

CHAPTER 6.0

PROJECT ALTERNATIVES

INTRODUCTION

This EIR provides a discussion of alternatives to the proposed project as required by CEQA. According to the CEQA Guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and provide means for evaluating the comparative merits of each alternative. In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines, [Section §15126.6\(ad\)\(5\)](#)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation.

Alternatives presented in this chapter were developed by reviewing alternatives to the use of oxygenates, different methods to obtain more alkylate, and different locations to receive ethanol. Consequently, each project alternative described below is similar to the proposed project in most respects except for the source of additional alkylate and the type of oxygenate used. The rationale for selecting specific components of the proposed project on which to focus the alternatives analysis rests on CEQA's requirements to present a range of reasonable project alternatives that could feasibly attain the basic objectives of the project, while generating fewer or less severe adverse environmental impacts.

Alternatives analyses typically evaluate the "No Project Alternative" as a basis for comparing potential significant adverse environmental impacts. However, Public Resources Code [Section §21178\(g\)](#) exempts projects that will enable the production of CARB RFG Phase 3 compliant fuels from the requirements of analyzing a No Project Alternative and alternative project sites. Accordingly, this EIR addresses only those alternatives that could be developed within the existing Equilon facilities. The exception to this is that Equilon has identified another potential site for railcar unloading of ethanol and this site is evaluated as an alternative herein.

The proposed project objective is to comply with California's RFG Phase 3 requirements for gasoline produced by the Equilon Wilmington Refinery. The alternatives presented in this chapter involve modifications to specific equipment or operations of the proposed project that would still allow the Refinery to meet the RFG Phase 3 specifications. The main emphasis of the proposed project is on eliminating MTBE, receiving ethanol, and producing additional quantities of alkylate, which will help comply with the CARB Phase 3 reformulated gasoline specifications. Alkylate has a low vapor pressure and low sulfur content, and is the ideal blending component of gasoline. Therefore, the alternatives to the project are based on different oxygenates, different ways to obtain more alkylate, and different ethanol receiving facilities. [Alternatives identified or rejected as infeasible that would](#) allow Equilon to achieve the stated project objectives are also discussed in the following section.

ALTERNATIVES REJECTED AS INFEASIBLE

Alternate Oxygenates: There are a number of other oxygenates besides MTBE and ethanol that could potentially be used in gasoline. However, with the Governor's ban on MTBE and the requirements of the CARB Phase 3 regulations, ethanol is the only oxygenate that can be used to replace MTBE at this time. Therefore, alternatives to the use of ethanol are not feasible and, therefore, were not evaluated.

Alternative Terminals: Equilon potentially could receive ethanol at a number of different locations. Sufficient quantities of ethanol are not produced in California so that ethanol will need to be supplied from other states and/or other countries. The EIR assumes that ethanol can be received via ship at the Marine Terminal and via railcar at the Carson Terminal. One additional alternative was developed to receive ethanol via railcar at the Lomita Terminal. Bulk receipt of ethanol also could be received via railcar at the Refinery. However, because ethanol absorbs water easily, it must be blended into gasoline at the Terminals to minimize the potential for contamination with water in the distribution system. Ethanol that would be shipped to the Refinery would then have to be transported to the Terminals. Therefore, shipping ethanol to the Refinery would increase the transportation requirements for ethanol. The Carson Terminal already has existing storage tanks so that ethanol could be shipped and distributed with fewer facility modifications. Shipping ethanol to another terminal would require more extensive construction to provide sufficient room to bring railcars to the site, construct railcar unloading facilities, construct sufficient tanks for ethanol storage, and truck loading facilities. The existing Equilon Terminals, other than the Carson Terminal, do not have sufficient space to meet the requirements of receiving, storing, and distributing ethanol to the various terminals. Because of the space limitations at the terminals, this potential alternative is considered infeasible.

Ethanol could also be transported into the Los Angeles area via truck. The worst case analysis for the Equilon project assumes that Equilon will require about 30,000 barrels per day of ethanol. However, a large number of trucks (about 250 per day) would be required to deliver sufficient ethanol to the Terminal. Delivery of ethanol via truck (instead of railcar) to the Carson Terminal was not considered feasible due to the large quantity of ethanol that is required. Based on the above, alternatives to receiving ethanol at terminals other than via ship at Mormon Island, railcar at Carson and potentially railcar at the Lomita site were considered to be infeasible.

DESCRIPTION OF THE PROJECT ALTERNATIVES

Alternative 1 – Purchase Additional Alkylate

Rather than making additional alkylate at the Equilon Refinery, the additional alkylate requirements could be purchased by Equilon and transported to the Refinery. This alternative assumes that sufficient supplies of alkylate will be available. It is assumed that all refineries in California will use all the alkylate that they manufacture since alkylate is the primary blending component in reformulated gasoline. Therefore, it is assumed that alkylate, if available, would be purchased from sources outside of California and transported to the Refinery via marine vessels. It should be noted that the feasibility of this alternative is questionable because it is doubtful that

sufficient quantities of alkylate will be available for purchase at a reasonable price due to the need for alkylate as a gasoline blending component [by all petroleum companies](#). However, on a short-term basis, sufficient quantities of alkylate are expected to be available.

