5 Alternatives Analysis

5.1 General Consideration of Alternatives

CEQA requires the lead agency to evaluate feasible mitigation measures or feasible alternatives to substantially lessen or avoid significant environmental impacts of the project that otherwise would occur. The California Environmental Quality Act (CEQA) requires a lead agency to analyze a range of reasonable alternatives to a proposed project that could feasibly attain most of the basic objectives of the project while substantially reducing or eliminating significant environmental effects. The lead agency must identify an environmentally superior alternative among the alternatives and the Project.

CEQA provides the following guidance for discussing project alternatives:

- An EIR need not consider every conceivable alternative to a project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation (CEQA Guidelines § 15126.6(a)).
- An EIR is not required to consider alternatives that are infeasible (§ 15126.6(a)).
- The discussion shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (§ 15126.6(b)).
- The range of alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§ 15126.6(c)).
- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project (§ 15126.6(d)).

CEQA requires the consideration of “feasible” alternatives. Section 15364 of the CEQA Guidelines define “feasible” as:

> *. . . capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.*

(See also Section 21061.1 of CEQA (“Feasible” means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.)

Among the factors that may be considered when addressing the feasibility of an alternative include, without limitation, site suitability, economic viability, availability of infrastructure, general plan consistency, consistency with other plans or regulatory limitations, or jurisdictional boundaries (CEQA Guidelines § 15126.6(f)(1)). In addition, CEQA requires an EIR to evaluate a “no project” alternative to allow decision-makers to compare the impacts of approving the project with the impacts of not approving it (CEQA Guidelines § 15126.6(e)). “When a project involves a proposed change to an ongoing operation, or even the continuation of an ongoing operation, a decision to reject the project would leave the operation in place. In such a situation, CEQA defines the no project alternative as a continuation of the existing operation” (*Ctr. for Biological Diversity v. Dep't of Fish & Wildlife*, 234 Cal. App. 4th 214, 253-254, 183 Cal. Rptr. 3d 736 (2015)). The “no project” alternative analysis “is not the baseline for determining whether the proposed project’s environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline” (CEQA Guidelines, § 15126.6(e)(1)). If

the “no project” alternative is the environmentally superior alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (CEQA Guidelines § 15126.6(e)(2)). The No Project Alternative to the Project is analyzed in Section 5.5.1.

The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice (CEQA Guidelines § 15126.6(a)). The lead agency is responsible for selecting a range of alternatives for examination and must publicly disclose its reasoning for selecting those alternatives (CEQA Guidelines § 15126.6(a)). There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason (CEQA Guidelines § 15126.6(a)). The EIR should briefly describe the rationale for selecting the alternatives to be discussed (CEQA Guidelines § 15126.6(c)). The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination (CEQA Guidelines § 15126.6(c)). Section 5.4, *Alternatives Considered but Dismissed from Further Consideration*, evaluates alternatives that were rejected as infeasible.

As explained above, the intent of the alternatives analysis is to reduce significant impacts of a project. Implementation of the Project could result in potentially significant impacts, as further described below. Based on the significant environmental impacts of the Project and the objectives established for the Project, and based on the feasibility of the alternatives considered, the following alternatives to the Project are evaluated in this Alternatives chapter:

- Alternative 1: No Project Alternative
- Alternative 2: Reduced Project Alternative
- Alternative 3: Terminal-Only Alternative
- Alternative 4: No Temporary Increase in Crude Oil

These alternatives are evaluated in detail below.

5.2 Project Objectives

The objectives of the Project include:

1. Convert the Phillips 66 Rodeo Refinery to a renewable transportation fuels production facility.
2. Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.
3. Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.
4. Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.
5. Repurpose and reuse the facility’s existing equipment capacity, including the marine and rail terminals.
6. Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components.
7. Provide ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.
8. Maintain the facility’s current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.

9. Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.
10. Provide a beneficial use for recyclable FOG within the state of California.
11. Provide a mechanism for compliance with both the federal RFS and state LCFS through processing facilities in California.

5.3 Potentially Significant Impacts of the Project

As mentioned above, CEQA requires a review of a reasonable range of alternatives that could avoid or substantially lessen any of the significant environmental impacts of the Project. This analysis evaluates the potential impacts of implementing the Project.

5.4 Alternatives Considered but Dismissed from Further Consideration

CEQA Guidelines require a brief explanation of alternatives that were considered but rejected during the scoping process. Among the factors that may be used to eliminate alternatives from further consideration under CEQA include the failure to meet most of the basic project objectives, the alternative's infeasibility, and the alternative's inability to avoid significant environmental effects (CEQA Guidelines, Section 15126.6(c)). The six alternatives described below were considered but rejected for the reasons stated below. Each alternative considered is summarized below, as well as an explanation why it was not carried forward for full evaluation.

5.4.1 Continued Operation of Rodeo Refinery and Shut-Down of Santa Maria and Pipeline Sites

In this alternative, the Rodeo Refinery would continue to refine crude oil into petroleum-based fuels; all of the crude would come into the refinery through the Marine Terminal. The Santa Maria Site would be shut down and demolished, and the Pipeline Sites would be cleaned and taken out of active service. Accordingly, those facilities would no longer collect and process crude oil for delivery to the Rodeo Refinery. This alternative would potentially increase deliveries of crude oil to the Marine Terminal up to the facility's permit limit of approximately 51,000 bpd to partially compensate for the decreased amounts of crude and partially refined feedstock received from the Santa Maria Site and Pipeline Sites under baseline conditions (70,000 bpd, on average). Accordingly, the Rodeo Refinery would refine up to approximately 51,000 bpd of crude oil and gasoil into petroleum products such as diesel fuel, jet fuel, gasoline components, propane, butane, and blendstocks, and would continue its gasoline blending and distribution operation. The Carbon Plant would remain in service, although operating at a lower activity level than under baseline conditions.

This alternative would not meet the fundamental purpose of the Project as reflected in the Project's basic objectives. The fundamental purpose of the Project is to transition the Rodeo Refinery to a renewable transportation fuels production facility. Accordingly, many of the Project objectives relate to the production of renewable fuels and repurposing the existing facility, consistent with federal and state renewable standards and LCFS, and those objectives could not be achieved with this alternative.

This alternative was also rejected from further consideration as infeasible because it would reduce transportation fuels production at the refinery to approximately 42 percent of the refinery's capacity (51,000 bpd vs 120,000 bpd), and would severely underuse refinery facilities for the refining of conventional fuels or the production of renewable fuels. In addition, at 42 percent capacity, this alternative would reduce regionally-available supply to meet regional demand. Regional demand is based on numerous factors, most of which are independent of the production of transportation fuels, and a reduction of production does not necessarily reduce demand. Phillips 66 is a critical supplier of transportation fuels to the region. The demand for gasoline in northern California is not met by the refining

capacity available in the region, necessitating imports every year (CEC 2021a), and any reduction in regional supply will result in increased imports of gasoline from other areas. This pattern has already been observed as a result of the closure of the Marathon Martinez refinery in April, 2020: thereafter, less gasoline was exported and more gasoline was imported, particularly from Southern California and the Pacific Northwest (CEC 2021a). Although in that case overall supply shortages did not occur because of reduced demand related to the pandemic, reduction of supply in the future, whether of regional production or imported supply, could cause demand to exceed supply (CEC 2021a). Further, this alternative would not achieve the state's objective to encourage the production of renewable fuels and it would not allow Phillips 66 to use the transformation of the facility to comply with the federal renewable standards and the state LCFS.

With respect to environmental effects, this alternative would not avoid any significant environmental impacts, but some environmental effects would be reduced because the alternative envisions substantially reduced operations. However, potential increased deliveries of crude oil to the Marine Terminal would not avoid the significant and unavoidable impacts related to marine traffic. The construction impacts of this alternative would be lower than those of the Project, as the Project's Rodeo components would not be constructed. The operational impacts of the Rodeo Refinery (primarily, air emissions, hazardous materials, and vehicular traffic impacts) would be reduced, but, similar to the Project, the operational impacts of the Santa Maria Site and the Pipeline Sites (primarily, air emissions and hazardous materials) would be eliminated.

In summary, although the environmental effects of this alternative would necessarily be reduced as compared to the Project, this alternative is rejected from further consideration because it is infeasible and would not meet most of the project objectives.

5.4.2 Project without Gasoline Blending Element

In this alternative, Phillips 66 would proceed with the Rodeo Renewed Project as described in Chapter 1, but the existing gasoline blending and distribution operation would no longer take place at the Rodeo location. Instead, this alternative would handle only renewable feedstocks and products. This alternative would eliminate from the Project the receipt of up to 38,000 bpd of petroleum-based gasoline and blendstocks, and the shipping of up to 40,000 bpd of finished gasoline.

Several of the Project's basic objectives depend on the ability to use the Rodeo Refinery to provide transportation fuels to the region to meet demand for both conventional and renewable fuels. This alternative would eliminate entirely any distribution of gasoline and gasoline blendstocks from the facility, and reduce the capacity of the site by 33 percent. Accordingly, this alternative would not preserve facilities "to provide conventional fuels and conventional fuel components" nor would it allow the facility to maintain its current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.

This alternative is infeasible because Phillips 66 is a critical supplier of conventional transportation fuels to the region. The gasoline operation at the Rodeo Refinery exists to meet regional demand for gasoline that cannot be filled solely by the region's existing refining capacity. Accordingly, the elimination of the Rodeo Refinery's gasoline operation would likely lead to regional shortages, which might then cause other refiners or importers to import gasoline from outside Northern California to remedy the supply shortage. The demand for gasoline in northern California is not met by the refining capacity available in the region, necessitating imports every year (CEC 2021a), and any reduction in regional supply will result in increased imports of gasoline from other areas. This pattern has already been observed as a result of the closure of the Marathon Martinez refinery in April 2020; thereafter, less gasoline was exported and more gasoline was imported, particularly from Southern California and the Pacific Northwest (CEC 2021a). Although in that case overall supply shortages did not occur because of reduced demand related to the pandemic, reduction of supply in the future, whether from regional production or imported supply, could cause demand to exceed supply (CEC 2021a).

In addition, if the gasoline blending operation at the Rodeo Refinery is eliminated, marine vessel and, potentially, rail and truck traffic in the Bay Area region would not decrease. Instead, other facilities in the region would begin to import gasoline from outside Northern California to meet the regional demand (pipeline transport would not be used because there are no pipelines between the Bay Area and other sources of gasoline). Thus, the environmental effects reduced by eliminating gasoline blending operation at the Rodeo Refinery would occur at other facilities in the region and would require increased vessel traffic to those facilities. On balance, therefore, it is likely that, on a regional basis, this alternative would not avoid or materially reduce environmental impacts of the Project, and could increase them depending on the sources of supply to the other regional facilities.

With the elimination of a primary component of both the existing operation and the Project, the air emissions and hazards in the immediate vicinity of the Rodeo Refinery could be reduced for this alternative; impacts would therefore remain less than significant, similar to the Project. Marine vessel traffic would be reduced at the Rodeo Site relative to the Project by eliminating the blendstocks and product that currently arrive at and leave the Rodeo Refinery through the Marine Terminal, but potential impacts would still be significant and unavoidable, similar to the Project. However, operations by other facilities to supply regional demand could have similar or greater environmental effects, depending on the methods of transportation and location of supplies. Given that this alternative would be unlikely to avoid or substantially reduce environmental effects, as well as its infeasibility related to regional gasoline supply and demand and its failure to meet several of the Project's objectives, this alternative was rejected from further consideration.

5.4.3 Project at an Alternate Site

Consideration of an "alternate site" alternative may be included among the reasonable range of alternatives under CEQA. The objectives of the Project are based on the transformation of an existing facility at the Rodeo Site. Development of an alternate site would not result in any changes to the Rodeo Site and would not advance any of the basic objectives of the Project.

