

5.0 PROJECT ALTERNATIVES

5.1 Introduction

The following sections identify and compare the relative merits of alternatives to the proposed project as required by the CEQA guidelines. According to CEQA Guidelines § 15126.6 (a), “An EIR shall describe a range of reasonable alternatives to the proposed project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project...” The alternatives presented in this section have been selected based on the assumption that each is potentially capable of reducing or eliminating significant effects of the project.

Section 15126.6 (c) of the CEQA Guidelines states that the EIR should identify alternatives that were considered but rejected as infeasible. No alternatives were considered and rejected as infeasible during the scoping process for this EIR.

Section 15126.6 (f) of the CEQA Guidelines stipulates that the range of alternatives required in an EIR is governed by a rule of reason in that the EIR must discuss only those alternatives “necessary to permit a reasoned choice” and those that could feasibly attain most of the basic objectives of the project. The CEQA Guidelines also state in § 15126.6 (f) (2) (B) that if the lead agency concludes that no feasible alternative locations for the project exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR.

In accordance with Public Resources Code § 21178(g) the “no project” alternative and alternative sites outside of existing refinery boundaries are not discussed in this EIR. Therefore, the “no project” alternative is not considered in this EIR.

Two project alternatives are proposed for consideration. Project alternatives were developed by considering different ways or engineering designs that would allow the project proposed to phase out MTBE on an expedited schedule, and comply with CARB Phase 3 gasoline specifications. Analyses of the alternatives are presented in this section along with a description of the modifications and/or additions that would be required at LAR and the terminals.

5.2 Project Alternatives

Two project alternatives have been identified for the proposed project, including storage of pentane at LAR instead of Marine Terminal 2, and the conversion of the MTBE Unit into a Selective Hydrogenation Unit. Project alternatives were developed by modifying one or more components of the proposed project. Unless otherwise stated, all other components of each project alternative are identical to the proposed project.

Alternative 1 – Storage of Pentane at LAR

As an alternative to storage of pentane at Marine Terminal 2, one new 87-foot storage sphere at LAR would be constructed to store chilled pentane at 60°F. The pentane would be refrigerated by utilizing the existing surplus refrigeration capacity at the Liquids Recovery Unit (LRU) or by installing a new dedicated propane-powered refrigeration system near the two existing pentane spheres in this area of LAR.

Four existing tetramer tanks, TK-677, 678, 679, and 680, located in the southeast portion of the LAR property near the proposed pentane off-loading rack area, would be demolished to allow room for the new 60,000 BBL capacity pentane sphere. Demolition of the tetramer tanks and the construction of the new sphere would result in the removal of approximately 500 tons of concrete from existing tank foundations, as well as 3,000 cubic yards of potentially contaminated soil during excavation of new foundations.

A new booster pump would be installed to feed the pentane from the sphere to an existing shipping pump, which would utilize an existing pipeline dedicated for loading ships at Marine Terminal 2 directly from LAR. Additional electrical power for this alternative is estimated to be 500 KW.

The construction activities related to this alternative would increase the daily peak number of construction worker vehicles from 350 to 390.

Alternative 2 – MTBE Unit Conversion into a Selective Hydrogenation Unit (SHU)

With this option, the existing MTBE unit would be converted into a SHU for alkylation feed treating to improve the octane of refinery gasoline components. As with the proposed conversion of the MTBE Unit into an ISO Octene Unit, this alternative would enable compliance with octane requirements absent MTBE and with less benzene as required by the CARB Phase 3 gasoline specification. Conversion to a SHU would require a new heat exchanger, re-servicing of an existing Methanol Stripper column to a Product Stripper column and modification of associated instrumentation/control systems.

5.3 Alternatives Analysis

This section contains an analysis of the alternatives by each environmental topic. Because air quality and hazards have the greatest potential to be adversely affected by the proposed project and project alternatives, each alternative is evaluated separately for these resource issues. For the other environmental topics, alternatives are discussed together.

5.3.1 Air Quality

Tables 5.3-1 and 5.3-2 provide summaries of the emissions from the project alternatives in comparison to the proposed project. Details of the emission calculations are in Appendix B. The emissions from sources subject to RECLAIM are the same for the alternatives as for the proposed project, so the tables only list emissions from non-RECLAIM sources. These emissions include direct and indirect operations source emissions as seen in the tables. Each alternative has lower

direct operational VOC emissions than the proposed project, and for Alternative 1, the projected emissions are below the 55-pound/day significance criterion.

Alternative 1 – Storage of Pentane at LAR

Approximately the same amount of construction would be associated with this alternative, although two additional tanks would have to be removed. Since four existing tanks would be taken out of service and a sphere would be constructed, rather than a fixed roof tank, the alternative will result in lower direct VOC emissions. This alternative would result in similar indirect emissions.

Alternative 2 – MTBE Unit Conversion into a Selective Hydrogenation Unit

Approximately the same amount of construction would be associated with this alternative. However, direct operational VOC emissions would be lower. This alternative would result in similar indirect emissions. In addition, this alternative would result in a comparable reduction in toxic air contaminants from LAR.