Alternative 2 – New Alkylation Unit

Instead of modifying the existing alkylation unit, a new alkylation unit could be constructed to produce the additional alkylate required by the facility. This alternative assumes that a completely new 5,000 bpd alkylation unit will be required that includes new vessels, pumps, valves, flanges, etc., and that a new heater would also be required.

Alternative 3 – Alternate Location for Ethanol Railcar Unloading Facilities

The proposed project includes receiving ethanol via railcar at the Equilon Carson Terminal for use and distribution to other terminals. Equilon is also investigating the feasibility of receiving ethanol at another terminal, the Lomita railcar offloading facility, and shipping the ethanol via pipeline to the Carson Terminal for use and further distribution. The Lomita site is located along Lomita Boulevard between Alameda Street and Wilmington Avenue in the City of Carson (immediately south of the Tosco Carson Refinery) (see Figures 2-1 and 6-1). The Lomita rail offloading facility is estimated to handle a yearly average of about 62 railcars per day. The ethanol will be pumped off of the railcars through a new offloading system (pumps and piping). The new offloading system will be connected to existing Equilon pipelines at Equilon's Lomita manifold and transported to Equilon's Carson Terminal for storage and further distribution. No construction of pipelines would be required and no storage of ethanol will occur at the Lomita site. The construction of new railcar unloading facilities and a new office building would be required at this site.

ALTERNATIVE 1 – PURCHASE ADDITIONAL ALKYLATE

Air Quality: Air quality impacts associated with construction under Alternative 1 would be less than the proposed project but are still expected to be significant. Under this alternative, less construction equipment would be needed at the Refinery since the modifications to the Alkylation Unit would not be required. However, modifications would still be required to the C4 Isomerization Unit, hydrotreater units, fractionator changes, CRU2, ethanol unloading and loading facilities, and storage tanks. The reduced construction activities at the Refinery, including reducing the amount of construction equipment and workers, are not expected to eliminate the significant impacts on air quality during construction associated with the proposed project. Construction activities at the terminals are not expected to change.

The VOC emissions associated with the operational phase of Alternative 1 would be reduced since the modifications to the Alkylation Unit were estimated to result in VOC emissions of about 57 pounds per day (see Table 6-1).

Figure 6-1 goes here

The indirect emissions under Alternative 1 would be increased (see Table 6-2). This alternative would cause an increase in the number of marine vessel visits by about 20 per year at the Port, with a resulting increase in emissions from marine vessels. The estimated emissions from marine vessel visits are expected to result in an annual increase in emissions over the proposed project per port visit as follows: 3,479,315 pounds of CO; 1,407,146 pounds of VOCs; 37,754,626 pounds of NOx, 53,714,383 pounds of SOx, and 7,363,447 pounds of PM10. The estimated maximum emissions per day of a visit are estimated to be 143 lbs/day of CO, 59 lbs/day of VOCs, 1,188 lbs/day of NOx, 1,553 lbs/day of SOx, and 210 lbs/day of PM10 (SCAQMD, 2000). Alternative 1 would result in an increase in annual emissions from marine vessels which would transport the additional alkylate. The total indirect emissions for this alternative would increase due to the increase in marine vessel visits (see Table 6-2). It should be noted that the maximum daily emissions are expected to be the same as the proposed project as no increase in the number of ship visits to the marine terminal on a daily basis is expected (i.e., only increases on an annual basis is expected).

TABLE 6-1

ALTERNATIVE 1
OPERATIONAL EMISSIONS
(pounds per day)

SOURCE	CO	VOC	NOx	SOx	PM10
Refinery Emissions ⁽¹⁾	193.0	230.6	652.9 ⁽²⁾	32.2	17.2
Carson Terminal Emissions ⁽¹⁾	1,940.4	108.2	1,349.7	38.5	39.6
Mormon Island Terminal Emissions	-	18.6	-	-	-
Wilmington Terminal Emissions	-	7.8	-	-	-
Signal Hill Terminal Emissions	-	15.7	-	-	-
Van Nuys Terminal Emissions	-	7.5	-	-	-
Colton Terminal Emissions	-	15.0	-	-	-
Rialto Terminal Emissions	-	7.3	-	-	-
Alternative 1: Operational Emissions	2,133.4	410.7	2,002.6	70.7	56.8
Proposed Project Operational Emissions (see Table 4-5)	2,130.9	467.5	2,002.6	70.7	56.8

- (1) The NOx and SOx emissions associated with these sources are regulated under SCAQMD's RECLAIM program.
- (2) The emission increases assume a worst-case analysis. The actual project emissions will be limited to less than 40 tons per year (about 216 pounds per day) for the Refinery stationary sources and permit conditions will be imposed.

Therefore, the emissions of criteria pollutants would be greater under Alternative 1 than the proposed project due to the increased emissions from marine traffic. Consequently, Alternative 1 would result in additional air quality impacts that would be significant.