This alternative is not feasible for several reasons. First, due to the nature of the Project, implementing it at an alternate site would require either construction of the Project facilities at another operating refinery, or construction of a new processing facility at a new location. The Rodeo Refinery is the only Phillips 66 refinery in northern California (the only other Phillips 66 refinery in California besides the Santa Maria Refinery is located in the Wilmington/Carson area in Los Angeles County), which means that an existing alternate location for the Project to serve the regional fuels market is not available. Further, as discussed in Section 5.4.1, *Continued Operation of Rodeo Refinery and Shut-Down of Santa Maria and Pipeline Sites*, the conversion of existing refining and hydrogen production facilities has been important to the development of renewable diesel facilities throughout the United States (USDA 2021), and this alternative would not result in a conversion of an existing facility. Second, it is unlikely that a suitable site, combining marine access, rail access, connecting infrastructure, adequate size, and community acceptability, could be located and obtained in a reasonable time frame. Third, Project activities at the Santa Maria and Pipeline sites similarly cannot take place elsewhere, as they consist of demolition activities at Santa Maria and taking the Pipeline Sites out of service, neither of which could be accomplished at a different location.

With respect to environmental effects, construction of a renewable fuels facility at a new site would be a substantially larger undertaking than the Project and would result in significant new environmental impacts related to that site, particularly because the Project consists of repurposing an existing industrial site and existing equipment. The Project as proposed focuses development only within the active area of the existing Rodeo Site, and would not result in development in new or previously undisturbed areas either within or outside the existing Rodeo Refinery footprint.

In summary, this alternative would fail to meet the Project's basic objectives, would not be feasible because no "alternative site" is readily available, and would not reduce environmental impacts. Therefore, this alternative is dismissed and is not considered further in this analysis.

5.4.4 Pretreated Feedstocks Only Alternative (No Pretreatment Unit)

In this alternative, as in the Project, the Rodeo Refinery would not refine petroleum-based feedstocks. Unlike the Project, however, the refinery would not be able to process untreated renewable feedstocks. This alternative would re-purpose the Rodeo Refinery to process pretreated renewable feedstocks by altering the process equipment and other support elements as described for the Project; the only difference would be that the PTU and supporting infrastructure would not be installed. Instead, the Rodeo Refinery would process only pretreated renewable feedstocks from other sources. This alternative would continue to handle refined blendstocks for gasoline. In this alternative, as in the Project, the Carbon Plant and Santa Maria Site would be closed and demolished and the Pipeline Sites would be cleaned and removed from active service.

This alternative was dismissed from further analysis as infeasible because current and reasonably foreseeable market conditions show that the pretreatment process is integral to the production of renewable fuels. To use a broader range of renewable feedstocks for the production of renewable fuels (and to reduce market impacts on edible oils), producers employ a pretreatment process for the renewable feedstocks. Both biodiesel and renewable diesel production rely on pretreated feedstocks. Biodiesel production in the United States has grown substantially over the past two decades, rising to a peak of 1.86 billion gallons in 2018, while the renewable diesel market is “a nascent but rapidly growing sector” with 2018 US production at approximately 356 million gallons, produced from only four commercial facilities (USDA 2021). Given the growth of the renewable fuels market, and the use of pretreated feedstocks in the production of biodiesel and renewable diesel, there is market uncertainty regarding the future availability of pretreated renewable feedstocks. Pretreatment is an integral part of the renewable fuels process, and increased capacity to produce renewable diesel requires pretreatment capacity. In California, the pretreatment capacity is limited, and the pretreatment capacity currently proposed elsewhere in California is dedicated to that particular facility and no excess capacity would be available. The renewable diesel facilities currently being developed include pretreatment facilities to provide an internal capability of processing the broad range of feedstocks (Bryan 2021).

Several of the Project’s basic objectives depend on the ability to use treated and untreated renewable feedstocks and to provide transportation fuels to the region to meet demand for both conventional and renewable fuels. This alternative would eliminate the capacity of the facility both to accept untreated renewable feedstocks and to provide renewable fuels from untreated renewable feedstocks. Accordingly, this alternative would not fully meet several of the project objectives, including maximizing production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels; allowing the facility to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks; maintain the facility’s current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels; and providing a beneficial use for recyclable FOG within the state of California. Without a PTU, this alternative would not be able to process the Bay Area region’s recyclable FOG to produce renewable fuels for local consumption, and such FOG would likely continue to be handled as wastes. Furthermore, this alternative would not fully support the objective of providing a mechanism for compliance with both the federal RFS and the state’s LCFS through processing facilities in California. Increasing renewable fuels production in California will require the development of additional pretreatment capacity in California. With this alternative, renewable fuels production would be curtailed and dependent on sufficient quantities of pretreated feedstocks, which are subject to market uncertainties.

With uncertain sources of pretreated feedstocks, this alternative’s production of renewable fuels would likely be substantially lower than that proposed for the Project and substantially lower than the capacity of the Rodeo Refinery. Thus, this alternative is also considered to be infeasible because it would reduce transportation fuels production at the Rodeo Refinery and severely underuse existing refinery facilities for the production of renewable fuels. This alternative would, therefore, reduce locally available supply to meet regional demand. Regional demand is based on numerous factors, most of which are independent

of the production of transportation fuels, and a reduction of production does not necessarily reduce demand. Accordingly, as described for the Continued Operation of Rodeo Refinery and Shut-Down of Santa Maria and Pipeline Sites Alternative and the Project without Gasoline Blending Element Alternative, regional demand would likely be met through the import of transportation fuels by other facilities in the region. Further, this alternative would not fully achieve the state's objective to produce renewable fuels and it would not allow Phillips 66 to use fully the transformation of the facility to comply with federal renewable standards and the state LCFS.

The Pretreated Feedstocks Only Alternative would not avoid any of the potentially significant impacts of the Project associated with increased vessel traffic (hazards, biology and hydrology) because it would have a similar level of vessel traffic as the Project, but it would have reduced effects compared to the Project. The construction impacts of this alternative would be lower than those of the Project because the PTU would not be constructed. This alternative's other operational impacts (primarily, air emissions, biology, energy use, hazardous materials, and vehicular traffic) would, like those of the Project, be less than significant. Also, similar to the Project, the operational effects of the Santa Maria Site and the Pipeline Sites (primarily, air emissions and hazardous materials) would be eliminated.

In summary, the Pretreated Feedstocks Only Alternative would not meet key project objectives related to increasing the availability of renewable fuels and meeting federal and state goals for renewable fuels and GHG reduction, would be infeasible because it would reduce the region's supply of transportation fuel and not meet federal and state goals related to transportation fuels, and would not substantially reduce environmental impacts. Accordingly, this alternative was dismissed and is not considered further in this analysis.

5.4.4.1 Hydrogen Generation Technology Alternative

This alternative would re-purpose the Rodeo Refinery, as described for the Project, to process renewable feedstocks by altering the process equipment and other support elements; the difference from the Project would be that the existing hydrogen generation process equipment would be replaced with equipment using an alternative technology. As under baseline conditions, the Project and this alternative would consume approximately 120,000,000 cubic feet per day of hydrogen. As proposed for the Project, that hydrogen would be generated from natural gas using a steam reforming technology, as under baseline conditions. In the Hydrogen Generation Technology Alternative, however, hydrogen would be generated by electrolysis (i.e., using electrolyzers to split water into hydrogen and oxygen), an energy-intensive process that uses a relatively large quantity of electricity. For example, Phillips 66 estimates that the Hydrogen Generation Technology Alternative would require approximately 750 MW of electrical generating capacity to power enough electrolyzers to meet the Project's hydrogen demand.

Under baseline conditions the Rodeo Refinery produces nearly enough electricity at the Rodeo Site and the Carbon Plant to power the refinery operations. However, that existing equipment would not have the capacity to power both the renewable processing and the electrolyzers. Accordingly, a new source or sources of electricity would need to be developed. The new source has not been determined, but this analysis assumes that it would be either the local utility (i.e., PG&E), which would deliver electricity produced by a mixture of fossil-fuel and renewable sources, or a new, dedicated generation facility such as a solar farm, wind farm, or conventional (i.e., natural-gas-fired) generator. A dedicated facility could be located either on the Rodeo Refinery site (suitable space permitting) or at a more remote site.

The electrolyzers and, if employed, the dedicated electrical generation equipment, would represent additional construction above that described for the Project; in fact, a dedicated generation facility would constitute a major project in itself, as described below. The electrolyzers would be constructed on the Rodeo Site, but it is unclear where the dedicated electricity generation equipment could be constructed. In this alternative, as in the Project, the Carbon Plant and Santa Maria Site would be closed and demolished and the Pipeline Sites would be cleaned and removed from active service.

This alternative would meet many of the project objectives because it would continue to process treated and untreated renewable feedstocks for the production of renewable fuels, but it would add a substantial component to the Project -- the construction of numerous electrolyzers and an electricity source – that is not contemplated by any of the objectives.

This alternative is considered infeasible for both technical and financial reasons. The scale of the electrolysis operation that would be required far exceeds any facility that has been put into operation in the world. At this time, the largest electrolyzer in service is 20 MW (Collins, 2021), meaning that approximately 37 units would need to be installed to supply the necessary amounts of hydrogen. Electrolysis projects similar in size to that required for the Rodeo Refinery have been announced (e.g., a 700 MW plant in Germany; Collins 2020), but none is in the construction stage, let alone operational; at this point only pilot-scale plants are under construction, and those appear to have been enabled with substantial government grants. Accordingly, the feasibility of production of hydrogen by electrolysis on such a large scale is unknown.

In addition to technical infeasibility, the capital costs of hydrolysis technology make it financially infeasible compared to the steam reformation process currently employed at the Rodeo Refinery. Electrolyzers have an estimated capital cost of between $1,000 and $1,500 per kilowatt (US Department of Energy 2020); considering both capital and installation costs, Phillips 66 estimates that the total capital cost of a dedicated facility would be $0.75 billion to $1.1 billion. If a third-party source of electricity were to be used (e.g., PG&E), the operational cost of the electricity would be prohibitive (at the current PG&E rate of $120 per MWh the annual cost would be approximately $788 million, which is ten times the refinery's current utility bill). Furthermore, the current demand-versus-capacity situation in the California Independent System Operator balancing area suggests that the regional system may not be able to meet such a substantial additional demand easily, particularly during high-demand periods such as summer (CAISO 2021).

Finally, it is not clear that a renewable-energy-based dedicated facility would be feasible. For an onsite solar or wind facility, it is unlikely that there is enough space at the Rodeo Refinery or favorable solar and wind conditions to generate the necessary energy to power the electrolyzers. For example, each megawatt of solar power installation requires between 4 and 9 acres of land (NREL 2013; Clements 2019) and each megawatt of wind farm capacity could require up to 85 acres (NREL 2009), so that a 750 MW installation would require at least 3,000 acres and possibly as much as 30,000 acres of land. Given that the total area of the Rodeo Refinery is 1,100 acres, including the currently vacant hilly grasslands east of I-80, an onsite renewable energy generation facility of sufficient size to meet the refinery's demand is clearly infeasible. For an offsite facility, the same access constraints would apply as for the Project at an Alternate Site Alternative (Section 5.4.3, *Project at an Alternate Site*), as would issues of favorable solar or wind conditions and the probable need for transmission facilities. These constraints would combine to make it extremely unlikely that a suitable location could be developed within a reasonable time frame.

The Hydrogen Generation Technology Alternative's environmental impacts would be similar to those of the Project with the following exceptions. First, construction of a dedicated electricity generation facility, whether onsite or offsite, would have substantial construction impacts related to air quality and terrestrial habitat loss that the Project would not have. In addition, if an offsite renewable energy facility is used to produce electricity, this alternative could have substantial additional environmental impacts related to aesthetics, recreation, habitat loss, and land use. Finally, because this technology would use substantially more electricity to produce the hydrogen than the current technology in use at the refinery, as described above, it could result in an inefficient, wasteful, and unnecessary use of energy, resulting in a potential significant impact with respect to energy. The use of renewable energy to produce electricity, if it were feasible, would have fewer impacts related to energy use and GHG emissions, and could have fewer impacts related to operational emissions of criteria pollutants. However, the use of substantially more

renewable energy to produce the same amount of hydrogen may not be a “wise and efficient” use of energy (Appendix F, CEQA Guidelines).

