak day for another phase, where there was potential for overlap of the phase, the peak day emissions were added together to provide the potential peak daily emissions for ROC and NO_x~~. The results of this potential phase overlap peak daily emissions for ROC and NO_x and significance evaluation is shown in Table 2-10, where only phases with potential overlap are shown. The CalEEMod outputs are provided in Attachment A.2. As shown in Table 2-10, the peak daily ROC emissions could occur during the overlap of Phases 8, 9, and 10, Paving + Painting/Insulation + Commissioning/Startup and Testing. The peak daily NO_x emissions could occur during the overlap of Phases 4, 5, and 6, Foundations + Trenching/Undergrounds + Equipment, Structural Steel & Building Erection, Piping. These emissions were compared to the VCAPCD Guidelines significance thresholds shown in Table 2-1. Only ROC and NO_x peak daily emissions are shown in Table 2-10 because the VCAPCD Guidelines (2003) do not include significance thresholds for emissions of the other criteria pollutants as described in Section 2.1.1.1. Even with the conservative assumption that the peak daily emissions for multiple phases could occur on the same day, the peak day emissions shown in Table 2-10 remain below the significance thresholds for ROC and NO_x during construction/demolition of the proposed Project.

Table 2-10: Significance Evaluation for Estimated Peak Daily ROC and NOx Emissions During Potential Construction/Demolition Phase Overlaps

Construction/Demolition Peak Day Emissions with Potential Phase Timeline Overlaps		Year	Emissions[1] (lbs/day)	
			ROC	NO_x
1+2	Subsurface Exploration + Existing Project Site Demo	2029	~~1.4~~0.7	~~15.6~~10.1

Construction/Demolition Peak Day Emissions with Potential Phase Timeline Overlaps		Year	Emissions[1] (lbs/day)	
			ROC	NO_x
4+5+6	Foundations + Trenching/Undergrounds + Equipment, Structural Steel & Building Erection, and Piping	~~2029~~-2030	~~2.2~~1.8	~~20.0~~19.3
6+7	Equipment, Structural Steel & Building Erection, Piping + Electrical & Instrumentation	2030-2031	1.3~~7~~	~~10.8~~14.3
8+9+10	Paving + Painting/Insulation + Commissioning/Startup and Testing	2031-2032	6.1~~3~~	~~3.8~~11.9
Project Construction/Demolition Overlapping Phases Maximum			**6.1~~3~~**	**~~20.0~~19.3**
Threshold			**25**	**25**
Significant?			**No**	**No**

Note~~s~~:

1. Emissions reflect the peak daily phase emissions ~~totals from Table 2-9 combined for the phases indicated~~for overlapping phases using the equipment list shown in Table 2-7.

CalEEMod outputs (Attachments A.1, A.2, and A.3) present the emissions results as unmitigated and mitigated to allow for additional emissions controls to be selected in the model. As discussed in Section 5.3.7, Avoidance and Minimization Measures, of this PEA, the CPUC recommended measures and additional fugitive dust BMPs from the VCAPCD Guidelines will be employed to minimize fugitive dust from the Project. Because these measures are incorporated as Project BMPs, the peak day mitigated and unmitigated emissions are the same.

Furthermore, the construction equipment will either be electric or have engines that meet EPA Tier 4 Final emission standards. As shown in Table 2-10 above, emissions of NO_x and ROC associated with the construction and demolition phases of the Project would be below the significance threshold of 25 pounds per day for both pollutants. The VCAPCD Guidelines do not provide significance thresholds for other criteria pollutants.

2.2.2 Operational Emissions Impact Analysis

The Project consists of the replacement of the three existing 1,100-HP natural gas compressors with two replacement 1,900-HP natural gas compressors and two new nominal up to 2,500-HP EDCs. The existing 68-HP diesel emergency generator will be replaced with a new 840-HP natural gas standby generator. The number of workers operating the VCS will increase from three to four due to the Project.

Stationary source project emissions were estimated on a maximum potential to emit (PTE) basis that assumes continuous operation of the two new 1,900-HP natural gas compressors for consistency with the air permitting. The PTE for the new standby generator is based on the maximum permitted operation of 1,000 hours per year.

Baseline emissions were estimated for the three existing 1,100-HP natural gas compressors and emergency generator using their 2021 and 2022 fuel usage.

