Appendix B

Feasibility Study Scoring Rubric

Ventura Compressor Station Feasibility Study

Goal

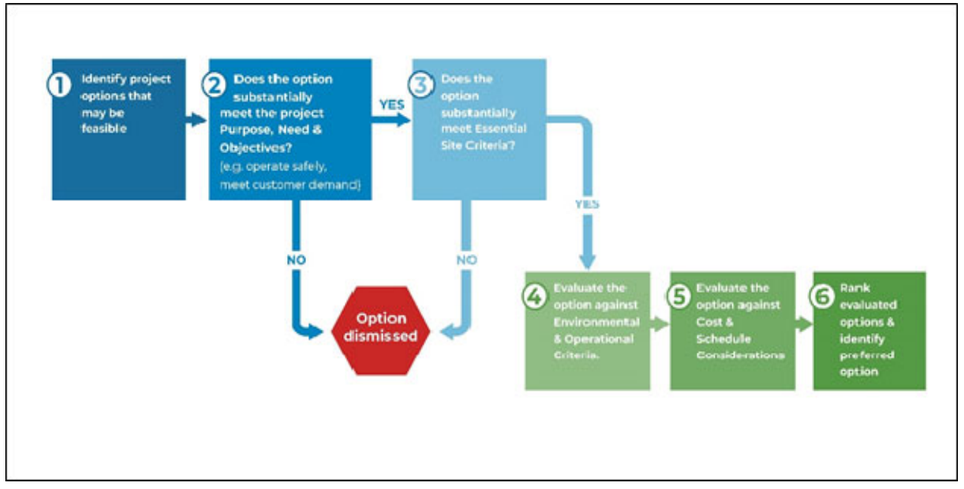
SoCalGas will evaluate a range of alternatives to a proposed project that would feasibly attain most of the basic project objective but would lessen any of the significant effects of the project.

Process

SoCalGas will evaluate whether the existing infrastructure can be modified to meet the project objects. If not, then SoCalGas will evaluate what new infrastructure is required and where it would be located to meet project objectives

Methodology

Potential Alternatives	**Step 1**	Identify project alternatives that may be feasible.
Initial Screening for Purpose, Need and Objectives	**Step 2**	Evaluate each project in accordance with whether the alternative would substantially meet the purpose, need and objectives. If the alternative does not meet purpose, need and objective, dismiss from further consideration.
Essential Site Criteria Analysis	**Step 3**	Perform Essential Site Criteria Analysis of alternatives consistent with established evaluation criteria. If project does not meet essential site parameters, dismiss from further consideration.
Site and Environmental Considerations	**Step 4**	Perform Operational, Emissions and Environmental Considerations Analysis of alternatives consistent with established evaluation criteria and assign point total to each category.
Cost and Schedule Considerations	**Step 5**	Perform Other Considerations Analysis of alternatives consistent with established evaluation criteria and assign point total to each category.
Rank & Identify Preferred Alternative	**Step 6**	Rank alternatives based on resulting point totals, with highest score being best to identify the preferred alternative.



Ventura Compressor Station Feasibility Study

STEP 1: IDENTIFY ALTERNATIVES

Alternative	Technology	Site Identified by	Land Use/Zoning	Location
No Project - Keep existing in operation	All Natural Gas	SoCalGas	Industry/ M-2	Maintain existing site configuration and operational profile keeping the 30-year old gas engine driven machines in service.
Compressor Station Removal	Nothing	Community	Industry/M-2	Request is to remove the station in its entirety.
All Electric at Any of the Sites	All Electric	SoCalGas/CPUC too?	Various	Replace existing compression with new electric compressors. Same benefits and/or issues will be experienced at any site.
Hybrid - 3 Electric and 1 Gas Engine at any site	Hybrid - 3 Elec / 1 Gas Engine	SoCalGas	Various	Replace existing compression with 3 new electric compressors and 1 gas engine. Same benefits and/or issues will be experienced at any site.
Petrochem	Natural gas	SoCalGas	Industrial/M3-10,000 sf	Industrial site located approximately 13,500 feet northwest of the existing compressor station on the west side of State Route 33 within the County of Ventura.
Petrochem - Hybrid	Hybrid - gas/electric	SoCalGas	Industrial/M3-10,000 sf	
Move Compression to Goleta Storage Field	Nat Gas/Elec or Hybrid	SoCalGas	UT – Public Utility/PU – Public Utilities	Remove the existing horsepower from Ventura and replace with new equipment at the Goleta Storage Field approximately 40 miles up the coast.
Alternative 1A: Planned Project	Natural gas	SoCalGas	Industry/ M-2	Current site - Approximately 8-acre parcel located on land designated by the Ventura General Plan as "Industry" and zoned "M-2 General Industrial," on the west side of City of Ventura.
Alternative 1B: Current Site, Hybrid	Hybrid - gas/electric	CPUC	Industry/M-2	
Alternative 2A: Avocado Site	Natural gas	Community	Open Space/AE-40 ac	Approximately 15-acre agricultural site located approximately 3,000 feet west of the compressor station, on privately held land currently developed with an avocado orchard within the County of Ventura.
Alternative 2B: Avocado Site - Hybrid	Hybrid - gas/electric	Community	Open Space/AE-40 ac	
Alternative 3A: Ventura Steel	Natural gas	SoCalGas	Industrial/M3-10,000 sf	Approximately 15-acre industrial site located approximately 8,000 feet north of the compressor station within the County of Ventura
Alternative 3B: Ventura Steel - Hybrid	Hybrid - gas/electric	SoCalGas	Industrial/M3-10,000 sf	
Alternative 4A: Devil's Cyn Rd	Natural gas	Community	Open Space/OS-160 ac/HCWC*	Approximately 15-acre oil extraction site located approximately 6,000 feet to the north of the compressor station on west side of State Route (SR) 33 within the County of Ventura.
Alternative 4B: Devil's Cyn Rd - Hybrid	Hybrid - gas/electric	Community	Open Space/OS-160 ac/HCWC*	
Alternative 5A: County Line	Natural gas	SoCalGas	Open Space/AE-40 ac	Approximately 15-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.
Alternative 5B: County Line - Hybrid	Hybrid - gas/electric	SoCalGas	Open Space/AE-40 ac	