In summary, although the Hydrogen Generation Technology Alternative, if it could be implemented, would meet several key project objectives related to increasing the availability of renewable fuels and meeting federal and state goals for renewable fuels and GHG reduction, it would introduce a new stand-alone electrolyzer and electricity project component not contemplated by the objectives. In addition, it would be infeasible for technical and financial reasons, it would not substantially reduce environmental impacts, and it could result in new environmental impacts, particularly regarding the use of energy. Accordingly, this alternative was dismissed and is not considered further in this analysis.

5.4.4.2 Decommission All Facilities

In this alternative, Phillips 66 would shut down and decommission the Rodeo Refinery (including the Carbon Plant), the Santa Maria Site, and the Pipeline Sites. Phillips 66 would no longer refine crude oil to produce petroleum products in Northern California and would no longer operate the gasoline blending activity. There would be no marine vessel, pipeline, truck, or rail transport of feedstocks or refined product in or out of any of the properties. All employment at the Rodeo and Santa Maria facilities, other than security forces, would cease.

Phillips 66 is not proposing to decommission the existing and operating Rodeo Refinery, and this alternative would conflict with the fundamental purpose of the Project, which is to convert the facility to a renewable transportation fuels facility. In addition, the Decommission All Facilities Alternative would not meet any of the project objectives because it would not transition the Rodeo Refinery to renewable fuels, repurpose existing equipment and facilities, preserve local jobs, provide a beneficial reuse for FOG, or support federal and state goals related to renewable and low-carbon fuels.

Importantly, the failure to re-use the facilities and equipment at the Rodeo Refinery undermines the state’s ability to produce renewable diesel as compared to biodiesel. Renewable diesel is not subject to the blending constraints of biodiesel due to its chemical composition, and it can be used at any blend level up to 100 percent (USDA 2021). Renewable diesel production is different than the production of biodiesel, as it uses “refinery-grade hydrogen,” and existing petroleum-refining hydrotreating can be converted to produce renewable diesel, as is proposed for the Project (USDA 2021). Because the capital costs for renewable diesel are three to four times those of biodiesel, the conversion of existing refining and hydrogen production facilities has been important to the development of renewable diesel facilities throughout the United States (USDA 2021). By leveraging existing infrastructure at sufficient scale and using unlimited blending potential, these facilities are able to produce an economically viable renewable diesel. (USDA 2021). Thus, the Decommissioning All Facilities would fail to re-use the refinery’s equipment and eliminate an opportunity to produce renewable diesel in an economically worthwhile manner.

This alternative is considered infeasible because it would eliminate a major supplier of transportation fuels to the Bay Area region. According to CEC (2021b), the Rodeo Refinery accounts for nearly 20 percent of the refined product produced in the Bay Area, and is thus a critical supplier of conventional transportation fuels to the region. For example, the demand for gasoline (representing 80 percent of transportation fuel consumption; CEC 2021b) in northern California is not met by that area’s refining capacity, necessitating imports every year (CEC 2021a). Accordingly, any reduction in regional supply would result in increased imports of gasoline from other areas. This pattern has already been observed as a result of the closure of the Marathon Martinez refinery in April, 2020: thereafter, less gasoline was exported and more gasoline was imported, particularly from Southern California and the Pacific Northwest (CEC 2021a). The supply/demand balance for diesel fuel has been tightening in 2021, and the situation for jet fuel is expected to do likewise in the near future (CEC 2021a). Accordingly, the elimination of the Rodeo Refinery’s production of transportation fuels, at least in the near term, would likely lead to regional shortages that could trigger increased imports and higher prices (CEC 2021a).

This alternative would have impacts related to decommissioning if demolition activities are undertaken, primarily in the areas of air quality, GHGs, and energy use arising from the emissions of diesel-powered equipment. However, because those emissions would be spread over a period of years, it is likely that they would be below baseline, and thus would not exceed a regulatory threshold of significance. Depending on the scale of excavation associated with demolition, this alternative could have impacts related to cultural and tribal resources, but if so, the mitigation measures proposed for the Project would ensure that impacts would be less than significant. The Decommission All Facilities Alternative would have beneficial effects related to biology, hazards and hazardous materials, hydrology, noise, and utilities as a result of the cessation of activities involving the transport of feedstocks and products, the use of hazardous materials onsite, and the consumption of natural gas and electricity. However, some of those beneficial effects would be offset by the impacts of the increased imports of fuels to other regional facilities that would be necessitated by the closure of the Rodeo Refinery.

In summary, although the Decommission All Facilities Alternative would have fewer environmental impacts than the Project, it would not meet any of the project objectives, including those related to increasing the availability of renewable fuels and meeting federal and state goals for renewable fuels and GHG reduction. In addition, it would be infeasible because of its effect on the region's transportation fuels market. Accordingly, this alternative was dismissed and is not considered further in this analysis.

5.5 Alternatives to the Project

As described in Section 5.1, *General Consideration of Alternatives*, four alternatives to the Project have been identified for further consideration. The alternatives are the No Project Alternative (required by CEQA), the Reduced Project Alternative, the Terminal Only Alternative, and the No Temporary Increase in Crude Oil Alternative. The characteristics of these four alternatives, as well as those of the Project, are summarized in Table 5-1.

Table 5-1. Summary of Alternatives

	Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Product Processed (bpd)					
Renewable Feedstock Received/Processed	80,000	0	55,000	0	80,000
Gasoline Blendstocks Received/Processed	38,000	115,000	38,000	0	38,000
Existing Renewable Fuels Processed	13,000	13,000	13,000	0	13,000
Product Produced (bpd)					
Renewable Fuels Produced/Shipped	55,000	0	50,000	75,000	55,000
Existing Renewable Fuels Produced	12,000	12,000	12,000		12,000
Conventional Fuels Produced/Shipped	40,000	100,000	40,000		40,000

	Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Mode of Transportation[g]					
Ships (annual visits)	201	80	165	70	201
Barges (annual visits)	161	90	161	40	161
Truck Trips (roundtrips/year)	16,026	53,221	11,230	0	16,026
Railcars (per day)	16	5	16	8	16
Employees	650	650	630	75	650

Notes:

[a.] No Project and Terminal Only Alternatives would transport blend stock and product by pipeline, marine vessel, and rail.

[b.] The No Temporary Increase in Crude Oil Alternative at full buildout is identical to the Project; it differs only in the temporary change in throughput of crude oil during the construction period, and associated vessel calls, which is not reflected in this table. This difference, however, is described in the following discussion.

[c.] Up to 25,000 bpd excess capacity of pre-treated feedstocks could be sold elsewhere.

[d.] As explained in the Project Description, Section 3.7, *Project Operation*, the facility currently has the capacity to produce approximately 12,000 bpd of renewable fuels from pretreated feedstocks using Unit 250, which was previously used to process petroleum-based feedstocks. Unit 250 is not included in the Project as the Project does not propose any changes for Unit 250 and it would continue to produce 12,000 bpd of renewable fuels. Given that Unit 250 is not part of the Project, Unit 250 feedstock and production numbers are not included in this chart under the No Project Alternative.

[e.] 70,000 bpd out of 115,000 bpd would arrive by pipeline, the rest would arrive through the Marine Terminal.

[f.] Blendstocks and product into the facility would arrive through the Marine Terminal and by rail, and products leaving the facility would be transported by pipeline and rail.

[g] Reflects operations (not construction) of the Project and Alternatives.

5.5.1 No Project Alternative

5.5.1.1 Description of the No Project Alternative

Based on the CEQA Guidelines, the No Project Alternative is the continued operation of the Rodeo Refinery, the Carbon Plant, the Santa Maria Site, and the Pipeline Sites, which would be the "circumstance" if the Project did not proceed. Under the No Project Alternative, the Rodeo Refinery would continue to receive petroleum-based feedstocks, including crude oil, by pipeline (from the Santa Maria Site via the Pipeline Sites) and marine vessels, refine those feedstocks into a variety of petroleum-based fuel products, and ship those products out by pipeline, marine vessels, and rail. The Carbon Plant would continue to receive raw coke by truck, produce finished petroleum coke, and ship that material to market by rail and truck. The No Project Alternative would consist of the continued operation of the existing Rodeo Refinery equipment and the Santa Maria Site and the Pipeline Site. Future activity levels would be, on average, similar to the baseline in terms of material throughput, number of truck, train, and marine vessel trips, and employment.

The propriety of using the continued operation of an existing facility for the "no project" alternative was explained in *Ctr. for Biological Diversity v. Dep't of Fish & Wildlife*, 234 Cal. App. 4th 214, 253-254, 183 Cal. Rptr. 3d 736 (2015):

> *Discussing a no project alternative in an EIR "provides the decision makers and the public with specific information about the environment if the project is not approved. It is a factually based forecast of the environmental impacts of preserving the status quo. It thus provides the decision makers with a base line against which they can measure the environmental advantages and disadvantages of the project and alternatives to the project" (Planning & Conservation League v. Department of Water Resources (2000) 83 Cal.App.4th 892, 917–918 [100 Cal. Rptr. 2d 173], italics added.)*

> *When a project involves a proposed change to an ongoing operation, or even the continuation of an ongoing operation, a decision to reject the project would leave the operation in place. In such a situation, CEQA defines the no project alternative as a continuation of the existing operation.*

See also Saltonstall v. City of Sacramento, 234 Cal. App. 4th 549, 573-574, 183 Cal. Rptr. 3d 898 (2015) ("no project" alternative consists of continued operation of an arena at its current location).

Comments on the NOP suggested that the Santa Maria Site would close whether or not the Project is approved, and that therefore the appropriate No Project alternative would be continued operation of the Rodeo Refinery without the Santa Maria Site. While throughput at the Santa Maria Site has declined over time, existing operations continue to use production from Santa Maria; furthermore, declining production is not equivalent to closure. If the Project were not to be approved, the Rodeo Refinery would continue to refine crude oil and crude feedstocks, including those supplied by the Santa Maria Site, and the Rodeo Refinery would continue to use the Pipeline Sites to transport feedstocks as under baseline conditions.

5.5.1.2 Impacts and Relationship to Project Objectives

The purpose of the Project is to transition the Rodeo Refinery to a renewable transportation fuels production facility. Accordingly, many of the Project objectives relate to the production of renewable fuels and repurposing the existing facility, consistent with federal renewable standards and the state LCFS. The No Project Alternative would not meet most of the project objectives, would fully meet only one objective, and would only partially meet the rest of the objectives. Below is an evaluation of the No Project Alternative relative to each objective on an individual basis.

1. **Convert the Rodeo Refinery to a renewable transportation fuels production facility.**

   The No Project Alternative would retain the existing uses at the site, include crude oil refining, and would not convert the Rodeo Refinery to a renewable transportation production facility. Although this alternative would retain the existing production of a relatively small quantity (12,000 bpd) of renewable fuels by processing pretreated feedstocks, it would also continue to refine crude oil feedstock, and therefore, the alternative would not achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   Although the No Project Alternative would continue the existing facility's production of renewable fuels at up to 12,000 bpd by processing pretreated feedstocks, it would not maximize production, nor would it provide for the processing of untreated feedstocks. The Project includes a PTU with a capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, while the facility's existing renewable fuels production would assist California in meeting its goals for renewable energy, GHG emission reductions and reduced CI, the No Project Alternative would not contribute to the production of renewable fuels. Therefore, the No Project Alternative would not meet this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The No Project Alternative does not involve any changes to the Rodeo Refinery, and therefore it would not result in the conversion of any equipment or infrastructure to produce renewable fuels, and it would not discontinue the processing of crude oil at the Rodeo Refinery. This alternative would not achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   Because the No Project Alternative provides for the continued operation of the Rodeo Refinery and related facilities and would preserve all existing jobs, it would achieve this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The No Project Alternative does not involve any changes to the Rodeo Refinery and therefore it would not repurpose or reuse the facility's existing equipment capacity, including the marine and rail terminals. This alternative would not achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components;**

   The No Project Alternative provides for the continued operation of the Rodeo Refinery and related facilities and therefore it would preserve marine and rail offloading facilities to provide renewable and conventional fuels. With respect to renewable feedstocks and fuels, however, the No Project Alternative would continue to access only pretreated feedstocks, which are subject to market conditions. This alternative would partially achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The No Project Alternative would not involve any changes to the Rodeo Refinery and does not include the installation of a Pretreatment Unit (PTU). Without a PTU, the facility would not have the ability to process a comprehensive range of renewable feedstocks and would be restricted to pretreated feedstocks. Accordingly, this alternative would not achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The No Project Alternative provides for the continued operation of the Rodeo Refinery and would maintain the facility's capacity to supply regional market demand for both renewable and conventional fuels, although with respect to renewable fuels, to a far lesser extent than the Project. This alternative would achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The No Project Alternative provides for the continued operation of the Rodeo Refinery and would not involve any increase of deliveries to the Marine Terminal. However, given the continued operation of the Rodeo Refinery, California's transportation fuel supply needs would continue to be met. This objective is not applicable to the No Project Alternative, given that it presumes a transition to a renewable fuels facility would occur.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    Because the No Project Alternative would involve the continued operation of the Rodeo Refinery, it would not have the capacity to process recyclable FOG. This would prevent the Bay Area region from fully realizing the benefits of a local renewable resource such as used cooking oils and waste grease. Therefore, this alternative would not achieve this objective.

