

CHAPTER 6.0

PROJECT ALTERNATIVES

INTRODUCTION

This EIR provides a discussion of alternatives to the proposed project as required by the CEQA guidelines. According to the 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 section were developed by reviewing different methods to obtain more alkylate. Consequently, each project alternative described below is similar to the proposed project in most respects except for the source of additional alkylate. The rationale for selecting specific components of the proposed project on which to focus the alternative analysis rests on CEQA's requirements to present a reasonable range of 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 environmental impacts. However, Public Resources Code [Section §21178\(g\)](#) exempts refinery projects that will enable the production of CARB RFG Phase 3 compliant fuels for the requirements of analyzing a No Project Alternative and alternative sites located outside of the existing Wilmington Plant boundaries. Accordingly, this EIR addresses only those alternatives that could be developed within the existing Wilmington Plant.

The proposed project objective is to comply with California's RFG Phase 3 requirements for gasoline produced by the Tosco Los Angeles Refinery. The alternatives presented in this section 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 producing additional quantities of alkylate. 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 ways to obtain more alkylate. [No other alternatives were identified or rejected as infeasible that would supply additional alkylate to the Tosco Wilmington Plant.](#)

Alternative 1 – Purchase Additional Alkylate

Rather than making additional alkylate at the Wilmington Plant, the additional alkylate requirements could be purchased by Tosco and transported to the Wilmington Plant. This

alternative assumes that additional 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 Wilmington Plant 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 due to the need for alkylate as a gasoline blending component by all petroleum companies. The long term availability of alkylate for purchase is considered to be unreliable.

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 alkylation unit will be required that includes new vessels, pumps, valves, flanges, etc., and that a new heater would also be required.

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 since the modifications to the Alkylation Unit, FCCU, Acid Plant, and Butamer would not be required. However, modifications would still be required to unloading facilities and tankage. The reduced construction activities, 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.

The VOC emissions ~~air quality impacts~~ associated with the operational phase of Alternative 1 would increase since the modifications to the Alkylation Unit, FCCU, Acid Plant, and Butamer in the proposed project were expected to result in an overall reduction in fugitive emissions of about 36 lbs/day. The incremental increases in CO, NO_x, SO_x, and PM₁₀ from the proposed project would be eliminated in Alternative 1. However, the VOC emissions for Alternative 1 would be slightly higher than for the proposed project (see Table 6-1) ~~increase by approximately 114 lbs/day because~~ because similar tankage modifications as those in the proposed project would still be necessary.

The indirect emissions under Alternative 1 would be increased (see Table 6-1). ~~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 ~~per port visit~~ as follows: 3,508,315 lbs of CO; 1,417,146 lbs of VOCs; 37,966,626 lbs of NO_x, 53,751,383 lbs of SO_x, and 7,368,447 lbs 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 NO_x, 1,553 lbs/day of SO_x, and 210 lbs/day of PM₁₀ (SCAQMD, 2000).~~ Therefore, Alternative 1 would result in an increase in emissions from marine

vessels which would transport the additional alkylate. The indirect emissions of trucks and railcars associated with the proposed project would be eliminated under this alternative. The total indirect emissions for this alternative would increase due to the increase in marine vessel visits (see Table 6-1).

TABLE 6-1
ALTERNATIVE 1
STATIONARY SOURCE OPERATIONAL EMISSIONS
(lbs/day)

<u>SOURCE</u>	<u>CO</u>	<u>VOC</u>	<u>NOx</u>	<u>SOx</u>	<u>PM10</u>
<u>Stationary Source Emissions:</u>					
<u>Piping Modifications for Tanks</u>	<u>--</u>	<u>-10</u>			
<u>Butane Unloading</u>	<u>--</u>	<u>9</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Storage Tank Modifications</u>	<u>--</u>	<u>114</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Total Stationary Source Emissions:</u>	<u>--</u>	<u>113</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Indirect Emission Sources:</u>					
<u>Marine Vessel Emissions (Max. Daily Emiss)</u>	<u>175</u>	<u>71</u>	<u>1898</u>	<u>2,688</u>	<u>368</u>
<u>Marine Vessel Emissions (lbs/yr)</u>	<u>3,508</u>	<u>1,417</u>	<u>37,966</u>	<u>53,751</u>	<u>7,368</u>
<u>ALTERNATIVE 1 OPERATIONAL EMISSIONS (lbs/day)</u>	<u>175</u>	<u>184</u>	<u>1,898</u>	<u>2,688</u>	<u>368</u>
<u>PROPOSED PROJECT OPERATIONAL EMISSIONS (lbs/day) (see Table 4-4)</u>	<u>134</u>	<u>116</u>	<u>503</u>	<u>402</u>	<u>43</u>

~~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.~~

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

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.

Geology/Soils

This alternative would not change the impacts associated with geology. 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 less than significant. During operation, the hazard impact would also be about the same as the proposed project, i.e., less than significant. Few physical modifications would be made to the Wilmington Plant under this alternative so that no significant change in the existing hazards would be expected to occur. 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. The transportation increases associated with truck and railcar traffic would be eliminated. The overall hazard impacts associated with this alternative are expected to be less than significant.

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, FCCU, Acid Plant, and Butamer 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 little increase in the number of noise sources operating at the site as the modifications to the Alkylation Unit, FCCU and Acid Plant would not occur. Alternative 1 would result in additional marine traffic resulting in an increase in noise sources at the Port. Nonetheless, the noise impacts associated with this alternative are expected to be less than significant, as is the proposed project.

