

5.1 Introduction

The California Environmental Quality Act (CEQA) requires that an environmental impact report (EIR) describe a range of reasonable alternatives to the project or to the location of the project that could feasibly avoid or lessen any significant environmental impacts while substantially attaining the project's basic objectives. An EIR should also evaluate the comparative merits of the alternatives.

As required by CEQA, this chapter describes the No Project Alternative and compares its impacts with those of the Proposed Project. Several alternatives to the Proposed Project are also analyzed in this EIR. This chapter described these considered alternatives and compares the potential environmental impacts of these alternatives with the Proposed Project. This chapter also discusses other alternatives considered but dismissed from further evaluation.

Key provisions of the CEQA Guidelines Section 15126.6 pertaining to the analysis of alternatives to a project are summarized below.

- The discussion of alternatives will 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 those alternatives would impede, to some degree, the attainment of the project objectives or be more costly.
- The No Project Alternative will be evaluated along with its impacts. The No Project analysis will discuss the existing conditions at the time the Notice of Preparation was published as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved based on current plans and consistent with available infrastructure and community services.
- The range of alternatives required in an EIR is governed by a "rule of reason;" therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. Alternatives will be limited to those that would avoid or substantially lessen any of the significant effects of the project.
- An EIR need not consider an alternative with effects that cannot be reasonably ascertained, when implementation is remote and speculative, and if its selection would not achieve the basic project objectives.
- The range of feasible alternatives is selected and discussed in a manner to foster meaningful public participation and informed decision-making. Among the factors that may be taken into account when addressing the feasibility of alternatives, as described in CEQA Guidelines Section 15126.6(f)(1), are environmental impacts, site suitability, economic viability, social and political acceptability, technological capacity, availability of infrastructure, general plan consistency, regulatory limitations, jurisdictional boundaries, and whether the proponent could reasonably acquire, control, or otherwise have access to the alternative site.

- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

The San Joaquin Regional Rail Commission (SJRRC) considered a range of alternatives before selecting the alternatives to be analyzed in this EIR. Alternatives were identified through input from the public, agencies, and stakeholders during scoping. Scoping was conducted in 2018 when the extension from Ceres to Merced was considered in the EIR programmatically and in 2020 for the project-level review of the Proposed Project. Appendix A, *ACE Extension Scoping Memorandum*, contains the scoping report detailing the scoping process, including the notification and scoping activities undertaken in 2020.

As explained in Section 5.6, *Alternatives Screening Process*, alternatives determined not to meet all or most of the Proposed Project's objectives, to be infeasible, and/or not to avoid or substantially reduce one or more significant impacts of the Proposed Project were dismissed from further analysis.

5.2 Alternatives Considered for Further Analysis

As discussed in Section 5.6, *Alternatives Screening Process*, SJRRC considered a wide range of alternatives suggested during the scoping process and then conducted a three-part screening evaluation to select the alternatives to be analyzed in this EIR. Alternatives determined to be infeasible, to not avoid or substantially reduce one or more significant impacts of the Proposed Project, or to not meet all or most of the Proposed Project's objectives were dismissed from further analysis.

Based on the screening process results, this EIR analyzes the following four alternatives (summarized in Table 5-1).

- Alternative analyzed in Chapter 2, *Project Description*; Chapter 3, *Environmental Impact Analysis*; and Chapter 4, *Other CEQA-Required Analysis*:
 - Atwater Station Alternative
- Alternatives analyzed at a lesser level of detail¹ in this chapter:
 - No Project Alternative
 - Merced Layover Facility Alternative
 - Merced Station Alternative

¹ CEQA does not require the analysis of alternatives at an equal level of detail to the Proposed Project and allows for the analysis of alternatives at a lesser level of detail.

Table 5-1. Summary of Alternatives Analyzed in this EIR

Proposed Project	Alternatives other than the No Project Alternative	Evaluation Level of Detail
Ceres to Merced Extension Alignment	Rail alignment as described for the proposed alignment, but extended 0.6 mile southward to the Merced Station Alternative	Lesser level of detail (see Section 5.3.3)
Turlock Station	None	N/A
Livingston Station	Atwater Station Alternative	Equal level of detail (see Chapters 2, 3, and 4)
Merced Station	Merced Station Alternative	Lesser level of detail (see Section 5.3.3)
Merced Layover & Maintenance Facility	Merced Layover Facility Alternative	Lesser level of detail (see Section 5.3.3)

5.3 Analysis of Alternatives at a Lesser Level of Detail

The screening process identified potentially feasible alternatives that SJRRC decided to analyze at an equal level of detail as the Proposed Project in Chapters 3, *Environmental Impact Analysis*, and 4, *Other CEQA-Required Analysis*. The screening process identified two additional potentially feasible alternatives that are analyzed in this chapter along with analysis of the No Project Alternative, which is required by CEQA.

5.3.1 No Project Alternative

5.3.1.1 CEQA Requirements

Section 15126.6(e) of the CEQA Guidelines requires the analysis of a No Project Alternative. The No Project Alternative analysis must discuss the existing conditions as well as what would reasonably be expected to occur in the foreseeable future if the project were not approved. Section 15126.6(e)(3)(B) of the CEQA Guidelines states the following.

If the project is...a development project on an identifiable property, the “no project” alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in its existing state against environmental effects that would occur if the project were approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this “no project” consequence should be discussed. In certain instances, the “no project” alternative means “no build,” wherein the existing environmental setting is maintained. However, where failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project’s non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment.

The No Project Alternative is neither required nor expected to meet the project’s basic objectives or avoid or reduce any of the significant impacts associated with the project.

5.3.1.2 No Project Alternative Description

Under the No Project Alternative and as part of the Valley Rail Sacramento Extension Project, which was analyzed in its own EIR, ACE would extend train service from Stockton to Sacramento (Natomas/ Sacramento Airport Station) and would include a shuttle from the Natomas/ Sacramento Airport Station to the Sacramento Airport. In addition, under the No Project Alternative and as part of the ACE Lathrop to Ceres Extension Project, which was analyzed previously at a project-level detail in the *ACE Extension Lathrop to Ceres/Merced EIR* (Prior EIR), ACE would extend train service from Lathrop to Ceres and would include buses between Ceres and Merced, connecting to the trains at Ceres.

ACE service would include the following in the morning and in the evening under the No Project Alternative in 2030.

- Two direct trains between Stockton and San Jose.
- One direct train between Ceres and San Jose with connecting bus service between Ceres and Merced.
- One direct train between Natomas and San Jose.
- One direct train between Natomas and Stockton.
- Three trains between Ceres and Natomas via the Natomas Extension. These three trains also connect at North Lathrop to other inbound ACE trains with service to San Jose.
- Four buses between Ceres and Merced, connecting to the trains at Ceres.

No new construction activities would occur for the area between Ceres and Merced under this alternative. Unlike the Proposed Project, the No Project Alternative would not extend ACE train service to Merced. While the No Project Alternative would not increase train service between Ceres and Merced, ridership is expected to increase as it has in recent years. Table 5-2 shows the estimated ACE passenger volumes with and without the Proposed Project under existing conditions, 2030, and 2040.

Modelling of annual ridership for the existing ACE corridor without the extension of service to Merced indicates that it will increase by 148 percent to approximately 3.7 million riders in 2030. This trend is projected to continue, and by 2040, the ridership demand without extension of service to Merced is projected to increase to approximately 4.8 million annual riders. The increase in ridership can be attributed to the extension of ACE service to Sacramento and to Merced, which is included as a part of the No Project Alternative. As shown, ACE ridership is expected to increase with or without the Proposed Project but would increase by greater amounts with the Proposed Project than without.

Table 5-2. System Ridership with and without the Proposed Project

Ridership Scenarios	Pre-COVID-19 Ridership		Forecasted Annual Riders		
	2019^a	2030	% Increase from 2019	2040	% Increase from 2019
No Project Alternative ^b	1,506,203	3,735,500	148%	4,797,100	218%
Proposed Project	--	4,176,800	177%	5,364,100	256%

Source: Appendix D, *ACE Extension Ridership, Revenue, and Benefits Report* and San Joaquin Regional Rail Commission 2020.

^a Calculated between June 2018 and July 2019.

^b The No Project Alternative consists of ACE service, with the addition of the Sacramento Extension and Ceres Extension. Service includes the following: two direct trains between Stockton and San Jose; one direct train between Ceres and San Jose with connecting bus service between Ceres and Merced; one direct train between Natomas and San Jose; one direct train between Natomas and Stockton; three trains between Ceres and Natomas via the Natomas Extension with connecting bus service between Ceres and Merced, these three trains also connect at North Lathrop to other inbound ACE trains with service to San Jose; and four buses between Ceres and Merced, connecting to the trains at Ceres.

5.3.1.3 Environmental Impacts

This assessment focuses on the environmental impacts associated with the differences between the No Project Alternative and the Proposed Project. Because the environmental impacts associated with the extension of ACE service to Sacramento and Ceres have already been assessed in previous EIRs and because the Proposed Project would not change the extended service to Sacramento or Ceres, this analysis below focuses on the physical impacts associated in the area between Ceres and Merced.

Aesthetics

Under the No Project Alternative, there would be no permanent change to visual character, views, nighttime lighting, and daytime glare. This alternative would not involve the construction of stations, track improvements, a layover and maintenance facility, vegetation removal, tree trimming, intersection and driveway modifications, new or modified culverts, and new or modified bridge structures. Current railroad right-of-way (ROW) maintenance of vegetation would continue as at present.

The Proposed Project would have significant, but mitigable aesthetic impacts at all locations. The No Project Alternative would have no new impacts on aesthetics, and its impacts would be less than the impacts of the Proposed Project.

Agricultural Resources

Under the No Project Alternative, there would be no temporary use of Important Farmland or direct conversion of Important Farmland to nonagricultural use. Therefore, the No Project Alternative would have no impact on agricultural resources, and its impacts would be less than the impacts of the Proposed Project (which would be significant and unavoidable due to the permanent conversion of Important Farmland).

Air Quality

Under the No Project Alternative, there would be no construction emissions and no extended ACE service to Merced. As noted above, ACE ridership would continue to grow over time, but at much lower levels than with the Proposed Project.

The No Project Alternative would avoid all construction emissions. As described in Section 3.3, *Air Quality*, the construction emissions of the Proposed Project would be mitigated to a less-than-significant level by the identified mitigation.

Operations of both the No Project Alternative and the Proposed Project would reduce VMT by providing an alternative form of transportation for individuals using vehicles. As identified in Table 5-2, the ridership is expected to be greater for the Proposed Project than the No Project Alternative and as such the Proposed Project is expected to result in a greater reduction in VMT and criteria pollutants than the No Project Alternative. As described in Section 3.3, *Air Quality*, the Proposed Project would provide an overall benefit from reducing all criteria pollutants in the Bay Area Air Quality Management District (BAAQMD). The benefit from reducing criteria pollutants in the BAAQMD would be greater for the Proposed Project than the No Project Alternative. Furthermore, in the San Joaquin Valley Air Pollution Control District (SJVAPCD), the No Project Alternative would result in greater daily emissions of carbon monoxide and particulate matter less than 10 and 2.5 micrometers in size in 2030 and 2040 than the Proposed Project and approximately the same daily emissions of reactive organic gases and sulfur oxides. Under the No Project Alternative, lower train ridership would mean less diesel locomotive operations and, therefore, more emissions would be vehicle-related. These vehicle-related emissions would outweigh the lower diesel locomotive operations in the BAAQMD for all criteria pollutants and for the three compounds (CO, PM_{2.5}, and PM₁₀) noted above. The No Project Alternative would result in lower daily emissions of NO_x in SJVAPCD, but the Proposed Project would not result in a significant increase in NO_x emissions, so this difference is less than significant. Overall, the No Project Alternative would result in worse regional and local air quality in the BAAQMD and the SJVAPCD.

As discussed in Section 3.3, *Air Quality*, increased operations would increase localized diesel particulate matter (DPM) emissions along the extended ACE corridor. However, the Proposed Project would result in a less-than-significant incremental cancer risk compared to the No Project Alternative.

Overall, the No Project Alternative is considered to have higher impacts on air quality than the Proposed Project due to the overall lower amount criteria pollutant emissions with the Proposed Project.

Biological Resources

The No Project Alternative would avoid new construction or operational impacts on biological resources including in areas of greatest biological sensitivity at the large river crossings, such as over the Merced River and Bear Creek.

The No Project Alternative would result in greater automobile travel and the associated potential for contaminant (e.g., oil, grease) spills related to automobile operations and maintenance but would result in less potential for contaminant spills associated with increased passenger train operations. Overall, given the reduction in vehicle fuel used with the Proposed Project, the No Project Alternative is expected to result in a greater potential for spills and/or runoff than the Proposed

1 Project, and thus greater potential overall to result in secondary impacts on biological resources in
2 relation to spills and runoff.

3 **Cultural Resources**

4 The No Project Alternative would not have construction- or operation-related effects on cultural
5 resources. Construction of the Proposed Project, in comparison, would result in impacts on cultural
6 resources that would be minimized to a less than significant level with mitigation.

7 **Energy**

8 Under the No Project Alternative, energy consumption would be higher than with the Proposed
9 Project.

10 As discussed in Section 3.6, *Energy Resources*, the increased service and accessibility to transit
11 services with the Proposed Project would encourage the diversion of travelers and commuters from
12 automobiles to passenger rail. The reduction in automobile vehicle miles traveled (VMT) and the
13 related decrease in automobile fuel consumption would offset the operational energy demands
14 (diesel fuel for locomotives and electricity for the bus bridge and station lighting) of the Proposed
15 Project.

16 The No Project Alternative would reduce substantially less VMT than the Proposed Project. Thus, the
17 No Project Alternative would not decrease fuel consumption to the degree the Proposed Project
18 would. Thus, the No Project Alternative would consume a greater amount of energy compared to the
19 Proposed Project. These differences reflect the net efficiency of the ACE commuter rail service
20 compared to that of individual automobiles.

21 **Geology and Soils**

22 The No Project Alternative would not result in any new exposure of structures and people to
23 adverse geology, soil, and seismic conditions. Therefore, impacts associated with adverse geology,
24 soil, and seismic conditions would be less than with the Proposed Project. However, as described in
25 Section 3.7, *Geology and Soils*, the Proposed Project would not result in significant impacts related to
26 geology, soils, or seismicity, and the differences between the No Project Alternative and the
27 Proposed Project are not substantial.

28 The No Project Alternative would not have construction- or operation-related effects on
29 paleontological resources. Construction of the Proposed Project, in comparison, could directly or
30 indirectly impact paleontological resources that would be minimized to a less-than-significant level
31 with the implementation of mitigation measures.