TABLE 6-2

ALTERNATIVE 1
MARINE VESSEL EMISSION INCREASES
(pounds per year)

SOURCE	CO	VOC	NOx	SOx	PM10
Cruising	2,902	923	32,094	48,924	7,682
Maneuvering	830	259	9,644	15,054	1,294
Tugboats	222	74	1,634	292	36
Auxiliary Power	577	577	5,772	5,569	562
Alternative 1 Marine Vessel Annual Emission Increases	4,531	1,832	49,143	69,839	9,574
Proposed Project Marine Vessel Annual Emission Increases	1,052	425	11,390	16,125	2,211
Alternative 1 Increase Emissions over the Proposed Project	3,479	1,407	37,753	53,714	7,363

~~The emissions of toxic air contaminants from the Wilmington Plant stationary sources would increase slightly under this alternative because the reductions from fugitive sources being eliminated in the proposed project would not occur in Alternative 1. The impacts of toxic air contaminants are expected to remain less than significant under this alternative, as with the proposed project.~~

The emissions of toxic air contaminants from the Refinery stationary sources would decrease under this alternative because the fugitive VOC emissions would be less than the proposed project because fewer fugitive components (pumps, valves, flanges, etc.) would be added to the Refinery. The incremental increase in firing rates from existing combustion sources is also expected to be reduced under this alternative, resulting in fewer emissions from combustion sources. The impacts of toxic air contaminants are expected to remain less than significant under this alternative, as with the proposed project.

Geology/Soils: This alternative would not change the conclusions regarding impacts associated with geology and soils. The amount of grading required for this alternative is less than the proposed project. This alternative may reduce the potential some impact to structures resulting from a major earthquake because fewer structures would be built. All new structures would need to comply with the Uniform Building Code for Zone 4 earthquake areas. The impacts associated with Alternative 1 on geology/soils are about the same as the proposed project and are considered less than significant.

Hazards: This alternative would result in the same hazards as the proposed project for construction which are considered significant. During operation, the hazard impact associated with Alternative 1 would also be about the same as the proposed project, i.e., significant since the significant hazard impacts are associated with modifications to the HTU2, which would still require

modification under Alternative 1. Alternative 1 would result in about 20 additional ~~a larger number of~~ ship visits to the marine terminal thus increasing the probability of a marine vessel accident, but the consequences of an accidental release from a marine vessel would not be expected to change. The transportation increases associated with truck and railcar traffic would still be required to transport ethanol. The overall hazard impacts associated with this alternative are expected to remain significant since modifications to HTU2 would still be required.

Noise: Alternative 1 would reduce the number of noise sources associated with the construction of the proposed project, as less construction activities would be required since the modifications to the Alkylation Unit would not occur. The proposed project impacts were considered to be less than significant for both the construction and operational phases. Under Alternative 1, there would be less increase in the number of noise sources operating at the site as the modifications to the Alkylation Unit would not occur. Alternative 1 would result in additional marine traffic resulting in noise from marine vessels at the Port occurring on more days. Nonetheless, the noise impacts associated with this alternative are expected to be less than significant, as is the proposed project.

Solid/Hazardous Waste: Alternative 1 is expected to result in about the same amount of solid/hazardous wastes as the proposed project. About the same amount of grading and demolition is expected to be required under Alternative 1 as the proposed project since the only difference is that the modifications to the existing Alkylation Unit would not occur under Alternative 1. About 500 tons of solid wastes are expected from that construction phase. Assuming that approximately 10 percent of the material is contaminated, an estimated 50 tons of soil is expected to be hazardous waste. Alternative 1 would reduce the amount of solid/hazardous waste generated by the proposed project since no increase in sulfuric acid use would occur. The proposed project impacts were considered to be less than significant since the waste streams are generally regenerated (sulfuric acid). Alternative 1 is expected to generate less waste and is also expected to have less than significant impacts on solid/hazardous waste.

Transportation: This alternative is expected to result in a reduction in traffic associated with construction activities since the modifications to the Alkylation Unit would not be constructed. However, the other portions of the project would still require modification. The construction traffic impacts associated with Alternative 1 are expected to be ~~the~~ less than the proposed project and, similar to the proposed project, ~~are~~ less than significant.

Alternative 1 would increase marine vessel traffic through the Port. Marine vessel traffic would occur on more days per year, but would not increase daily marine vessel trips. The truck traffic required to transport ethanol is expected to remain the same as for the proposed project. Therefore, the impacts of Alternative 1 on transportation are expected to be the same as the proposed project and would be mitigated to less than significant.

ALTERNATIVE 2 – NEW ALKYLATION UNIT

Air Quality: Air quality impacts associated with construction under Alternative 2 would be greater than the proposed project and would be significant. Under this alternative, more construction activities would be required because the construction of an entire new Alkylation unit

would be required. The air quality impacts during construction are estimated to be about 20 percent greater than the proposed project and are included in Table 6-3.

TABLE 6-3
ALTERNATIVE 2 CONSTRUCTION ACTIVITIES
(pounds per day)

Construction Activities	CO	VOC	NO_x	SO_x	PM₁₀
Alternative 2 Refinery Construction Emissions	1,114	428	629	47	207
Carson Terminal Construction Emissions	210.6	25.8	273.1	24.7	144.1
Mormon Island Construction Emissions	38.2	4.2	52.3	5.0	47.1
Construction Emissions at Each Terminal (Wilmington, Signal Hill Van Nuys, Colton and Rialto)	123.9	184.6	147.5	12.8	57.6
Alternative 2 Estimated Peak Day Construction Emissions ⁽¹⁾	1,611	827	1,249	102	513
SCAQMD Threshold	550	75	100	150	150
Significant?	YES	YES	YES	NO	YES
Proposed Project Estimated Construction Emissions (see Table 4-3)	1,424.8	755.6	1,144.8	94.1	479.2

⁽¹⁾ The peak construction day assumes construction will occur simultaneously with the Refinery, Carson Terminal, Mormon Island Terminal, and at two other terminals.