**Table 5.3-1
Alternative 1 Operational Criteria Pollutant Emissions Summary for Non-RECLAIM Sources**

Pollutant	Direct Emissions (lb/day)	Indirect Emissions (lb/day)	Total (lb/day)	SCAQMD CEQA Threshold (lb/day)	Significant?
CO	0.0	41.8	41.8	550	No
VOC ^a	7.2	6.3	-1.0	55	No
NO _x	0.0	49.2	49.2	55	No
SO _x	0.0	0.0	0.0	150	No
PM ₁₀	0.0	57.4	57.4	150	No

(a) Does not include emission changes from changes in tank service.

**Table 5.3-2
Alternative 2 Operational Criteria Pollutant Emissions Summary for Non-RECLAIM Sources**

Pollutant	Direct Emissions (lb/day)	Indirect Emissions (lb/day)	Total (lb/day)	SCAQMD CEQA Threshold (lb/day)	Significant?
CO	0.0	41.8	41.8	550	No
VOC ^a	3	6.3	66.5	55	Yes
NO _x	0.0	49.2	49.2	55	No
SO _x	0.0	0.0	0.0	150	No
PM ₁₀	0.0	57.4	57.4	150	No

(b) Does not include emission changes from changes in tank service.

5.3.2 Hydrology/Water Quality

Alternatives 1, and 2 would yield little or no change in water use or water quality from that of the proposed project. These alternatives are expected to use the same or less water during construction and operation. Because there is expected to be no significant impact from the

project as proposed, similarly there would be no significant impact to water resources from any of the alternatives.

5.3.3 Noise

Because the alternatives involve modifications or additions within LAR boundaries, noise levels generated by Alternatives 1, and 2 would be equivalent to those generated by the project. While each of these alternatives would involve noise associated with industrial activities, none would include components that would generate substantially different noise during construction or operation than the proposed project.

5.3.4 Land Use and Planning

As with the proposed project, no significant impacts to land use are expected to occur from the implementation of any of the project alternatives. The alternatives proposed would be located within existing refinery boundaries currently used for industrial purposes. No acquisition of additional land or changes to existing land would be required by the alternatives.

5.3.5 Hazards and Hazardous Materials

This section reviews the effects of the two alternatives on the risk of upset estimates.

Alternative 1 – Storage of Pentane at LAR

As an alternative to storage of pentane at Marine Terminal 2, one new 87-foot storage sphere at LAR would be constructed to store chilled pentane at 60° F. Four existing tetramer/nonene tanks, TK-677, 678, 679, and 680, located in the southeast portion of the LAR property near the proposed pentane off-loading rack area, would be demolished to allow for the new 60,000 BBL capacity pentane sphere. A new booster pump would be installed to feed the pentane from the sphere to an existing shipping pump, which would utilize an existing pipeline dedicated for loading ships at Marine Terminal 2 directly from LAR.

The tetramer tanks that are to be demolished have a combined capacity of approximately 66,000 BBLs. The overall risk of storing the proposed quantity of pentane should be comparable with the current risk of storing tetramer. For the "worst-case" risk of upset analysis, the largest container is assumed to release and explode or burn. For the tetramer/nonene, the largest container is approximately 16,700 BBLs. To determine the incremental risk of the alternative 60,000 BBLs of pentane at LAR, the "worst-case" release should be a comparison of the release of 60,000 BBLs of pentane with the release of 16,700 BBLs of nonene (more volatile and lower boiling point than tetramer). This incremental risk at LAR should be compared with the risk of 100,000 BBLs at Marine Terminal 2 (where the baseline is 20,000 BBLs nonene). Based on the relative risk of the two alternatives, the risk of upset impacts of pentane at LAR should be lower than pentane impacts at Marine Terminal 2. The 100,000 BBLs at Marine Terminal 2 had an explosive impact distance of 3,712 meters compared with 3,132 meters at LAR. In addition, the tank area at Marine Terminal 2 does not have enough space to allow for a dike capable of containing fire

suppression liquids and the tank contents. At Marine Terminal 2, the pentane tank is also within 100 feet of the ship/barge berth. The pentane pipeline risk between LAR and Marine Terminal 2 will be the same for either alternative.

Alternative 2 – MTBE Unit Conversion into a Selective Hydrogenation Unit (SHU)

With this option, the existing MTBE unit would be converted into a SHU for alkylation feed treating to improve the octane of refinery gasoline components. As with the proposed conversion of the MTBE Unit into an ISO Octene Unit, this alternative would enable compliance with octane requirements absent MTBE and with less benzene as required by the CARB Phase 3 gasoline specification. Conversion to a SHU would require a new heat exchanger, re-servicing of an existing Methanol Stripper column to a Product Stripper column and modification of associated instrumentation/control systems. The risk of upset for a process such as this should be comparable to existing processes at the facility and not be significantly different. Both processes handle similar hydrocarbon streams. The SHU eliminates chemicals such as methanol that were used in the MTBE Unit and would have slightly lower risk due to the smaller quantity of chemicals in the modified unit.

