CHAPTER 6
Analysis of Alternatives

6.1 General Consideration of Alternatives

An EIR must identify and describe a reasonable range alternatives to a project that would avoid or substantially lessen significant project impacts and attain most of the project objectives. 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)).

6.1.1 Identification of Alternatives

CEQA requires an EIR to evaluate a "no project" alternative to allow decision-makers to compare the impacts of approving a proposed project with the impacts of not approving it (CEQA Guidelines Section 15126.6(e)). The "no project" analysis evaluates the baseline or the conditions that existed at the time of the preparation of the Initial Study (Spring 2013) as an oil refinery. These conditions include ongoing operations, which include the shipment of crude oil by marine vessel, and maintenance activities as well as the activities that reasonably would be expected to occur in the foreseeable future if the proposed project were not approved, based on current plans, permits and available infrastructure and services. The "no project" alternative is analyzed in Section 6.4.1.

Once the significant impacts of the Project are known, it is possible to identify alternatives capable of reducing or eliminating the significant adverse impacts of the project.

If the significant adverse impacts are proportional to the size of a project, then reducing the size of the project may result in a suitable alternative. Given the nature of the Project, this analysis is focused on project impacts related to the Project footprint and design. The alternatives analysis identifies and evaluates scenarios under which various project designs and footprints are formulated to minimize specific impacts that otherwise would occur with the Project. These reduced project alternatives are analyzed in Section 6.4.2.

On the other hand, if a particular element of a project causes a significant adverse impact, eliminating or replacing that element may result in a suitable alternative. Also, a different site for the project may eliminate or reduce an impact. The “different site” alternative is analyzed in Section 6.4.3

If the "no project" alternative is the environmentally superior alternative, the EIR must identify the “environmentally superior” alternative among the rest of the alternatives. (CEQA Guidelines Section 15126.6(e)(2)). The “environmentally superior” alternative is identified in Section 6.4.4.

6.1.2 Alternatives Screening Methodology

The evaluation of alternatives to the Project was completed using a screening process that consisted of three steps:

Step 1: Clarify the description of each alternative to allow comparative evaluation.

Step 2: Evaluate each alternative using CEQA criteria (defined below).

Step 3: Determine the suitability of each alternative for full analysis in the EIR. Eliminate from further analysis all infeasible alternatives and alternatives that clearly offer no potential for overall environmental advantage.

Following the three-step screening process, the advantages and disadvantages of the remaining alternatives were carefully weighed with respect to CEQA’s criteria for consideration of alternatives:

- Does the alternative meet most of the basic objectives of the proposed project?
- Is the alternative feasible economically, environmentally, legally, socially, and technically?
- Does the alternative avoid or substantially lessen any significant effects of the Project (considering also whether the alternative could create significant effects potentially greater than those of the proposed project)?

6.1.3 Consistency with Project Objectives

The Project proposes to install rail spur tracks and new transfer equipment that would enable the Refinery to receive a portion of its crude oil deliveries by rail car. Valero has identified the following specific project objectives for the Crude by Rail Project:

1. Allow for the delivery of up to 70,000 barrels per day of North American-sourced crude oil by rail.

2. Replace marine vessel delivery with rail delivery of up to 70,000 barrels per day of crude oil.

3. Mitigate Project-related impacts.

4. Implement the Project without changing existing Refinery process equipment or Refinery process operations.

5. Continue to meet requirements of existing rules and regulations pertaining to oil refining including the State of California Global Warming Solutions Act of 2006 (AB 32).

CEQA Guidelines Section 15126.6 requires an EIR to describe a range of reasonable alternatives to the proposed project, or its location, that would feasibly attain most, but not necessarily all, of the basic objectives.

6.1.4 Feasibility

CEQA Guidelines Section 15364 defines "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.*

In addition, CEQA requires that the Lead Agency consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and project proponent's control over alternative sites in determining the range of alternatives to be evaluated in the EIR (CEQA Guidelines Section 15126.6(f)). Feasibility can include three components:

- **Legal Feasibility:** Does the alternative have legal implications that may prohibit or substantially limit the feasibility of permitting the project?