The air quality impacts associated with the operational phase of Alternative 2 would eliminate the modifications to the Alkylation Unit and the related emission increases. However, the proposed project would result in an an-large increase in fugitive emissions associated with a new Alkylation Unit and combustion emissions associated with additional heat requirements to operate the new unit. It is assumed that a new Alkylation Unit would be about one-half the size of the existing unit. New fugitive emissions would be associated with the valves, flanges, pumps, pressure relief devices, drains, and other fugitive components associated with typical refinery units. The overall emissions associated with the fugitive components are estimated to be about 100 pounds per day. A new heater or increased firing at an existing heater of about 65 mmBtu/hr is expected to be required to supply the necessary heat and steam needs of the new unit. The emissions from stationary sources under Alternative 2 would be greater than the proposed project (see Table 6-4). The emissions of NO_x and SO_x from stationary sources at the Refinery and Carson Terminal are regulated under the SCAQMD's RECLAIM program and are subject to different CEQA thresholds than the other sources (see Table 4-2). The emissions of NO_x and SO_x from stationary sources are expected to remain less than significant. The emissions of CO, VOC, and PM₁₀ from stationary sources and all pollutants from indirect sources are expected to exceed the SCAQMD significance threshold and are considered significant. (Note that Alternative 2 would result in significant PM₁₀ emissions while the proposed project would not exceed the PM₁₀ significance threshold.)

The indirect emissions under Alternative 2 and the terminal emissions are expected to be about the same as the proposed project. Under Alternative 2, the indirect emissions of marine vessels, trucks and railcars would remain about the same as the proposed project.

TABLE 6-4
ALTERNATIVE 2 OPERATIONAL EMISSIONS
(pounds per day)

SOURCE	CO	VOC	NOx	SOx	PM10
Refinery Emissions					
Fugitive Emissions (e.g., pumps)	-	223.3	-	-	-
Storage Tank Modifications	-	82.1	-	-	-
Increased Firing Rates at Boilers ⁽¹⁾	193.0	25.3	652.9 ⁽²⁾	32.2	17.2
New Heater ⁽¹⁾	57.6	33.6	13.0	7.4	156.0
Refinery Emissions Total	250.6	364.3	665.9	39.6	173.2
Carson Terminal Emissions	1,940.4	108.2	1,349.7	38.5	39.6
Mormon Island Terminal Emissions	-	18.6	-	-	-
Wilmington Terminal Emissions	-	7.8	-	-	-
Signal Hill Terminal Emissions	-	15.7	-	-	-
Van Nuys Terminal Emissions	-	7.5	-	-	-
Colton Terminal Emissions	-	15.0	-	-	-
Rialto Terminal Emissions	-	7.3	-	-	-
Alternative 2 Emissions Total	2,191.0	544.4	2,015.6	78.1	212.8
Proposed Project Operational Emissions (pounds per day) (see Table 4-5)	2,133.4	467.5	2,002.6	70.7	56.8

- (1) The NOx and SOx emissions associated with these sources are regulated under SCAQMD’s RECLAIM program.
 (2) The emission increases assume a “worst-case” analysis. The actual project emissions will be limited to less than 40 tons per year (about 216 pounds per day) for the Refinery stationary sources and permit conditions will be imposed.

~~The indirect emissions under Alternative 2 are expected to be about the same as the proposed project. The proposed project would result in an increase of nine railcars per day and about six trucks per day. Under Alternative 2, the indirect emissions of trucks and railcars associated with the proposed project would remain about the same.~~

Therefore, construction emissions of criteria pollutants would be greater under Alternative 2 than the proposed project due to the increased fugitive and combustion emissions associated with the construction of a new Alkylation Unit. The operation air quality impacts under Alternative 2 would be higher than for the proposed project and are expected to be significant.

The emissions of toxic air contaminants from the Refinery stationary sources would be greater under this alternative due to the increase in fugitive and combustion emissions over the proposed project conditions. It is estimated that the toxic emissions from the proposed project would about double but are expected to remain less than significant.

~~The emissions of toxic air contaminants from the Wilmington Plant stationary sources would be greater under this alternative due to the increase in fugitive and combustion emissions over the proposed project conditions.~~

~~Therefore, the emissions of criteria pollutants would be greater under Alternative 2 than the proposed project due to the increased fugitive and combustion emissions associated with the construction of a new Alkylation Unit. The air quality impacts under Alternative 2 would result in additional air quality impacts than the proposed project and would be significant.~~

Geology/Soils: The amount of grading required for this alternative would be greater than the proposed project as building foundations would be required for a new unit which would increase the potential for finding contaminated soils. This alternative may increase the potential impact to structures resulting from a major earthquake because additional structures would be built. All new structures would need to comply with the Uniform Building Code for Zone 4 earthquake areas. The impacts associated with Alternative 2 on geology/soils are slightly greater than for the proposed project but would still be less than significant.