Ventura Compressor Station Feasibility Study

Scored by SoCalGas - Operations and Project Management Team (PMT)

STEP 2: PURPOSE, NEED AND OBJECTIVES

		Alternative 1: Ventura-Existing Site North Olive Street		Alternative 2: Avocado Site-Ventura		Alternative 3: Ventura Steel		Alternative 4: Devil's Cyn Rd		Alternative 5: County Line		All Electric at any proposed site	Hybrid 3 Electric/ 1 Gas Engine at any site	No Project - Keep Existing in Service	Remove Existing Facility	Petrochem		Goleta Storage Field
Evaluation Criteria	**Rationale for Criteria**	**Natural Gas (1A)**	**Hybrid (1B)**	**Natural Gas (2A)**	**Hybrid (2B)**	**Natural Gas (3A)**	**Hybrid (3B)**	**Natural Gas (4A)**	**Hybrid (4B)**	**Natural Gas (5A)**	**Hybrid (5B)**					**Natural Gas (A)**	**Hybrid (B)**	**Any Driver**
Safety Consideration	Project must be able to operate safely	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	No Go	Go	Go	Go
System Operational Requirements	Project must meet basic system operational requirements (Meet minimum and maximum flow requirements throughout the range of pipeline operating pressures)	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	No Go	No Go	Go	Go	Go
System Operational Requirements	Ability to meet core customer demand w/o Goleta W/D	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	No Go	No Go	Go	Go	No Go
System Operational Requirements	Adequate capacity to inject at La Goleta Storage Field	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	No Go	No Go	Go	Go	Go
System Operational Requirements	Enhance reliability by modernizing aging infrastructure	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	No Go	No Go	No Go	No Go	Go	Go	No Go

Ventura Compressor Station
Feasibility Study

Scored by SoCalGas - PMT

STEP 3: ESSENTIAL SITE CRITERIA

		Alternative 1: Ventura- Existing Site North Olive Street		Alternative 2: Avocado Site- Ventura		Alternative 3: Ventura Steel		Alternative 4: Devil's Cyn Rd		Alternative 5: County Line		Petrochem	
Evaluation Criteria	**Rationale for Criteria**	**Natural Gas (1A)**	**Hybrid (1B)**	**Natural Gas (2A)**	**Hybrid (2B)**	**Natural Gas (3A)**	**Hybrid (3B)**	**Natural Gas (4A)**	**Hybrid (4B)**	**Natural Gas (5A)**	**Hybrid (5B)**	**Natural Gas (A)**	**Hybrid (B)**
Mapped FEMA Floodway	Project site is not located in a mapped FEMA floodway (note that this is a restriction on the actual project footprint, not the property boundary)	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	No Go	No Go
Proximity to Airport and Compatibility with FAA regulation	FAA limits uses and heights within certain areas near an airport	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go
Property Size (Min. 8-acres for Existing Site; 12-acres for new site) & Land Ownership	Minimum site size equivalent to or larger than existing compressor station and under SoCalGas or private land ownership	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go	Go