32 **Greenhouse Gas Emissions**

33 As described in Section 3.8, *Greenhouse Gas Emissions*, the No Project Alternative would result in
34 higher greenhouse gas (GHG) emissions than the Proposed Project. Under the No Project
35 Alternative, lower train ridership would mean less diesel locomotive operations and, therefore,
36 more emissions would be vehicle related. These vehicle-related emissions would far outweigh the
37 lower diesel locomotive operations. With the Proposed Project, the greater ridership (and
38 reductions in vehicle-related emissions) would far outweigh the greater diesel locomotive and
39 shuttle emissions that would result from the Proposed Project.

Hazards and Hazardous Materials

The No Project Alternative would result in higher overall diesel and gasoline use compared to the Proposed Project because it would require more handling of fuel. As discussed in Section 3.16, *Safety and Security*, compared to air and rail modes of transportation, highway travel is the most used and the most dangerous mode of transportation. It is not expected that the Proposed Project would substantially increase hazards to workers, passengers, or adjacent human and environmental receptors along rail routes due to design features and because rail systems must comply with Federal Railroad Administration (FRA) and California Public Utilities Commission requirements for tracks, equipment, railroad operating rules, and practices. Because the No Project Alternative would result in greater potential for highway accidents than the Proposed Project and more fuel handling and use overall, the No Project Alternative is considered to have a greater impact associated with the release and exposure of hazardous materials than the Proposed Project.

Hydrology and Water Quality

With the No Project Alternative, the impervious surface area in the study area and drainage would remain the same as at present. Operation of the No Project Alternative would not increase stormwater runoff that could degrade water quality. As noted under *Hazards and Hazardous Materials*, the Proposed Project is considered overall to have less potential for spills and runoff in relation to fuel handling and use because it would result in less handling of transportation fuel overall (with the reduction in VMT and automobile fuel consumption). Because the potential operational impact of the Proposed Project on water quality could be addressed through applying existing regulations, the No Project Alternative is considered to have a higher risk of spills and water quality effects.

Land Use and Planning

With the No Project Alternative, the stations and the layover and maintenance facility would not be constructed inside or outside the existing railroad ROW. The No Project Alternative would also not physically divide an existing community and would not create conflicts with an applicable land use plan, policy, or regulation for the purpose of avoiding or mitigating an environmental effect.

The No Project Alternative would not increase connectivity and transportation options and would not support the ability of cities to pursue transit-oriented development (TOD). The Proposed Project would establish stations in existing infill areas within the cities of Turlock, Livingston, and Merced. As a result, the No Project Alternative would neither complement nor help fulfill local plans concerning land use patterns and intensities throughout the ACE corridor. The No Project Alternative would not afford improved mobility and an alternative to automobile travel, which would not be beneficial for regional planning agencies in meeting their responsibilities under Senate Bill 375 to promote and implement sustainable community strategies. Overall, the Proposed Project would result in fewer potential impacts on land use and policy documents than the No Project Alternative.

Noise and Vibration

The No Project Alternative would not result in any construction noise, compared to the Proposed Project, which is expected to result in a significant and unavoidable construction noise impact. In addition, the No Project Alternative would result in less noise and vibration from passenger rail operations along the extended corridor, compared to the Proposed Project, which is expected to

1 result in a less than significant noise impact from operations and a less than significant (with
2 mitigation) vibration impact from operation. However, the No Project Alternative would result in
3 more highway traffic noise along the extension corridor and along highways to and from the San
4 Francisco Bay Area (Bay Area). Thus, the noise levels experienced by nearby receptors would be
5 similar under the No Project Alternative and the Proposed Project.

6 **Population and Housing**

7 The No Project Alternative would not have the potential to attract new growth or accelerate
8 population growth or displace existing housing units. Therefore, the No Project Alternative would
9 result in less of an impact on population and housing than the Proposed Project. However, as
10 discussed in Section 3.13, *Population and Housing*, the Proposed Project would not displace any
11 residences and would not induce unplanned growth around proposed stations because stations are
12 located in areas consistent with local planning and land use policies and would not result in
13 unplanned growth.

14 **Public Services**

15 As discussed in Section 3.16, *Safety and Security*, highway travel is a more dangerous mode of
16 transportation than commuter rail. Thus, the No Project Alternative could result in a greater
17 demand for fire and emergency services and, therefore, in a greater impact on public services than
18 the Proposed Project.

19 **Recreation**

20 The No Project Alternative would avoid the temporary impacts of construction adjacent to
21 recreational resources. Construction of the Proposed Project would result in impacts on certain
22 recreational resources, which would be minimized to a less-than-significant level with mitigation. As
23 such, the No Project Alternative would avoid the construction impacts associated with the Proposed
24 Project.

25 Operationally, the No Project Alternative would result in more highway traffic noise and less train
26 noise. Thus, the noise levels experienced by users of nearby recreational resources would be similar
27 under the No Project Alternative and the Proposed Project. Operation of the Proposed Project would
28 have a less-than-significant impact on recreation. Overall, the operational impacts on recreation
29 would be similar under the No Project Alternative and the Proposed Project.

30 **Safety and Security**

31 As discussed in Section 3.16, *Safety and Security*, highway travel is a more dangerous mode of
32 transportation than commuter rail. Traveling by train is safer than by highway, and transporting
33 freight is safer by rail than by highway. Thus, the No Project Alternative would result in a greater
34 impact on safety and security than the Proposed Project.

35 **Transportation**

36 **Transit, Bicycle Facilities, Pedestrian Facilities, and Freight**

37 Under the No Project Alternative, corridor population and employment growth accompanied by
38 changes to other transit connections and increases in highway congestion would contribute to the

1 increases in ACE ridership, compared with existing conditions. As stated in Section 3.17,
2 *Transportation*, the Proposed Project would further increase ridership because it would extend
3 service between Ceres and Merced, consequently expanding the service area. The No Project
4 Alternative would result in less of an impact on transit system capacity but would also not result in
5 the beneficial impacts of the Proposed Project related to increased transit ridership. The No Project
6 Alternative would not result in the beneficial impact relative to transit planning that would occur
7 with implementation of the Proposed Project.

8 With increases in ACE ridership, the No Project Alternative would result in increased pedestrian and
9 bicyclist volumes at facilities surrounding and leading to ACE stations; however, the increase would
10 be less than under the Proposed Project. Therefore, the No Project Alternative would result in a
11 lesser impact on the pedestrian and bicycle system.

12 The No Project Alternative would not affect existing freight service. As stated in Section 3.17,
13 *Transportation*, the Proposed Project could affect existing freight service along the extension from
14 Ceres to Merced, but would add a second track, which would accommodate the combined passenger
15 and rail service along the extension. Overall, the improvements to increased capacity needed to
16 accommodate the Proposed Project would provide some secondary operational benefits for freight
17 operations compared to the No Project Alternative due to the addition of the second track along the
18 extension.

19 **Vehicle Miles Traveled**

20 As stated in Section 3.17, *Transportation*, the Proposed Project would shift travel demand from
21 driving trips to ACE transit trips and reduce regional vehicle traffic and VMT on major highways and
22 arterials. The Proposed Project would substantially reduce overall VMT in the ACE corridor
23 compared to the No Project Alternative (Table 5-2).

24 **Emergency Access**

25 The No Project Alternative would not result in any changes to emergency access compared to
26 existing conditions. As stated in Section 3.17, *Transportation*, the Proposed Project could impact
27 emergency vehicle access if an emergency occurs at the same time and locations when construction
28 activities would result in temporary access or egress limitations. However, ACE will coordinate with
29 local public works departments, local emergency access providers, and the California Department of
30 Transportation, and implement mitigation measures to ensure that Proposed Projects impacts
31 related to emergency access would be less than significant. Therefore, the No Project Alternative and
32 Proposed Project would result in similar impacts on emergency access.

33 **Utilities and Service Systems**

34 With the No Project Alternative, there would be a lower demand for utilities compared to the
35 Proposed Project. The No Project Alternative would not result in a demand for water, electricity,
36 natural gas, telecommunication facilities or the generation of wastewater, stormwater, or solid
37 waste at the stations proposed under the Proposed Project. Therefore, the No Project Alternative
38 would have less of an impact on utilities than the Proposed Project.

5.3.2 Merced Layover Facility Alternative

The Merced Layover Facility Alternative was identified previously in the Prior EIR, and its potential environmental impacts were analyzed programmatically in the Prior EIR. As such, the Prior EIR has been used to prepare the description of this alternative, as well as to prepare its environmental analysis. Based on the comments that were received on the Prior EIR, including concerns that this layover facility would result in the permanent impacts on prime farmland, the SJRRC moved the proposed location of the layover facility to an area with primarily industrial uses. The Merced Layover Facility Alternative is analyzed below.

5.3.2.1 Alternative Description

The Merced Layover Facility Alternative would be located within unincorporated Merced County, north of the downtown of the City of Merced, on the west side of State Route (SR) 99, between the Black Rascal Canal and Bear Creek. The lead track to the Merced Layover Facility Alternative would cross over from the existing mainline track at milepost (MP) 148.22 and at MP 149.33 on the Fresno Subdivision. The lead track to the layover facility would cross over Black Rascal Canal at MP 148.38, would cross Southern Pacific Avenue at grade at MP 148.43, cross under the SR 99 overhead structure at MP 149.07, and cross the Private Road at grade at MP 149.29. The lead track would cross over Black Rascal Canal via a new single-track concrete bridge south of the single-track bridge for the existing mainline track. The bridge would be approximately 17-feet-wide supported by two abutments on each end and five piers located in the canal. New at-grade crossing features – including concrete crossing panels where the new mainline track crosses the roadway, railroad crossing signals, guards or gates, signal houses, and stop bars – would be installed at Southern Pacific Avenue at MP 148.43. Modifications to a private road at-grade crossing at MP 149.29 for the layover facility lead track would include installing concrete crossing panels where the tracks cross the roadway.

Four new storage tracks, ranging from 0.40 to 0.50 mile, would turn out from the lead track to the layover facility. The layover facility would also include support facilities such as an administrative office building, crew facilities, light vehicle repair facilities, parts storage, fueling facilities, wayside power, and train cleaning function areas. Support facilities would be constructed to the north along the length of the new storage tracks and a fence would be constructed around the perimeter of the layover facility.

The majority of improvements for the Merced Layover Facility Alternative would be located outside the Union Pacific Railroad (UPRR) ROW. West 16th Street forms the northern boundary of the site and the site is surrounding by industrial properties to the north and northeast, and agricultural properties to the south and west. There is also a residential development located approximately 0.25 mile south of the site.

Under this alternative, the Merced Layover Facility Alternative would be implemented instead of the proposed Merced Layover & Maintenance Facility. This alternative would include all of the other facilities associated with the Project. In other words, this alternative would include the Ceres to Merced Extension Alignment, Turlock Station, Livingston Station, the Merced Station, and the Merced Layover Facility Alternative. Figure 5-1 depicts the location of the Merced Layover Facility Alternative.

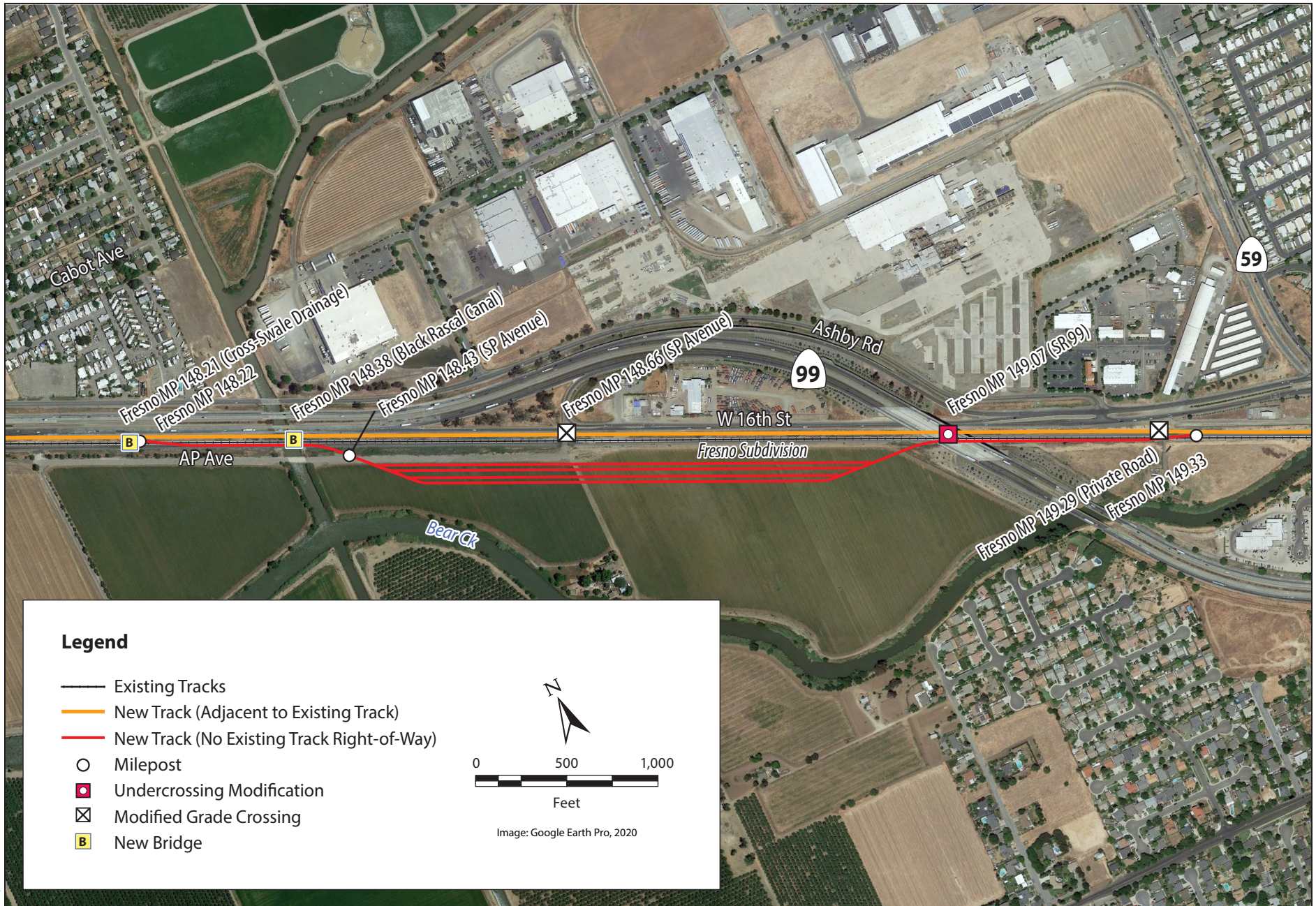


Figure 5-1
Merced Layover Facility Alternative
 ACE Ceres-Merced Extension Project

As stated above, in addition to the alternative layover facility in Merced, this alternative would also include the stations and Ceres to Merced Extension Alignment associated with the Project. However, to understand the differences in impacts between the proposed Merced Layover & Maintenance Facility and the Merced Layover Facility Alternative, the analysis below focuses on the impacts of the proposed and alternative layover facilities.