Hazards: During operation, hazard impacts would also be about the same as the proposed project. A new Alkylation unit would be expected to have essentially the same hazards as the existing unit. There would be more sulfuric acid transported to the Refinery to supply the new Alkylation unit and more spent acid generated by the Refinery. Additional ammonia would be transported to the Refinery to supply ammonia to the new Alkylation unit heater. Alternative 2 would not result in any changes to the terminals over the proposed project. The overall hazard impacts associated with this alternative are expected to be significant since modifications would still be required to HTU2 and the proposed project hazard impacts associated with modifications to HTU2 are potentially significant.

Noise: Alternative 2 would increase the number of noise sources associated with the construction of the proposed project as more construction activities would be required to construct a new alkylation unit. The proposed project impacts were considered to be less than significant for both the construction and operational phases. Alternative 2 would result in additional noise sources at the Refinery including additional pumps and heaters. The noise impacts are expected to be less than significant as sensitive receptors and residential areas are located about one-half mile from the site and noise from new units would be limited to comply with various regulations and ordinances.

Solid/Hazardous Waste: Alternative 2 would increase the amount of solid/hazardous waste generated by the proposed project as additional quantities of sulfuric acid would be used and additional spent sulfuric acid would be generated. The proposed project impacts were considered to be less than significant since the waste streams are generally regenerated (sulfuric acid) or recycled (metal catalysts). Alternative 2 is expected to generate more spent sulfuric acid that would be transported and regenerated off-site. The impact of Alternative 2 on solid/hazardous is expected to be less than significant.

Transportation: This alternative is expected to result in additional traffic associated with construction activities since more construction workers and equipment would be required to construct a new unit. The construction traffic impacts associated with Alternative 2 would be greater than the proposed project.

Alternative 2 would not change the railcar or marine vessel traffic associated with the proposed project. The by-products/chemicals traveling to/from the Refinery by truck would increase as a new Alkylation Unit would require additional quantities of sulfuric acid. The impacts of Alternative 2 on transportation are expected to be the same as the proposed project and would be mitigated to less than significant.

ALTERNATIVE 3 – ALTERNATE ETHANOL RAILCAR UNLOADING SITE

The environmental analysis for Alternative 3 includes an evaluation for all the environmental resources because this potential alternative was not addressed in the NOP/IS (see Appendix A). Therefore, in order to provide a complete environmental analysis of this alternative, all environmental resources are addressed herein.

Air Quality: Air quality impacts associated with construction under Alternative 3 would be slightly greater than the proposed project and would be significant. Under this alternative, the ethanol railcar unloading facilities that would have been constructed at the existing Carson Terminal will be constructed at the site of the proposed Lomita Terminal (see Figure 6-1). Overall, more construction activities would be required because construction activities would be required at both the Carson Terminal and the Lomita Terminal. The largest increase would be in VOC emissions associated with coating of a new tank required to store storm water at the Lomita Terminal (see Table 6-5). The air quality impacts during construction would be the same as the proposed project, i.e., significant for CO, VOCs, NOx, and PM10 and less than significant for SOx (see Table 6-6). Detailed emission calculations are included in Appendix B.

TABLE 6-5
ALTERNATIVE 3
CONSTRUCTION EMISSIONS
(pounds per day)

Construction Activities	CO	VOC	NOx	SOx	PM10
Alternative 3 Construction Activities at the Lomita and Carson Terminals					
Construction Equipment	131.6	24.7	301.1	30.2	18.3
Construction Worker Vehicles	30.5	3.4	2.9	-	0.2
Light Duty Truck	17.7	0.6	0.5	-	<0.1
Heavy Diesel Trucks	86.5	2.8	33.9	-	1.1
Fugitive Dust from Roadways	-	-	-	-	38.2
Fugitive Construction Emissions	-	-	-	-	82.8
Coating Emissions	-	175.0	-	-	-
Total Construction Emissions	266.3	206.5	338.4	30.2	140.7
Carson Terminal Construction under the CARB Phase 3 Proposed Project					
Construction Equipment	107.5	20.4	244.8	24.7	14.8
Construction Worker Vehicles	25.4	2.9	2.4	-	0.1
Light Duty Truck	12.7	0.4	0.4	-	<0.1
Heavy Diesel Trucks	65.0	2.1	25.5	-	0.8
Fugitive Dust from Roadways	-	-	-	-	30.9
Fugitive Construction Emissions	-	-	-	-	97.4
Total Construction Emissions	210.6	25.8	273.1	24.7	144.1
Alternative 3 Construction Emission Increases over Proposed Project	55.7	180.7	65.3	5.5	-3.4

TABLE 6-6

**ALTERNATIVE 3
PEAK DAY CONSTRUCTION EMISSIONS
(pounds per day)**

Construction Activities	CO	VOC	NO_x	SO_x	PM₁₀
Refinery Construction	928.2	356.4	524.4	38.8	172.8
Carson/Lomita Terminals	266.3	206.5	338.4	30.2	140.7
Mormon Island	38.2	4.2	52.3	5.0	47.1
Two Terminals	247.8	369.2	295.0	25.6	115.2
Total Construction Emissions	1,480.5	936.3	1,210.1	99.6	475.8
SCAQMD Threshold	550	75	100	150	150
Significant?	YES	YES	YES	NO	YES

The air quality impacts associated with the operational phase of Alternative 3 would change the location of the railcar unloading facilities from the Carson Terminal to the Lomita site. Only minor changes are expected in emissions from stationary sources. Equilon also estimates that more ethanol would be transported via railcar to the Lomita Terminal resulting in the increased distribution of ethanol via truck from the Carson Terminal. Therefore, Alternative 3 will result in increased emissions from the transport of ethanol via railcar and the distribution of ethanol via truck (see Table 6-7). Under Alternative 3, the indirect emissions from marine vessels would remain about the same as the proposed project. Criteria pollutant emissions from the Refinery and stationary sources at the Los Angeles, Van Nuys, Signal Hill, Colton, and Rialto Terminals under this alternative would be unchanged from the proposed project.