STEP 4: ENVIRONMENTAL - OPERATIONAL CRITERIA

Environmetal scored by Dudek, Yorke Operational scored by Operations/PMT

Topic Areas	Ranking				Option 1: Ventura- Existing Site North Olive Street		Option 2: Avocado Site- Ventura		Option 3: Ventura Steel		Option 4: Devil's Cyn Rd		Option 5: County Line	
	0	"1-2-3"	"4-5-6"	"7-8-9"	Natural Gas (1A)	Hybrid (1B)	Natural Gas (2A)	Hybrid (2B)	Natural Gas (3A)	Hybrid (3B)	Natural Gas (4A)	Hybrid (4B)	Natural Gas (5A)	Hybrid (5B)
Environmental Considerations: Operational (10X multiplier applied to Operational only)					26	32	23	28	29	35	30	35	17	25
Air - Criteria Pollutant (Potential to Emit = 24/7/365)	NOx emission ≥ 12 tons per year	NOx emissions ≥ 8 tons per year but < 12 tons per year	NOx emission ≥4 tons per year but <8 tons per year	NOx emissions <4 tons per year	1	5	1	5	1	5	1	5	0	5
GHGs (Direct and Indirect) (Potential to Emit = 24/7/365)	GHG emissions ≥50,000 MT/yr CO2e	GHG emissions ≥25,000 MT/yr CO2e but <50,000 MT/yr CO2e	GHG emissions ≥10,000 MT/yr CO2e but <25,000 MT/yr CO2e	GHG emissions <10,000 MT/yr CO2e	3	5	3	5	3	5	3	5	2	4
Land Use Designation	Non-industrial/manufacturing zone and adjacent to sensitive receptor	Industrial/manufacturing zone located adjacent to sensitive receptor	Non-industrial/manufacturing zone not adjacent to sensitive receptor	Industrial/manufacturing zone not adjacent to sensitive receptor	1	1	6	6	9	9	6	6	6	6
Cal Enviro Screen	91% to 100% pollution burden	61% to 90% pollution burden	31% to 60% pollution burden	1% to 30% pollution burden	1	1	2	2	3	3	2	2	2	2
Wildfire	Within Very High Fire Hazard Severity Zone	Within High Fire Hazard Severity Zone	Within Moderate Fire Hazard Severity Zone	Not within a fire hazard severity zone	8	8	2	1	0	0	2	1	3	2
Aesthetics/Visual Resources	Substantially alters a defined scenic resource, as determined by adopted plans (e.g. scenic vistas, scenic highways, ridgelines)	Substantially alters the character of a site and/or its surroundings and is highly visible	Minimally alters the character of a site and/or its surroundings and is highly visible	Project is either not visible or does not alter the character of the surrounding community	8	8	0	0	6	5	8	7	0	0
Noise (Operations assuming a 80 dBA) continuious operation day to night with permanent noise attenuation	65 dBA or greater at the property line taking into account non-industrial landuses*	65 dBA to 55dBA at the property line taking into account non-industrial landuses	55 dBA to 45 dBA property line taking into account non-industrial landuses	45 dBA lower at the property line taking into account non-industrial landuses	4	4	9	9	7	8	8	9	4	6
Environmental Considerations: On-Site Construction					48	48	32	32	56	56	51	51	32	32
Slope, Topography & Grading	Average slope of property is greater than 40%; substantial overexcavation-recompaction required	Average slope of property is 30% - 40%; moderate overexcavation-recompaction required	Average slope of property is 20% - 30%; minimal overexcavation-recompaction required	Average slope of property is less than 20%; negligible/no overexcavation-recompaction required	8	8	0	0	8	8	8	8	3	3
Traffic - Construction (Site Preparation)	Heavy-truck traffic (i.e. import/export) through residential areas or roadway-constrained areas for 1 year or longer	Heavy-truck traffic (i.e. import/export) through residential areas or roadway-constrained areas for 6 months to 1 year	Heavy-truck traffic (i.e. import/export) through residential areas or roadway-constrained areas for less than 6 months	Heavy-truck traffic (i.e. import/export) NOT occurring through residential areas or roadway-constrained areas	6	6	7	7	9	9	9	9	2	2
Air Quality	NOx emissions ≥ 80,000 pounds and PM10 ≥ 10,000 pounds	NOx emissions ≥ 80,000 pounds but <40,000 pounds and PM10 emissions ≥ 10,000 pounds but <6,000 pounds	NOx emissions ≥ 40,000 pounds but <8,000 pounds and PM10 emissions ≥ 6,000 pounds but <2,000 pounds	NOx emissions < 8,000 pounds and PM10 < 2,000 pounds	6	6	0	0	6	6	6	6	2	2
GHGs (Direct and Indirect)	GHG emissions >500 MT for project duration CO2e	GHG emissions ≥250 MT CO2e but <500 MT CO2e (for project duration)	GHG emissions ≥50 MT CO2e but <250 MT CO2e (for project duration)	GHG emissions <50 MT for project duration CO2e	8	8	2	2	8	8	8	8	4	4
Cultural Resources (Records Search)	Significant Cultural Resource(s), are present and the project has the potential to impact the significance of that resource.	Significant Cultural Resource(s), are present and project impacts will be less than significant with minimization measures incorporated in the project; or, the project is in a location that is highly sensitive for potentially significant cultural resources.	Significant Cultural Resources are present, but project does not have the potential to impact the significance of that resource; or, the project is in a location that is moderately sensitive for potentially significant cultural resources.	No significant cultural resources are present based on records search results and the project is in a location that is not sensitive for potentially significant cultural resources.	8	8	6	6	7	7	7	7	8	8
Natural Resources- Site Sensitivity (Database Search)	Site contains sensitive species (plant/animal) and/or habitats or wetlands that would be directly impacted and require mitigation	Site is adjacent to sensitive species (plant/animal) and/or habitats or wetlands that would be indirectly impacted and would require mitigation	Site contains or is adjacent to species (plant/animal) and/or habitats that would be directly or indirectly impacted, but would not require mitigation	No onsite or potential to affect sensitive biological resources	9	9	8	8	9	9	4	4	6	6
Noise - (Assuming 100+ dBA at Site)	Non-industrial land uses are located within 0-50 feet from site construction (~ 90 dBA or greater)	Non-industrial land uses are located within 50-100 feet from site construction (90 dBA to 84 dBA)	Non-industrial land uses located within 100-250 feet from site construction (84 dBA to 75 dBA)	Non-industrial land uses located greater than 250 feet from site construction (~75 dBA or lower)	3	3	9	9	9	9	9	9	7	7
Environmental Considerations: Off-Site Construction for Routing Utilities					61	61	35	32	13	13	37	36	40	38
Traffic - Roadway Construction	Substantial roadway construction on existing roads (e.g. lane closures greater than 5,000 feet)	Moderate roadway construction on existing roads (e.g. lane closures 2,500 to 5,000 feet)	Minimal roadway construction on existing roads (e.g. lane closures 500 to 2,500 feet)	None or negligible roadway construction (e.g. less than 500 feet)	9	9	7	7	0	0	7	7	7	7