Emissions of criteria pollutants from the small number of vehicles to be used by VCS employees during operations were estimated using EMFAC2021 version 1.0.2 (CARB 2022) and AP-42 fugitive dust emissions estimation techniques for paved roads (EPA

2011). The proposed Project operational vehicle miles traveled (VMT) analysis assumes four employees commuting daily in separate light-duty vehicles for a one-way distance of 32 miles within Ventura County. Baseline vehicle use assumed three worker vehicles. The emissions calculations for the operational worker vehicles are provided in Attachment B.

Table 2-11 shows the baseline emissions, which are the average of the last 2 years of actual emissions (from 2021 and 2022) for the three existing natural gas compressors and emergency generator, as well as emissions from three worker vehicles. Table 2-12 shows the proposed Project annual emissions based on the PTE of the replacement units (two new natural gas compressors and one new standby generator) plus four worker vehicles (one more than in the baseline). The Project net emissions increase (NEI) during operation was calculated based on the difference between the PTE for the new engines and the historical actual emissions (HAE) for the existing engines as presented in Table 2-13. Additional details on these emission calculations are provided in Attachment B.

Table 2-11: Baseline Criteria Pollutant Emissions During 2021-2022 (tons/year)

Pollutant	Natural Gas Compressor Engines	Emergency Generator	Worker Vehicles	Total Baseline Emissions
ROC	0.47	0.0002	0.0025	0.48
NO_x	2.88	0.004	0.002	2.89
$PM_{10}/PM_{2.5}$	0.44	0.0004	0.008	0.45
CO	0.60	0.005	0.036	0.64
SO_x	0.03	0.00001	0.0001	0.03

Table 2-12: Proposed Project Criteria Pollutant Potential to Emit (tons/year)

Pollutant	Natural Gas Compressor Engines	Standby Generator	Worker Vehicles	Total Project Potential Emissions
ROC	5.50	0.14	0.0033	5.64
NO_x	5.50	0.14	0.003	5.64
$PM_{10}/PM_{2.5}$	1.24	0.04	0.016	1.29
CO	22.00	0.56	0.048	22.56
SO_x	0.08	0.002	0.0002	0.08

Table 2-13: Proposed Project Criteria Pollutant Net Emissions (tons/year)

Pollutant	Total Project Potential Emissions	Total Baseline Actual Emissions	Net Project Emissions (PTE – Baseline)
ROC	5.64	0.48	5.16
NO_x	5.64	2.89	2.75
$PM_{10}/PM_{2.5}$	1.29	0.45	0.84
CO	22.60	0.64	21.95
SO_x	0.08	0.03	0.06

As noted in Section 2.1.1, the VCAPCD Guidelines require that only unpermitted source emissions associated with the operational Project be compared to the significance thresholds. In addition to the four worker vehicles (annual emissions are shown in Table 2-12), PEA Section 3.2.2.1, Proposed Site Improvements, lists several storage tanks that would be installed including 1 engine oil, 1 waste oil, and 3 oily waste storage tanks. These storage tanks (or drums, see PEA Table 3-1, Dimensions of Structures) are considered ancillary equipment and would not be required to obtain a permit from VCAPCD. Used oil has a very low vapor pressure and tank throughput would be low; hence, ROC emissions from these tanks would be negligible. When the emissions are compared to the significance thresholds in Table 2-14, the operational emissions are less than significant.

Table 2-14: Maximum Daily Operational Non-Permitted Sources Emissions Summary and Evaluation

Emission Source	NO_x (lbs/day)	ROC (lbs/day)
Non-stationary source emissions [1]	negligible	negligible
Non-stationary source threshold [2]	25	25
Significant?	No	No

Notes:

1. Unpermitted sources include worker vehicles (see Table 2-12) and ancillary storage tanks, i.e., engine oil, oil waste, and oily waste storage drums, which would have very low emissions of ROC.
2. VCAPCD Guidelines (2003).

Per the VCAPCD and OPR CEQA Guidelines, a project is significant if it results in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment of an applicable NAAQS or CAAQS.

VCAPCD is designated attainment for CO, SO_x and $PM_{2.5}$ but is nonattainment of the CAAQS for PM_{10}. Based on the VCAPCD Guidelines, since Ventura County is nonattainment for PM_{10}, an AQIA was conducted to assess the significance of the Project PM_{10} emissions, as described in the next section.