5.3.2.2 Environmental Impact Analysis

Aesthetics

This alternative would require new sections of rail line be built along the edges of flat agricultural lands that border the existing tracks west of SR 99. The new tracks would not generally alter the existing flat and rural visual landscape or affect existing visual quality because they would be low-profile and comparable to existing rail lines and roadway corridors that are located nearby and are common to the surrounding area. Visual effects associated with this alternative would be a less-than-significant visual expansion of existing conditions and would generally not alter the existing visual landscape or affect existing visual quality. The Prior EIR identified that impacts from construction and nighttime lighting would be less than significant with the same mitigation as the Proposed Project.

Nonetheless, aesthetic impacts associated with the Merced Layover Facility Alternative would be comparatively greater than that of the proposed Merced Layover & Maintenance Facility, as the latter would convert an existing unutilized industrial property to a compatible railyard use while this alternative would convert farmland to railyard use.

Agricultural Resources

The Merced Layover Facility Alternative would result in the temporary use of Farmland of Local Importance (0.1 acre) and the permanent conversion of Prime Farmland (15.1 acres) and Farmland of Local Importance (0.3 acre) to nonagricultural use. In comparison, the proposed Merced Layover & Maintenance Facility is located on Farmland of Local Importance (11.1 acres) and would also result in the permanent conversion of this farmland to nonagricultural uses. The Merced Layover Facility Alternative would result in greater impacts than the proposed Merced Layover & Maintenance Facility because more acreage would be disturbed by the alternative and Farmland of Local Importance is generally considered to be of lower value than Prime Farmland. In either case, both would result in significant impacts on Important Farmland that would require mitigation.

Nonetheless, the Merced Layover Facility Alternative would have a greater impact on agricultural resources than the Proposed Project.

Air Quality

The Merced Layover Facility Alternative would require less construction than the proposed Merced Layover & Maintenance Facility because the proposed facility would require demolition of existing structures and installation of a lead track from the mainline tracks and, therefore, would result in less construction emissions than the proposed Merced Layover & Maintenance Facility.

Operationally, the Merced Layover Facility Alternative would result in the same locomotive emissions as the Proposed Project. This is because the Merced Layover Facility Alternative would be the same distance from the Merced Station as the proposed Merced Layover & Maintenance Facility.

1 Additionally, both the proposed Merced Layover & Maintenance Facility and Merced Layover
2 Facility Alternative would potentially expose sensitive receptors to diesel particulate matter (DPM);
3 however, the Merced Layover Facility Alternative would result in less localized exposure to DPM
4 than the proposed Merced Layover & Maintenance Facility, as the access to and from the proposed
5 Merced Layover & Maintenance Facility would be located adjacent to the residential area east of SR
6 59. Nonetheless, startup and shutdown emissions at the Merced Layover Facility Alternative would
7 occur about 0.25 mile northeast of a residential area and the proposed Merced Layover &
8 Maintenance Facility would have these emissions about 0.25 mile west of residential areas near SR
9 59; thus, the effect on adjacent receptors is expected to be roughly similar.

10 Biological Resources

11 The Prior EIR identified that the Merced Layover Facility Alternative would impact 0.1 acre of
12 riverine, 15.8 acres of row crops, 2.8 acres of developed/landscaped, and 0.01 acre of mixed riparian
13 forest and woodland land cover. The Prior EIR identified that the Merced Layover Facility
14 Alternative would result in impacts on special-status plants, 26 special-status wildlife species,
15 special-status fish, regulated waters and wetlands, a sensitive natural community, and wildlife
16 movement. These impacts would be reduced to a less-than-significant level with mitigation, which
17 would be the same as the mitigation included for the Proposed Project for impacts on biological
18 resources. In comparison, the proposed Merced Layover & Maintenance Facility would affect 42.8
19 acres of developed/landscaped and 15.3 acres of ruderal land cover. Section 3.4, *Biological*
20 *Resources*, identifies that the proposed Merced Layover & Maintenance Facility would affect eight
21 special-status wildlife species. This impact would be reduced to a less-than-significant level with
22 mitigation. The proposed Merced Layover & Maintenance Facility would have no impacts on special-
23 status plants, special-status fish, regulated waters and wetlands, sensitive natural communities, or
24 wildlife movement.

25 As such, the Merced Layover Facility Alternative would have a greater impact on biological
26 resources than the proposed Merced Layover & Maintenance Facility.

27 Cultural Resources

28 The Prior EIR identified one historical resource that could be affected by the Merced Layover
29 Facility Alternative. The EIR concluded that the Merced Layover Facility Alternative would result in
30 a less-than-significant impact on a historical resource because this alternative is not expected to
31 alter the resource's setting, integrity of setting and feeling, and its visual context and narrative.
32 Likewise, the proposed Merced Layover & Maintenance Facility would result in the same less than
33 significant impact to the same resource.

34 In addition, both the Merced Layover Facility Alternative and the proposed Merced Layover &
35 Maintenance Facility would be located within areas of high general prehistoric archaeological
36 resource sensitivity and high buried archaeological resource sensitivity. Both are expected to result
37 in a less than significant impact on archaeological resources, potential human remains, and tribal
38 cultural resources after mitigation.

39 Energy

40 The Merced Layover Facility Alternative would require less construction and operational energy
41 demands than the proposed Merced Layover & Maintenance Facility. The proposed Merced Layover

1 & Maintenance Facility would require more building demolition compared to the Merced Layover
2 Facility Alternative, and would thus consume more diesel fuel during construction.

3 Operationally, the Merced Layover Facility Alternative would result in the same energy consumption
4 as the proposed Merced Layover & Maintenance Facility because both facilities would be the same
5 distance from the Merced Station. Lighting, mechanical systems, and maintenance activities at both
6 layover facilities is anticipated to be similar and would result in increased demand for electricity
7 from regional and local providers.

8 **Geology and Soils**

9 The Merced Layover Facility Alternative would be located in an area with similar geologic hazards
10 as the proposed Merced Layover & Maintenance Facility. The Prior EIR identified that the potential
11 impacts on geology and soils would be less than significant, similar to the proposed Merced Layover
12 & Maintenance Facility.

13 The Merced Layover Facility Alternative would be located in the same geologic units as the proposed
14 Merced Layover & Maintenance Facility [Holocene alluvium (Q) and Modesto Formation (Qm)]. The
15 Prior EIR identified that the Merced Layover Facility Alternative would result in a less-than-
16 significant impact (after mitigation) on paleontological resources. Similarly, the proposed Merced
17 Layover & Maintenance Facility would have a less-than-significant impact (after mitigation) on
18 paleontological resources. Overall, the impacts on paleontological resources would be similar.

19 **Greenhouse Gas Emissions**

20 The Merced Layover Facility Alternative would require less construction than the proposed Merced
21 Layover & Maintenance Facility and, thus, would result in less construction GHG emissions than that
22 for the proposed Merced Layover & Maintenance Facility.

23 Operationally, the Merced Layover Facility Alternative would have the same locomotive emissions
24 as the proposed layover facility because both facilities are the same distance from the Merced
25 Station.

26 **Hazards and Hazardous Materials**

27 Construction and maintenance of the Merced Layover Facility Alternative could disturb potentially
28 hazardous building materials associated with existing bridges and overhead, roadways, and
29 agricultural land. The footprint of the Merced Layover Facility Alternative could potentially contain
30 hazardous building materials, such as asbestos-containing materials, lead-based paint, universal
31 wastes (e.g., polychlorinated biphenyls, diethylhexyl phthalate, mercury, and other metals) and
32 wood preservatives (e.g., arsenic, chromium, copper, pentachlorophenol, or creosote). Additionally,
33 soil underlying the site could potentially be contaminated with aerially deposited lead from major
34 roadway corridors and pesticide residues from historical agriculture operations. As documented in
35 the Prior EIR, searches of the Geotracker and Envirostor databases for the Merced Layover Facility
36 Alternative indicate that soil and groundwater contamination have not been documented in the
37 environmental footprint. Thus, construction and maintenance activities associated with the Merced
38 Layover Facility Alternative would not disturb known soil and/or groundwater contamination.

39 Construction on the Merced Layover Facility Alternative is anticipated to encounter less residual
40 contamination than the proposed Merced Layover & Maintenance Facility due to the prior industrial

development on the proposed facility site; however, it is expected that with proper construction, site controls for both the proposed and alternative facility, hazards to workers and the public can be avoided.

Hydrology and Water Quality

The Merced Layover Facility Alternative would introduce impervious pavement surfaces to a pervious agricultural area, which would alter existing drainage at the site and provide new sources of polluted runoff associated with motor vehicle traffic and train fueling/cleaning. Due to the proximity of the Black Rascal Canal and Bear Creek, altered drainage and increased polluted runoff associated with the Merced Layover Facility Alternative would result in potentially significant impacts on water quality. With the implementation of existing regulations and mitigation measures, potential impacts on water quality would be less than significant and consistent with applicable water quality standards.

Construction of the Merced Layover Facility Alternative would involve construction of a new bridge crossing an irrigation canal, which would involve the discharge of groundwater or dewatering effluent and potentially result in temporary impacts on water quality. With the implementation of mitigation measures, potential impacts on water quality would be less than significant and consistent with applicable water quality standards.

Implementation of the Merced Layover Facility Alternative would have relatively more effects on hydrology and water quality compared to the proposed Merced Layover & Maintenance Facility, as the latter has been previously developed and has extensive existing impervious area for site buildings and truck loading areas.

Land Use and Planning

The Merced Layover Facility Alternative would be located within unincorporated Merced County and within the City of Merced's sphere of influence. A portion of the Merced Layover Facility Alternative would be located within the existing UPRR ROW and county ROW, where no land use designations are identified. The majority of the Merced Layover Facility Alternative would be located on lands with farmland and residential reserve land use designations. The Merced Layover Facility Alternative would not be consistent with these uses. The proposed Merced Layover & Maintenance Facility would be within the city of Merced and would be located on lands with a manufacturing/industrial land use designation. A railyard is considered an allowable use with the site designation and zoning, which allows freight terminal use subject to site plan review permit. Thus, the Merced Layover Facility Alternative would be less consistent with the city of Merced General Plan than the proposed Merced Layover & Maintenance Facility.

The Prior EIR identified that the impact on land use from the Merced Layover Facility Alternative is due to inconsistencies with policies related to biological resources and agricultural resources. This impact would be mitigated to a less-than-significant level with mitigation. Similarly, the proposed Merced Layover & Maintenance Facility would require mitigation to minimize impacts on agricultural and biological resources to a less-than-significant level. It should be noted that the Merced Layover Facility Alternative would have a greater impact on agricultural and biological resources than the proposed Merced Layover & Maintenance Facility.

1 **Noise and Vibration**

2 The Merced Layover Facility Alternative is located approximately 0.25 mile north of a residential
3 neighborhood and would marginally increase the proximity of train noise, including noise from
4 maintenance of trains to these residences. The proposed Merced Layover & Maintenance Facility
5 would also increase train noise within approximately 0.25 mile of a residential neighborhood,
6 located east of SR 59; however, the access to and from the proposed Merced Layover & Maintenance
7 Facility would be located adjacent to the residential area east of SR 59 and, therefore, would result
8 in more residential noise exposure than the Merced Layover Facility Alternative. Nonetheless, noise
9 modeling for the Proposed Project found that operational noise impacts would be less than
10 significant.

11 Although operational noise impacts would be less than significant, construction impacts associated
12 with the Merced Layover Facility Alternative are expected to be less than the construction impacts
13 from the proposed Merced Layover & Maintenance Facility. Section 3.12, *Noise and Vibration*,
14 identifies that a potentially significant impact could occur within 270 feet from a construction site.
15 The Merced Layover Facility Alternative is located more than 270 feet from any residences or other
16 sensitive receptor. The proposed Merced Layover & Maintenance Facility, however, which is located
17 within 270 feet of residences across SR-59, would result in a significant and unavoidable impact
18 (even after mitigation).

19 Thus, the Merced Layover Facility Alternative would have a less-than-significant construction noise
20 impact compared to the proposed Merced Layover & Maintenance Facility, which would have a
21 significant and unavoidable construction impact.

22 **Population and Housing**

23 Like the proposed Merced Layover & Maintenance Facility, the Merced Layover Facility Alternative
24 would not displace any housing units or induce unplanned population growth. There would be no
25 difference in impact between the proposed Merced Layover & Maintenance Facility and the Merced
26 Layover Facility Alternative.

27 **Public Services**

28 The construction and operation of the Merced Layover Facility Alternative has the potential to
29 increase fire protection, law enforcement, and emergency response services demand at the site. The
30 Merced Layover Facility Alternative is not expected to result in any different demand for public
31 services than the proposed Merced Layover & Maintenance Facility. However, operation of the
32 proposed Merced Layover & Maintenance Facility has the potential to effect emergency access in the
33 site vicinity due to potential delays at the at-grade crossing of West 16th Street at SR 59, while the
34 Merced Layover Facility Alternative would not affect emergency access.

35 **Recreation**

36 There are no recreational facilities at or near the Merced Layover Facility Alternative or the
37 proposed Merced Layover & Maintenance Facility. There would be no difference in impacts as both
38 would result in no impact on recreational facilities.

Safety and Security

The Merced Layover Facility Alternative would include the implementation of new or altered at-grade crossing along Southern Pacific Avenue and a private driveway. Since there is already an at-grade crossing in place at the private driveway, the proposed modifications are not expected to substantially change safety conditions. The new at-grade crossing along Southern Pacific Avenue would change safety conditions along the roadway, but the inclusion of railroad crossing signals, guards or gates, signal houses, and stop bars along the roadway would ensure that impacts would be less than significant.

The proposed Merced Layover & Maintenance Facility would not modify or add any at-grade crossings but would add a maximum of eight trains per day (four in the morning and four in the afternoon/ evening) that would cross the at-grade crossing of West 16th Street at SR 59. The addition of eight trains per day is not expected to substantially change safety conditions and, thus, both alternatives would have similar effects to safety and security.