Topic Areas	Ranking				Option 1: Ventura- Existing Site North Olive Street		Option 2: Avocado Site- Ventura		Option 3: Ventura Steel		Option 4: Devil's Cyn Rd		Option 5: County Line	
	0	"1-2-3"	"4-5-6"	"7-8-9"	Natural Gas (1A)	Hybrid (1B)	Natural Gas (2A)	Hybrid (2B)	Natural Gas (3A)	Hybrid (3B)	Natural Gas (4A)	Hybrid (4B)	Natural Gas (5A)	Hybrid (5B)
Utilities / Service Systems	Major utility extensions required	Moderate utility extensions required	Minor utility extensions required	Existing Utilities are adequate	9	9	4	4	1	1	3	3	4	4
Noise - (Assuming 100+ dBA at Site)	Non-industrial land uses are located within 0-50 feet from site construction (~ 90 dBA or greater)	Non-industrial land uses are located within 50-100 feet from site construction (90 dBA to 84 dBA)	Non-industrial land uses located within 100-250 feet from site construction (84 dBA to 75 dBA)	Non-industrial land uses located greater than 250 feet from site construction (~75 dBA or lower)	9	9	9	9	0	0	9	9	0	0
Air Quality	Substantial linear construction adjacent to non-industrial land uses (e.g. greater than 5,000 feet)	Moderate linear construction adjacent to non-industrial land uses (e.g. 2,500 to 5,000 feet)	Minimal linear construction adjacent to non-industrial land uses (e.g. 500 to 2,500 feet)	None or negligible linear construction adjacent to non-industrial land uses (e.g. less than 500 feet)	9	9	2	0	0	0	5	3	5	4
GHGs (Direct and Indirect)	GHG emissions >500 MT for project duration CO2e	GHG emissions ≥250 MT CO2e but <500 MT CO2e (for project duration)	GHG emissions ≥50 MT CO2e but <250 MT CO2e (for project duration)	GHG emissions <50 MT for project duration CO2e	9	9	7	6	4	4	7	7	9	9
Natural Resources- Site Sensitivity (Database Search)	Site contains sensitive species (plant/animal) and/or habitats or wetlands that would be directly impacted and require mitigation	Site is adjacent to sensitive species (plant/animal) and/or habitats or wetlands that would be indirectly impacted and would require mitigation	Site contains or is adjacent to species (plant/animal) and/or habitats that would be directly impacted, but would not require mitigation	No onsite or potential to affect sensitive biological resources	8	8	0	0	0	0	0	0	8	8
Cultural Resources (Records Search)	Significant Cultural Resource(s), are present and the project has the potential to impact the significance of that resource.	Significant Cultural Resource(s), are present and project impacts will be less than significant with minimization measures incorporated in the project; or, the project is in a location that is highly sensitive for potentially significant cultural resources.	Significant Cultural Resources are present, but project does not have the potential to impact the significance of that resource; or, the project is in a location that is moderately sensitive for potentially significant cultural resources.	No significant cultural resources are present based on records search results and the project is in a location that is not sensitive for potentially significant cultural resources.	8	8	6	6	8	8	6	7	7	6
				Grand Total Environmental Score	369	429	297	344	359	419	388	437	242	320
				Additional Operational Considerations	39.0	34.5	23.3	18.8	35.0	30.5	28.8	24.5	31.0	26.5
Geotechnical Engineering Constraints	Substantial geotechnical constraints associated with high risk of liquefaction, faulting/seismicity and landslide	Moderate geotechnical constraints associated with high risk of liquefaction, faulting/seismicity and landslide	Minimal geotechnical constraints	No known geotechnical constraints	6	6	4	4	6	6	5	5	6	6
Emergency Access (max 20% slope and minimum 20-foot wide)	Emergency access exceeds 20% grade even with engineered design (including retaining walls)	Construct new access road to meet requirements	Modify existing access road to meet requirements	No access road construction is necessary	9	9	4	4	9	9	7	7	5	5
Complexity of Auxiliary and Control Systems (with hybrids, Station Control panel would need to talk to two unique types of unit control panels, instead of one panel and one set of commands and control philosophy)	Hybrid option that relys on SCE power for running 50% of compressors	Hybrid option that does not rely on SCE power for running 50% of compressors	Non-hybrid with back-up power from SCE (2-line feed) to run 50% of compressors	Non-hybrid option with on-site back-up power generation to run 50% of compressors	9	5	9	5	9	5	9	5	9	5
Back-up power requirements. Lowest for gas engines; highest for all electric	No operation possible without SCE power in service.	Black start capability and ability to provide less than 50% of horsepower without SCE power in service	Black start capability and ability to provide less than 100% down to 50% of horsepower without SCE power in service	Black start capability and ability to provide 100% of horsepower without SCE power in service	6	6	6	6	6	6	6	6	6	6
Proximity to lower pressure Distribution System - needed to depressurize without blowing gas to atmosphere.	Zero access to Distribution without substantial effort	Distribution access greater than 1/2 mile	Distribution access outside the facility but less than 1/2 mile away.	Distribution lines are within the facility	9	9	1	1	5	5	2	2	5	5
				Option Grand Totals	**408**	**464**	**320**	**363**	**394**	**450**	**417**	**462**	**273**	**347**