- **Regulatory Feasibility:** Does the alternative have the potential to include lands that have regulatory restrictions that may substantially limit the feasibility of, or permitting of, the project within a reasonable period of time?

- **Technical Feasibility:** Is the alternative feasible from a technological perspective, considering available technology?

For the screening analysis, the legal, technical, and regulatory feasibility of potential alternatives must assessed.

This screening analysis does not eliminate potential alternatives based on relative economic factors or costs of the alternatives (as long as they are found to be economically feasible) since CEQA Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives or would be more costly" (CEQA Guidelines Section 16126.6(b)).

For the Project, factors considered when addressing the feasibility of an alternative included, without limitation, site suitability, ability to support infrastructure, general plan consistency, consistency with other plans or regulatory limitations, jurisdictional boundaries, economic viability, and whether the Applicant reasonably can acquire, control, or otherwise have access to an alternative site. None of these factors alone establishes a fixed limit on the scope of alternatives (CEQA Guidelines §15126.6(f)).

6.1.5 Potential to Eliminate Significant Environmental Effects

CEQA requires lead agencies to identify alternatives that could "avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines §15126.6(a)). If an alternative was identified that clearly would not provide potential overall environmental advantage as compared to the Project, it was eliminated from further consideration. At the screening stage, it is neither possible, nor legally required, to evaluate all of the impacts of the alternatives in comparison to the Project with absolute certainty, nor is it possible to quantify impacts. It is possible, however, to identify elements of an alternative that are likely to be the sources of impact and to relate them generally to general conditions in the subject area.

6.2 Potentially Significant Impacts of the Project

As explained above, CEQA requires the lead agency to identify and evaluate a reasonable range of alternatives that could avoid or substantially lessen any of the significant adverse environmental impacts of the Project. This EIR evaluates the potential impacts of implementing the Project. As discussed in detail in EIR Chapters 4 and 5, after the implementation of the mitigation measures proposed in this EIR, there would still remain a significant and unavoidable impact to Air Quality (see Impacts 4.1-1b and 4.1-2) from indirect NOx emissions along the Union Pacific Railroad mainline. All other environmental impacts associated with the Project were determined to be insignificant.

6.3 Alternatives Considered but Dismissed from Further Consideration in this EIR

The alternatives listed below are those that have been eliminated from detailed analysis. These alternatives were not included for further consideration because they would not meet the basic Project objectives, would not be feasible, and/or would not avoid or substantially reduce potential environmental effects of the Project.

Each alternative considered is summarized below, along with an explanation as to why it was not carried forward for further evaluation.

6.3.1 Locate Tank car Unloading Racks at the Port of Benicia Valero Marine Terminal

The existing Valero Marine Terminal at the Port of Benicia was considered as a location for constructing the tank car transfer equipment; however, this location was rejected as infeasible due to insufficient space to locate the tank car offloading rack within limits of existing Valero property.

6.3.2 Locate Tank car Unloading Racks at the AMPORTS Property Near Benicia Marine Terminal

Constructing the transfer equipment on property now owned by AMPORTS in the vicinity of the Valero Marine Terminal was considered; however, this alternative would interfere with existing vehicle import offloading activities. In addition, similar to the Port of Benicia Valero Marine Terminal alternative, there is insufficient space to locate the tank car offloading rack. For these two reasons, this alternative was rejected as infeasible.

6.3.3 Receiving Crude from the Proposed WesPac Energy--Pittsburg Terminal

A third party project – a terminal for WesPac Energy–Pittsburg Terminal (WesPac Terminal) – is currently undergoing CEQA review by the City of Pittsburg. This project has the potential to offload crude oil from tank cars. The WesPac Terminal was historically used to berth and moor vessels, as well as to support the required equipment to transfer product between marine vessels and the onshore storage tanks; however, this facility was placed into "caretaker status" in 2003, and is not currently in service. However, WesPac Energy–Pittsburg LLC has proposed to reactivate the existing oil storage and transfer facilities located at the NRG Energy, Inc. Pittsburg Generating Station.