Transportation

Transit, Bicycle Facilities, Pedestrian Facilities, and Freight

Neither the Merced Layover Facility Alternative nor the proposed Merced Layover & Maintenance Facility would affect transit, bicycle, or pedestrian facilities. There would be no difference between the Merced Layover Facility Alternative or the proposed Merced Layover & Maintenance Facility (both would result in no impact).

The proposed Merced Layover & Maintenance would not impede freight movements or operations due to its location off the UPRR ROW. Similarly, the Merced Layover Facility Alternative would not impede freight movements or operations due to the low amount of train traffic added to the spur from the Fresno Subdivision. Both would result in no impact on freight.

Vehicle Miles Traveled

VMT reductions are due to passengers choosing to use ACE service rather than driving their vehicles. Unlike stations, which attract passenger to use ACE service, the layover and maintenance facility would not interface with the public and would, therefore, not affect how ACE would attract passengers. There would be no difference in the reduction of VMT between the Merced Layover Facility Alternative and the proposed Merced Layover & Maintenance Facility.

Emergency Access

Both the Merced Layover Facility Alternative and the proposed Merced Layover & Maintenance Facility have adequate access for emergency vehicles from public roads. The Merced Layover Facility Alternative has the potential to effect emergency access in the site vicinity due to potential delays with the addition of an at-grade crossing along South Pacific Avenue, while the proposed Merced Layover & Maintenance Facility similarly affects emergency access with the addition of train traffic at the grade crossing of West 16th Street at SR 59. There would be no difference in impacts (both would result in a less-than-significant impact).

Utilities and Service Systems

The Merced Layover Facility Alternative would require connections to utilities. The Merced Layover Facility Alternative would be located in an agricultural area, compared to the proposed Merced Layover & Maintenance Facility, which would be located in an area that is served by existing utility systems due to its prior operation as a food processing facility. Connection of the site to electric utilities would require more construction for the Merced Layover Facility Alternative than the proposed Merced Layover & Maintenance Facility.

5.3.3 Merced Station Alternative

The Merced Station Alternative was identified previously in the Prior EIR, and its potential environmental impacts were analyzed programmatically in the Prior EIR. As such, the Prior EIR has been used to prepare the description of this alternative, as well as to prepare its environmental analysis. Based on coordination with the City of Merced, which has identified that it would prefer that both the ACE and HSR stations at Merced be located in closer proximity to the Merced Transit Station, SJRRC moved the proposed station closer to the Merced Transit Station. The Merced Station Alternative is located further away from the Merced Transit Station.

5.3.3.1 Alternative Description

The Merced Station Alternative would be located adjacent to the Fresno Subdivision between Canal Street and G Street in downtown Merced. The ACE station platform would be located adjacent to the currently adopted location of the future California High-Speed Rail (HSR) station in Merced, as identified in the environmental impact report/environmental impact statement (EIR/EIS) for the Merced to Fresno HSR project section (California High-Speed Rail Authority and Federal Railroad Administration 2012). As noted in Chapter 2, *Project Description*, the City of Merced has identified that it would prefer that both the ACE station and the HSR station be located in closer proximity to the Merced Transit Station, which is on 16th Street between N Street and O Street.

Development of the Merced Station Alternative would consist of the following improvements.

- Construction of a station platform and fence between the new mainline track and existing mainline track.
- Construction of a new surface parking lot, providing a total of 173 parking spaces.

To provide ACE service at this new station, a new station platform would be constructed to allow passengers to board and disembark the train. An approximately 20-foot-wide and 1,000-foot-long station platform would be constructed between MP 150.92 and MP 151.11 on the Fresno Subdivision, between the Martin Luther King Jr. Way and G Street at-grade crossings. A 1,000-foot-long fence would be constructed between the existing mainline track and the new mainline track, which would function as the station track, in the vicinity of the station platform.

To meet future parking demands generated by ACE service, a new surface parking lot would be constructed in the vicinity of the future HSR station, north of the Fresno Subdivision and west of Martin Luther King Jr. Way. Vehicle access to the North Lot would be provided by two entrances on West 16th Street. Construction of the North Lot would require the demolition of existing commercial buildings onsite. In addition, landscaping would be installed at the station, including at parking areas. The majority of improvements at the Merced Station Alternative would be located outside the UPRR ROW, particularly the parking improvements.

Under this alternative, the Merced Station Alternative would be implemented instead of the proposed Merced Station. This alternative would include all of the other facilities associated with the Project. In other words, this alternative would include the Ceres to Merced Extension Alignment, Turlock Station, Livingston Station, the Merced Station Alternative, and the Merced Layover & Maintenance Facility Alternative. Figure 5-2 depicts the location of the Merced Station Alternative.

As stated above, in addition to the Merced Station Alternative, this alternative would also include the additional Project stations, Merced Layover & Maintenance Facility, and Ceres to Merced Extension Alignment associated with the Project. However, to understand the differences in impacts between the proposed Merced Station and the Merced Station Alternative, the analysis below focuses on the impacts of the proposed and alternative station in Merced

5.3.3.2 Environmental Impact Analysis

Aesthetics

The Merced Station Alternative and the proposed Merced Station are located approximately 0.5 mile from each other and are both located in downtown Merced. Both the alternative and proposed station would be located in areas with the same overall existing visual quality. Because the Merced Station Alternative and the proposed Merced Station would include similar features, such as a platform and a parking lot, it is expected that both would result in a similar aesthetic impact. No substantial difference in aesthetics is expected between the Merced Station Alternative and the proposed Merced Station. The Prior EIR identified that the Merced Station Alternative would result in a less-than-significant impact on aesthetics after mitigation. Similarly, the proposed Merced Station would also have a less-than-significant impact on aesthetics after mitigation.

Agricultural Resources

The Merced Station Alternative would not affect any agricultural land or disrupt any agricultural resources. Both the Merced Station Alternative and the proposed Merced Station would have no impact.

Air Quality

The Merced Station Alternative would require a similar level of construction compared to the proposed Merced Stations, as both stations would require the demolition of existing buildings onsite and the construction of platform, new track, and surface parking facilities. The proposed Merced Station (3.80 acres) would have a larger footprint than the Merced Station Alternative (1.91 acres) and, thus, is anticipated to result in slightly more construction emissions; however, the Merced Station Alternative would require an additional 0.6 mile² of track upgrades compared to the proposed Merced Station as it is located further southward. Operationally, the Merced Station Alternative would result in additional locomotive emissions due to additional train travel of 0.6 mile each way to reach the station alternative location. Based on eight trains per day, this alternative would result in 5.4 additional miles of train travel than the proposed Merced Station, which would result in additional 1 pound per day of NO_x and 0.1 tons per year of NO_x in 2030.

² The stations themselves (i.e., parking areas and platforms) would be located approximately 0.5 mile from each other. However, the tracks required for each station would be approximately 0.6 mile from each other (measured from the end of the line).



Figure 5-2
Merced Station Alternative
ACE Ceres-Merced Extension Project

Given the currently adopted HSR station location, the Merced Station Alternative would be expected to have higher rail ridership than the proposed Merced Station because the proposed station is approximately 0.5 mile from the adopted HSR station location. This would mean the Merced Station Alternative would reduce VMT and associated passenger vehicle emissions more than the proposed station. However, if the California High-Speed Rail Authority (CHSRA) decides to relocate the HSR station farther north, then the proposed Merced Station would have higher ridership than the Merced Station Alternative, which would result in greater reductions of VMT and associated vehicle emissions. Nonetheless, implementation of the Merced Station Alternative instead of the proposed Merced Station, is not expected to change the reduction in operational criteria pollutant emissions overall that is expected from implementing the extended ACE service between Ceres and Merced.

Biological Resources

The Merced Station Alternative would be located on developed and landscaped areas with limited biological value. The Prior EIR identified that the Merced Station Alternative would impact 1.91 acres of developed/landscaped land cover and would result in impacts on special-status wildlife species (including special-status birds, migratory nesting birds, and special-status bats) and trees, which would be potentially significant. These impacts would be reduced to a less-than-significant level with mitigation. The proposed Merced Station would also be located on developed and landscaped areas (3.81 acres) and would affect similar biological resources, including special-status wildlife and trees.

There would be no difference in impacts on biological resources between the Merced Station Alternative and the proposed Merced Station.

Cultural Resources

The Prior EIR identified one historical resource that could be affected by the Merced Station Alternative. The EIR concluded that the Merced Station Alternative would result in a less-than-significant impact on a historical resource because this alternative is not expected to alter the resource's setting, integrity of setting and feeling, and its visual context and narrative. Likewise, the proposed Merced Station would result in the same less than significant impact to the same resource.

In addition, both the Merced Station Alternative and the proposed Merced Station would be located within areas of high general prehistoric archaeological resource sensitivity and high buried archaeological resource sensitivity. Both are expected to result in a less than significant impact on archaeological resources, potential human remains, and tribal cultural resources after mitigation.

Energy

The Merced Station Alternative would require similar construction to the proposed Merced Station, as both would require the demolition of existing buildings onsite and the construction of platform, new track, and surface parking facilities. The proposed Merced Station would be larger (3.81 acres) than the Merced Station Alternative (1.91 acres) and, thus, is anticipated to result in slightly more consummation of diesel fuel during construction. However, the alternative would require additional 0.6 mile of track upgrades (and associated construction energy consumption) given the alternative location further southward than the proposed station location.

Operationally, the Merced Station Alternative would result in additional locomotive fuel use due to additional train travel to reach the site. The Merced Station Alternative would require

approximately 0.6 mile more track than the proposed Merced Station. Lighting, mechanical systems, and maintenance activities at both layover facilities is anticipated to be similar and would result in increased demand for electricity from regional and local providers. The relative differences in ridership between the proposed and alternative station location will determine which location would result in greater reductions in VMT and associated passenger vehicle fuel consumption.

Nonetheless, implementation of the Merced Station Alternative instead of the proposed Merced Station is not expected to change the overall reduction in net-energy demand that is expected from implementing the extended ACE service.

Geology and Soils

The Merced Station Alternative would be located in an area with similar geologic hazards as the proposed Merced Station. The Prior EIR identified that the potential impacts on geology and soils would be less than significant, similar to the proposed Merced Station.

The Merced Station Alternative would be constructed on previously disturbed land of the Riverbank Formation (Qr). The proposed Merced Station would be constructed on previously disturbed land of the Modesto Formation (Qm) and Riverbank Formation (Qr). Both are expected to result in a potentially significant impact on paleontological resources, which would be reduced to a less-than-significant level with mitigation. Overall, there is not a substantial difference in impacts on paleontological resources between the Merced Station Alternative and the proposed Merced Station.

Greenhouse Gas Emissions

The Merced Station Alternative would require similar construction to the proposed Merced Station as both would require the demolition of existing buildings onsite and the construction of platform, new track, and surface parking facilities. The proposed Merced Station would be slightly larger (3.81 acres) than the Merced Station Alternative (1.91 acres) and thus is anticipated to result in slightly more GHG emissions from station construction. However, the alternative would require additional 0.6 mile of track upgrades (and associated construction emissions) given the alternative location further southward than the proposed station location.

Operationally, the Merced Station Alternative would result in additional locomotive fuel use due to additional train travel to reach the site. The Merced Station Alternative would require approximately 0.6 mile more track than the proposed Merced Station. The Merced Station Alternative would have 5.4 miles more of train travel per day, which would result in additional GHG emissions of 55 tons per year in 2030.

The relative differences in ridership between the proposed and alternative station location will determine which location would result in greater reductions in VMT and associated passenger vehicle GHG emissions.

Nonetheless, implementation of the Merced Station Alternative instead of the proposed Merced Station, is not expected to overall change the reduction in GHG emissions that is expected from implementing the extended ACE service between Ceres and Merced.

Hazards and Hazardous Materials

The Merced Station Alternative and the proposed Merced Station would be located in a similar area. Both sites have a similar potential to be affected by hazardous materials within building structures,

roadways (yellow pavement stripes), petroleum pipeline, and hazardous material release sites (eight near the Merced Station Alternative and six near the proposed Merced Station). Because construction and operation of the Merced Station Alternative and proposed Merced Station would be similar, it is expected that both the alternative and proposed station would have the same impact on hazards and hazardous materials (less than significant after mitigation).

Hydrology and Water Quality

The Merced Station Alternative and the proposed Merced Station would both require the construction of impervious areas (e.g., parking lots, station platforms) in previously disturbed, urban areas that already have impervious surfaces. As such, the potential impacts on hydrology and water quality are expected to be similar between the Merced Station Alternative and the proposed Merced Station. Both Merced Station Alternative and the proposed Merced Station would result in similar impacts on hydrology and water quality, and with the implementation of existing regulations and mitigation measures described in Section 3.10, *Hydrology and Water Quality*, impacts would be less than significant.

Land Use and Planning

The Merced Station Alternative would be located in downtown Merced, adjacent to the UPRR ROW, on a parcel that is currently developed with commercial uses, and in an area designated with the general plan land use designation of Regional Community Commercial. The Prior EIR concluded that the Merced Station Alternative would not divide a physically established community and would be consistent with the Merced General Plan. Similarly, the proposed Merced Station would be located in downtown Merced, adjacent to the UPRR ROW, on a parcel that is currently developed with commercial and industrial uses, and in an area designated with the general plan land use designation of General Commercial. The proposed Merced Station would also not divide a physically established community and would be consistent with the Merced General Plan. Both would result in the same impact on land use and planning.

The City of Merced prefers a more northerly location for both the ACE station and the HSR station because it would have greater potential for TOD, would extend the revitalization of downtown Merced to the northwest providing a catalyst for further economic development and would be adjacent to the City's existing transit center. In addition, the City of Merced prefers a northerly location for the HSR Station in order to avoid relocation of the City's central Fire Department and Station; avoid disruption to historic buildings in the downtown; avoid disruption to the City's recent investments in G Street, which is the primary emergency route to Dignity Health; and avoid disruption in areas due to roadway crossing relocations necessary for the more southerly HSR station location (City of Merced pers. comm.).

The Merced Station Alternative would be located farther away from the City of Merced's preferred location of the HSR station (i.e., close to the Merced Transit Station). The proposed Merced Station would be located in close proximity to the City of Merced's preferred location of the HSR station. Conversely, the Merced Station Alternative would be located adjacent to the currently adopted location of the HSR station, and the proposed Merced Station would be located approximately 0.5 miles from the currently adopted location of the HSR station.

1 **Noise and Vibration**

2 The Merced Station Alternative would increase train noise to the site between the Martin Luther
3 King Jr. Way and G Street at-grade crossings, which is approximately 450 feet north of a residential
4 neighborhood Colony Lane. The proposed Merced Station would also increase train noise to the site
5 between R Street and O Street, which is approximately 300 feet north of a residential neighborhood
6 along 15th Street. Due to the similar distance from sensitive receptors, operational noise impacts
7 are expected to be similar. This EIR identifies a less-than-significant impact operational noise impact
8 due to the Merced Station. Likewise, the operational noise impact at the Merced Station Alternative
9 would also be less than significant.