*Non-industrial land uses include, but are not limited to, residential, commercial, agricultural, and parks.

NOTES:

1. Environmental considerations were included in response to CPUC request.
2. Developed for purpose of Ventura site considerations; not transferrable to other projects.
3 Proposed project back-up generation
provides power to black start and operate
two gas engines to meet core demand and
not inject at Goleta.

Ventura Compressor Station Alternatives Evaluation

Numbers provided by PMT, Estimating, Operations, BMcD, ROW

STEP 5: COST AND SCHEDULE

	Option 1: Ventura- Existing Site North Olive Street		Option 2: Avocado Site- Ventura		Option 3: Ventura Steel		Option 4: Devil's Cyn Rd		Option 5: County Line	
	Natural Gas (1A)	Hybrid (1B)	Natural Gas (2A)	Hybrid (2B)	Natural Gas (3A)	Hybrid (3B)	Natural Gas (4A)	Hybrid (4B)	Natural Gas (5A)	Hybrid (5B)
Project Cost (Class 5)										
Property/ROW(road/pipeline/power/temp construction easements). Acquisition Included Here Plus All Loaders.	$2,000,000	$2,000,000	$18,000,000	$19,000,000	$82,000,000	$82,000,000	$47,000,000	$47,000,000	$6,000,000	$6,000,000
EPC + everything else to execute the project	$ 419,000,000	$ 462,000,000	$ 659,000,000	$ 688,000,000	$ 525,000,000	$ 553,000,000	$ 519,000,000	$ 547,000,000	$ 587,000,000	$ 616,000,000
Project Cost Totals	$421,000,000	$464,000,000	$677,000,000	$707,000,000	$607,000,000	$635,000,000	$566,000,000	$594,000,000	$593,000,000	$622,000,000
Operational Cost (Annual)										
Cost for Fuel -Typical Annual Usage - Gas and Electric + Auxilliary Loads. Assumes 50/50 Usage for Hybrid	$299,200	$1,447,500	$299,200	$1,447,500	$299,200	$1,447,500	$299,200	$1,447,500	$374,000	$2,096,625
Annual Maintenance Costs - compressors are same regardless of drive type; lower maintenance for electric motor drive; additional personnel training if hybrid; NSCR, CEMS (1/2 FTE) and higher compressed air needs for engines.	$600,000	$325,000	$600,000	$325,000	$600,000	$325,000	$600,000	$325,000	$700,000	$375,000
Fuel Modification - landscape maintenance re brush fire defensible space. ($2500/day for a landscape crew)	$5,000	$5,000	$50,000	$50,000	$10,000	$10,000	$20,000	$20,000	$50,000	$50,000
Operational Cost Totals	$904,200	$1,777,500	$949,200	$1,822,500	$909,200	$1,782,500	$919,200	$1,792,500	$1,124,000	$2,521,625