11. **Provide a mechanism for compliance with the federal RFS and state Low Carbon Fuel Standard through processing facilities in California.**

    The No Project Alternative would continue the existing production of renewable fuels of up to approximately 12,000 bpd. However, the Project includes a Pretreatment Unit (PTU) with a capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, while the facility's existing renewable fuels production provides a mechanism for compliance with the federal RFS and state Low Carbon Fuel Standard, by processing renewable feedstocks that have been pre-treated elsewhere, the No Project Alternative does not increase the facility's production of renewable fuels and does not further facilitate compliance with the RFS or the LCFS through processing facilities in California. Therefore, the No Project Alternative would not achieve this objective.

With regard to environmental impacts, the No Project Alternative would not result in changes to structures or operations (i.e., activity levels, throughput, and feedstocks and products) at any of the elements of the Project site. Accordingly, the No Project Alternative would have no impacts under CEQA because it would not differ from the CEQA baseline except to the extent that, in the future, throughputs would likely vary and air pollutant and GHG emissions and energy usage would likely decline somewhat in response to technological and regulatory changes.

The No Project Alternative would continue to emit criteria pollutants and GHGs, and to consume energy (see Section 4.6, *Energy Conservation*, and Section 4.8, *Greenhouse Gas Emissions*); the No Project Alternative's emissions would be similar to the baseline emissions in those tables). However, because there would be no incremental emissions in excess of the baseline, there would be no impact under CEQA.

5.5.2 Reduced Project Alternative

5.5.2.1 Description of the Reduced Project Alternative

Reduced project alternatives are usually considered as one means to potentially reduce the adverse effects of a project on the environment. A reduced project alternative considers components of the project that could potentially be eliminated or reduced and still meet the project objectives.

In the Reduced Project Alternative, the capacity of the Rodeo Renewed facility would be reduced compared to the Project because the Pre-Treatment Unit would consist of only two pre-treatment trains instead of three, thereby reducing overall processing capability for renewable feedstocks to 55,000 bpd (instead of 80,000 bpd) and shipping 50,000 bpd of renewable fuels (instead of 55,000 bpd). With existing (as of 2021) renewable processing capacity of 12,000 bpd (i.e., the Unit 250 production) and the reduced shipping of 50,000 bpd, the total production capacity of the facility after the Reduced Project Alternative is operational would be 62,000 bpd of renewable fuels. Like the Project, the facility would continue to receive 38,000 bpd of gasoline blendstocks, and blend and ship 40,000 bpd conventional fuels. All other elements of the Reduced Project would be identical to the Project, including demolition of the Carbon Plant and the Santa Maria Site and cleaning and decommissioning the Pipeline Sites.

5.5.2.2 Impacts and Relationship to Project Objectives

As discussed below, the Reduced Project Alternative would meet several of the objectives of the Project, but would only partially meet the remaining objectives.

1. **Convert the Rodeo Refinery to a renewable transportation fuels production facility.**

   The Reduced Project Alternative would convert the Rodeo Refinery to a renewable transportation production facility. Although this alternative would produce smaller amounts of renewable fuels than the Project, it would nevertheless achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   In the Reduced Project Alternative, the refinery would process 55,000 bpd of renewable feedstocks to produce up to 50,000 bpd of renewable fuels. In comparison, the Project would have a capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, while the facility under the Reduced Project Alternative would assist California in meeting its goals for renewable energy, GHG emission reductions and reduced CI, it would do so to a lesser extent than the Project. The decreased production of renewable fuels compared to the Project could mean that the region's fuel demand would have to be met with greater amounts of petroleum-based fuels than with the Project. In that case, the Reduced Project would not go as far toward assisting in the attainment of California's climate and energy goals as the Project would. Therefore, the Reduced Project Alternative would partially achieve this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The Reduced Project Alternative would result in the conversion of equipment and infrastructure to produce renewable fuels and it would discontinue the processing of crude oil at the Rodeo Refinery. Accordingly, this alternative would achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   The Reduced Project Alternative would preserve most of the existing jobs (see Table 5-1). Accordingly, it would achieve this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The Reduced Project Alternative would repurpose and reuse the facility's existing equipment capacity to the same extent as the Project would, including the marine and rail terminals. Accordingly, this alternative would achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components.**

   The Reduced Project Alternative would preserve marine and rail offloading facilities to provide renewable and conventional fuels. This alternative would achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The Reduced Project Alternative would have the ability to process a comprehensive range of renewable feedstocks, although at a lower throughput than the Project. This alternative would achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The Reduced Project Alternative would not maintain the Rodeo Refinery's capacity to produce approximately 120,000 bpd to supply regional market demand for both renewable and conventional fuels, as it would provide an overall supply of 102,000 bpd (50,000 bpd of renewable

fuels, 40,000 bpd of conventional fuels, and 12,000 bpd of existing capacity for renewable fuels). This alternative would not achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The Reduced Project Alternative would achieve this objective because it would include increased deliveries and processing of crude oil during the construction period.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    The Reduced Project Alternative would have the capacity to process recyclable FOG, although to a lesser degree than the Project. Therefore, this alternative would partially achieve this objective.

11. **Provide a mechanism for compliance with the federal RFS and state LCFS through processing facilities in California.**

    In the Reduced Project Alternative, the facility would produce up to 50,000 bpd of renewable fuels. In comparison, the Project would have the capacity to treat up to 80,000 bpd of a broad range of renewable feedstocks, resulting in 55,000 bpd of renewable fuels and up to 25,000 bpd of pre-treated feedstocks to be exported into the market for potential further renewable fuels production at other facilities. Thus, although the facility's renewable fuels production would provide a mechanism for compliance with the federal RFS and the state LCFS, it would do so to a far lesser extent than the Project would. Therefore, the Reduced Project Alternative would partially achieve this objective.

Most of the impacts of the Reduced Project Alternative would be at similar levels of significance as those of the Project (see Chapter 4) because construction and operational activities would be similar. Accordingly, the Reduced Project Alternative would have no impacts, with respect to agriculture and forestry, mineral resources, public services, recreation, wildfires and utilities and service systems (except solid waste). As with the Project, impacts related to aesthetics, energy conservation, land use and planning, and solid waste would be less-than-significant with no mitigation required. Significant impacts requiring mitigation to reduce impacts to less than significant include cultural resources, geology and soils, noise, transportation, and tribal cultural resources. Given the lower activity levels, air emissions, energy usage, vessel activity, and truck traffic impacts would be somewhat reduced from those of the Project, resulting in lower effects. Accordingly, impacts would be less than significant, like those of the Project.

In the case of air quality, the Reduced Project Alternative would have short-term impacts related to demolition and construction emissions, although the effects would be less than those associated with the Project because one train of the PTU and its associated infrastructure would not be constructed, therefore partially reducing construction activity and related emissions. Average daily construction emissions of NO_x prior to the application of mitigation would likely exceed the CEQA threshold of significance, given that the construction activity, albeit reduced, would not be much smaller than the Project's, which would exceed the threshold (see Section 4.3, *Air Quality*, [Tables 4.3-11 through 4.3-14]); however, emissions of other criteria pollutants would not exceed the thresholds and would, like those of the Project, result in less-than-significant impacts. The construction-phase emissions of NOx would be mitigated to a less-than-significant impact.

Operation of the Reduced Project Alternative would not emit criteria pollutants in amounts that would exceed the BAAQMD's significance thresholds. As in the case of the Project, operational emissions of all criteria pollutants would be lower than the baseline and they would also be lower than the Project's (see Tables 4.3-13 and 4.3-14 in Section 4.3, *Air Quality*). However, similar to the Project, incremental emissions from rail operations would likely exceed the NO_x significance criterion outside the SFBAAB (see Table 4.3-15 in Section 4.3, *Air Quality*).

The Reduced Project Alternative would have slightly less effects related to vessel activity. Compared to the Project, the Reduced Project would result in 326 versus 362 vessels (see Table 5-1). As with the Project, most impacts would be mitigated to less than significant with the same mitigation measures proposed for the Project. The Reduced Project Alternative's effects on biological resources would be marginally less than those of the Project due to the reduced throughput and vessel calls; however, significant and unavoidable impacts would still occur to marine biological resources. All other impacts would be less than significant.

The Reduced Project Alternative would have potential impacts related to cultural resources because it would involve demolition and construction in areas with known archeological resources. However, the same mitigation measures proposed for the Project (see Section 4.5, *Cultural Resources*) would be applied to this alternative. Accordingly, impacts would be less than significant.

The Reduced Project Alternative would have potential impacts related to energy use because it would consume natural gas, electricity, and diesel fuel during construction and operation. Consumption of energy during construction would be similar to, although slightly lower than, the amounts depicted for the Project (see Section 4.6, *Energy Conservation*, [Table 4.6-5a]). These amounts would be minimal in the context of total California consumption and supplies, and the impact would be less than significant.

As in the case of the Project, the Reduced Project Alternative's consumption of electricity and natural gas during operations would be less than during baseline conditions – in the case of natural gas, substantially less (see Section 4.6, *Energy Conservation*, [Table 4.6-5b]). Similar to the Project, the Reduced Project Alternative would produce onsite over 80 percent of the electricity for the Rodeo Refinery, and natural gas would constitute a fraction of Contra Costa County consumption. Thus, the Reduced Project Alternative's consumption of those energy sources would not be wasteful, inefficient, or unnecessary, and impacts would be less than significant. The Reduced Project Alternative would consume more diesel fuel than under baseline conditions, primarily because of increased vessel traffic and assumed longer rail routes, but less fuel than the Project. The increased consumption would represent less than 0.04 percent of the statewide consumption of diesel fuel, however, and would thus be minimal and would not represent wasteful, inefficient, or unnecessary use of energy.

The Reduced Project Alternative would release GHGs during construction and operation. The construction emissions would be similar to, although slightly less than, those of the Project, and would therefore not exceed thresholds of significance. Operational GHG emissions would likewise be somewhat less than those of the Project and therefore impacts would be less than significant.

The Reduced Project Alternative would pose fewer hazards to people and the environment than baseline conditions. Specifically, the onsite hazards associated with the use and storage of hazardous materials and the hazards associated with the transportation of hazardous materials to and from the Rodeo Refinery (see Section 4.9, *Hazards and Hazardous Materials*) would be lower because of the non-hazardous nature of the feedstocks and the renewable fuels products, and because the hazards associated with operation of the Santa Maria Site would be eliminated. Onsite hazards that would be substantially lessened include the risk of fire and explosion associated with the handling of flammable and explosive substances (i.e., petroleum hydrocarbons in feedstocks, refining process intermediates, and products). Transportation risks that would be eliminated or substantially lessened under the Reduced Project Alternative include trucks transporting hazardous materials to and hazardous wastes from the Rodeo Refinery and the Santa Maria Site, and railcars transporting both hazardous (e.g., butane) and non-hazardous materials (e.g., petroleum coke) from the Rodeo and Santa Maria facilities.