The WesPac Terminal project, if implemented as proposed, would receive crude oil and partially refined crude oil delivered by trains, marine vessels, and pipelines, store the oil in existing or new storage tanks, and then transfer oil to nearby refineries. In the WesPac Draft Environmental Impact Report (City of Pittsburg, 2013), all five Bay Area refineries are listed by WesPac as possible refineries to receive crude handled at the WesPac Terminal. According to the City of Pittsburg website, as of March 2014 the WesPac project is undergoing additional review. The City of Pittsburg does not currently have a timeframe available for this additional review. The WesPac Terminal as proposed would connect to two third-party common-carrier pipelines, including the KLM (Kettleman-Los Medanos) Pipeline (owned and operated by Chevron Pipeline Company) that currently provides crude oil to the Valero Benicia Refinery and other Bay Area refineries.

The alternative was considered whereby Valero would procure crude oil from WesPac by either delivering crude oil to the WesPac facility or simply purchasing crude oil from the WesPac facility that was delivered from other suppliers. The crude oil would then be delivered to the Refinery by the KLM pipeline.

Valero has no plans to utilize the proposed WesPac Terminal in Pittsburg because, according to Valero, there is insufficient pipeline capacity available to transport the additional crude to the Refinery through existing pipelines. Without additional pipeline capacity between the proposed WesPac facility and Valero (involving new crossings of the Carquinez Strait, and additional CEQA review), this alternative is infeasible because it would not fulfill the basic objective of allowing for delivery of as much as 70,000 barrels per day of North American crude oil.

6.3.4 Project with an Onsite Wye Rail Spur

Early designs of the project considered utilizing an existing rail spur located within the Refinery property to store empty tank cars prior to their departure from the Refinery. In this alternative, new track would be installed to connect the petroleum coke spur on the west side of the Refinery to the new spur for the Project in the form of a wye (referred to as "the wye connector"). This alternative was rejected because the operation would interfere with existing railway activity within the Refinery and because of concern for a potential safety risk from the storage of tank cars on an inclined track (the petroleum coke spur) within the Refinery.

6.4 Alternatives to the Project

6.4.1 No Project Alternative

CEQA requires an evaluation of the No Project Alternative so that decision makers can compare the impacts of approving the project with the impacts of not approving the project. According to CEQA Guidelines §15126.6(e), the No Project Alternative must include:

(a) the assumption that conditions at the time of the Notice of Preparation (i.e., baseline environmental conditions) would not be changed since the proposed project would not be installed, and

(b) the events or actions that would be reasonably expected to occur in the foreseeable future if the project were not approved.

The first condition is described in the EIR for each environmental discipline as the "environmental baseline," since no impacts of the Project would be created. This section defines the second condition of reasonably foreseeable actions or events.

The No Project alternative would consist of the existing Refinery configuration and operation, together with on-going maintenance activities and other projects planned or currently underway. The Refinery's regular maintenance turnarounds would continue to occur.

Under the No Project alternative, the Project would not be constructed, which would prevent crude oil from being transported to the Refinery via tank car. The Refinery's existing facilities would remain at the site of the proposed unloading racks and spurs and the Refinery would continue to use marine vessels to import crude oil. The amount of California crude oil delivered to the Refinery by pipeline would remain unchanged. Valero would not be able to achieve the

basic project objectives, including access to as much as 70,000 barrels per day of North American crude oil (see Section 6.1.2).

Air emissions (both criteria pollutants and greenhouse gases) from marine vessels that transport crude oil would remain unchanged, because there would be no reduction in marine vessel trips.

Emissions of greenhouse gases would be higher in the Bay Area Basin with the No Project alternative than with the Project because there would be no reduction from elimination of up to 82 percent of marine vessel trips annually. Global greenhouse gas emissions would be also higher with the No Project alternative than with the proposed project. Direct Project-related emissions of ROG, NOx, CO, PM and SO_2 would all be higher with the No Project alternative than with the Project, however because there would be no indirect emissions from crude by rail trains, the significant and unavoidable air quality impact (4.1-1b and 4.1-2) would not occur because NO_x emissions would not occur in the Sacramento Metropolitan Air Quality Management District or the Yolo-Solano Air Quality Management District.