Ventura Compressor Station
Alternatives Evaluation

Schedule rankings by PMT, ROW, Permits(Thompson)

STEP 5: COST AND SCHEDULE

					Option 1: Ventura- Existing Site North Olive Street		Option 2: Avocado Site- Ventura		Option 3: Ventura Steel		Option 4: Devil's Cyn Rd		Option 5: County Line	
Schedule	**0**	**1 - 3**	**4 - 6**	**7 - 9**	**Natural Gas (1A)**	**Hybrid (1B)**	**Natural Gas (2A)**	**Hybrid (2B)**	**Natural Gas (3A)**	**Hybrid (3B)**	**Natural Gas (4A)**	**Hybrid (4B)**	**Natural Gas (5A)**	**Hybrid (5B)**
Project permitting complexity (other utilities, lead time to develop plans, etc.)	Substantial permitting complexity	Moderate permitting complexity	Minimal permitting complexity	None or negligible permitting complexity	8	7	5	4	6	5	6	5	5	4
Property/ROW Acquisition	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	8	8	4	4	0	0	2	2	2	2
Construction Duration (including infrastructure, site prep., etc.)	Longer than 4 years	3 - 4 years	2-3 years	Less than 2 years	8	6	0	0	5	4	6	5	0	0
		Total possible	27	**Total**	24	21	9	8	11	9	14	12	7	6

Ventura Compressor Station Alternatives Evaluation

STEP 6: PREFERRED ALTERNATIVE

Alternative	Environmental	Operational	Project Cost Class 5 Estimate 50%/+100%	Operational Cost (Yr)	Schedule Level 1
Alternative 1A: Planned Project	369	**39.0**	**$421,000,000**	**$904,200**	**24**
Alternative 1B: Current Site, Hybrid	429	34.5	$464,000,000	$1,777,500	21
Alternative 2A: Avocado Site	297	23.3	$677,000,000	$949,200	9
Alternative 2B: Avocado Site - Hybrid	344	18.8	$707,000,000	$1,822,500	8
Alternative 3A: Ventura Steel	359	35.0	$607,000,000	$909,200	11
Alternative 3B: Ventura Steel - Hybrid	419	30.5	$635,000,000	$1,782,500	9
Alternative 4A: Devil's Cyn Rd	388	28.8	$566,000,000	$919,200	14
Alternative 4B: Devil's Cyn Rd - Hybrid	**437**	24.5	$594,000,000	$1,792,500	12
Alternative 5A: County Line	242	31.0	$593,000,000	$1,124,000	7
Alternative 5B: County Line - Hybrid	320	26.5	$622,000,000	$2,521,625	6

Possible Points or Lowest Cost in Category	756	45.0	$421,000,000	$904,200	27

Appendix C

Cost Estimates

Ventura Compressor Station Alternatives Evaluation

Numbers provided by PMT, Estimating, Operations, BMcD, ROW

STEP 5: COST AND SCHEDULE

	Option 1: Ventura- Existing Site North Olive Street		Option 2: Avocado Site- Ventura		Option 3: Ventura Steel		Option 4: Devil's Cyn Rd		Option 5: County Line	
	Natural Gas (1A)	Hybrid (1B)	Natural Gas (2A)	Hybrid (2B)	Natural Gas (3A)	Hybrid (3B)	Natural Gas (4A)	Hybrid (4B)	Natural Gas (5A)	Hybrid (5B)
Project Cost (Class 5)										
Property/ROW(road/pipeline/power/temp construction easements). Acquisition Included Here Plus All Loaders.	$2,000,000	$2,000,000	$18,000,000	$19,000,000	$82,000,000	$82,000,000	$47,000,000	$47,000,000	$6,000,000	$6,000,000
EPC + everything else to execute the project	$ 419,000,000	$ 462,000,000	$ 659,000,000	$ 688,000,000	$ 525,000,000	$ 553,000,000	$ 519,000,000	$ 547,000,000	$ 587,000,000	$ 616,000,000
Project Cost Totals	$421,000,000	$464,000,000	$677,000,000	$707,000,000	$607,000,000	$635,000,000	$566,000,000	$594,000,000	$593,000,000	$622,000,000
Operational Cost (Annual)										
Cost for Fuel -Typical Annual Usage - Gas and Electric + Auxilliary Loads. Assumes 50/50 Usage for Hybrid	$299,200	$1,447,500	$299,200	$1,447,500	$299,200	$1,447,500	$299,200	$1,447,500	$374,000	$2,096,625
Annual Maintenance Costs - compressors are same regardless of drive type; lower maintenance for electric motor drive; additional personnel training if hybrid; NSCR, CEMS (1/2 FTE) and higher compressed air needs for engines.	$600,000	$325,000	$600,000	$325,000	$600,000	$325,000	$600,000	$325,000	$700,000	$375,000
Fuel Modification - landscape maintenance re brush fire defensible space. ($2500/day for a landscape crew)	$5,000	$5,000	$50,000	$50,000	$10,000	$10,000	$20,000	$20,000	$50,000	$50,000
Operational Cost Totals	$904,200	$1,777,500	$949,200	$1,822,500	$909,200	$1,782,500	$919,200	$1,792,500	$1,124,000	$2,521,625