2.3 Proposed Project Air Quality Impact Analyses

In addition to the emissions analyses, the VCAPCD Guidelines indicate that an AQIA should be performed to ensure that there are no localized impacts that would cause or contribute to an exceedance of a State or national AAQS for nonattainment pollutants. Emissions which cause or contribute to an exceedance of an applicable standard would be considered to have a significant impact.

Per the VCAPCD Guidelines, and as described in the previous sections, an AQIA was prepared to demonstrate the significance of the Project PM_{10} operational emissions.

2.3.1 Ambient Air Quality Impacts from Project Operation

The purpose of the AQIA is to evaluate whether criteria pollutant emissions resulting from the proposed Project will cause or contribute significantly to an exceedance of the NAAQS or CAAQS. The United States Environmental Protection Agency's (EPA's) guideline **A**merican Meteorological Society/**EPA** **R**egulatory **Mod**el (AERMOD) was used to simulate the atmospheric transport and dispersion of airborne pollutants and to quantify the maximum expected ground level concentrations (GLCs) from Project emissions.

The modeling of PM_{10} emissions during operations analyzed the 24-hour and annual concentrations from the PTE of the new natural gas compressors and standby generator. The modeling input parameters and results are provided in Attachment C.

The modeling results for PM_{10} are summarized in Table 2-15. Since the background PM_{10} concentrations are greater than the CAAQS, the modeled concentrations were compared to the SILs as described above. The PM_{10} concentrations predicted by the model from onsite emissions sources are less than these significance levels. Therefore, the proposed Project will have a less than significant adverse impact to air quality based on modeling.

Table 2-15: Proposed Project PM_{10} AQIA Results

Pollutant	Averaging Time	Modeled Concentration (μg/m^3)	Significant Impact Level[1] (μg/m^3)	Exceed SIL?
PM_{10}	24-Hour	3.92	5.0	No
	Annual	0.37	1.0	No

Note:

1. SJVAPCD Policy APR 1925 (2014)

2.4 Proposed Project Health Risk Assessment

Both a construction HRA and operations HRA were conducted. The construction and operations HRAs were conducted in accordance with VCAPCD guidance following the California Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual (2015). The HRAs used refined air dispersion analyses and health risk modeling.

AERMOD was used to estimate the GLCs. The Hotspots Analysis and Reporting Program, Version 2 (HARP2) software was used to perform the calculations for this step for comparison to the current VCAPCD risk threshold values.

For the HRAs, AERMOD was run with all sources emitting unit emissions [1 gram per second (g/s)] to obtain the X/Q (i.e., the relative concentration given as the effluent concentration divided by the source strength at a given distance and direction from the source) values that are necessary for input into HARP2. The health risk calculations were performed using the HARP2 Air Dispersion Modeling and Risk Tool (ADMRT). The X/Q values that were determined for each source using AERMOD were imported into HARP2 and used in conjunction with hourly and annual emissions to determine the GLCs for each pollutant. The GLCs were then used to estimate the long-term cancer health risk to an individual and non-cancer chronic and acute health indices.

The Maximally Exposed Individual Resident (MEIR), Maximally Exposed Individual Worker (MEIW), and maximum impact at a sensitive receptor were calculated for cancer risk and non-cancer chronic and acute health indices.

2.4.1 Health Risk Assessment for Project Construction

The purpose of the construction HRA is to evaluate the potential health risks associated with the Project-related construction emissions. During construction and demolition, the use of diesel-fueled equipment will emit DPM. DPM emissions are derived from the CalEEMod runs in Attachment A.1, where DPM is conservatively assumed to be 100% of the exhaust PM_{10} emissions.

Since the construction and demolition activities will last approximately 3 years, cancer risk was estimated for a 3-year period using the average annual DPM emissions over the entire construction and demolition period for both residential and off-site workers.

The construction HRA input parameters and results are provided in Attachment D. The construction HRA results are summarized in Table 2-16. The results show that, for all receptor types and locations, the predicted health risks are less than the VCAPCD cancer significance threshold and well below the non-cancer thresholds. The cancer risk at the MEIR occurs at a residence ~~bordering the VCS's northeastern fenceline~~south of VCS.