10 Although operational noise impacts would be similar for both alternatives, construction impacts
11 associated with the Merced Station Alternative are expected to be less than the construction impacts
12 from the proposed Merced Station. Section 3.12, *Noise and Vibration*, identifies that a potentially
13 significant impact could occur within 270 feet from a construction site. The Merced Station
14 Alternative is located more than 270 feet from any residences or other sensitive receptor. The
15 proposed Merced Station, however, includes a parking lot that is located within 270 feet of
16 residences, which would result in a significant and unavoidable impact (even after mitigation).

17 Thus, the Merced Station Alternative would have a less-than-significant construction noise impact
18 compared to the proposed Merced Station, which would have a significant and unavoidable
19 construction impact.

20 **Population and Housing**

21 Neither the Merced Station Alternative nor the proposed Merced Station would displace any housing
22 units or residents.

23 As noted above, the City of Merced prefers a more northerly location for both the ACE station and
24 the HSR station because it would have greater potential for TOD than a southerly location, where the
25 currently adopted HSR Station is planned (City of Merced pers. comm.). As a result, the proposed
26 Merced Station would be more consistent with current City planning for TOD, potentially including
27 housing, than the Merced Station Alternative.

28 **Public Services**

29 The construction and operation of the Merced Station Alternative has the potential to increase fire
30 protection, law enforcement, and emergency response services demand at the site. The Merced
31 Station Alternative is not expected to result in any considerable difference in demand for public
32 services than the proposed Merced Station. However, the Merced Station Alternative would
33 introduce eight additional trains per day (four in the morning and four in the afternoon/evening) to
34 three additional at-grade crossings in the city of Merced, compared to the proposed Merced Station.
35 The Merced Station Alternative could result in slightly greater impacts on public services related to
36 operations of public services that use roadways.

37 Nonetheless, both the Merced Station Alternative and the proposed Merced Station would result in a
38 similar less than significant demand for public services.

1 **Recreation**

2 The Prior EIR identified that Bob Hart Park would be located 600 feet from the Merced Station
3 Alternative and that due to the distance, impacts are expected to be less than significant. There are
4 no recreational facilities near the proposed Merced Station. As such, the Merced Station Alternative
5 would have a slightly greater impact on recreational resources than the proposed Merced Station
6 (i.e., less than significant for the Merced Station Alternative versus no impact for the proposed
7 Merced Station).

8 **Safety and Security**

9 Both the Merced Station Alternative and the proposed Merced Station would add eight trains per
10 day (four in the morning and four in the afternoon/evening) to the existing UPRR line that would
11 cross existing at-grade crossings in the city of Merced; however, the Merced Station Alternative
12 would affect three additional existing at-grade crossings compared to the proposed Merced Station.
13 These existing crossings include automatic gates for every lane crossing the railroad, and because
14 the grade crossing safety gates are already in place, the addition of eight trains per day are not
15 expected to substantially change safety conditions.

16 The Merced Station Alternative would have a slightly greater impact because of the additional at-
17 grade crossings. Nonetheless, both alternatives would have a less-than-significant impact on safety
18 and security.

19 **Transportation**

20 **Transit, Bicycle Facilities, Pedestrian Facilities, and Freight**

21 Both the Merced Station Alternative and the proposed Merced Station would be constructed and
22 operated in conformance with policies addressing transit, bicycle, and pedestrian facilities and
23 would not conflict with such policies. Both the Merced Station Alternative and the proposed Merced
24 Station would not reduce or minimize the access to any transit, bicycle, and pedestrian facilities. In
25 fact, existing or proposed transit, bicycle, and pedestrian infrastructure would serve the expanded
26 ACE service. The expanded ACE service would enhance or create new multimodal connectivity to
27 existing and proposed ACE stations and would result in a less-than-significant (beneficial) impact.
28 Thus, there would be no difference in impact between the Merced Station Alternative and the
29 proposed Merced Station.

30 Neither the Merced Station Alternative nor the proposed Merced Station would impede freight
31 movements or operations due to the low amount of train traffic added to the UPRR line and the
32 inclusion of new, adjacent tracks for the stations. Both would result in a less-than-significant impact
33 on freight.

34 **Vehicle Miles Traveled**

35 Given the currently adopted HSR station location, the Merced Station Alternative would be expected
36 to have higher rail ridership than the proposed Merced Station because the proposed station is
37 approximately 0.5 mile from the adopted HSR station location. This would mean the Merced Station
38 Alternative would reduce VMT more than the proposed station. However, if CHSRA decides to
39 relocate the HSR station farther north, then the proposed Merced Station would have higher
40 ridership than the Merced Station Alternative, which would result in a greater reduction of VMT.
41 Nonetheless, implementation of the Merced Station Alternative instead of the proposed Merced

Station, is not expected to overall change the reduction in VMT that is expected from implementing the extended ACE service between Ceres and Merced.

Emergency Access

The Merced Station Alternative would introduce eight additional trains per day (four in the morning and four in the afternoon/evening) to up to three additional at-grade crossings in the city of Merced, compared to the proposed Merced Station. The Merced Station Alternative would have slightly greater impact on emergency access because of the additional at-grade crossings. Nonetheless, both Merced Station Alternative and the proposed Merced Station would have adequate access for emergency vehicles from public roads.

Utilities and Service Systems

The Merced Station Alternative site and the proposed Merced Station sites are served by existing utility systems due to existing commercial and industrial uses. Connection of the sites to electric utilities would require similar levels of construction. There would be no substantial difference in impacts on utilities and service systems between the Merced Station Alternative and the proposed Merced Station.

5.4 Comparison of Alternatives Analyzed

This section summarizes and compares the transportation performance, environmental impacts, and capital costs of the alternatives considered in this EIR. The alternatives considered include the Atwater Station Alternative, which is analyzed in detail in Chapter 3, *Environmental Impact Analysis* and Chapter 4, *Other CEQA-Required Analysis*, and two additional alternatives analyzed at a lesser level of detail in this chapter (the Merced Layover Facility Alternative and the Merced Station Alternative). Impacts of the alternatives are compared to the Proposed Project.

5.4.1 Transportation Performance

The Merced Layover Facility Alternative would not differ from the Proposed Project in terms of alignment, stations, or service. There should be no meaningful difference in terms of ridership or VMT reductions between the Merced Layover Facility Alternative and the Proposed Project.

The Merced Station Alternative may have higher or lower rail ridership than the proposed Merced Station depending on where the CHSRA decides ultimately to place the HSR station in Merced. CHSRA has previously adopted a station location that is adjacent to the ACE Merced Station Alternative. However, the City of Merced has urged CHSRA to relocate the HSR station farther north and adjacent to the city transit center, which would also be adjacent to the proposed ACE Merced Station. Given the currently adopted HSR station location, the ACE Merced Station Alternative would be expected to have higher rail ridership than the proposed ACE Merced Station because the proposed station is approximately 0.5 mile from the adopted HSR station location. However, if CHSRA decides to relocate the HSR station further north, then the proposed ACE Merced Station would have higher ridership than the ACE Merced Station Alternative. The location with higher rail ridership also would have a greater effect on reducing VMT.

There are no significant differences in station-level ridership between the Atwater Station Alternative and the proposed Livingston Station. The evaluation for this EIR indicates that with an

Atwater Station there would be slightly more ridership at Atwater Station than at Livingston Station. Furthermore, there is slightly less ridership at Merced. This suggests that Atwater would be used as an alternative for some passengers who would otherwise board in Merced. Ridership for the Project with the proposed Livingston or the Atwater Station Alternative is included in Table 5-3. Overall, implementation of the Atwater Station Alternative is expected to add 445,400 new annual riders in 2030 and 570,400 new annual riders in 2040, compared to implementation of the proposed Livingston Station, which is expected to add 441,300 new annual riders in 2030 and 567,000 new annual riders in 2040. This is a difference of 4,100 additional riders in 2030 (0.9 percent) and 3,400 additional riders in 2040 (0.6 percent). These differences are within the margin of error for the ridership evaluation and is not considered substantive. As a result, the Atwater Station Alternative and the Livingston Station would overall result in similar transportation benefits.

As a result of the ridership differences, it is possible that the Atwater Station Alternative would also reduce VMT slightly more than the Proposed Project; however, the difference is small.

Table 5-3. Ridership—Comparison of Proposed Livingston Station and Atwater Station Alternative

Year	Ridership for Project with Proposed Livingston Station	Ridership for Project with Atwater Station Alternative
2030	441,300	445,400
2040	567,000	570,400

5.4.2 Environmental Impacts

The analysis in this section focuses on the following areas that have the greatest potential to disclose differences in environmental impact for different alternatives.

- Aesthetics—the comparative level of aesthetic impact from each alternative is identified.
- Agricultural resources—the acreage of Important Farmlands (Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance) by alternative is presented.
- Air quality and GHG emissions—the quantitative analysis in Chapter 3 of operational emissions does not focus on each alternative element but rather the effects from implementation of new ACE service between Ceres and Merced. As a result, the analysis either uses VMT avoided as a proxy for air quality and GHG emissions, or provides a comparative ranking of alternatives against each other in terms of level of emissions. The VMT results overall can be used to discern likely differences in different end-to-end alternative combinations.
- Biological resources
 - Temporary and permanent disturbance of aquatic habitats (waters, wetlands, and riparian habitats)—total acreage within the alternative footprint is identified.
 - Special-status wildlife species habitat—total acreage within the alternative footprint is identified for key affected threatened or endangered species for each segment.
- Cultural resources—the number of listed or eligible historic resources affected by each alternative is identified.
- Land use and planning—the comparative level of consistency of different alternatives with local and regional plans is identified.

- Noise
 - Construction—the level of impact (i.e., less than significant or significant and unavoidable) of each alternative is presented.
 - Operation—model results for the exposure of sensitive receptors to severe or moderate noise from operations of each alternative (where relevant) is presented.
- Recreation—the number of parks adjacent to or near (within 300 feet) each alternative is presented.
- Transportation—The comparative level of VMT reduction from the alternative is identified, where available.

In order to assist the reader with comparison of alternatives, Tables 5-4, 5-5, and 5-6 provide color coding to illustrate relative differences in environmental effects. Some of the comparisons are quantitative in nature, whereas others are qualitative.

5.4.2.1 Comparison of Atwater Station Alternative and Proposed Livingston Station

Chapter 3, *Environmental Impact Analysis*, discloses the environmental impacts of the Atwater Station Alternative and highlights the slight but insubstantial differences in environmental impacts between the Atwater Station Alternative and the proposed Livingston Station. The slight differences in environmental impacts between the Atwater Station Alternative and the proposed Livingston Station are summarized in Table 5-4 and below.

- The Atwater Station Alternative would be located within 170 feet of one recreational resource while no recreational resources would be located within 300 feet of the proposed Livingston Station. The Atwater Station Alternative would result in a less-than-significant impact after mitigation compared to a no impact from the Livingston Station.
- Visual aesthetic impacts would be slightly higher for the Atwater Station Alternative because it would be built in a location with higher concentration of sensitive viewers, compared to the proposed Livingston Station. In addition, the Atwater Station Alternative would result in an impact related to the alternative station being visible from a city-designated scenic roadway. The proposed Livingston Station would not be located near a city-designated scenic roadway.
- As described in Section 5.4.1, the Atwater Station Alternative and the proposed Livingston Station are expected to have approximately the same amount of VMT and GHG emissions reductions.
- The Atwater Station Alternative is expected to result in more construction noise impacts than the proposed Livingston Station. Although there are residences located near the track that would be implemented near the proposed Livingston Station, there are no residences or other sensitive receptors located near the parking that would be constructed for the proposed Livingston Station. There are, however, residences located near the parking proposed for the Atwater Station Alternative. As such, the Atwater Station Alternative is expected to result in a greater impact from construction noise than the proposed Livingston Station.

Table 5-4. Environmental Impact—Comparison of Proposed Livingston Station and Atwater Station Alternative

Impact Criteria ^a	Impact Measure	Proposed Livingston Station	Atwater Station Alternative
Aesthetics	Scale (see explanation in footnotes below)	3	4
Agriculture	Acres of Important Farmland	0.0	0.0
Air Quality/GHG Emissions	Operational emission reductions	Similar reductions	Similar reductions
Biology	Acres of aquatic habitat	0.0	0.0
	Acres of special-status wildlife habitat	0.0	0.0
Cultural	Significant built resources	0	0
Land use and planning	Scale	3	3
Noise	Construction level of impact	SU	SU
	Operations impacts	0	0
Recreation	Number of Adjacent parks	0	1
Transportation	VMT reduction	Similar reductions	Similar reductions

Source: Quantitative data from analysis in Chapter 3, *Environmental Impact Analysis*; relative ranking based on analysis in Chapter 3.

Notes:

Scale: 1 – High Positive Impact; 2 – Moderate Positive Impact; 3 – Little to No Impact; 4 – Moderate Negative Impact; 5 – High Negative

Impact Colors: from more significant impact (red) to less significant impact (dark green): red-yellow-blue-light green-dark green. Grey means no significant difference.

LTS = less than significant impact.

^a The summary analysis in this section focuses on the areas that have the greatest potential to disclose differences in environmental impact for different alternatives. There would be no substantial differences in other environmental topics.

5.4.2.2 Comparison of Merced Layover Facility Alternative and Proposed Merced Layover & Maintenance Facility

This chapter discloses the environmental impacts of the Merced Layover Facility Alternative, compared to the proposed Merced Layover & Maintenance Facility, respectively. The difference in environmental impacts between the Merced Layover Facility Alternative and the proposed Merced Layover & Maintenance Facility are summarized in Table 5-5 and are below.

- The Merced Layover Facility Alternative would have a greater impact on biological resources than the proposed Merced Layover & Maintenance Facility.
- The Merced Layover Facility Alternative would have less of a noise impact during construction than the proposed Merced Layover & Maintenance Facility. Due to the distance from sensitive receptors, the Merced Layover Facility Alternative would have a less-than-significant noise impact compared to the proposed Merced Layover & Maintenance Facility, which would have a significant and unavoidable noise impact.