Transportation

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

Alternative 1 would not have any of the truck traffic or railcar traffic associated with the proposed project. Alternative 1 would increase the marine vessel traffic through the Port. The increase in

marine traffic would be less than one vessel per day, which represents a small increase in the total traffic within the Ports. Therefore, the impacts of Alternative 1 on transportation are expected to be the same as the proposed project and are less than significant.

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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 unit would be required. The air quality impacts during construction would be the same as the proposed project and would remain significant.

The air quality impacts associated with the operational phase of Alternative 2 would eliminate the modifications to the Alkylation Unit and the related emission changes which were mostly emission reductions. 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 lbs/day. A new heater or increased firing at an existing heater of about 8 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 6-2) and significant.

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, 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 be higher than for the proposed project and are expected to be 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. It is estimated that the toxic emissions from the proposed project would about double but are expected to remain less than significant.

~~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.~~

TABLE 6-2

ALTERNATIVE 2 STATIONARY SOURCE OPERATIONAL EMISSIONS
(lbs/day)

<u>SOURCE</u>	<u>CO</u>	<u>VOC</u>	<u>NOx</u>	<u>SOx</u>	<u>PM10</u>
<u>Stationary Source Emissions:</u>					
<u>Fugitive Emissions (e.g., pumps, valves).</u>					
<u>New Alkylation Unit (U-110)</u>	<u>--</u>	<u>100</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>FCCU (U-152)</u>	<u>--</u>	<u>-4.2</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Acid Plant (U-141)</u>	<u>--</u>	<u>1.9</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Butamer Unit</u>	<u>--</u>	<u>0</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>New Alkylation Unit Heater</u>	<u>11</u>	<u>1</u>	<u>14</u>	<u>5</u>	<u>1</u>
<u>Piping Modifications for Tanks</u>	<u>--</u>	<u>-10.3</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Butane Unloading</u>	<u>--</u>	<u>8.8</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Utilization of Existing Combustion Sources</u>	<u>110.9</u>	<u>14.5</u>	<u>350.7</u>	<u>20.1</u>	<u>9.9</u>
<u>Acid Plant/Sulfur Plant Utilization</u>	<u>--</u>	<u>--</u>	<u>46.6</u>	<u>375.3</u>	<u>11.3</u>
<u>Flare Modifications</u>	<u>0.4</u>	<u><1</u>	<u>1.8</u>	<u>0.6</u>	<u><1</u>
<u>Storage Tank Modifications</u>	<u>--</u>	<u>114.4</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>New Cooling Tower</u>	<u>--</u>	<u>17.3</u>	<u>--</u>	<u>--</u>	<u>--</u>
<u>Total Stationary Source Emissions:</u>	<u>122.3</u>	<u>244.4</u>	<u>413.1</u>	<u>401.0</u>	<u>23.2</u>
<u>Indirect Emission Sources:</u>					
<u>New Heavy Diesel Trucks (within Basin)</u>	<u>13.4</u>	<u>2.8</u>	<u>13.5</u>	<u>--</u>	<u>1.0</u>
<u>Fugitive Dust Emissions</u>	<u>--</u>	<u>--</u>	<u>--</u>	<u>--</u>	<u>17.3</u>
<u>Railcar Emissions (within Basin)</u>	<u>8.9</u>	<u>3.4</u>	<u>90.5</u>	<u>5.7</u>	<u>2.2</u>
<u>Total Indirect Emissions:</u>	<u>22.3</u>	<u>6.2</u>	<u>104.0</u>	<u>5.7</u>	<u>20.5</u>
<u>TOTAL OPERATIONAL EMISSIONS</u>	<u>144.6</u>	<u>250.6</u>	<u>517.1</u>	<u>406.7</u>	<u>43.7</u>
<u>PROPOSED PROJECT OPERATIONAL EMISSIONS (lbs/day) (see Table 4-4)</u>	<u>134</u>	<u>116</u>	<u>503</u>	<u>402</u>	<u>43</u>

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, the hazard impact 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 Wilmington Plant to supply the new Alkylation unit and ~~more~~ spent acid generated by the Plant. Additional ammonia would be transported to the Wilmington Plant to supply ammonia to the new Alkylation unit heater. Alternative 2 would result in about the same number of railcars delivered to the Wilmington Plant. The overall hazard impacts associated with this alternative are expected to be less than 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 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 Wilmington Plant including additional pumps and heaters. There is the potential that the new unit could have significant noise impacts due to the location of the residential area at the eastern property boundary of the Wilmington Plant. The noise impacts associated with the proposed project were considered to be less than significant.

Transportation

This alternative is expected to result in additional traffic associated with construction activities since more construction workers 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 traffic associated with the proposed project. Butane would still be transported to the Wilmington Plant by railcar. The by-products/chemicals traveling to/from the Wilmington Plant 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 are less than significant.

CONCLUSION

Table 6-34 compares the potential environmental impacts of the various alternatives with those of the proposed project. Based on the analyses herein, both alternatives would result in larger impacts, specifically on air quality, than the proposed project. Both alternatives would allow Tosco to attain the project objectives of complying with the CARB RFG Phase 3 requirements and producing more alkylate.

Analysis shows that Alternative 2, the construction of a new Alkylation Unit would probably be the environmentally superior choice from the alternatives presented in this Chapter. Alternative 2 would not reduce a significant project impact to less than significant. In addition, ~~this Alternative 2~~ 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 State reformulated fuels requirements and producing more alkylation while resulting in fewer environmental impacts than any of the identified project alternatives.

TABLE 6-31

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

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

Notes:

S = Significant

NS = Not Significant

PS = Potentially Significant

(-) = 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.