The HRA demonstrates that health risks related to construction and demolition activities for the proposed Project are less than significant.

Table 2-16: Construction/Demolition Health Risk Assessment Results

Health Risk	MEIR	Maximum Sensitive Receptor	MEIW	VCAPCD Guidelines Threshold	Significant?
Cancer Risk (Per Million)	~~2.30~~1.92	~~1.49~~1.24	~~0.31~~0.28	10	No
Chronic Hazard Index (HIC)	0.001~~1~~	0.001	0.002	1	No

Note:

1. Because DPM does not have an acute risk, an Acute Hazard Index (HIA) was not modeled for construction.

2.4.2 Health Risk Assessment for Project Operation

The operations HRA modeling conservatively analyzed the total post-Project TAC emissions based on the proposed Project's PTE from the new natural gas compressors and standby generator, rather than the delta between pre-Project and post-Project TAC emissions. Additional information on the TAC emission calculations is provided in Attachment B, and the input parameters and detailed results for the operational HRA are provided in Attachment E for each health risk and at each receptor type, broken down by pollutant and source. The results of the HRA for the proposed Project operational TAC emissions are summarized in Table 2-17.

The results show that, for all receptor types and locations, the predicted health risks are less than the VCAPCD cancer significance threshold and well below the non-cancer thresholds. For cancer risk, the MEIR occurs past the southern end of the facility.

The results show that the predicted health risks are below the VCAPCD health risk thresholds; thus, impacts from the Project TAC emissions during VCS operation are less than significant.

Table 2-17: Operation Health Risk Assessment Results

Health Risk	MEIR	Maximum Sensitive Receptor	MEIW	VCAPCD Guidelines Threshold	Significant?
Cancer Risk (In One Million)	2.81	0.54	1.25	10	No
Chronic Hazard Index (HIC)	0.009	0.002	0.01 (annual) 0.05 (8-hour)	1	No
Acute Hazard Index (HIA)	0.03	0.03	0.02	1	No

3.0 GREENHOUSE GAS EMISSIONS

3.1 GHG Emissions Significance Criteria

The VCAPCD has not adopted a mass emissions threshold for GHGs. Other air districts such as the SCAQMD use a threshold of 10,000 metric tons (MT) of carbon dioxide equivalents (CO_2e) per year as the significance criteria for industrial facilities (SCAQMD 2023). This significance threshold is proposed for this Project.

3.2 GHG Emissions Analysis for the Proposed Project

GHG emissions are estimated for both construction/demolition and operations for the proposed Project. Construction GHG emissions are typically amortized over the life of the project (typically 30 years) and added to the annual operational GHG emissions for evaluation against the significance threshold to determine significance. Additional details on the emissions calculations are provided in Attachment F.

3.2.1 GHG Emissions from Project Construction/Demolition

During construction, GHGs – primarily carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), collectively reported as CO_2e – are directly emitted from mobile sources such as onroad vehicles and offroad construction equipment. Direct onsite and off-site GHG emissions were estimated for proposed Project construction activities using CalEEMod. CalEEMod also includes a calculation of GHG emissions related to refrigerants and ozone-depleting substances (R/ODS).

Table 3-1 shows a breakdown of proposed Project construction GHG emissions over the roughly ~~25~~31-month main construction period (2029-2032~~1~~) and 3-month demolition period (2033~~2~~). The CalEEMod output file for GHG emissions can be found in Attachment A.~~2~~3. Table 3-1 also aggregates the CO_2e emissions for all construction/demolition and determines the 30-year amortization amount for the operational GHG netting analysis. The maximum annual GHG emissions from construction are ~~2,731~~1,777 MT in 2030. Together, construction and demolition emissions amortized over 30 years are ~~198~~ 105 MT CO_2e per year.