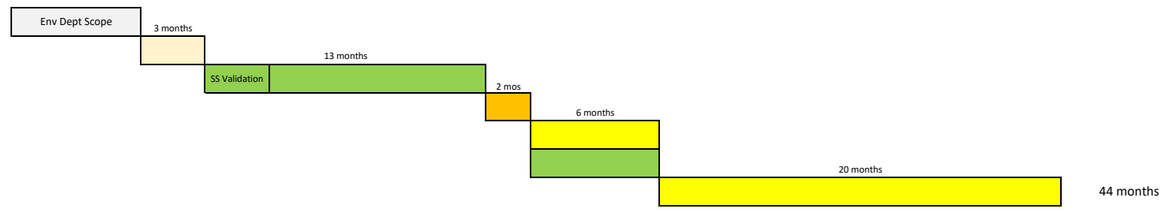
Appendix D

Schedules

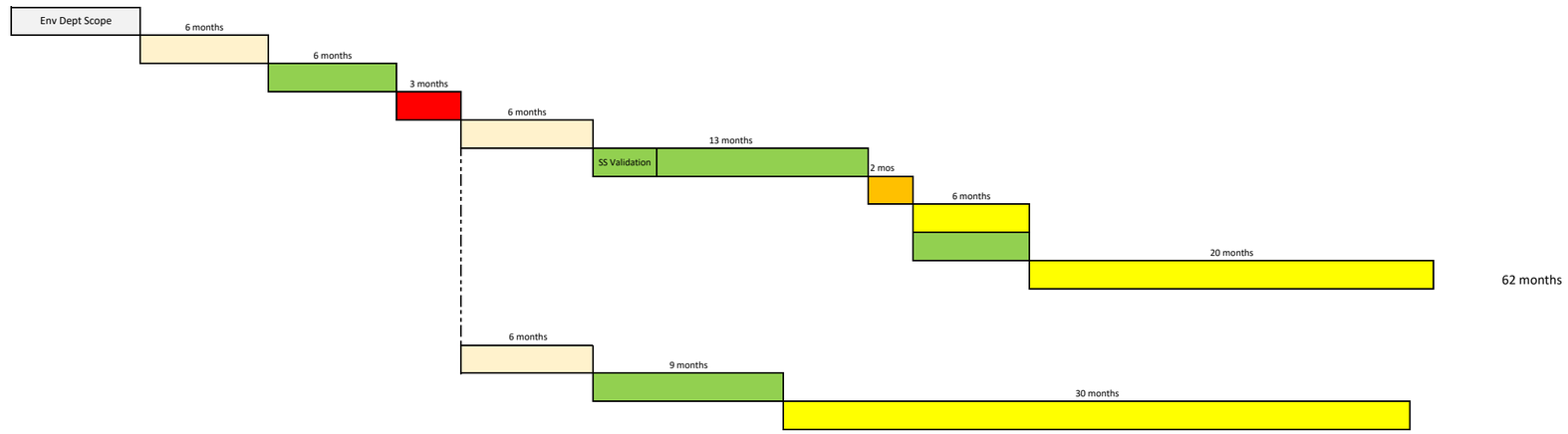
Ventura Compressor Project
EPC Construction Schedule on Alternative Locations
Date: 1/25/22

VENTURA STATION

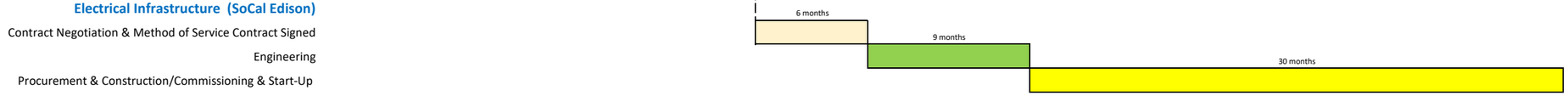
Compressor Station (4 Gas)



Compressor Station (Hybrid)



Electrical Infrastructure (SoCal Edison)



Ventura Compressor Project
EPC Construction Schedule on Alternative Locations
Date: 1/25/22

AVOCADO

Compressor Station (4 Gas & Hybrid)

Assumption: Current VCM Budget is approved to fund these activities

Land Acquisition/Easement — 24 months
Access Road Alignment & Staging Area Survey/Eng — 9 months
RFP Access Road Widening/Contract Award — 6 months
Access Road Widening/Installation of Mini-Retaining Wall — 24 months (includes engineering needed for changes in the field)
Contract Revision for a New-FEED (w/ BMcD) — 3 months
New FEED (Engineering) — 9 months
Executive Approval for New Class 3 Estimate & Schedule — 3 months
EPC RFP/Contract Negotiations/Award — 9 months
Phase 1 Engineering — 16 months (SS Validation)
Contract Conversion — 2 mos
Site Grading at EPC Staging Area/BMP — 6 months
Phase 2 Engineering
Construction/Commissioning/Start-Up — 32 months (Site Grading/Installing Ret Wall/Piling - 12 mo)