- The Merced Layover Facility Alternative would require permanent conversion of 15.4 acres of Important Farmland (15.1 acres of prime farmland and 0.3 acre of Farmland of Local Importance) compared to the proposed Merced Layover & Maintenance Facility, which would require the permanent conversion of 11.1 acres of Farmland of Local Importance. The prime farmland converted due to the Merced Layover Facility Alternative is irrigated and of much higher value than the Farmland of Local Importance converted due to the proposed Merced Layover & Maintenance Facility, which is not irrigated and has only been used for hay in recent years. Because of the greater amount of land impacted and because the prime farmland at the Alternative location is much higher quality farmland than the farmland at the proposed facility, the Merced Layover Facility Alternative would have a greater impact on agricultural resources than the proposed Merced Layover & Maintenance Facility.
- The Merced Layover Facility Alternative would be inconsistent with land use designations because it would involve placing a light industrial facility within agriculturally designated land. In contrast, the proposed Merced Layover & Maintenance Facility would be consistent with land use designations because it would be in an industrial area, whereas the Merced Layover Facility Alternative is located in an area primarily used for agricultural purposes.
- Visual aesthetic impacts would be higher for the Merced Layover Facility Alternative because it would be built in a location that is currently and predominantly agricultural (which has an open space visual character), whereas the proposed Merced Layover & Maintenance Facility would be in an industrial park (of lesser visual quality).

Table 5-5. Environmental Impact—Comparison of Proposed Merced Layover & Maintenance Facility and Merced Layover Facility Alternative

Impact Criteria ^a	Impact Measure	Proposed Merced Layover & Maintenance Facility	Merced Layover Facility Alternative
Aesthetics	Scale (see explanation in footnotes below)	3	4
Agriculture	Acres of Important Farmland	0.0 (Prime Farmland) 11.1 (Farmland of Local Importance) Farmland affected of much lower quality than the Alternative	15.1 (Prime Farmland) 0.3 (Farmland of Local Importance) Farmland affected of much higher quality than the proposed facility.
Air Quality/GHG Emissions	Operational emission reductions	Same reductions	Same reductions
Biology	Acres of aquatic habitat	0.0	0.10
	Acres of special-status wildlife habitat	0.0	0.10
Cultural	Significant built resources	0	0
Land use and planning	Scale (consistency with land use designations)	3	4
Noise	Construction level of impact	SU	LTS

Impact Criteria ^a	Impact Measure	Proposed Merced Layover & Maintenance Facility	Merced Layover Facility Alternative
	Operations impacts	0	0
Recreation	Number of Adjacent parks	0	0
Transportation	VMT reduction	Same reductions	Same reductions

Source: Quantitative data from analysis in Chapter 3, *Environmental Impact Analysis*, for the proposed Merced Layover & Maintenance Facility and quantitative data from the Prior EIR (*ACE Extension Lathrop to Ceres/Merced EIR*) for the Merced Layover Facility Alternative.

Notes:

Scale: 1 – High Positive Impact; 2 – Moderate Positive Impact; 3 – Little to No Impact; 4 – Moderate Negative Impact; 5 – High Negative

Impact Colors: from more significant impact (red) to less significant impacts (dark green): red-yellow-blue-light green-dark green. Grey means no significant difference.

LTS = less than significant impact.

^a. The summary analysis in this section focuses on the areas that have the greatest potential to disclose differences in environmental impact for different alternatives. There would be no substantial differences in other environmental topics.

5.4.2.3 Comparison of Merced Station Alternative and Proposed Merced Station

This chapter discloses the environmental impacts of the Merced Station Alternative, compared to the proposed Merced Station. The difference in environmental impacts between the Merced Station Alternative and the proposed Merced Station are summarized in Table 5-6 and below.

- The proposed Merced Station would have greater potential for TOD than the Merced Station Alternative and thus would be more consistent with City of Merced's long-term planning direction than the Merced Station Alternative. As such, the proposed Merced Station is more likely to support the City's plan for higher-density development, including potential residential development in close proximity to transit, which, if it is realized would result in additional reduction of VMT as well as associated reductions of criteria pollutants and GHG emissions.
- The Merced Station Alternative would have less of a noise impact during construction than the proposed Merced Station. Due to the distance from sensitive receptors, the Merced Station Alternative would have a less-than-significant noise impact compared to the proposed Merced Station, which would have a significant and unavoidable noise impact.
- The Merced Station Alternative would require more trackwork than the proposed Merced Station and thus would result in more construction air quality and GHG emissions than the proposed Merced Station. The Merced Station Alternative would have slightly higher train criteria pollutant and GHG emissions than the proposed Merced Station because the Merced Station Alternative is located slightly south of the proposed Merced Station and thus trains would have a longer distance to travel. The operational ridership, VMT, and associated air quality and GHG emission reductions will depend on where CHSRA ultimately decides to place the HSR station in Merced. Based on the adopted HSR station location, the Merced Station Alternative would be adjacent to the HSR station, while the proposed Merced Station would be 0.5 mile away, and the Merced Station Alternative would be expected to have higher ridership, greater VMT reduction, and greater reduction in criteria pollutants and GHG emissions. However, if CHSRA decides to move the HSR station to the City of Merced's preferred location,

which is where the proposed ACE Merced Station would be, then the proposed Merced Station would have higher ridership, greater VMT reduction, and greater reduction in criteria pollutants and GHG emissions than the Merced Station Alternative.

Table 5-6. Environmental Impact—Comparison of Proposed Merced Station and Merced Station Alternative

Impact Criteria ^a	Impact Measure	Proposed Merced Station	Merced Station Alternative
Aesthetics	Scale (see explanation in footnotes below)	3	3
Agriculture	Acres of Important Farmland	0.0	0.0
Air Quality/GHG emissions	Operational emission reductions (presuming currently adopted HSR station location)	Slightly less	Slightly more
	VMT reduction (presuming HSR station moves to City - preferred location)	Slightly more	Slightly less
Biology	Acres of aquatic habitat	0.0	0.0
	Acres of special status wildlife habitat	0.0	0.0
Cultural	Significant built resources	0	0
Land use and planning	Potential for TOD	Consistent with City's planning and higher TOD potential	Limited TOD potential
Noise	Construction level of impact	SU	LTS
	Operations impacts	0	0
Recreation	Number of Adjacent parks	0	0
Transportation	VMT reduction (presuming currently adopted HSR station location)	Slightly less	Slightly more
	VMT reduction (presuming HSR station moves to City-preferred location)	Slightly more	Slightly less

Source: Quantitative data from analysis in Chapter 3, *Environmental Impact Analysis*, for the proposed Merced Layover & Maintenance Facility and quantitative data from the Prior EIR (*ACE Extension Lathrop to Ceres/Merced EIR*) for the Merced Layover Facility Alternative.

Notes:

Scale: 1 – High Positive Impact; 2 – Moderate Positive Impact; 3 – Little to No Impact; 4 – Moderate Negative Impact; 5 – High Negative

Impact Colors: from more significant impacts (red) to less significant impacts (dark green): red-yellow-blue-light green-dark green. Grey means no significant difference.

LTS = less than significant, SU = significant and unavoidable; HSR – High-Speed Rail; VMT = vehicle miles traveled.

^a The summary analysis in this section focuses on the areas that have the greatest potential to disclose differences in environmental impact for different alternatives. There would be no substantial differences in other topics.

5.4.3 Capital Costs

The capital costs for different alternatives and different combinations of alternatives are presented in Tables 5-7, 5-8, and 5-9.

Table 5-7. Capital Costs—Construction Cost Estimates for Proposed Livingston Station and Atwater Station Alternative (2021 Dollars)

Proposed Livingston Station	Atwater Station Alternative
\$21,126,387	\$27,558,046

Source: Appendix E, *ACE Ceres–Merced Extension Opinion of Probable Cost Report*

Table 5-8. Capital Costs—Construction Cost Estimates for Proposed Merced Layover & Maintenance Facility and Merced Layover Facility Alternative (2021 Dollars)

Proposed Merced Layover & Maintenance Facility	Merced Layover Facility Alternative
\$73,495,973	\$41,618,009 ^a

Source: Appendix E, *ACE Ceres–Merced Extension Opinion of Probable Cost Report* and San Joaquin Regional Rail Commission 2018.

^a. The Prior EIR identified the cost of the Merced Layover Facility Alternative as \$36,700,184, using 2017 dollars. To convert this into 2021 dollars, an escalation multiplier of 1.134 was used. The escalation multiplier was determined based on a 3.2 percent escalation per year, that is then compounded.

Table 5-9. Capital Costs—Construction Cost Estimates for Proposed Merced Station and Merced Station Alternative (2021 Dollars)

Proposed Merced Station	Merced Station Alternative
\$14,434,294	\$14,793,416 ^a

Source: Appendix E, *ACE Ceres–Merced Extension Opinion of Probable Cost Report* and San Joaquin Regional Rail Commission 2018.

^a. The Prior EIR identified the cost of the Merced Station Alternative as \$13,045,340 using 2017 dollars. To convert this into 2021 dollars, an escalation multiplier of 1.134 was used. The escalation multiplier was determined based on a 3.2 percent escalation per year, that is then compounded.

5.5 Environmentally Superior Alternative

CEQA Guidelines Section 15126.6(e)(2) require an EIR to identify an “environmentally superior alternative” from among the alternatives considered to the Proposed Project. The guidelines also state that if the environmentally superior alternative is the No Project Alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives. As such, from a technical CEQA perspective, an EIR cannot identify a Proposed Project as the “environmental superior alternative” even if the Proposed Project has better environmental performance than all the alternatives. As discussed below, except for the Atwater Station Alternative, the Proposed Project would be environmentally superior to any other alternative.

The Proposed Project as well as any of the alternatives considered would provide benefits, such as reducing VMT and reducing regional air pollutants and GHG emissions that would not be realized under the No Project Alternative. While the No Project Alternative would avoid the construction impacts of the Proposed Project and any of the build alternatives, it is not considered the

“environmentally superior alternative” because it would not provide the long-term environmental benefits of expanded passenger rail service.

The “environmentally superior alternative” among the alternatives to the Proposed Project is summarized in Table 5-10. The “environmentally superior alternative” among the alternatives would consist of the following Project facilities: the rail alignment as described for the Proposed Project but extended 0.6 mile southward to the Merced Station Alternative; implementation of the Turlock Station, Atwater Station Alternative, and Merced Station Alternative; and implementation of the Merced Layover Facility Alternative.

Table 5-10. Identification of the “Environmentally Superior Alternative”

Facility	Code	Title of Proposed Facility or Alternative	“Environmentally Superior Alternative” Identification
Rail Alignment	--	Rail alignment as described for proposed alignment	N/A
	--	Rail alignment as described for proposed alignment, but extended 0.6 mile southward to the Merced Station Alternative	This is the only feasible alternative considered and is part of the Merced Station Alternative
Station at Turlock	Proposed Project	Turlock Station	No feasible alternative, meeting the purpose and need, and lowering one or more environmental impacts of the Proposed Project has been identified for the Turlock Station.
Station at Livingston or Atwater	Proposed Project	Livingston Station	N/A
	ATW-1	Atwater Station Alternative	This is the only feasible alternative considered to the proposed Livingston Station
Layover Facility	Proposed Project	Merced Layover & Maintenance Facility	N/A
	ML-1	Merced Layover Facility Alternative	This is the only feasible alternative considered to the proposed layover facility
Station at Merced	Proposed Project	Merced Station	N/A
	MS-1	Merced Station Alternative	This is the only feasible alternative considered to the proposed Merced Station

As discussed in Section 5.4.2, there are some environmental tradeoffs between the “environmentally superior alternative” and the Proposed Project in relation to the impacts of Merced Layover Facility Alternative versus the proposed Merced Layover & Maintenance Facility and the impacts of the Merced Station Alternative versus the proposed Merced Station. These environmental tradeoffs are summarized in Table 5-11.

The Proposed Project is environmentally superior to the “environmentally superior alternative” for the following reasons:

- 1 • The Merced Station would have greater potential for TOD than the Merced Station Alternative
2 and thus would be more consistent with City of Merced’s long-term planning direction than the
3 Merced Station Alternative. The Merced Station Alternative would require more trackwork than
4 the proposed Merced Station and thus would result in more construction air quality and GHG
5 emissions than the proposed Merced Station. The Merced Station Alternative would have
6 slightly higher train criteria pollutant and GHG emissions than the proposed Merced Station
7 because the Merced Station Alternative is located slightly south of the proposed Merced Station
8 and thus trains would have a longer distance to travel. However, the Merced Station Alternative
9 would have less of a noise impact during construction than the proposed Merced Station
10 because it is further away from sensitive receptors.
- 11 • The Merced Layover & Maintenance Facility would have lower impacts on agricultural farmland
12 because it would affect much lower quality of farmland and a lesser quantity of farmland than
13 the Merced Layover Facility Alternative. The Merced Layover & Maintenance Facility would be
14 more consistent with land use planning and have lower aesthetic impacts since it would be
15 located within an existing industrial park compared to the Merced Layover Facility Alternative,
16 which would be in an agricultural area. The Merced Layover & Maintenance Facility would have
17 a lower impact on biological resources than the Merced Layover Facility Alternative. However,
18 the Merced Layover Facility Alternative would have less of a construction noise impact during
19 than the proposed Merced Layover & Maintenance Facility because it would be located further
20 away from sensitive receptors.

21 Taking all these factors into consideration, the Proposed Project would be environmentally superior
22 for all relevant environmental factors that differ between the Proposed Project and the
23 “environmentally superior alternative” with the exception of construction noise. Since construction
24 noise would be a temporary effect, whereas the Proposed Project’s environmental benefits would be
25 primarily related to permanent long-term effects such as conservation of prime farmland, land use
26 consistency, potential for TOD, as well as biological resources, the Proposed Project would be
27 environmentally superior to the “environmentally superior alternative.”