The Reduced Project Alternative would no longer transport crude oil by marine vessel but instead would transport non-hazardous renewable feedstocks. Compared to the Project, significant and unavoidable impacts related to water quality and potential release of hazardous materials from a vessel spill (see Section 4.9 *Hazards and Hazardous Materials*), would be somewhat lessened under this alternative due to fewer vessels, but remain significant and unavoidable.

Under the Reduced Project Alternative, the Rodeo Refinery's use of water would be substantially the same as under baseline conditions (see Section 4.10, *Hydrology and Water Quality*). The volumes and chemical composition of the discharges would be somewhat different from baseline conditions, as described for the Project. The Santa Maria Site would no longer withdraw groundwater from the local aquifer or discharge wastewater to the Pacific Ocean. Construction, demolition, and activities at the Pipeline Sites would be substantially the same as described for the Project. Accordingly, similar to the Project, impacts related to soil erosion or siltation, surface runoff, stormwater drainage, flood flows or hazards, or groundwater management would be less than significant.

Under the Reduced Project Alternative, the transportation of petroleum coke by truck from the Rodeo Refinery and the Santa Maria Site would not occur, and the transportation of chemicals and wastes to and from the Santa Maria Site would no longer occur. Accordingly, truck traffic would be substantially reduced relative to the baseline. Specifically, truck traffic would be reduced from approximately 53,200 roundtrips per year (see Table 3-2 in Chapter 3, *Project Description*) to approximately 11,200 trips per year. The number of employees in Contra Costa County would be only slightly less than under baseline conditions. Accordingly, the Reduced Project Alternative would not have adverse effects related to the vehicle miles traveled or levels of service on area roads (which are acceptable at both the Rodeo and Santa Maria locations; see Section 4.13, *Transportation and Traffic*), and impacts, like those of the Project, would be less than significant. Because the Reduced Project Alternative would not substantially alter traffic volumes or patterns, it would not conflict with plans or policies to implement other forms of transportation or the performance of the area circulation system.

5.5.3 Terminal Only Alternative

5.5.3.1 Description of the Terminal Only Alternative

In the Terminal Only Alternative, the Rodeo Refinery would stop processing petroleum-based feedstocks and only serve as a terminal. It would receive, store, and ship petroleum-based and renewable fuels produced elsewhere. No processing of any materials would occur onsite; only storage, blending, and handling would occur.

Under the Terminal Only Alternative, the process equipment at the Rodeo Site would be demolished, likely over a period of years, leaving only the storage tankage and associated infrastructure, including the wastewater treatment plant (Unit 100), piping, pumps, and administration buildings in active service. In this alternative, as in the Project, the Carbon Plant and Santa Maria Site would be closed and demolished and the Pipeline Sites would be cleaned and removed from active service.

Operation of this alternative would involve the receipt of gasoline blendstocks, as under existing conditions, as well as renewable fuels and blendstocks, by marine vessel and potentially rail. Finished gasoline and diesel, both petroleum-based and renewable, would be distributed from the Rodeo Site by pipeline and potentially rail. The Terminal Only Alternative would result in 110 vessels per year delivering blendstocks and fuels, which is considerably less than the Project. As described in Table 5-1, the Terminal Only Alternative is assumed to handle an average of 75,000 bpd, in approximately equal amounts of gasoline and diesel fuel. This alternative would employ far fewer personnel than the Project, with employment estimated at 75.

5.5.3.2 Impacts and Relationship to Project Objectives

The Terminal Only Alternative would partially meet several of the project objectives but, as discussed below, would not meet objectives related to production of renewable fuels, maintaining facility capacity to meet regional demand, and job protection.

1. **Convert the Rodeo Refinery to a renewable transportation fuels production facility.**

   The Terminal Only Alternative would not convert the Rodeo Refinery to a renewable transportation fuels production facility and would not, therefore, achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   The Terminal Only Alternative would not produce renewable fuels, and would therefore not assist California in meeting its goals for renewable energy, GHG emission reductions and reduced CI. The lack of production of renewable fuels at the Rodeo Refinery could mean that the region's fuel demand would have to be met with greater amounts of petroleum-based fuels, some portion of it imported, than with the Project. In that case, the Terminal Only Alternative would not assist in the attainment of California's climate and energy goals. Therefore, the Terminal Only Alternative would not achieve this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The Terminal Only Alternative would not convert equipment and infrastructure to produce renewable fuels, but it would discontinue the processing of crude oil at the Rodeo Refinery. Accordingly, this alternative would partially achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   The Terminal Only Alternative would result in the elimination of approximately 575 of the 650 existing jobs at the Rodeo Refinery. Although it would preserve 75 jobs (see Table 5-1), the magnitude of job reduction means that this alternative cannot be considered as achieving this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The Terminal Only Alternative would repurpose and reuse only a small portion of the facility's existing equipment capacity, primarily storage tanks and administrative facilities. The remainder of the refinery's equipment would not be reused. Accordingly, this alternative would partially achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components;**

   The Terminal Only Alternative would preserve marine and rail facilities, and possibly truck loading/offloading facilities. Those facilities would likely be used to receive, store, and distribute renewable fuels and would certainly be used to handle conventional fuels and fuel components (e.g., the existing gasoline blending operation). However, this alternative does not include accessing renewable feedstocks. Accordingly, this alternative would partially achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The Terminal Only Alternative would not be able to process renewable feedstocks. Accordingly, this alternative would not achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The Terminal Only Alternative would allow the Rodeo Refinery to supply regional market demand for conventional and renewable fuels. However, the capacity to supply fuels would be substantially less than the Project's (see Table 5-1) and would not maintain the facility's current capacity to produce approximately 120,000 bpd. This alternative would not achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The Terminal Only Alternative would not achieve this objective because it would not transition the Rodeo Refinery to a renewable fuels facility and would not require any increased crude oil or gasoil deliveries.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    The Terminal Only Alternative would not have the capacity to process recyclable FOG. Therefore, this alternative would not achieve this objective.

11. **Provide a mechanism for compliance with the federal RFS and state LCFS through processing facilities in California.**

    The Terminal Only Alternative would provide a mechanism for compliance with the federal RFS and state LCFS because it would likely supply some renewable and low-carbon fuels, although to a far lesser extent than the Project. Therefore, the Terminal Only Alternative would partially achieve this objective.

Most of the impacts of the Terminal Only Alternative would be at similar levels of significance as those of the Project because construction and operational activities would be similar. Accordingly, the Terminal Only Alternative would have no impacts with respect to agriculture and forestry, mineral resources, public services, recreation, wildfires and utilities and service systems (except solid waste). As with the Project, impacts related to aesthetics, energy conservation, land use and planning, and solid waste would be less-than-significant with no mitigation required. Significant impacts requiring mitigation to reduce impacts to less than significant include cultural resources, geology and soils, noise, transportation, and tribal cultural resources. Given the lower activity levels, air emissions, energy usage, and truck traffic impacts would be somewhat reduced from those of the Project, resulting in lower effects. Accordingly, impacts would be less than significant, like those of the Project.

The Terminal Only Alternative would have less effects related to vessel spills (see Section 4.4, *Biological Resources*) because there would be less vessel activity (see Table 5-1). As with the Project, with exception of impacts related to vessel spills, impacts would be mitigated to less than significant with the same mitigation measures proposed for the Project. Overall, the Terminal Only Alternative's effects on biological resources would be less than those of the Project due to the reduced throughput and vessel calls; however, significant and unavoidable impacts would still occur.

In the case of air quality, the Terminal Only Alternative would have short-term impacts related to demolition emissions. Average daily demolition emissions of NOx would likely exceed the CEQA threshold of significance, given that construction/demolition would be greater than that of the Project, the

emissions of which would substantially exceed the threshold (see Section 4.3, *Air Quality*), but emissions of other criteria pollutants would likely not exceed the thresholds. The same mitigation applied to the Project would reduce this impact to less than significant. Operation of the Terminal Only Alternative would not emit criteria pollutants in amounts that would exceed the BAAQMD's significance thresholds. The primary source of operational emissions would be marine vessels. However, operational emissions of all criteria pollutants would be lower than the baseline because although there would be marine vessel emissions, they would be offset by the fact that there would be no processing activities at the Rodeo Site, the Santa Maria Site, or the Carbon Plant.

The Terminal Only Alternative would have potential impacts related to cultural resources because it would involve demolition and construction in areas with known archeological resources. However, the same mitigation measures proposed for the Project (see Section 4.5, *Cultural Resources*) would be applied to this alternative. Accordingly, impacts would be similar in magnitude to those of the Project and therefore less than significant.

The Terminal Only Alternative would have potential impacts related to energy use because it would consume natural gas, electricity, and diesel fuel during demolition and operation. Given the scale of the demolition involved, consumption of energy during construction and demolition could be higher than the amounts depicted for the Project (see Section 4.6 *Energy Conservation*). Nevertheless, the consumption of diesel fuel and gasoline during demolition would likely be minimal in the context of total California consumption and supplies, and would not represent a significant impact.

The Terminal Only Alternative's consumption of electricity and natural gas during operations would be substantially less than during baseline conditions. The decrease would be the result of closing the Santa Maria Site and the Carbon Plant and discontinuing refining operations at the Rodeo Site. The Terminal Only Alternative would consume small amounts of electricity, relative to the baseline consumption of 520,000 MWh (see Section 4.6, *Energy Conservation*), to operate lighting, pumps, generators, and similar support equipment, and minimal amounts of natural gas for minor uses such as hot water and building heating. This alternative would consume less diesel fuel than under baseline conditions, primarily because of decreased numbers of trucks and marine vessels at the Rodeo Site and the elimination of truck and rail traffic at the Carbon Plant and Santa Maria Site. Because the Terminal Only Alternative would not increase use of energy sources above baseline levels, energy use would not be inefficient or unnecessary, and impacts would be less than significant.

The Terminal Only Alternative would release GHGs during construction and operation. The construction emissions would likely be greater than those of the Project (see Section 4.8, *Greenhouse Gas Emissions*), given the scale of demolition, and would likely exceed thresholds of significance. However, the same mitigation measure applied to the Project would be applied to this alternative. Operational GHG emissions would be substantially less than those of the Project (see Section 4.8, *Greenhouse Gas Emissions*) because no processing activities would take place. Accordingly, impacts would be less than significant.

The Terminal Only Alternative would pose fewer onsite hazards to people and the environment than either baseline conditions or the Project. Specifically, the onsite hazards associated with the use of hazardous materials in the refining process and the hazards associated with the transportation of hazardous materials to and from the Rodeo Refinery (see Section 4.9 *Hazards and Hazardous Materials*) would be lower because the refining processes at the Rodeo Site and the Santa Maria Site would no longer occur. Other onsite hazards that would be eliminated or substantially lessened include the risk of fire and explosion associated with the handling of flammable and explosive substances such as crude oil, hydrogen, and refinery process intermediates.

Under the Terminal Only Alternative, the Rodeo Refinery would cease to withdraw cooling water from San Pablo Bay and to use East Bay MUD water for refinery processes, although it would continue to use small amounts of East Bay MUD water for sanitary, drinking, and some industrial functions. Stormwater and wastewater would continue to be treated in the wastewater treatment plant and discharged to San Pablo

Bay (see Section 4.10, *Hydrology and Water Quality*). The Santa Maria Site would no longer withdraw groundwater from the local aquifer for process and cooling purposes, treat it, and discharge it to the Pacific Ocean. Demolition at the Carbon Plant and the Santa Maria Site would be substantially the same as described for the Project, and demolition at the Rodeo Site would involve above-ground equipment. Accordingly, impacts related to soil erosion or siltation, surface runoff, stormwater drainage, flood flows or hazards, or groundwater management at the Rodeo Refinery, the Santa Maria Site, and the Pipeline Sites would be less than significant.