6.4.2 Reduced-Project Alternatives

Reduced-project alternatives are usually considered as a means to reduce potentially adverse environmental effects of a project. A reduced-project alternative considers components of the Project that could potentially be eliminated or reduced from the full Project scope. Alternatives 1 and 2 both involve reduced operations.

6.4.2.1 Alternative 1 – Limiting Project to One 50-Car Train Delivery per Day

Under this alternative, the Project would operate with a 50% reduction in the proposed number of train deliveries to the Refinery per day.[1] Deliveries would be limited to a maximum of one 50-car train each day, containing a daily total of 35,000 barrels. This single train would be delivered during nighttime hours (between 8:00 p.m. and 6:00 a.m.) and once emptied, would depart the Refinery during nighttime hours and be returned to its origination point. All other aspects of this alternative would be the same as the Project.

Analysis

Alternative 1 would have essentially the same impacts as the Project except in the areas of air quality and climate change. Alternative 1 would reduce the emission of criteria pollutants, toxic air emissions, and greenhouse gases from trains as compared with the Project. At the same time, however, Alternative 1 would result in smaller reductions in the same pollutants from marine vessels. Overall, Alternative 1 would result in greater emissions of criteria pollutants, toxic air emissions, and greenhouse gases.

[1] Note: The Refinery has limited space in proximity to the proposed unloading rack. Therefore, it is capable of accepting delivery of only 50 railcars at a time.

As with the Project, under Alternative 1 locomotive emissions would have a significant NOx impact within the Yolo-Solano Air Quality Management District (AQMD). Alternative 1, however, would avoid the Project's significant NOx impact in the Sacramento Metro AQMD.

By eliminating two rail crossings per day, Alternative 1 would reduce local traffic impacts.

Alternative 1 would not allow Valero to fully achieve the primary Project objectives 1 and 2, which includes receiving as much as 70,000 barrels of North American crude oil by rail and achieving reductions in maritime deliveries and emissions (see Section 6.1.2, above), but would still fulfill Project objectives 3 through 5.

As explained in Section 3.7, Union Pacific has taken the position that any limitation on the volume of product it ships or the frequency, route, or configuration of such shipments is clearly preempted by federal law (See Appendix L). Thus, Alternative 1 may be legally infeasible.

6.4.2.2 Alternative 2 – Two 50-Car Trains Delivered during Nighttime Hours

Under Alternative 2, Valero would be required to schedule all Park Road train crossings during the nighttime hours between 8:00 p.m. and 6:00 a.m. This could be accomplished through sequencing two 50-car trains such that they are delivered and subsequently depart only during nighttime hours. All other aspects of this alternative would be the same as the Project.

Analysis

As with Alternative 1, for most environmental topics, this alternative would have essentially the same impacts as the Project. Alternative 1 would have different impacts in the areas of noise and traffic.

As compared with the Project, there would be more noise associated with the movement and unloading of trains at night because two trains would arrive and depart at night rather than just one. While the highest level of noise would be the same, Alternative 1 would achieve that level for longer periods of time.

As compared with the Project, under Alternative 1 train crossings at Park Road would affect fewer vehicles because there is substantially less traffic at night than during the day. The Project, however, will not have a significant effect on traffic; thus, Alternative 1 will not eliminate any significant effects. Alternative 2 would still allow Valero to achieve most of its Project objectives.

6.4.3 Alternative 3 – Offsite Unloading Terminal

As discussed above in Sections 6.3.1 through 6.3.3, several alternative sites were considered and rejected as being infeasible. Given the hilly site topography and generally congested nature of the Valero Benicia Refinery, there are no other areas onsite which could support the unloading facility and necessary rail lines. In general, siting the tank car unloading facility outside the Refinery boundary would carry with it the need for an unloading rack and a new pipeline to bring the crude from this offsite facility to the Refinery.