1 **Table 5-11. Environmental Impact - Comparison of Proposed Project versus the “Environmentally Superior Alternative”**

Impact Criteria ^a	Impact Measure	Proposed Project	“Environmentally Superior Alternative” ^b
Aesthetics	Scale (see explanation in footnotes below)	3	4
Agriculture	Acres of Important Farmland	0.0 (Prime Farmland) 11.1 (Farmland of Local Importance)	15.1 (Prime Farmland) 0.3 (Farmland of Local Importance)
Air Quality/GHG Emissions	Operational emission reductions (presuming currently adopted HSR station location in Merced)	Slightly less	Slightly greater
	Operational emission reductions (presuming HSR station moved to City preferred location in Merced)	Slightly greater	Slightly less
Biology	Acres of aquatic habitat	0.0	0.10
	Acres of special-status wildlife habitat	0.0	0.10
Cultural	Significant built Resources	0	0
Land use and planning	Scale (presuming currently adopted HSR station location in Merced)	3	4
Noise	Construction level of impact	SU	SU
	Operational impacts	0	0
Recreation	Adjacent parks	0	1
Transportation	VMT reduction (presuming currently adopted HSR station location in Merced)	Slightly less	Slightly greater
	VMT reduction (presuming HSR station moved to City preferred location in Merced)	Slightly greater	Slightly less

Impact Criteria ^a	Impact Measure	Proposed Project	“Environmentally Superior Alternative” ^b
Source: Quantitative data from analysis in Chapter 3, <i>Environmental Impact Analysis</i> , for the proposed Merced Layover & Maintenance Facility and quantitative data from the Prior EIR for the Merced Layover Facility Alternative.			
Scale: 1 – High Positive Impact; 2 – Moderate Positive Impact; 3 – Little to No Impact; 4 – Moderate Negative Impact; 5 – High Negative			
Impact Colors: more significant impacts (red) to less significant impacts (dark green): red-yellow-blue-light green-dark green. Grey means no significant difference.			
LTS = less than significant impact; SU = significant and unavoidable; HSR = High-Speed Rail; VMT = vehicle miles traveled.			
^a . The summary analysis in this section focuses on the areas that have the greatest potential to disclose differences in environmental impact for different alternatives. There would be no substantial differences in other environmental topics.			
^b . The “environmentally superior alternative” would consist of the following Project facilities: the proposed rail alignment extended 0.6 mile south to the Merced Station Alternative; Turlock Station, Atwater Station Alternative, and Merced Station Alternative; and the Merced Layover Facility Alternative.			

5.6 Alternatives Screening Process

All alternatives were evaluated as to whether they would meet most of the Proposed Project's objectives, whether they would be feasible, and whether they would avoid or substantially lower one or more significant impact of the Proposed Project. The following sections provide a list of the alternatives that were considered by SJRRC. Two alternatives were suggested during the scoping period. This section includes the pertinent alternatives that were developed in the Prior EIR and also considers alternatives that were suggested in prior scoping and comments for the Prior EIR. Alternative titles that are listed in *italicized* text indicate the alternative was developed and carried forward for further environmental analysis. One of the alternatives (the Atwater Station Alternative) was analyzed in detail and is described in Chapter 2, *Project Description*, and analyzed at an equal level of detail within the resource sections in Chapter 3, *Environmental Impact Analysis*, and in Chapter 4, *Other CEQA-Required Analysis*. Some alternatives are analyzed at a lesser level of detail, as allowed under CEQA, and are described and reviewed in Section 5.3, *Analysis of Alternatives at a Lesser Level of Detail*. Alternatives considered but dismissed from further analysis are also in this section.

5.6.1 Alternatives Considered

5.6.1.1 No Project Alternative

CEQA requires analysis of a No Project Alternative. The No Project Alternative is analyzed in Section 5.3.1, *No Project Alternative*.

5.6.1.2 Alternatives Located Between Ceres and Merced

The following alternatives were considered but dismissed from further analysis. The alternatives below are coded as CM, followed by a number (CM stands for Ceres to Merced).

- **CM-1: Ceres to Merced Alignment West of UPRR.** This alternative would include an alignment adjacent to but outside the UPRR alignment on the west side (the east side is SR 99). This alternative was dismissed because would not avoid or substantially reduce significant environmental impacts of the Proposed Project, and it would result in far greater impacts on adjacent land uses, roadways, and farmland.
- **CM-2: Ceres to Merced Alignment outside the SR 99 Corridor.** This alternative would be separate from the UPRR alignment and SR 99 except on the approaches to station locations wherein the alternative would use the UPRR alignment. This alternative would not follow the SR 99 corridor except on approaches to station locations. This alternative was dismissed because it would not avoid or substantially reduce significant environmental impacts of the Proposed Project, and it would result in far greater impacts on adjacent land uses and farmland.
- **CM-3: Turlock Station North Side of Turlock.** This alternative was suggested in scoping for the Prior EIR out of concern for the impacts of the Turlock Station alternative on the Stanislaus Fairgrounds, on traffic near the residential area about 400 feet west of North Soderquist Road on the opposite side of Summerfaire Park, in particular potential impacts due to loss of parking for the Stanislaus County Fair. Instead, the commenters suggested a station at the corner of Taylor Road and Golden State Boulevard to avoid placing a station and parking near existing

residential neighborhoods in central Turlock. The intersection of Taylor Road and Golden State Boulevard is on the east side of SR 99, which is east of the railroad alignment. The station platforms would have to be on the west side of SR 99, so this alternative would require an 800-foot pedestrian elevated walkway over SR 99, which would add substantial cost to the project. A variant on this alternative would be to place station parking west of SR 99 on land between SR 99 and the Fresno Subdivision north or south of West Taylor Road. South of West Taylor Road, the station would be located on land designated for Highway Commercial use, and there are existing mobile homes and an area used for truck trailer parking that would be displaced. North of West Taylor Road there is an open field designated as Urban Reserve. Even if the station parking were positioned west of SR 99 in one of the two locations described in this paragraph, the placement of a station on the edge of town far from all residential areas is not consistent with the project objectives to enhance transit connectivity and to promote local and regional land use and transportation sustainability goals. All of the extension stations, including in Turlock, are proposed in areas of concentrated development to make use of the train service as convenient as possible and also to facilitate local bicycle, pedestrian, and transit access to the future ACE station. The proposed Turlock Station would be located adjacent to the Turlock Transit Center and would be connected by a pedestrian overcrossing. The pedestrian overcrossing provides a more convenient and direct route between the transit center and the station platform and increases the opportunities for intermodal connectivity. The proposed Turlock Station would also not result in direct traffic generation at the fairgrounds or west of SR 99 because the station parking would be east of SR 99. A station outside of town also has the potential to induce growth nearby, which would result in potential pressure to convert agricultural land just north of the developed areas of Turlock. Because it would not meet the objective of promoting local and regional land use and transportation sustainability goals, this alternative was dismissed from further consideration.

- **CM-4: Turlock Station on Stanislaus County Fair land.** The Prior EIR identified a station at Turlock with a parking lot located on Stanislaus County Fair land. The analysis in the Prior EIR identified a potentially significant land use impact that could occur related to insufficient parking during Stanislaus County Fair events. The Prior EIR also identified potential secondary effects associated with traffic congestion and the potential conversion of environmentally sensitive areas for parking. As such, the SJRRC developed a new proposed Turlock Station that is located outside of Stanislaus County Fair land to avoid this potentially significant impact. This alternative was dismissed from further consideration because it would not avoid or substantially reduce one or more significant impacts of the Proposed Project.
- **CM-5: Atwater Station Option.** This alternative proposed using double-loaded, 90-degree parking spaces at the Atwater Station Alternative to increase the amount of parking adjacent to the station platform. This alternative was dismissed as it is considered infeasible due to site constraints.
- **CM-6: University of California, Merced Connection.** This alternative proposed adding a rail connection to UC Merced. This alternative was dismissed as it is outside the objectives for the Proposed Project.
- **CM-7: Co-locate the Merced Layover & Maintenance Facility with the HSR heavy maintenance facility in Merced.** This alternative was dismissed as the final location of the HSR heavy maintenance facility has not yet been identified and would likely be geographically distant from the Proposed Project.

In addition to the alternatives listed above the were dismissed from further analysis, the following alternative were carried forward for full environmental analysis in Chapters 2, 3, and 4.

- *CM-8: Ceres to Merced Extension Alignment with Atwater Station Alternative (includes Turlock Station, Merced Station, and Merced Layover & Maintenance Facility)*

The following alternatives are described and analyzed in a lesser level of detail in Section 5.3.

- *CM-9: Ceres to Merced Extension Alignment with Merced Layover Facility Alternative (includes Turlock Station, Livingston Station, Merced Station, and Merced Layover Facility Alternative)*
- *CM-10: Ceres to Merced Extension Alignment with Merced Station Alternative (includes Turlock Station, Livingston Station, Merced Station Alternative, and Merced Layover & Maintenance Facility)*

Scoping comments from the Prior EIR suggested the following alternative concepts, all of which are included in the Proposed Project, and thus are not analyzed separately:

- **Turlock Station:** Design the pedestrian overcrossing to be compatible with the City's new transit building across the street. ACE would work with the City of Turlock to ensure compatibility as part of the project.
- **Merced Station:** Locate the station in employment center and urban densities to support the station location. The Merced Station would be located in downtown Merced, which is the highest local concentration of employment and dense urban use in Merced.

A scoping comment from the Prior EIR also suggested that the ACE Merced Station be co-located with HSR. As noted above, the proposed Merced Station is located adjacent to the Merced Transit Station, and the City of Merced prefers that both the ACE station and the HSR station be located adjacent to the Merced Transit Station. The currently adopted HSR station is located approximately 0.5 mile south. This EIR considers a Merced Station Alternative that is adjacent to the currently adopted HSR station location.

5.6.1.3 Multiple Segments Alternatives

The following alternatives were considered but dismissed from further analysis for the full rail corridor or multiple segments of the corridor. The alternatives below are coded as MS, followed by a number (MS stands for Multiple Segments).

- **MS-1: Independent ROW.** This alternative would consist of an independent ROW separate from the UPRR ROW. This alternative would reduce the potential for scheduling and other constraints from operating on shared tracks with freight operations. This alternative was dismissed because it is not feasible due to cost. Furthermore, it would not avoid or substantially reduce significant environmental impacts of the Proposed Project and would result in far greater disruption to land uses, biological resources, and farmland due to the construction of a new rail alignment.
- **MS-2: Partially Dedicated Passenger Track.** This alternative would include a dedicated passenger track within the existing UPRR ROW. Such a track could be utilized by passenger trains during peak hour passenger service times and by freight trains outside of passenger train peak hours. This alternative was dismissed because is not feasible due to UPRR control of the ROW. Furthermore, it would not avoid or substantially reduce significant environmental impacts of the Proposed Project.

- **MS-3: Grade Separate Highways and Railroads along the Extension Corridor.** This alternative would include grade separations for select at-grade crossings along the extension corridor. SJRRC supports grade separations in partnership with local jurisdictions when funding is available. However, grade separations are expensive, often costing \$25 million to \$100 million (or more depending on complexity), which is not within the existing available funds. Thus, this alternative is considered financially infeasible.

5.6.1.4 Operations Alternatives

Several operations alternatives were considered but dismissed from further analysis, including changes in service options.

- **OPS-1: Split Train Scenario.** This alternative would involve operating two separate consists,³ one departing from the existing Stockton Station and one from the Merced Station. Once both consists arrive at the Lathrop-area station, the two separate consists would be joined. The combined consists would then proceed along the existing ACE corridor to San Jose. On the return trip, a single consist would be split into two separate consists at the Lathrop-area station and one consist would proceed to the Stockton Station and the other consist would proceed to the Merced Station.

There might be a potential one-seat convenience and ridership benefits for this alternative under the right conditions in the future. However, there are multiple operational concerns including the time necessary for coupling and splitting, the risk of mechanical failure, safety, and the lack of precedent to do train splitting in North America using existing/proposed Bombardier equipment.

- Train coupling or train splitting requires two separate actions: (1) physical coupling or splitting—5 to 10 minutes; and (2) re-establishing the Positive Train Control (PTC) system for each new consist—15 minutes. If the PTC can be brought up at the same time as the actual coupling/splitting, then the duration would be 15 minutes. If it cannot, then the delay could be a total of 20 to 25 minutes. The delay time with the proposed time transfers in Lathrop is between 5 and 10 minutes, with most transfers taking less than 10 minutes. As such, a train splitting scenario will add between 5 and 15 minutes to each commute direction and up to 10 to 30 minutes for a daily commute.
- When doing mechanical work, such as when joining or splitting a train, there is a risk of additional mechanical failure. The train also has to be re-inspected after joining, the air brake test has to be completed, and the PTC system has to be reengaged. Mechanical failure introduces the risk of additional service delay as well as concerns about safety.
- The crew would be doing the joining/splitting at the station on the railroad mainline; thus, there is a reduced amount of safety given the frequent passage of freight trains. Furthermore, this will tie up the mainline in single track territory, which will be a concern for UPRR and may not be permitted by UPRR.
- SJRRC has not identified any train splitting for revenue service conducted in North America using the Bombardier equipment intended for use for the Proposed Project. This lack of precedent means that this is untested on United States (U.S.) railroads operating under FRA regulations, which raises the potential for additional delay, mechanical, and safety issues

³ A *train consist* is the lineup or sequence of railroad carriage or cars.

than those described above. European regulations are different and not applicable to U.S. operations.

The existing ACE service and the extended ACE service during the weekdays is dominated by San Joaquin Valley workers travelling to the Tri-Valley and Silicon Valley for work. As such, their commute mode choices are heavily influenced by time. For existing service from Stockton to San Jose, train coupling would nominally add 5 to 15 minutes additional travel time each way. For proposed service from Merced, the proposed transfer at Lathrop would be on the same platform for westbound passengers in the morning and eastbound in the evening, which is the most efficient transfer for these passengers. Thus, train coupling/splitting would extend the service time for riders along the extension to Merced.

This alternative was dismissed because it does not meet the project objective of enhancing intercity transit connectivity and because it would increase service times, increase risk of mechanical failures, and increase safety risks to workers. Due to the unprecedented nature of train splitting using proposed Bombardier equipment in the U.S., there remain unresolved mechanical and safety concerns of doing such operations on a busy railroad mainline. Furthermore, this alternative would not avoid or substantially reduce significant adverse environmental impacts of the Proposed Project.

Nothing in the Proposed Project precludes SJRRC from considering train splitting in the future. In the future, SJRRC may purchase equipment that may make splitting more practicable and that addresses the delay, potential for mechanical failure, safety, and may then be able to address UPRR concerns about train splitting/coupling on a freight mainline. However, with the present equipment and the current challenges, this is not an option today.