The Terminal Only Alternative would no longer transport crude oil by marine vessel, but instead would transport petroleum-based blendstocks, renewable fuels, and other refined products. Accordingly, the risk of water pollution from vessel spills, either in transit or at the Marine Terminal, would be slightly above baseline conditions. Compared to the Project, significant and unavoidable impacts related to water quality and potential release of hazardous materials from a vessel spill (see Section 4.9 *Hazards and Hazardous Materials*), would be somewhat lessened, but remain significant and unavoidable.

Under the Terminal Only Alternative, the transportation of petroleum coke by truck from the Rodeo Refinery and the Santa Maria Site would not occur. The transportation of chemicals and wastes to and from the Santa Maria Site would no longer occur. The number of employees would be substantially less than under baseline conditions, (see Table 5-1). Accordingly, the Terminal Only Alternative would not have adverse effects related to the vehicle miles traveled or levels of service on area roads (which are acceptable at both the Rodeo and Santa Maria locations; see Section 4.13, *Transportation and Traffic)*, and impacts would be less than significant. Because the Terminal Only Alternative would not alter traffic volumes or patterns, it would not conflict with plans or policies to implement other forms of transportation or the performance of the area circulation system.

5.5.4 No Temporary Increase in Crude Oil Alternative

5.5.4.1 Description of the No Temporary Increase Alternative

This alternative would be identical to the Project except that it would not include a temporary increase in crude oil and gas oil deliveries via the Marine Terminal during the transitional phase (last 7 months of the construction period) in excess of the permit limit of approximately 51,000 bpd. Specifically, some additional visits of barges and ships would occur during the interim period to deliver the permitted amount of crude oil and gasoil, but the number of vessels would be lower than under the Project. The lower vessel traffic would mean that the Rodeo Refinery would operate at a lower level of production than the Project during that interim period.

Under this alternative, it is reasonable to expect that the decreased vessel traffic to the Marine Terminal during the 7-month interim period, and therefore the decreased production of refined products by the Rodeo Refinery, would be offset by imports to other regional fuels facilities and possibly, where feasible, increased production by the other three regional refineries. Imports would likely come primarily by vessel, as happened in 2020 during the Marathon Martinez refinery shutdown (CEC 2021a), and increased production, should some excess capacity be available, would require imports of crude oil, also likely primarily by marine vessel. Accordingly, some or all of the vessel traffic that would not come to the Rodeo Refinery would come to other regional facilities.

Under operating conditions, however, the No Temporary Increase in Crude Oil Alternative would result in the same significant and unavoidable impacts associated with vessel spills as the Project.

5.5.4.2 Impacts and Relationship to Project Objectives

As discussed below, the No Temporary Increase in Crude Oil Alternative would meet most of the project objectives because it would result in a facility that would provide the same amounts and types of renewable fuels as the Project (except during a portion of the construction period) and that would

maintain the same level of employment. It would not, however, meet Project objectives designed to ensure that the regional transportation fuels supply is met and uninterrupted during Project construction.

1. **Convert the Rodeo Refinery to a renewable transportation fuels production facility.**

   The No Temporary Increase in Crude Oil Alternative would convert the Rodeo Refinery to a renewable transportation production facility that would produce the same amounts of renewable fuels as the Project. Accordingly, it would achieve this objective.

2. **Provide/maximize production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels.**

   The No Temporary Increase in Crude Oil Alternative would produce renewable fuels in the same quantities as the Project. Accordingly, the facility would assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI. The decreased production of conventional fuels during the construction period compared to the Project would mean that the region's fuel demand would have to be met with imported petroleum-based fuels, but such an eventuality would be of short duration (7 months) and would not interfere with the long-term supply of renewable fuels. Therefore, the No Temporary Increase in Crude Oil Alternative would achieve this objective.

3. **Convert existing equipment and infrastructure to produce transportation fuels from non-hazardous renewable feedstocks and discontinue the processing of crude oil at the Rodeo Refinery.**

   The No Temporary Increase in Crude Oil Alternative would result in the conversion of equipment and infrastructure to produce renewable fuels to the same extent as the Project would, and it would discontinue the processing of crude oil at the Rodeo Refinery. Accordingly, this alternative would achieve this objective.

4. **Preserve and protect existing family-wage jobs in Contra Costa County during and after the transition to a renewable transportation fuels production facility.**

   The No Temporary Increase in Crude Oil Alternative would preserve the existing jobs (see Table 5-1). Accordingly, it would achieve this objective.

5. **Repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals.**

   The No Temporary Increase in Crude Oil Alternative would repurpose and reuse the facility's existing equipment capacity, including the marine and rail terminals to the same extent as the Project. Accordingly, this alternative would achieve this objective.

6. **Preserve marine, rail, and truck offloading facilities to access national/international renewable feedstocks to provide renewable transportation fuels and to provide conventional fuels and conventional fuel components;**

   The No Temporary Increase in Crude Oil Alternative would preserve marine, rail, and truck offloading facilities to access renewable feedstocks to the same extent as the Project. Accordingly, this alternative would achieve this objective.

7. **Provide the ability to process a comprehensive range of renewable feedstocks, including treated and untreated feedstocks.**

   The No Temporary Increase in Crude Oil Alternative would have the same ability to process a comprehensive range of renewable feedstocks as the Project. This alternative would achieve this objective.

8. **Maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels.**

   The No Temporary Increase in Crude Oil Alternative would maintain the Rodeo Refinery's capacity to supply regional market demand for both renewable and conventional fuels in the long term. However, during 7 months of the construction period, the Rodeo Refinery would not be able to supply its historic share of the regional market for conventional fuels, which could result in either increased imports or regional shortages of transportation fuels. Accordingly, this alternative would partially achieve this objective.

9. **Ensure California transportation fuel supply needs are met during the transition to a renewable fuels facility by temporarily (approximately 7 months) increasing gas oil and crude deliveries at the Marine Terminal to maintain current transportation fuel production at the Rodeo Refinery.**

   The No Temporary Increase in Crude Oil Alternative would not achieve this objective because it would not include increased deliveries and processing of crude oil during the construction period to maintain current fuel production.

10. **Provide a beneficial use for recyclable FOG within the state of California.**

    The No Temporary Increase in Crude Oil Alternative would achieve this objective because it would have the capacity to process recyclable FOG.

11. **Provide a mechanism for compliance with the federal RFS and state LCFS through processing facilities in California.**

    The No Temporary Increase in Crude Oil Alternative would provide a mechanism for compliance with the federal RFS and state LCFS by producing renewable fuels at the maximum capacity of the Project. Therefore, the No Temporary Increase in Crude Oil Alternative would achieve this objective.

Most of the impacts of the No Temporary Increase in Crude Oil would be at similar levels of significance as those of the Project (see Chapter 4) because construction and operational activities would be similar. Accordingly, the No Temporary Increase in Crude Oil would have no impacts, with respect to agriculture and forestry, mineral resources, public services, recreation, wildfires and utilities and service systems (except solid waste). As with the Project, impacts related to aesthetics, energy conservation, land use and planning, and solid waste would be less-than-significant with no mitigation required. Significant impacts requiring mitigation to reduce impacts to less than significant include cultural resources, geology and soils, noise, transportation, and tribal cultural resources. Given the lower activity levels, air emissions, energy usage, and truck traffic impacts would be somewhat reduced from those of the Project, resulting in lower effects. Accordingly, impacts would be less than significant, like those of the Project.

In the case of air quality, the No Temporary Increase in Crude Oil Alternative would have significant impacts related to construction emissions but, similar to the Project, excess NO_x emissions would be mitigated to constitute a less-than-significant impact. Operation of this alternative would not emit criteria pollutants in amounts that would exceed the BAAQMD's significance thresholds. Operational emissions of all criteria pollutants, which would be identical to those of the Project, would be lower than the baseline (see Section 4.3, *Air Quality*), and thus impacts would be less than significant. However, similar to the Project, incremental emissions from rail operations would likely exceed the NO_x significance criterion outside the SFBAAB (see Table 4.3-15 in Section 4.3, *Air Quality*). During the transitional phase, the No Temporary Increase in Crude Oil Alternative would have potential impacts on biological resources related to transporting crude oil. Although the marine vessel traffic to the Rodeo Refinery would increase over baseline, it would not allow the refinery to operate at its capacity, and vessel traffic to other regional facilities likely would increase, so that overall, construction-phase impacts would be similar to those of the Project.

During operation, this alternative would have potential impacts related to transporting renewable feedstocks and renewable fuels by tanker vessel. As with the Project, the No Temporary Increase in Crude Oil Alternative would result in significant and unavoidable impacts to marine biological resources as a result of an accidental spill of renewable feedstocks enroute, at or near the Marine Terminal since the amount of vessel traffic would be the same (see Table 5-1). In addition, significant and unavoidable impacts would occur related to increased vessel traffic that would increase the presence of nonindigenous species. Despite recommended mitigation measures, these substantial adverse impacts on special-status marine species or their habitat cannot be eliminated. Similarly, the No Temporary Increase in Crude Oil Alternative would have the same effects as the Project with regard to vessel noise and vessel strikes on marine mammals (see Section 4.4, *Biological Resources*) when compared to baseline conditions. As with the Project, impacts would be mitigated to less than significant with the same mitigation measures proposed for the Project. All other impacts would be less than significant.

The No Temporary Increase in Crude Oil Alternative would have impacts related to cultural resources because it would involve demolition and construction in areas with known archeological resources. However, the same mitigation measures proposed for the Project (see Section 4.5, *Cultural Resources*) would be applied to this alternative. Accordingly, impacts would be less than significant.

The No Temporary Increase in Crude Oil Alternative would have impacts related to energy use because it would consume natural gas, electricity, and diesel fuel during construction and operation. Consumption of energy during construction would be similar to, although lower than (because of the lower vessel traffic during the last 7 months) the amounts depicted for the Project (see Section 4.6 *Energy Conservation*). These amounts would be minimal in the context of total California consumption and supplies, and the impact would be less than significant. This alternative's consumption of energy during operations would be the same as the Project's (see Section 4.6 *Energy Conservation*), and energy use would not be inefficient or unnecessary. Accordingly, impacts would be less than significant.

The No Temporary Increase in Crude Oil Alternative would release GHGs during construction and operation. The construction-phase emissions would be less than those of the Project (see Section 4.6, *Energy Conservation*) because of the lower vessel traffic, and would therefore not exceed thresholds of significance. Operational GHG emissions would be the same as those of the Project, and therefore impacts would be less than significant.

As compared to baseline conditions, the onsite hazards associated with the use and storage of hazardous materials, and the hazards associated with the transportation of hazardous materials to and from the Rodeo Refinery (see Section 4.9, *Hazards and Hazardous Materials*), would be lower because of the non-hazardous nature of the feedstocks and the renewable fuels products, and because the hazards associated with operation of the Santa Maria Site would be eliminated. Onsite hazards that would be eliminated or substantially lessened include the risk of fire and explosion associated with the handling of flammable and explosive substances such as crude oil. Transportation risks that would be eliminated or substantially lessened under operation of the No Temporary Increase in Crude Oil Alternative include spills from trucks transporting hazardous materials to and hazardous wastes from the Santa Maria Site, and railcars transporting both hazardous (e.g., butane) and non-hazardous materials (e.g., petroleum coke) from the Rodeo and Santa Maria facilities. Compared to the Project, significant and unavoidable impacts related to water quality and potential release of hazardous materials from a vessel spill (see Section 4.9 *Hazards and Hazardous Materials*), would remain significant and unavoidable.