The emissions of criteria pollutants would be greater under Alternative 3 than the proposed project due to the increased emissions associated with the transport of additional ethanol. Alternative 3 would result in the same impacts as the proposed project, i.e., significant impacts for all criteria pollutants including CO, VOC, NO_x, SO_x, and PM₁₀. The impacts of stationary sources (RECLAIM sources) of NO_x and SO_x at the Refinery and Carson Terminal are expected to remain less than significant.

The emissions of toxic air contaminants from the Refinery and stationary sources at the Los Angeles, Van Nuys, Signal Hill, Colton, and Rialto Terminals would be unchanged from the proposed project. The emissions of toxic air contaminants from the Carson Terminal are expected to be slightly greater than the proposed project due to the increased amount of ethanol delivered and loaded onto trucks. The proposed project impacts on toxic air contaminants were less than significant. The cancer risk to the MEIR and MEIW was about 0.3 per million and 0.06 per million, respectively. The acute hazard index was about 0.0017 and the chronic hazard index was about 0.0005. The impacts associated with Alternative 3 are also expected to be less than significant because this alternative is not expected to result in a substantial increase in toxic air contaminants. Alternative 3 would only result in the increased loading of denatured ethanol and slightly increase emissions at the Carson Terminal. The only stationary emission source of toxic air contaminants at

the Lomita Terminal would be fugitive emissions of denatured ethanol associated with fugitive components (pumps, valves, flanges). Denatured ethanol contains 95 percent ethanol and five percent gasoline. Because the gasoline is a small fraction of the total product, the emissions are predominantly ethanol. Ethanol is comparatively non-toxic so that significant health effects associated with exposure to ethanol are not expected.

TABLE 6-7
ALTERNATIVE 3
STATIONARY SOURCE OPERATIONAL EMISSIONS
(pounds per day)

SOURCE	CO	VOC	NOx	SOx	PM10
Refinery Emission Summary⁽¹⁾	193.0	287.4	652.9⁽²⁾	32.2	17.2
Carson Terminal Stationary Source Emissions Under Alternative 3					
Fugitive Emissions	-	13.9	-	-	-
Ethanol Truck Loading	-	24.3	-	-	-
Thermal Oxidizer Emissions	2.5	0.1	4.0	0.03	0.8
Carson Terminal Indirect Emissions Under Alternative 3					
New Workers Commuting	3.6	0.4	0.3	-	<0.1
Ethanol Truck Transport	2,629.0	83.2	1,029.3	-	32.9
Carson Terminal Emission Summary	2,635.1	121.9	1,033	0.03	33.8
Lomita Terminal Stationary Source Emissions					
Railcar Unloading Facility	-	11.2	-	-	-
Lomita Terminal Indirect Emissions					
Railcar Emissions	88.3	33.2	895.8	56.4	22.2
Lomita Terminal Emission Summary	88.3	44.4	895.8	56.4	22.2
Mormon Island Terminal Summary		18.6			
Wilmington Terminal Summary	-	7.8	-	-	-
Signal Hill Terminal Summary	-	15.7	-	-	-
Van Nuys Terminal Summary	-	7.5	-	-	-
Rialto Terminal Summary	-	7.3	-	-	-
Colton Terminal Summary	-	15.0	-	-	-
ALTERNATIVE 3 SUMMARY	2,916.4	525.6	2,581.7	88.6	73.2
Significance Thresholds	550	55	55	150	150
Significant?	YES	YES	YES	NO	NO
Proposed Project Emissions	2,133.4	467.5	2,002.6	70.7	56.8

⁽¹⁾ The NOx and SOx emissions associated with these sources are regulated under SCAQMD’s RECLAIM program.

⁽²⁾ The emission increases assume a “worst-case” analysis. The actual project emissions will be limited to less than 40 tons per year (about 216 pounds per day) for the Refinery stationary sources and permit conditions will be imposed.

Biological Resources: The Lomita facility is located within a heavy industrial area, adjacent to existing operating refineries and related operations. Past development has virtually eliminated all natural habitats in the area. Currently, no species of rare, threatened or endangered plants or animals have been reported in the vicinity of the proposed Lomita Terminal. Thus, no listed species are expected to be significantly adversely impacted by construction or operation of the Lomita terminals. Because the area in and near the terminal is devoid of native habitat, impacts to other, non-listed species are not expected.