Table 3-1: Construction and Demolition GHG Emissions by Year~~1~~ (2029-2033~~2~~)

GHGs	2029 (MT)	2030 (MT)	2031 (MT)	2032 (MT)	2033 (MT)	Total (MT)	30-Year (MT/yr)
CO_2	234~~2,549~~	1,756~~2,677~~	815~~580~~	16~~64~~	129	–	–
CH_4	0.01~~0.06~~	0.06~~0.08~~	0.03~~0.02~~	0.01~~0.00~~	0.00	–	–
N_2O	0.02~~0.25~~	0.06~~0.17~~	0.02~~0.01~~	0.01~~0.00~~	0.00	–	–
R/ODS	0.08~~1.25~~	0.34~~0.84~~	0.10~~0.04~~	0.04~~0.00~~	0.01	–	–
CO_2e	**239~~2,625~~**	**1,777~~2,731~~**	**822~~583~~**	**16~~84~~**	**130**	**3,136~~5,943~~**	**105~~198~~**

~~Notes:~~

~~1. This analysis assumed construction would start in May 2029. Current expectation is that construction will start in July or August 2029. The analysis was not revised because the earlier start date is conservative.~~

3.2.2 GHG Emissions from Project Operation

The baseline GHG emissions for the proposed Project are shown in Table 3-2. The baseline is based on fuel use by the existing equipment to be replaced (three natural gas compressors and an emergency generator), plus up to three operations workers commuting, and indirect GHG emissions from facility-wide electric power usage. Baseline emissions were estimated for the three existing 1,100-HP engine compressors and emergency generator using the average of their 2021 and 2022 fuel usage. Baseline facility-wide electricity usage was based on the average of 2021 and 2022 electricity purchased for the VCS site.

Emissions of GHGs from the limited number of onroad vehicles to be used by VCS employees during operations were estimated using EMFAC2021 version 1.0.2 (CARB 2022). Because EMFAC2021 outputs the GHGs as CO_2, CH_4, and N_2O, the Intergovernmental Panel on Climate Change (IPCC) global warming potentials (GWPs) were used to determine CO_2e from these mobile sources (CARB 2016). The operational baseline VMT analysis assumes three workers commuting daily in separate light-duty vehicles for a one-way distance of 32 miles within Ventura County, which is an average distance to communities within the County. Project worker vehicle emissions are based on four workers commuting, a net increase of one worker.

Table 3-2: VCS Baseline GHG Emissions (MT/year)

GHGs	Existing (3) Natural Gas Compressors	Existing Emergency Generator	Worker Vehicles	Indirect Electric Power	Total Baseline Emissions[1]
CO_2	4,845	0.6	50.5	92.0	4,988
CH_4	0.09	0.00003	0.0004	0.012	0.103
N_2O	0.01	0.00001	0.0008	0.001	0.011
CO_2e	**4,850**	**1**	**51**	**93**	**4,994**

Note:

1. Baseline emissions based on HAE for 2021-2022 for natural gas compressors and standby generator, three operations workers, and electricity purchased during these years.

The projected emissions of GHGs from the replacement combustion units (two new natural gas compressors and new standby generator) are provided in Table 3-3, along with worker commuting and indirect GHG emissions for the EDCs and other electric power usage. Stationary source GHG emissions for the proposed Project were estimated based on the projected annual usage of the two new 1,900-HP engine compressors, the new standby generator, one additional operations worker, and the electrical usage for the new EDCs.

As noted in Section 3.1, Project Overview (footnote 1), of this PEA, as a result of not having electric compressors selected at this time, SoCalGas has assumed that the two EDCs will each be 2,500 HP in the PEA for the purpose of environmental review. Upon completion of engineering related to the EDCs, the horsepower utilized may be lower than, but will not be higher than the 2,500 HP reviewed in this PEA. However, as discussed in Section 5.6, Energy, it was decided to analyze two scenarios for energy impacts, where Case 1 is based on two 2,500 HP EDCs and Case 2 is based on two 2,000 HP EDCs, both cases along with the two 1,900 HP natural gas compressors. These cases represent the projected maximum electricity use and maximum natural gas use, respectively.

The GHG emissions for both cases were estimated for the Project operations and are shown in Table 3-3. Both Cases 1 and 2 show a decrease in natural gas usage and an increase in electricity usage as compared to the baseline.

GHG emissions can occur from venting of natural gas to the blowdown stack during maintenance activities. These activities occur infrequently and typically consist of venting the residual amount of gas in a length of pipe from the equipment that is being serviced and the blowdown stack has a discharge scrubber. The Project will implement a vapor capture and recovery system that will prevent 85-100% of the natural gas from being released to the atmosphere during venting. Thus, the Project is expected to result in a reduction in GHG emissions associated with venting compared to the existing facility.