Under the No Temporary Increase in Crude Oil Alternative, the Rodeo Refinery's use of water would be substantially the same as under baseline conditions (see Section 4.10, *Hydrology and Water Quality*). The Santa Maria Site would no longer withdraw groundwater from the local aquifer or discharge wastewater to the Pacific Ocean. Construction and demolition activities would be identical to those of the Project. Accordingly, impacts related to soil erosion or siltation, surface runoff, stormwater drainage, flood flows or hazards, or groundwater management would be less than significant. Under the No Temporary

Increase in Crude Oil Alternative, the transportation of petroleum coke by truck from the Rodeo Refinery and the Santa Maria Site would not occur, and the transportation of chemicals and wastes to and from the Santa Maria Site would no longer occur. Accordingly, truck traffic would be substantially reduced relative to the baseline. Specifically, truck traffic would be reduced from approximately 53,200 roundtrips per year to approximately 16,000 truck trips per year (see Chapter 1. *Project Description*, [Table 1-2]). The number of employees would be the same as under baseline conditions. Accordingly, this alternative would not have adverse effects related to the vehicle miles traveled or levels of service on area roads (which are acceptable at both the Rodeo and Santa Maria locations; see Section 4.13, *Transportation and Traffic*), and impacts would be less than significant. Because the No Temporary Increase in Crude Oil Alternative would not substantially alter traffic volumes or patterns, it would not conflict with plans or policies to implement other forms of transportation or the performance of the area circulation system.

5.5.4.3 Comparison of Alternatives

The following discussion compares the impacts of the four alternatives to those of the Project in each of the key resource areas considered in Section 5.5, *Alternatives to the Project*; the comparisons are summarized in Table 5-2. Most of the impacts of the Project would be less than significant or could be mitigated to a less-than-significant level with implementation of recommended mitigation measures. However, the Project would result in significant and adverse impacts that even with recommended mitigation measures the impacts would remain significant and adverse. These significant and unavoidable impacts relate to water quality, hazardous materials, and marine biological resources that would occur as a result of increased marine vessel traffic, and potentially significant increased NO_x emissions from rail operations outside the San Francisco Bay Area Air Basin that would exceed air quality thresholds.

The magnitude of the impacts of the alternatives (other than the No Project Alternative) would be similar to or lower than those of the Project. The No Project Alternative would have no impacts under CEQA, but in a number of resource areas the magnitude of its environmental effects would be greater than those of the Project.

Table 5-2. Summary Comparison of the Environmental Effects of Alternatives Relative to the Project

Resource Area	Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Air Quality					
Construction	LTS with mitigation	Reduced (No Impact)	Similar (LTS with mitigation)	Greater (LTS with mitigation	Reduced (LTS with mitigation)
Operation	LTS	Greater (No Impact)	Similar (LTS)	Reduced (LTS)	Same (LTS)
Rail NOx emissions outside SFBAAB	SU	Reduced (No Impact)	Same (SU)	Reduced (SU)	Same (SU)

Resource Area		Project	No Project	Reduced Project	Terminal Only	No Temporary Increase in Crude Oil
Biology						
Spills	Construction	LTS	Similar (No Impact)	Similar (LTS)	Similar (LTS)	Similar (LTS)
	Operation	SU	Reduced (No Impact)	Reduced (SU)	Reduced (SU)	Same (SU)
Noise / Vessel Strikes	Construction	LTS	Similar (No Impact)	Similar (LTS)	Reduced (LTS)	Similar (LTS)
	Operation	LTS	Reduced (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)
Cultural Resources						
Construction		LTS with mitigation	Reduced (No Impact)	Similar (LTS with mitigation)	Similar (LTS with mitigation)	Same (LTS with mitigation)
Operation		N/A[a]	N/A	N/A	N/A	N/A
Energy						
Construction		LTS	Reduced (No Impact)	Reduced (LTS)	Greater (LTS)	Similar (LTS)
Operation		LTS	Similar (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)
Greenhouse Gases						
Construction		LTS	Reduced (No Impact)	Similar (LTS)	Greater (LTS)	Similar (LTS)
Operation		LTS	Greater (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)
Hazards & Hazardous Materials						
Construction		LTS	Reduced (No Impact)	Similar (LTS)	Greater (LTS)	Similar (LTS)
Operation		SU	Reduced (No Impact)	Reduced (SU)	Reduced (SU)	Same (SU)
Hydrology and Water Quality						
Construction		LTS	Reduced (No Impact)	Same (LTS)	Greater (LTS)	Similar (LTS)
Operation		SU	Reduced (No Impact)	Reduced (SU)	Reduced (SU)	Same (SU)
Transportation						
Construction		LTS	Reduced (No Impact)	Similar (LTS)	Similar (LTS)	Same (LTS)
Operation		LTS	Greater (No Impact)	Reduced (LTS)	Reduced (LTS)	Same (LTS)

Note: LTS = less than significant
SU = Significant and Unavoidable

[a] Cultural impacts are only applicable to the construction phase, as they involve the potential for encountering archeological or other cultural artifacts during excavation.

5.5.5 Air Quality

The No Project Alternative would avoid the Project's significant short-term impacts of emissions associated with construction and demolition. For operational emissions, the No Project Alternative would not have a CEQA impact as compared to baseline conditions. However, given that the Project reduces operational emissions as compared to baseline conditions, the No Project Alternative's operational emissions of criteria pollutants would be greater – in the case of NO_x and SO_2 substantially greater – than the Project's emissions after implementation of the Project (see Section 4.3, *Air Quality*).

The Reduced Project Alternative would have similar air quality impacts related to construction as the Project and would be similarly mitigated. Operational emissions would be somewhat lower than those of the Project, although essentially similar, because of the lower activity levels, and impacts would remain less than significant.

The Terminal Only Alternative would potentially have substantially greater construction impacts than the Project, although those impacts potentially could be mitigated in a similar manner as the Project's to less than significant. The operational emissions would be lower than those of the Project, and thus its impacts would be less than significant, similar to the Project.

Under the No Temporary Increase in Crude Oil Alternative, impacts related to construction emissions would be very similar to those of the Project (see Section 4.3, *Air Quality*) except during 7 months of the construction period, when reduced vessel traffic relative to the No Temporary Increase Alternative would result in lower air emissions relative to the Project. Operational emissions would be identical to those of the Project, and therefore impacts would be less than significant.

5.5.6 Biological Resources

The No Project Alternative would not have a CEQA impact to biological resources as compared to baseline conditions as it would transport materials that are less toxic than the petroleum-based feedstocks and products. Compared to the Project the total number of vessels would decrease under the No Project Alternative (70 versus 362; see Table 5-1). Impacts related to noise and vessel strikes would be less than significant, the same as the Project. Additionally, the No Project Alternative would not result in significant and unavoidable impacts to water quality, hazards and marine biological impacts related to vessel spills and nonindigenous species since vessel activity would be the similar to baseline conditions.

The Reduced Project Alternative would have very similar impacts on biological resources as the Project. The only difference would be that, because there would be somewhat fewer marine vessels (326 versus 362; see Table 5-1), potential impacts related to spills, underwater noise, and collisions would be marginally less, but remain the same as the Project.

The Terminal Only Alternative would, as compared to the Project, potentially transport and handle more petroleum-based materials (gasoline and gasoline blendstocks), which are more toxic than the renewable feedstocks and fuels. Accordingly, adverse effects on biological resources, including sensitive habitats, migratory species, and marine mammals, from a spill could be more serious than those of the Project. However, vessel traffic would be lower than that of the Project (110 versus 362; see Table 5-1). Impacts related to noise and vessel strikes would continue to be less than significant, the same as the Project. The Terminal Only Alternative would result in similar impacts to marine biological impacts related to vessel spills and nonindigenous species since vessel activity would be the similar to baseline conditions.

Vessel traffic related to the No Temporary Increase in Crude Oil Alternative would be somewhat less than that of the Project during 7 months of the construction period. Operational impacts related to vessel activity, however, would be the same as the Project. Impacts related to noise and vessel strikes would continue to be less than significant, but significant and unavoidable impacts to marine biological resources related to vessel spills and nonindigenous species would be the same as the Project.

5.5.7 Cultural Resources

Because the No Project Alternative would not involve construction or demolition of structures or ground-disturbing activities, it would have no impacts on cultural resources. Accordingly, impacts would be less than those of the Project, which could adversely affect cultural resources (see Section 4.5, *Cultural Resources*), but with mitigation, Project impacts are less than significant.

The Reduced Project Alternative would involve similar construction, demolition, and ground-disturbing activities as the Project, and would therefore have the same potentially significant impact. As with the Project, the potentially significant impact would be reduced to less than significant by the application of mitigation measures.

The Terminal Only Alternative, like the Project, would involve demolition of the Carbon Plant and Santa Maria Site, and thus would have the same potential impacts related to cultural resources. It is assumed to involve demolition of most or all of the process equipment at the Rodeo Site, and would have the same potential for an impact to cultural resources as the Project, the level of impact relative to the Project would not be materially increased and would therefore be less than significant.

The No Temporary Increase in Crude Oil Alternative would not differ in its construction and demolition elements from the Project (except for the increase of vessels at the Marine Terminal). Accordingly, it would have exactly the same impacts as the Project with respect to cultural resources, less than significant.

5.5.8 Energy

The No Project Alternative would not have a CEQA impact with respect to energy usage as compared to baseline conditions. Because there would be no construction, the No Project Alternative would have reduced environmental effects regarding energy usage as compared to the Project. The Project would reduce electricity and natural gas usage as compared to baseline conditions, and therefore, the No Project Alternative would use approximately 6 times as much natural gas and somewhat more electricity than the Project. The No Project Alternative, based on existing conditions, would use substantially less diesel fuel than the Project, largely because of the lower vessel and rail traffic. The greater usage of diesel fuel in the Project could be considered offset by the Project's lower usage of electricity and natural gas, such that the energy use of the No Project Alternative would be similar in magnitude to the Project.

The Reduced Project Alternative would use somewhat less energy than the Project (see Section 4.6, *Energy Conservation*) during both construction and operation. Accordingly, its impacts would be somewhat lower than those of the Project, and remain less than significant.

The Terminal Only Alternative would use more energy during demolition of existing facilities than the Project would use for construction, although impacts are assumed to be less than significant given the likely timeframe of demolition. However, this alternative would use substantially less energy than the Project during operation. Accordingly, its operational impacts related to energy would be less than those of the Project, and remain less than significant, similar to the Project.

During 7 months of the construction period, the No Temporary Increase in Crude Oil Alternative would use less energy than the Project because there would be fewer vessels delivering crude oil, although the likely increase of vessel traffic to other refineries could offset that difference. Otherwise, operational energy use under the two scenarios would be identical, and impacts would be less than significant.

5.5.9 Greenhouse Gases

The No Project Alternative would not have a CEQA impact with respect to GHGs as compared to baseline conditions. However, the Project would reduce GHGs relative to baseline conditions, and therefore, the operational GHG emissions of the No Project Alternative would be somewhat greater than those of the Project (see Section 4.8, *Greenhouse Gas Emissions*).

The Reduced Project Alternative's construction emissions of GHGs would be similar to those of the Project, but its operational emissions would be proportionately less, based on reduced throughput compared to the Project. Accordingly, impacts related to operational GHG emissions would be lower than those of the Project, and less than significant.

The Terminal Only Alternative would have greater construction-phase GHGs than the Project, given the scale of demolition, but substantially lower operational GHG emissions than the Project because there would be no onsite processing activities and substantially less vessel traffic. Accordingly, impacts, like those of the Project, would be less than significant.

The No Temporary Increase in Crude Oil Alternative's operational impacts related to GHGs would be identical to those of the Project except during 7 months of the construction period, when reduced vessel traffic and refinery activity could result in somewhat lower GHG emissions, although increased traffic to other refineries could offset that decrease.

5.5.10 Hazards and Hazardous Materials

The No Project Alternative would not have a CEQA impact with respect to hazards and hazardous materials as compared to baseline conditions. The Project would no longer handle crude oil, whereas the No Project Alternative would continue to handle large quantities of crude oil. The No Project would not result in increased vessel activity over the baseline condition. The Reduced Project Alternative would have very similar impacts on biological resources as the Project (326 versus 362 vessels; see Table 5-1). Potential impacts related to spills, would be marginally less, but remain the same as the Project. Construction impacts would be very similar to those of the Project, as they differ only in the installation of one pre-treatment train.