Cultural Resources: The Lomita terminal is located in an area of high archaeological sensitivity. The Tongva/Gabrielino village site known as Suangna is located near the terminal and a large cemetery was recently exposed in the vicinity of the ARCO Refinery, which is located just north of the terminal (SCAQMD, 2000g). Earth disturbance associated with construction of the terminal will not impact the known limits of the burial sites. However, there is potential that additional buried archaeological deposits may exist, which could be adversely affected by ground disturbance associated with the construction of the terminal. Any such impact would be considered significant but mitigatable. Such mitigation measures would include:

- Subsurface earth disturbances would be monitored by a professional archaeologist and a representative of the Gabrielino/Tongva Tribunal Council;
- In the event that cultural deposits are exposed during project construction, the archaeological monitor shall have the authority to temporarily halt or redirect earth disturbing work within the vicinity of the find. The find shall be evaluated and mitigated as warranted. After the find has been appropriately mitigated, work in the area may resume; and
- If human remains are unearthed, State Health and Safety Code §7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code §5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then serve as consultant on how to proceed with the remains.

Energy: A minimal amount of natural gas may be required during construction of this alternative, which could be supplied by a local utility. Electricity required during construction activities is expected to be minimal as the majority of construction machinery is powered by gasoline or diesel fuel. No significant impacts to electrical or natural gas utilities are expected due to construction activities.

Operation of this alternative will require about an additional two megawatts of electricity. The facility is near the boundary of the Southern California Edison (SCE) and Los Angeles Department of Water and Power supply areas. The facility is expected to be supplied electricity by SCE. Recently, the electrical demand has exceeded the electrical supply in parts of California due to deregulation of California's electric industry. Although California has experienced generation shortages and the demand for electricity is expected to increase, the construction of several power plant projects recently and currently being permitted by the California Energy Commission (CEC)

is expected to adequately meet future electricity requirements. The Lomita Terminal is not expected to be operational until the last quarter of 2002. By that time, additional electricity generating capacity in California is expected to be available, thus minimizing the potential for electricity supply shortages. The CEC has approved 13 major new power plant projects with a combined generation capacity of 8,923 megawatts since April 1999. Eight power plants, with a generation capacity of 5,587 megawatts are now under construction, with 1,903 megawatts expected to be on-line by the end of 2001. In addition, another 11 major electricity generating projects totaling 5,578 megawatts of electricity are currently being considered for licensing by the CEC (CEC, 2001). However, the electrical requirements of the Lomita Terminal would be minor (used to run pumps, security lights, and a small office building). Therefore, sufficient electricity is expected to be available when the Lomita Terminal becomes operational so that no significant impacts would be expected.

Geology/Soils: The amount of grading required for this alternative would be greater than the proposed project as building foundations would be required for the new railcar unloading facility which would increase the potential for finding contaminated soils. This alternative includes relocating the railcar unloading facility from the Carson Terminal to the new Lomita site. Therefore, this alternative would have the same potential impacts as the proposed project due to a major earthquake. Similar to the proposed project, all new structures would need to comply with the Uniform Building Code for Zone 4 earthquake areas. The impacts associated with Alternative 3 on geology/soils are slightly greater than for the proposed project but would still be less than significant.

Hazards: During operation, hazard impacts would also be about the same as the proposed project. A new railcar unloading facility at the Lomita Terminal would be expected to have the same impacts as the railcar unloading facility at the Carson Terminal. The Lomita facility is located within a heavy industrial area so that impacts on residential areas are expected to be less than the proposed project because residential areas are located a further distance from the Lomita site than the Carson Terminal. Additional ethanol would be transported to the Lomita site and from the Carson Terminal but the impacts associated with the transport of ethanol was determined to be less than significant. The overall hazard impacts associated with this alternative are expected to be less than significant.

Hydrology and Water Quality: The Lomita facility would result in additional paved surfaces and the generation of additional storm water discharges. A storm water collection system would be installed as part of the terminal, which would include a new storage tank for storm water, and paving and diking, so that any contact water is collected. Any runoff at the loading facility will be collected analyzed, treated as necessary and discharged under the requirements of the Los Angeles County Sanitation District (LACSD). Development of the Lomita Terminal under Alternative 3 is expected to require a new industrial wastewater discharge permit, although water would only be discharged during periods of rainfall. Storm water runoff from outside the process unit areas will be collected and discharged through a storm water permit, which would also be required for the facility. Since water would only be discharged during periods of rainfall, no significant impacts are expected to the sewer system or the storm water system. Additional wastewater and storm water

discharged will be regulated by the appropriate regulatory agencies so that no significant impacts are expected.

This alternative is not expected to significantly adversely affect the quantity or quality of ground water in the area for the reasons discussed below. There is no beneficial use of ground water in the area since all aquifers in this area are unusable for fresh water supply because of salt-water intrusion. This alternative would not interfere with the operation of ground water or monitoring wells maintained by the Los Angeles County Department of Public Works for the West Coast Basin Barrier Project designed to stop salt water intrusion. No significant adverse impacts are expected to ground water quality from the proposed project because: (1) wastewater discharge will be limited to contaminated storm water which would be collected and treated in compliance with wastewater discharge permits; (2) no underground storage tanks will be constructed as part of the proposed project; (3) containment berms are proposed around the new loading racks to minimize the potential for a spill to contaminate soil/ground water; and (4) the new tank will be used to store storm water.

The Lomita terminal is not expected to result in a substantial increase in water demand. Water would only be required for domestic purposes in the new office building. The increase in water demand is expected to be within the available water supply.

The Lomita facility is not located within a 100-year flood hazard area so the terminal would not impede or redirect 100-year flood flows. The proposed project is not located within a flood zone and would not expose people or property to any known water-related hazards. The proposed project is not located in an area susceptible to mudflows, e.g., hillside or slope areas, so that no significant impacts from mudflow would be expected.