To meet the CARB Oil and Gas Regulation, the VCS has implemented a leak detection and reporting (LDAR) system to minimize natural gas leaks from the equipment components, such as flanges, valves, seals, etc., which lead to CH_4 emissions. The combination of the LDAR system and newer technologies for the equipment components will ensure that Project GHG emissions are similar or reduced from baseline conditions.

Table 3-3: Projected Annual Project GHG Emissions (MT/year)

GHGs	New (2) Natural Gas Compressors[1, 2]		New Standby Generator	Worker Vehicles[3]	Indirect Electric Power[4, 2]		Total Project Emissions[2]	
	Case 1	Case 2			Case 1	Case 2	Case 1	Case 2
CO_2	1,723.0	3071.1	79.3	67.4	2526.3	2208.7	4346.2	5376.8
CH_4	0.0325	0.0579	0.0015	0.0006	0.32	0.28	0.35	0.34
N_2O	0.0032	0.0058	0.0001	0.0011	0.04	0.03	0.04	0.04
CO_2e	**1,725**	**3,074**	**79**	**68**	**2,546**	**2,226**	**4,368**	**5,397**

Notes:

1. GHG emissions are based on a conservative projected usage of the natural gas compressors based on historic flow rates and accounting for a drop in the local production rate. It is assumed that the trend of the monthly demand for the new plant will continue to remain the same as the existing plant (lower demand in winter and higher demand in summer).
2. Case 1 is two 2,500 HP EDCs, which would have slightly lower natural gas use and higher electricity use. Case 2 is two 2,000 HP EDCs, which would have slightly higher natural gas use and lower electricity use.
3. Worker vehicle emissions based on 4 workers (1 more than the baseline) commuting from within Ventura County in separate vehicles (32 miles each one-way trip).
4. Indirect emissions based on electric power for projected use of new EDCs as well as station utilities and auxiliaries. The analysis is based on the EDCs turned on first and turned off last from an operational standpoint.

As shown in Table 3-3, Case 1 would have slightly lower natural gas use and higher electricity use than Case 2 since it includes the two larger 2,500 HP EDCs. Case 2 would have slightly higher natural gas use and lower electricity use than Case 1 since it includes two smaller 2,000 HP EDCs. Because GHG emissions are higher from natural gas use than from indirect electricity use, Case 2 would have slightly higher GHG emissions.

3.2.3 Determination of GHG Emissions Significance

Table 3-4 provides a comparison of the aggregated net GHG emissions for the proposed Project to the significance threshold. The net GHG emissions reflect the direct and indirect

GHG emissions from the proposed Project (Table 3-3) plus the amortized GHG construction emissions (Table 3-1) minus the baseline GHG emissions (Table 3-2).

As shown in Table 3-4 the aggregated GHG net emissions show a small decrease in GHG emissions associated with the Case 1 Project and a small increase for the Case 2 Project compared to the baseline. This result shows that the projected future operation of the Project will be similar to the operation of the VCS in the future. Further, the slightly larger EDC assumed in Case 1 will lead to a reduction in GHG emissions. In both cases, the net emissions decrease or increase is below the CO_2e significance threshold of 10,000 MT per year, and thus, the proposed Project will have a less than significant impact.

Additional details on these emission calculations are provided in Attachment F.

Table 3-4: Proposed Project GHG Significance Evaluation

Item	Annual CO_2e Net Emissions (MT/year)	
	Case 1	**Case 2**
Total Direct Project Net Emissions (Project-Baseline)	(3,042)	(1,693)
Total Indirect Project Net Emissions (Project-Baseline)	2,453	2,133
Amortized Construction Emissions (30 years)	~~198~~105	~~198~~105
Total Operation Net Emissions + Construction	**(~~391~~484)**	**~~639~~545**
Significance Threshold	**10,000**	**10,000**
Total Project Net Emissions Significant?	**No**	**No**
Mitigation Required	**None**	**None**

4.0 REFERENCES

Association of Environmental Professionals (AEP), 2023. 2023 CEQA Statute & Guidelines. Website (https://www.califaep.org/statute_and_guidelines.php) accessed February 10, 2023.