5.3.6 Transportation/Traffic

Alternative 1 would increase the average number of construction workers and the peak number of vehicles per day at LAR incrementally. As with the proposed project, no significant increase in the ICU values at intersections in the area are expected during construction of this alternative. No change in operational workers would be required for this alternative. Based on these considerations, this alternative would create a slightly greater short-term impact to traffic during construction and similar to the proposed project, would have an insignificant impact on long-term traffic.

Because Alternative 2 includes modifications to existing refinery equipment, traffic impacts during construction would be slightly less than that of the proposed project. There would be no changes to the number of workers required for operation of Alternative. Based on these considerations, there would be no substantive difference in impacts between the proposed project and this alternative.

5.3.7 Energy

Additional power for Alternative 1 is estimated to be 500 KW over the estimated power required for the proposed project. This incremental increase is not expected to have a significant effect on the existing power grid. Therefore, this alternative would create little or no difference in impacts compared to the proposed project.

Alternative 2 is expected use the same amount of electricity as that required for the proposed project. Therefore, under this alternative, impacts would be equivalent to the proposed project whose impacts are expected to be insignificant.

5.3.8 Solid/Hazardous Waste

Alternative 1 would create additional minimal amounts of hazardous and non-hazardous solid waste during construction of pentane storage and shipping facilities. In addition, approximately 3,000 cubic yards of potentially contaminated soil will need be handled due to demolition activities required for this alternative. The wastes and soils would be handled in the same manner as the proposed project wastes. Although there would be increases in the amount of wastes generated for this alternative, the impacts are expected to be insignificant and short-term. Based on this consideration, the proposed project is expected to be similar with respect to solid and hazardous wastes.

Alternative 2 impacts to solid/hazardous waste would be equivalent to the proposed project due to the similarity in construction and operational requirements with the proposed project.

5.3.9 Public Services

Alternatives 1, and 2 would be constructed at LAR. As with the proposed project these alternatives would not create a demand for workers that could not be met by the existing population in the region. Therefore, no significant adverse impact on schools or medical facilities is expected as a result of these alternatives.

With respect to fire protection, Alternative 2 would not create additional demand on the existing LAR fire services or local fire stations. As with the proposed project, no significant impacts are expected to fire protection services from this alternative. However, there are some differences in requirements for fire protection services between Alternative 1 and the proposed project. Placing the pentane storage at LAR would reduce some of the potential demand in the Port area and increase the potential demand in the Carson area. It should be noted that both locations have sufficient capacity to provide the necessary services.

5.3.10 Geology/Soils

The alternatives would not be expected to result in different significant adverse impacts to geology or soils as the changes associated with these alternatives would occur within the confines of the refinery. As identified in Section 4.11.2.3 ~~of Chapter 4, no significant adverse impacts are anticipated for those modifications and/or additions located within the boundaries of LAR. the northeast corner of LAR has been identified by the CDMG as an area that has the potential for permanent ground displacements due to liquefaction. Therefore, the potential impact for alternative 1 is the same as for the proposed project, and the same measures (that are applicable) would be employed to mitigate the potential liquefaction hazard at either location.~~

5.3.11 Cultural Resources

Alternative 2 will be located within areas of LAR where no cultural resources are known to exist. Therefore, no impacts to cultural resources are expected if either of these alternatives are implemented.

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Alternative 1 would be located in an area near where cultural resources were found in September 1998 during subsurface excavation for replacement of underground utility lines. Native American human remains were discovered during the excavation in this portion of LAR. Future subsurface soil disturbance in this area would require mitigation such as monitoring by both a Native American monitor and an archaeologist. Based on the above information, Alternative 1 has the potential to create a greater impact to cultural resources than the proposed project. However, mitigation measures would be implemented to ensure that remains discovered during excavations would be preserved to the extent possible. Therefore, the impacts to cultural resources as a result of this alternative would not be significant after mitigation.

5.4 Conclusion

As the alternatives discussed above are primarily operational differences to the proposed project, environmental impacts are not expected to be substantially different than those of the proposed project. With a few exceptions (hazards, cultural, and air) none of the alternatives create substantially different impact to the environment than the proposed project.

Alternative 1 is environmentally superior to the proposed project as it relates to air quality and hazards. However, since the proposed pentane storage capacity at Marine Terminal 2 would be greater than at LAR (see Alternative 1 discussion), there would be increased operational flexibility for the exportation of pentane in the event that there is a disruption in the transportation of pentane. The pentane tank Marine Terminal 2 would provide an additional five days of pentane storage over Alternative 1. For this reason, the proposed project is the preferred alternative to achieve the phase out of MTBE and production of CARB Phase 3 gasoline. Refer to Table 1.4-1 for a summary of the merits of each project alternative compared to the proposed project.