The Terminal Only Alternative would, given the differing scales of construction and demolition at the Rodeo Site, have greater construction-phase impacts than the Project related to the generation and transportation of hazardous construction wastes. This alternative and the Project would handle, store, and transport hazardous materials (gasoline and diesel fuel), but this alternative would have less vessel traffic (110 versus 362 vessels) and no truck traffic. As a result, Terminal Only Alternative would lessen impacts of the Project related to spills, but remain significant and unavoidable.

During 7 months of the construction period, the No Temporary Increase in Crude Oil Alternative would have fewer vessels delivering crude oil, which could result in marginally lower risks related to the transport of hazardous materials (i.e., crude oil) than the Project. However, as discussed above, any reduced vessel traffic the Rodeo Refinery would likely be offset by more traffic to other regional refineries, so that there might not be any net reduction in risk. During operations, hazards and impacts associated with the use, storage, and transport of hazardous materials under the two scenarios would be the same. Although this alternative would result in decreased vessel activity, it would have the same significant and unavoidable impacts of the Project related to spills.

5.5.11 Hydrology and Water Quality

The No Project Alternative would not have a CEQA impact with respect to hydrology and water quality as compared to baseline conditions. With respect to construction, the Project would have less-than-significant impacts, whereas the No Project Alternative would have no impacts. Impacts related to discharge of larger volumes of treated wastewater and cooling water to San Pablo Bay and the Pacific Ocean (from the Santa Maria Site), the No Project Alternative would increase impacts compared to the Project.

The Reduced Project Alternative would have impacts related to both onsite and offsite hazards that would be similar in nature to those of the Project, because the materials and activities involved would be identical, and from a risk perspective, similar to the Project. However, the risk impacts could be marginally lower than those of the Project because of the lower activity levels (particularly throughput and vessel

traffic). Construction impacts would be very similar to those of the Project, as they differ only in the installation of one pre-treatment train.

The Terminal Only Alternative's construction effects on water quality could be greater than those of the Project, given the scale of demolition at the Rodeo Site, but the standard construction controls would minimize those effects and it is likely that impacts would be less than significant. Both the Project and this alternative would handle, store, and transport toxic materials (gasoline and diesel fuel). The Terminal Only Alternative would result in lower vessel traffic than the Project, but increase over baseline conditions. As a result, the Terminal Only Alternative would lessen impacts related to a vessel spill, but remain same significant and unavoidable. The Terminal Only Alternative would have no truck or rail traffic, which would lower impacts, with the exception of vessel spills.

For a 7-month period during construction, the No Temporary Increase in Crude Oil Alternative's impacts on water quality would be similar in magnitude compared to the Project. The significant and unavoidable impact related to vessel spills would be the same as the Project. Other operational impacts of this alternative would be identical to those of the Project.

5.5.12 Transportation

The No Project Alternative does not have a CEQA impact with respect to transportation as compared to baseline conditions. In addition, the No Project Alternative would avoid the less-than-significant impacts of Project's temporary construction traffic. However, the Project would reduce the facility's operational traffic by more than 50 percent as compared to baseline conditions and would completely eliminate truck traffic at the Santa Maria Site. Therefore, although the No Project Alternative's operational traffic has no CEQA impact, its traffic would be greater than that of the Project.

The Reduced Project Alternative's construction-phase effects on local traffic conditions would be very similar to those of the Project, given that the workforce is expected to be the same. Operation of this alternative would have somewhat less impact related to transportation than the Project because truck traffic would be approximately one-third less than with the Project. Impacts related to the vehicle miles traveled would be similar to those of the Project (i.e., less than significant), because worker commuting traffic would be nearly identical in both scenarios.

The Terminal Only Alternative's construction-phase impacts on traffic conditions would likely be similar to those of the Project, because although the scale of demolition would be greater than the scale of construction of the Project, the workforce would likely be similar in size, the primary difference being the duration of construction/demolition activities. Because operation of the Terminal Only Alternative would involve far fewer workers and less truck traffic than the Project (see Table 5-1), overall traffic would be substantially less than that of the Project, and impacts would be less than significant, similar to the Project.

The No Temporary Increase in Crude Oil Alternative's impacts related to traffic would be identical to those of the Project in both construction and operation, as the increase in vessel traffic would not affect truck or worker traffic.

5.5.13 Summary

Normally, the No Project Alternative is expected to be environmentally superior to the other alternatives and the proposed project. In this case, the No Project Alternative does not have any impacts under CEQA because impacts are evaluated against a baseline very similar to the alternative's future operations. Nevertheless, the Project and other alternatives reduce effects on the environment as compared to baseline conditions in many resource areas, and thus, the facility operating under the No Project Alternative could have greater environmental effects than the Project.

Specifically, although the No Project Alternative does not have CEQA impacts, the continued transport, use, and storage of flammable and toxic materials under the No Project Alternative would still present

certain risks of spills, fires, and explosions, would use substantially more energy than the other alternatives, and would emit substantially more criteria air pollutants and GHGs than the other alternatives. The Project, the Reduced Project Alternative, and the No Temporary Increase in Crude Oil Alternative, on the other hand, would substantially reduce some of those risks as compared to baseline conditions, but the significant and unavoidable impacts related to vessel spills would be similar or the same as the Project. The Terminal Only Alternative would further reduce those risks, but vessel traffic would still be slightly above the baseline condition, and therefore, still result in significant and unavoidable impacts from a vessel spill.

Potentially significant increased NO_x emissions from rail operations would be lessened under the No Project and Terminal Only Alternative compared to the Project, but the impact would remain significant and unavoidable in air basins outside the SFBAAB. The No Project Alternative would have fewer impacts than the Project and the other alternatives related to construction activities.

The Reduced Project Alternative and the No Temporary Increase in Crude Oil Alternative would have very similar impacts to the Project, given that all three scenarios would handle similar types and quantities of materials and would have similar levels of construction. The impacts of the Reduced Project Alternative related to air quality, biology, energy, GHGs, hazards and hazardous Materials, and hydrology and water quality would be somewhat smaller than those of the Project, largely because the lower throughput and the resulting smaller or fewer marine vessels, which would lower emissions of air pollutants and GHGs. The impacts of the No Temporary Increase in Crude Oil Alternative during the 7-month transitional phase, would be less because there would be fewer marine vessels than under the Project. However, during operation the No Temporary Increase in Crude Oil would result in the same significant and adverse impacts of the Project related to vessel spills. These significant and unavoidable impacts would not occur under the No Project Alternative and would be substantially lessened under the Terminal Only Alternative since vessel activity would be considerably less than the Project, and lower or similar to the baseline condition.

Accordingly, selecting one of these two alternatives over the Project would provide only marginal reductions in impacts while not meeting the project objectives to the same extent as the Project. The Reduced Project Alternative would partially meet the objectives of maximizing production of renewable fuels to assist California in meeting its goals for renewable energy, GHG emission reductions, and reduced CI for transportation fuels, and would not maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels. The No Temporary Increase in Crude Oil Alternative would not meet the objectives of maintaining current capacity to supply regional market demand for transportation fuels, or of ensuring an adequate supply of transportation fuels during the transition to a renewable fuels facility, but would still result in significant and unavoidable impacts.

The Terminal Only Alternative would have the least environmental impacts of the alternatives considered. This is because the throughput and activity levels of this alternative would be substantially lower than any of the other scenarios. The Terminal Only Alternative would not process either crude oil or renewable feedstocks at the site. Accordingly, emissions and energy use associated with those activities would not occur. Furthermore, the much lower marine vessel and truck traffic of this alternative would further reduce air emissions and would also reduce hazards associated with the transport of hazardous materials.

Although selecting the Terminal Only Alternative would provide reductions in impacts compared to the Project, that alternative would not meet objectives related to converting the Rodeo Refinery to a renewable fuels production facility or of maintaining family-wage jobs in Contra Costa County. It would only partially meet the objective related to supporting local, state, and national goals and policies related to transitioning California to renewable, low-carbon-intensity fuels.

5.6 Environmentally Superior Alternative

Identification of an environmentally superior alternative is required under CEQA. The purpose of identifying such an alternative is to examine ways to eliminate or substantially reduce significant adverse impacts to lower levels of significance.

The Reduced Project Alternative would be the Environmentally Superior Alternative under CEQA. This alternative would meet or partially meet all but one of the Project objectives. The only objective not met is to maintain the facility's current capacity to supply regional market demand for transportation fuels, including renewable and conventional fuels. The Reduced Project Alternative would not maintain the capacity to produce approximately 120,000 bpd to supply regional market demand for both renewable and conventional fuels, as it would provide an overall supply of 102,000 bpd (50,000 bpd of renewable fuels, 40,000 bpd of conventional fuels, and 12,000 bpd of existing capacity for renewable fuels). However, this alternative would reduce the number of annual marine vessels to 326 instead of 362, as proposed under the Project. Other elements of the Reduced Project would be identical to the Project, including demolition of the Carbon Plant and the Santa Maria Site, and cleaning and removal from active service of the Pipeline Sites.

Because the Reduced Project Alternative would include two pre-treatment trains as opposed to three, and reduce the number of vessel calls at the Marine Terminal, impacts would be similar or lessened with the Reduced Project Alternative since less product is received and produced. Therefore, the Reduced Project Alternative is the Environmentally Superior Alternative.

5.7 References

Bryan, T. 2021. Renewable Diesel's Rising Tide. Biodiesel Magazine. January 12, 2021. Available at: http://www.biodieselmagazine.com/articles/2517318/renewable-diesels-rising-tide.

CAISO (California Independent System Operator). 2021. 2021 Summer Loads and Resources Assessment. Available at: http://www.caiso.com/Documents/2021-Summer-Loads-and-Resources-Assessment.pdf.

CARB (California Air Resources Board). 2018. CA-GREET3.0 Model and Tier 1 Simplified Carbon Intensity Calculators. Available at: https://ww2.arb.ca.gov/resources/documents/lcfs-life-cycle-analysis-models-and-documentation.

CEC (California Energy Commission). 2021a. Transportation Fuels Trends, Jet Fuel Overview, Fuel Market Changes & Potential Refinery Closure Impacts. Presentation to BAAQMD Board of Directors Special Meeting. May 25, 2021. Available at: https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-6-rule-5-particulate-emissions-from-refinery-fluidized-catalytic-cracking-units/2020-amendment/documents/20210525_03_fuelspresentation_bods_presentations_050521_revised_op-pdf-pdf.pdf?la=en.

———. 2021b. California's Petroleum Market. https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market

Clements, J. 2019. Solar Farm Land Requirements: How Much Land Do You Need? Green Coast. June 2019. Available at: https://greencoast.org/solar-farm-land-requirements/.

Collins, L. 2020. Green Light for Pilot Phase of Groundbreaking 700 MW Green Hydrogen Project. Recharge, August 3, 2020. Available at: https://www.rechargenews.com/transition/ green-light-for-pilot-phase-of-groundbreaking-700mw-green-hydrogen-project/2-1-851549.

———. 2021. Growing ambition: the world's 22 largest green-hydrogen projects. Recharge, May 20, 2021. Available at: https://www.rechargenews.com/energy-transition/growing-ambition-the-worlds-22-largest-green-hydrogen-projects/2-1-933755.

NREL (National Renewable Energy Laboratory), 2009. Land-Use Requirements of Modern Wind Power Plants in the United States. Technical Report NREL/TP-6A2-45834. Available at: https://www.nrel.gov/docs/fy09osti/45834.pdf.

———. 2013. Land-Use Requirements for Solar Power Plants in the United States. Tech Rept NREL/TP-6A20-56290. Available at: https://www.nrel.gov/docs/fy13osti/56290.pdf.

USDA (US Department of Agriculture). 2021. Renewable Energy Trends, Options, and Potential for Agriculture, Forestry, and Rural America. US Department of Agriculture, Office of the Chief Economist. March. Available at: www.usda.gov/sites/default/files/documents/renewable-energy-trends-2020.pdf.

US Department of Energy. 2020. Cost of Electrolytic Hydrogen Production with Existing Technology. DOE Hydrogen and Fuel Cells Program Record #20004. September 2020. Available at: https://www.hydrogen.energy.gov/pdfs/20004-cost-electrolytic-hydrogen-production.pdf.