80 months

New Pipeline & Main Line Valve Station

Land Easement — 12 months
Geotechnical Assessment of Proposed Pipeline Route — 3 months
Preliminary Engineering — 3 months
Engineering (Detailed Engineering & Procurement) — 18 months
RFP Pipeline Installation & Contract Award — 6 months
Construction & Commissioning (0.66 miles total + 2 MLV Station) — 12 months

Electrical Infrastructure (SoCal Edison) for Hybrid

Contract Negotiation & Method of Service Contract Signed — 6 months
Engineering — 9 months
Procurement & Construction/Commissioning & Start-Up — 30 months

Ventura Compressor Project
EPC Construction Schedule on Alternative Locations
Date: 1/25/22

VENTURA STEEL

Compressor Station (4 Gas & Hybrid)

Assumption: Current VCM Budget is approved to fund these activities

Land Acquisition/Easement
Contract Revision for a New-FEED (w/ BMcD)
New FEED (Engineering)
Executive Approval for New Class 3 Estimate & Schedule
EPC RFP/Contract Negotiations/Award
Phase 1 Engineering
Contract Conversion
Site Grading at EPC Staging Area/BMP
Phase 2 Engineering
Construction/Commissioning/Start-Up

24 months
3 months
9 months
3 months
9 months
13 months
2 mos
6 months
26 months
Site Grading, 6 mos
Piling - 6
71 months

New Pipeline & Main Line Valve Station

Land Easement
Geotechnical Assessment of Proposed Pipeline Route
Preliminary Engineering
Engineering (Detailed Engineering & Procurement)
RFP Pipeline Installation & Contract Award
Construction & Commissioning (6.77 miles total + 2 MLV Station)

12 months
3 months
3 months
18 months
6 months
13 months

Electrical Infrastructure (SoCal Edison) for Hybrid

Contract Negotiation & Method of Service Contract Signed
Engineering
Procurement & Construction/Commissioning & Start-Up

6 months
9 months
30 months

Ventura Compressor Project
EPC Construction Schedule on Alternative Locations
Date: 1/25/22

DEVIL'S CANYON

Compressor Station (4 Gas & Hybrid)

Assumption: Current VCM Budget is approved to fund these activities

Land Acquisition/Easement — 24 months
Contract Revision for a New-FEED (w/ BMcD) — 3 months
New FEED (Engineering) — 9 months
Executive Approval for New Class 3 Estimate & Schedule — 3 months
EPC RFP/Contract Negotiations/Award — 9 months
Phase 1 Engineering — 13 months
Contract Conversion — 2 mos
Site Grading at EPC Staging Area/BMP — 6 months
Phase 2 Engineering
Construction/Commissioning/Start-Up — Site Grading, Piling - 6 mos; 26 months

71 months

New Pipeline & Main Line Valve Station

Land Easement — 12 months
Geotechnical Assessment of Proposed Pipeline Route — 3 months
Preliminary Engineering — 3 months
Engineering (Detailed Engineering & Procurement) — 18 months
RFP Pipeline Installation & Contract Award — 6 months
Construction & Commissioning (4.08 miles total + 2 MLV Station) — 13 months

Electrical Infrastructure (SoCal Edison) for Hybrid

Contract Negotiation & Method of Service Contract Signed — 6 months
Engineering — 9 months
Procurement & Construction/Commissioning & Start-Up — 30 months

Ventura Compressor Project
EPC Construction Schedule on Alternative Locations
Date: 1/25/22

COUNTY LINE

Compressor Station (5 Gas & Hybrid)

Assumption: Current VCM Budget is approved to fund these activities

Land Acquisition/Easement
CA-150 Road Alignment Survey/Eng
RFP CA-150 Road Widening/Contract Award
CA-150 Road Widening
Contract Revision for a New-FEED (w/ BMcD)
New FEED (Engineering)
Executive Approval for New Class 3 Estimate & Schedule
EPC RFP/Contract Negotiations/Award
Phase 1 Engineering
Contract Conversion
Site Grading at EPC Staging Area/BMP
Phase 2 Engineering
Construction/Commissioning/Start-Up

New Pipeline & Main Line Valve Station

Land Easement
Geotechnical Assessment of Proposed Pipeline Route
Preliminary Engineering
Engineering (Detailed Engineering & Procurement)
RFP Pipeline Installation & Contract Award
Construction & Commissioning (2.39 miles total + 2 MLV Station)

Electrical Infrastructure (SoCal Edison) for Hybrid

Contract Negotiation & Method of Service Contract Signed
Engineering
Procurement & Construction/Commissioning & Start-Up