California Air Resources Board (CARB). 2017. California's 2017 Climate Change Scoping Plan. Website (https://ww3.arb.ca.gov/cc/scopingplan/scopingplan.htm) accessed February 10, 2023.

California Air Resources Board (CARB). 2016. GHG Global Warming Potentials. Website (https://ww2.arb.ca.gov/ghg-gwps#:~:text=CARB%20uses%202007%20IPCC%20AR4%20GWPs%20for%20the,AR4%20GWPs%20are%20included%20in%20the%20table%20above.) accessed February 10, 2023.

California Air Pollution Control Officers Association (CAPCOA). 2022. California Emissions Estimation Model® (CalEEMod). Version 2022.1.1.19. Website (http://www.caleemod.com/) accessed ~~February 10~~September 27, 2023.

California Independent System Operator (CAISO). 2023. "Today's Outlook/Capacity/Demand." Website (https://www.caiso.com/TodaysOutlook/Pages/index.html) accessed March 3, 2023.

California Office of Environmental Health Hazard Assessment (OEHHA). 2015. Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments. February. Website (https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0) accessed February 10, 2023.

California Office of Planning and Research (OPR). 2022. Appendix G Checklist Form. Website (https://resources.ca.gov/CNRALegacyFiles/ceqa/docs/ab52/final-approved-appendix-G.pdf) accessed March 3, 2023.

California Public Utilities Commission (CPUC). 2019. Guidelines for Energy Project Applications Requiring CEQA Compliance: Pre-filing and Proponent's Environmental Assessments. Version 1.0. November 2019. Website (https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/c/6442463239-ceqa-pre-filing-guidelines-pea-checklist-nov-2019.pdf) accessed March 3, 2023.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2014. APR-1925 Policy for District Rule 2201 AAQA Modeling. Website (https://www.valleyair.org/policies_per/policies_per_idx.htm) accessed February 10, 2023.

South Coast Air Quality Management District (SCAQMD). 2023. Air Quality Significance Thresholds. Website (http://www.aqmd.gov/docs/default-source/ceqa/handbook/south-coast-aqmd-air-quality-significance-thresholds.pdf?sfvrsn=25) accessed March 27, 2023.

Southern California Edison (SCE). 2018. Fact Sheet on SCE's Green Rate and Community Renewables Programs. Website (https://www.sce.com/sites/default/files/inline-files/G18-013%2BGreen%2BRate%2BBusiness%2BFact%2Bsheet-AA_0.pdf) assessed February 10, 2023.

Southern California Edison (SCE). 2021. Power Content Label. Website (https://www.sce.com/sites/default/files/custom-files/Web%20files/2021%20Power%20Content%20Label.pdf) accessed February 17, 2023.

Southern California Edison (SCE). 2019. "Southern California Edison's Service Area." Website (https://newsroom.edison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/166/files/20193/SCE%20Service%20Area%20Fact%20Sheet_Ver2_04252019.pdf#:~:text=Southern%20California%20Edison%20is%20one%20of%20the%20nation%E2%80%99s,15%20million%20people%20through%205%20million%20customer%20accounts) accessed March 3, 2023.

The Climate Registry (TCR). 2022. Default Emission Factors Document. Website (https://theclimateregistry.org/registries-resources/protocols/) accessed assessed February 10, 2023.

United States Energy Information Administration (EIA). 2021. Southern California Daily Energy Report. Website (https://www.eia.gov/special/disruptions/socal/summer/#dashboard) accessed February 10, 2023.

Ventura County Air Pollution Control District (VCAPCD). 2003. Ventura County Air Quality Assessment Guidelines. Website (http://www.vcapcd.org/pubs/Planning/VCAQGuidelines.pdf) accessed February 10, 2023.

ATTACHMENT A – CALEEMOD OUTPUTS

ATTACHMENT B – OPERATIONAL CRITERIA POLLUTANT AND TOXIC AIR CONTAMINANT EMISSIONS

ATTACHMENT C – OPERATIONS PM10 MODELING INPUT PARAMETERS AND RESULTS

ATTACHMENT D – CONSTRUCTION HRA INPUT PARAMETERS AND RESULTS

ATTACHMENT E – OPERATIONS HRA INPUT PARAMETERS AND RESULTS

ATTACHMENT F – GHG EMISSIONS AND ENERGY CALCULATIONS