One possible alternative offsite loading facility, the WesPac Terminal in Pittsburg, was discussed and eliminated as infeasible for reasons discussed above in Section 6.3.3.

Alternative 3 would consist of a separate, offsite facility where crude oil could be shipped by either marine vessel or rail, and then transferred to the Refinery presumably by a new pipeline. There are two variations to this alternative: 1) the offsite terminal would be developed and operated by Valero, or 2) the offsite terminal would be independently developed and operated by a third party.

Regardless of ownership, environmental impacts would occur if such a facility were to be built.

If Valero were the operator and owner of an offsite terminal, all impacts (construction and operation including a pipeline to the Refinery) would have to be considered as part of the proposed Crude by Rail Project and considered in the current CEQA analysis of this Project. Most of the impacts identified for the proposed CBR Project would occur at a Valero owned offsite terminal, although potential impacts to local traffic flow could likely be reduced depending on where the terminal was located. Alternative 3 would involve greater construction impacts, based on the need to build additional infrastructure, than would occur if the unloading racks were constructed within the Refinery.

Under the third party operator[2] variant, new or existing infrastructure could be developed to receive crude oil and transfer it to Valero via new pipeline. In this case it is likely that new CEQA review would be required for the offsite facility and the pipeline to Valero would have to be considered within this analysis as a direct impact of the project.

Analysis

There are many unknowns under this alternative, including whether this would be a new facility or an existing one, and how far away this facility would be from the Refinery. The requirement for a new pipeline from this offsite facility alone would include substantive environmental impacts from all construction activities (e.g., air quality, greenhouse gas emissions, noise, biological and cultural resources), which could exceed those of construction of the Project. Regardless of method of shipping crude oil to any offsite terminal (marine vessel or tank car), both methods have potential for accidental release of crude into sensitive areas.

In the final analysis, any variation of Alternative 3 would simply add the impacts of the new pipeline construction and operation to the Project's impacts. Thus, the impacts of Alternative 3 would be at least somewhat greater than those of the Project. Although Alternative 3 would meet all objectives of the Project and could reduce the impacts to the local Refinery / Benicia area, many of these same impacts would be simply transferred to another location.

[2] Besides the proposed WesPac Terminal project discussed in Section 6.3.3, several of the nearby refineries and marine terminals could conceivably be configured to receive crude oil by rail and transfer this to the Valero Refinery via new pipeline.

6.4.4 Environmentally Superior Alternative

If the no project alternative is considered the environmentally superior alternative, CEQA Guidelines Section 15126.6(e)(2) requires an EIR to also identify an environmentally superior alternative among the other alternatives. Here, the no project alternative is not environmentally superior to the Project. Therefore, it is not necessary to identify an environmentally superior alternative from among the other alternatives. Nevertheless, this EIR identifies herein an alternative that may be superior to the Project in certain specific and limited respects, as discussed below.

CEQA does not provide specific direction regarding the methodology of comparing alternatives to a proposed project. Each project must be evaluated for the issues and impacts that are most important; this will vary depending on the project type and the environmental setting. Issue areas with significant long-term impacts are generally given more weight in comparing alternatives. Impacts that are short-term (e.g., construction-related impacts) or those that can be mitigated to less than significant levels are generally considered to be less important.

As explained above in Section 6.4.2, Alternative 1 is environmentally superior to the Project in a few respects. Alternative 1 would reduce the emission of criteria pollutants, toxic air emissions, and greenhouse gases from trains as compared with the Project, and avoid the Project's significant NOx impact in the Sacramento Metro AQMD. However, as explained above, this alternative may be legally infeasible because of federal preemption. Alternative 1 would also reduce the impacts of train crossings on traffic. Since the Project would not have a significant effect on traffic, however, Alternative 1 would not avoid any significant traffic effect.

The Project, however, is environmentally superior to Alternative 1 with respect to overall air quality. Alternative 1 would result in greater emissions of criteria pollutants, toxic air emissions, and greenhouse gases than the Project overall, because Alternative 1 involves 50% more emissions of these same pollutants from marine vessels.

Otherwise, the impacts of Alternative 1 and the Project are the same.