The impacts of Alternative 3 on hydrology and water quality are expected to be less than significant.

Land Use: The Lomita terminal would be consistent with the zoning for that area (MH) and with the City of Carson General Plan. The land uses in the area include refineries and related facilities (e.g., petroleum coke storage and hydrogen plants), storage tank farms and other industrial facilities. The facility is compatible with the land use of the site and the surrounding land uses. The Lomita site would not disrupt or divide an established community. Therefore, significant impacts on land use are not expected.

Noise: Alternative 3 would increase the number of noise sources associated with the construction of the proposed project as construction activities would be required at the Lomita site. The proposed project impacts were considered to be less than significant for the construction phase and construction at the Lomita site is expected to remain less than significant since construction activities will be limited to daytime hours and occur within an industrial area.

Alternative 3 would shift the location of the railcar unloading facility from the Carson Terminal to the Lomita site. It is expected that about one additional train per day (with about 55-65 railcars) would be required to deliver the ethanol to the site. The increase in railroad traffic is not expected

to create noticeable noise impacts due to the industrial nature of the area surrounding the Lomita site. No significant noise impact due to railroad trips is expected.

Solid/Hazardous Waste: Alternative 3 is not expected to result in an increase in the amount of solid/hazardous waste generated by the proposed project. The proposed project impacts were considered to be less than significant since the waste streams are generally regenerated (sulfuric acid) or recycled (metal catalysts). The impact of Alternative 3 on solid/hazardous waste is expected to be less than significant.

Transportation: This alternative is expected to result in additional traffic associated with construction activities since more construction workers and equipment would be required due to construction activities at the Lomita site. The construction traffic impacts associated with Alternative 3 would be greater than the proposed project (about 10 additional construction workers) but are expected to be less than significant as the traffic would be split between two sites.

Alternative 3 would increase the railcar and truck traffic compared to the proposed project since more ethanol would be transported to the Lomita site and distributed by truck from the Carson Terminal. The impacts of Alternative 3 on transportation are expected to be significant at the Wilmington Avenue/I-405 SB intersection since additional truck traffic (200 trucks per day instead of 150 per day) would be generated. For the proposed project, it was concluded that significant adverse impacts would occur at this intersection with 150 trucks per day. Therefore, the mitigation measure developed for the proposed project would need to be imposed for this alternative, i.e., truck traffic from the Carson Terminal shall be scheduled to avoid the Wilmington Avenue/I-405 SB Ramp during the evening peak hour. The mitigation measure is expected to reduce traffic impacts associated with Alternative 3 to less than significant.

CONCLUSION

Table 6-8+ compares the potential environmental impacts of the various alternatives with those of the proposed project. Based on the analyses herein, Alternatives 1 and 2 would result in larger impacts, specifically on air quality, than the proposed project. Alternative 3 would have similar impacts as the proposed project, although slightly greater as it would involve construction activities at an additional site. All alternatives would allow Equilon to attain the project objectives of complying with the CARB RFG Phase 3 requirements and producing more alkylate.

Analysis shows that Alternative 1, the construction of a new Alkylation Unit would probably be the environmentally superior choice from the alternatives presented in this Chapter. Alternative 1 would not reduce a significant project impact to less than significant. In addition, ~~this Alternative 1~~ would result in higher emissions due to the construction and operation of a new refinery unit.

All ~~the~~ alternatives and the proposed project would result in significant impacts ~~to~~ air quality. No other feasible alternatives were identified that would reduce the air quality impacts during construction to a less than significant level. Consequently, the proposed project is preferable to Alternatives 1 and 2 because it allows the Refinery to meet the project objectives of complying with Statestate reformulated fuels requirements and producing more alkylate while resulting in

fewer environmental impacts than any of the identified project alternatives. Alternative 3 would result in similar impacts as the proposed project.

TABLE 6-81

**ENVIRONMENTAL IMPACTS OF ALTERNATIVES
as compared to the proposed project**

ENVIRONMENTAL TOPIC	Proposed Project	Alternative 1*	Alternative 2*	Alternative 3*
AIR QUALITY				
Construction	S	S(-)	S(+)	S(+)
Operation	S	S(+)	S(+)	S(+)
Toxic Air Contaminants	NS	NS(-)	NS(+)	NS(=)
Geology/Soils				
Construction	NS	NS(-)	NS(+)	NS(+)
Operation	NS	NS(-)	NS(+)	NS(=)
Hazards				
Construction	NS	NS(=)	NS(=)	NS(=)
Operation	S	S(=)	S(+)	S(=)
Noise				
Construction	NS	NS(-)	NS(+)	NS(=)
Operation	NS	NS(=)	NS(+)	NS(=)
Solid/Hazardous Waste				
Construction	NS	NS(=)	NS(=)	NS(=)
Operation	NS	NS(-)	NS(+)	NS(=)
Transportation				
Construction	NS	NS(-)	NS(+)	NS(+)
Operation	MNS	MNS(=)	MNS(=)	MNS(+)

Notes:

S = Significant

NS = Not Significant

PS = Potentially Significant

MNS = Mitigated to Non-significance

(-) = [Potential impacts are less than the proposed project.](#)

(+) = [Potential impacts are greater than the proposed project.](#)

(=) = [Potential impacts are approximately the same as the proposed project.](#)