- **OPS-2: DMU Extension.** This alternative would include the use of lightweight diesel multiple units (DMUs) instead of a conventional locomotive push/pull service for the connection from Merced to Lathrop. DMUs are self-propelled diesel-mechanical vehicles with engines located below the passenger compartment. In this alternative, the DMUs would only operate between Merced and Lathrop and would not be used for the service from Stockton to San Jose. This alternative was considered in the Prior EIR and that discussion, which is included in Chapter 4 of the Prior Final EIR and which identifies that this alternative is not considered feasible, is hereby incorporated by reference.
- **OPS-3: DMU ACE Service.** This alternative would use DMUs for both the extension to Merced and for operations between Stockton and San Jose. In other words, ACE service would be entirely with DMUs. This alternative is similar to the description provided in OPS-2 for DMU operations along the extension to Merced, but this alternative would replace the use of locomotives and carriages for the existing ACE service between Stockton and San Jose with DMUs instead. This alternative was considered in the Prior EIR and that discussion, which is included in Chapter 4 of the Prior Final EIR and which identifies that this alternative would not meet Project objectives and is considered infeasible, is hereby incorporated by reference.
- **OPS-4: Bus Service between Gilroy and Merced.** This alternative would consist of express bus service from Merced to Gilroy to connect with Caltrain morning service to San Jose and beyond. The bus service would be done in lieu of the Proposed Project. While this alternative would provide for a connection from Merced to San Jose (via Caltrain at Gilroy) in roughly the same time as the Proposed Project, it would not provide connections from Turlock. Residents in Livingston and Atwater could use the bus from Merced but would have longer commutes with the drive to Merced. In addition, this alternative would not provide timely connections to the

Tri-Valley, Fremont, or Great America Stations compared to the Proposed Project. Thus, this alternative would have substantially lower transit ridership to the Bay Area and would result in inferior environmental outcomes in terms of air quality, GHG emissions, regional traffic and VMT and, thus, was dismissed from further consideration.

- **OPS-5: Weekend ACE Service to Union City or existing ACE stations in the Bay Area.** The Proposed Project does not change the amount of ACE service to the Bay Area and does not include weekend service. The Proposed Project would not require weekend service, but would not hinder the provision of weekend service in addition to the Proposed Project, should SJRRC choose to implement weekend service separately. Thus, this alternative is beyond the project scope and would not lessen any adverse significant impacts. This option is under consideration by SJRRC separate from the Proposed Project.

Scoping comments from the Prior EIR suggested the following alternative concept, which is included in the Proposed Project and, thus, is not analyzed separately:

- Lengthen trains and add locomotives to existing Stockton to San Jose service: ACE plans, as necessary, to accommodate increased ridership to add additional cars to the existing Stockton to San Jose service in order to maintain capacity for riders along the entire service corridor. New Tier 4 diesel locomotives are being designed to be more powerful than current diesel locomotives and are expected to be able to handle lengthened train consists without having two locomotives.

5.6.1.5 TRAC Northern San Joaquin Valley/Altamont Pass Rail Concepts

The Train Rider's Association of California (TRAC) submitted scoping comments concerning this EIR regarding consolidating the ACE and San Joaquins services on the UPRR Fresno Subdivision between Lathrop and Merced and implementing the Altamont Corridor Vision. The TRAC concept for unified passenger rail service in the northern San Joaquin Valley and across the Altamont Pass to the Bay Area was not fully articulated in TRAC's scoping comment. In order to understand TRAC's overall concept and the connection between the different recommended concepts, the preparers of this EIR reviewed TRAC's prior comments on the Prior EIR and also reviewed several editions of the TRAC publication, the California Rail News, including the May–September 2017 edition article "TRAC's Integration Plan for San Joaquins and Altamont Commuter Express" (TRAC 2017) and the May–August 2019 edition article "A \$6 Billion Plan to Upgrade the Altamont Corridor" (TRAC 2019). The preparers of this EIR also reviewed a 2019 San Joaquin Regional Rail Commission presentation on the Altamont Corridor Vision (San Joaquin Regional Rail Commission 2019). Based on a review of these materials, it appears TRAC is recommending three connected ambitious efforts to further passenger rail service in the northern San Joaquin Valley and to connect through the Altamont Pass to the Bay Area. While each of these three initiatives are reviewed separately below for the sake of clarify, they appear to be connected actions in TRAC's vision and to depend on each of the other initiatives in order to successfully deliver the passenger rail benefits TRAC is advocating.

- **TRAC-1: Consolidate San Joaquins Service with ACE Service on the UPRR Fresno Subdivision between Merced and Lathrop.** A scoping comment from TRAC for this EIR suggested that an alternative should be analyzed to acquire enough slots to make it possible for the San Joaquins service to travel on the UPRR Fresno Subdivision tracks from Merced to North Lathrop, and the EIR should then analyze the cumulative impacts of ACE sharing the tracks from Merced to North Lathrop with the additional San Joaquins service. The San Joaquins provide passenger service from Bakersfield to Stockton, Sacramento, and Oakland. Within the Project

1 area, the San Joaquins operate on the BNSF Line, which is to the east of the UPRR Fresno
2 Subdivision, and serve Merced, Turlock, Modesto, and Stockton. This alternative would require
3 construction of additional tracks to connect the BNSF Lines and UPRR lines near Merced.
4 Potential alignments for connecting the BNSF and UPRR lines near Merced suggested by TRAC
5 include a new surface connection adjacent to “University Parkway” (this likely refers to the
6 planned Campus Parkway project in southeast Merced), a 1.5-mile tunnel paralleling SR 140, or
7 use (and likely upgrade) of an existing rail spur north of SR 59 on the north side of town (TRAC
8 2017). This alternative would require additional agreement with UPRR for the additional
9 passenger rail slots, which would likely require construction of additional tracks between
10 Merced and Lathrop beyond those required for the extension of ACE service alone. This
11 alternative would provide additional stops for the San Joaquins in Atwater, Livingston, Ceres,
12 Manteca, and Lathrop. This alternative would also provide stops in more downtown areas of
13 Merced, Turlock, and Modesto than the current San Joaquins stop in the eastern portion of these
14 cities. Although not mentioned specifically in the TRAC scoping comment on this EIR, based on
15 other TRAC materials mentioned above, it appears that TRAC envisions the San Joaquins service
16 could proceed northward from Lathrop to Stockton (and then on to Sacramento) and could
17 proceed westward to the Bay Area via the Altamont Pass and the Tri-Valley (see discussion of
18 the Altamont Corridor Vision below). This alternative is outside and beyond the objectives of
19 this Proposed Project. Because this alternative would require additional construction compared
20 to the Proposed Project, this alternative would not avoid or substantially reduce any significant
21 impacts of the Proposed Project. This alternative does not meet the objectives of this Proposed
22 Project, would have substantially higher cost than available funds at this time (due to additional
23 construction of a BNSF–UPRR rail connection and additional tracks along the UPRR Fresno
24 Subdivision), and would not avoid or substantially reduce significant impacts of the Proposed
25 Project. It is also unknown whether UPRR would agree to such an alternative. Therefore, it was
26 dismissed from further consideration in this EIR. The Proposed Project would not preclude the
27 completion of this alternative should it be advanced at some point in the future separate from
28 this project.

- 29 • **TRAC-2: Implement the Altamont Corridor Vision.** In its scoping comment on this EIR, TRAC
30 suggested that ACE should implement the Altamont Corridor Vision.

31 The Altamont Corridor Vision is a long-term vision of potential improvements to rail service
32 over the Altamont Pass to better link the San Joaquin Valley to the Bay Area. This vision was best
33 articulated in a July 18, 2019 SJRRC presentation that describes a series of improvements (San
34 Joaquin Regional Rail Commission 2019). Short-term improvements include two additional
35 round trips between the San Joaquin Valley and San Jose via the Altamont Pass (to increase from
36 four to six daily weekday round trips) and weekend service; implementation of Valley Link
37 between Dublin/Pleasanton to North Lathrop; and Altamont Pass tunnel/alignment
38 improvements. Mid-term improvements include four more round trips between the San Joaquin
39 Valley and San Jose via the Altamont Pass (to increase from 6 to 10 daily weekday round trips)
40 and weekend service; Newark to Alviso improvements; and Valley Link extended to Stockton.
41 Longer-term improvements include 15-minute to 30-minute frequency during peak periods of
42 service; dedicated track involving a universal corridor (e.g., a combined corridor for ACE and the
43 San Joaquins and possibly other services); and one seat rides (e.g., no need to transfer from one
44 train to another) from the San Joaquin Valley to San Jose, Oakland, San Francisco, and the San
45 Francisco Peninsula. To facilitate these large increases in service, the vision would include
46 improvement between Lathrop and Newark, including Tracy alignment improvements, a new

Altamont Pass Tunnel, Livermore and Pleasanton alignment improvements, a new Niles Canyon tunnel, and Fremont improvements.

The estimated cost of the improvements between Lathrop and Newark is approximately \$6.6 billion. Additional improvements would be needed between Stockton and Lathrop (\$0.7 billion) and Newark and San Jose (\$2.5 billion). Additional improvements necessary to provide universal corridors as part of the longer-term vision include improvements across the Alviso Flats, a rail crossing near the Dumbarton Bridge, Jack London Square improvements, and a second Transbay Tube.

These improvements would require substantially higher costs for the improvements between Stockton and Lathrop, Lathrop and Newark, Newark and San Jose (San Joaquin Regional Rail Commission 2019). In order to provide passenger rail service connections from Merced to the Bay Area, this alternative would still require the same improvements as the Proposed Project between Ceres and Merced (and the previously approved improvements between Ceres and Lathrop). This would have substantially higher cost than available funds at this time, and would not avoid or substantially reduce significant impacts of the Proposed Project; therefore, it was dismissed from further consideration in this EIR in relation to this project.

However, the Proposed Project would not preclude the completion of this alternative should it be advanced at some point in the future separate from this project. Parts of this alternative are already being advanced through the Valley Link project and planning by SJRRC. Furthermore, the Proposed Project is consistent with the Vision and supports the advancement of the short-term goals of the Altamont Vision.

- **TRAC-3: Restore West Side Line for Freight Use.** Although not mentioned in the TRAC scoping comment letter for this EIR, TRAC suggested in comments on the Prior EIR an alternative that included reactivating the West Side Line between Tracy and Fresno (distance of approximately 123 miles) for use as an exclusive freight line so that the Fresno Subdivision could be primarily used for passenger trains. This alternative was considered in the Prior EIR and that discussion, which is included in Chapter 4 of the Prior Final EIR and which identifies that this alternative is considered infeasible and would result in greater construction impacts, is hereby incorporated by reference.

5.6.2 Screening Criteria

Alternatives were evaluated as to whether they would meet most of the project's basic objectives, whether they are feasible, whether they would avoid or substantially lower one or more significant impact of the Proposed Project.

5.6.2.1 Tier 1: Project Objectives Screening

The first tier of screening involved evaluating whether potential alternatives met the Proposed Project's basic objectives, which is described in detail in Chapter 1, *Introduction*. CEQA does not require alternatives to be analyzed if they do not meet most of a project's basic objectives. For the purpose of this EIR, the basic objectives are considered to be the primary objectives of the Proposed Project identified in Chapter 1 and summarized below.

- Enhance commuter rail and intercity service and transit connections in the San Joaquin Valley.
- Reduce traffic congestion, improve regional air quality, and reduce greenhouse gas emissions.

- Promote local and regional land use and transportation sustainability goals.

The results of the Tier 1 screening are presented in Table 5-12 in Section 5.6.3, *Screening Results and Conclusions*.

5.6.2.2 Tier 2: Feasibility Screening

The second tier of screening involved examining whether potential alternatives would be feasible. Only feasible alternatives passed this screening. Several aspects of feasibility were examined.

- Technically feasible—can the alternative be built using current construction techniques as proposed and operated?
- Logistically feasible—can the alternative be implemented taking into account legal, social, or regulatory constraints?
- Financially feasible—can the alternative be implemented within the financial capability of the project sponsor?

The results of the Tier 2 screening are presented in Table 5-13 in Section 5.6.3.

5.6.2.3 Tier 3: Environmental Impact Screening

For the third tier of screening, alternatives were examined to see whether they would avoid or substantially reduce one or more significant impacts of the Proposed Project.

An alternatives analysis focuses on the potentially significant impacts of the Proposed Project over existing conditions that may be avoided or substantially reduced with the implementation of a feasible alternative that meets the basic objectives of the Proposed Project. The significant impacts of the Proposed Project are identified in Chapter 3, *Environmental Impact Analysis*, and Chapter 4, *Other CEQA-Required Analysis*. Alternatives need not reduce all impacts of the Proposed Project. Alternatives that would avoid or substantially reduce one or more of the significant impacts were considered to pass this level of screening. The potentially significant and unavoidable impacts of the Proposed Project (See Section 4.2, *Significant and Unavoidable Impacts*) that were the focus of the environmental screening were as follows.

- Agricultural resources—result in the permanent loss of important farmland.
- Noise—disturb sensitive receptors during construction.

Other impacts that were less than significant after mitigation for the Proposed Project, such as aquatic resources, special-status species habitat, air quality and GHG emissions, were also considered for alternatives where these impacts varied between an alternative and the Proposed Project.

The results of the Tier 3 screening are presented in Table 5-14 in Section 5.6.3.

5.6.3 Screening Results and Conclusions

The tables at the end of this section present the results of the screening process for each of the alternatives considered. The reasons alternatives were dismissed from further consideration are explained in these tables. Tables 5-12 through 5-14 show the Tier 1, 2, and 3 results, respectively, for the alternatives' ability to meet the Proposed Project objectives, their level of feasibility, and their ability to avoid impacts on the environment associated with the Proposed Project. The overall results of the screening evaluation are summarized in Table 5-15.

Based on this screening, the Proposed Project and the Atwater Station Alternative were analyzed in equal detail in Chapters 2, 3, and 4. Three other alternatives (the No Project Alternative, Merced Layover Facility Alternative, and Merced Station Alternative) also passed the screening evaluation and are analyzed in this chapter.

1 **Table 5-12. Alternatives Screening, Tier 1: Project Objectives**

Code	Title of Alternative	Enhance intercity transit connectivity?	Reduce congestion, improve air quality, and reduce GHG emissions?	Promote land use and transportation sustainability goals?	PASS?	Notes
NP	No Project Alternative	No	No	No	Yes	Required to be analyzed under CEQA
Alternatives Located Between Ceres and Merced						
CM-1	Extension to Merced west of UPRR in SR 99 corridor	Yes	Yes	Yes	Yes	
CM-2	Extension to Merced west of SR 99 corridor	Yes	Yes	Yes	Yes	
CM-3	Turlock Station at West Taylor Road/ North Golden State Boulevard	Yes	Yes	No	No	Station on the edge of Turlock is not consistent with land use planning and supporting quality transit connections in the city.
CM-4	Turlock Station on Stanislaus County Fair land	Yes	Yes	Yes	Yes	
CM-5	Atwater Station with double-loaded 90-degree parking	Yes	Yes	Yes	Yes	
CM-6	UC Merced Connection	Yes	Yes	Yes	Yes	
CM-7	Combined ACE Layover & Maintenance Facility with HSR heavy maintenance facility	Yes	Yes	Yes	Yes	
CM-8	Atwater Station Alternative	Yes	Yes	Yes	Yes	
CM-9	Merced Layover Facility Alternative	Yes	Yes	Yes	Yes	
CM-10	Merced Station Alternative	Yes	Yes	Yes	Yes	
PP	Proposed Project: Ceres to Merced Extension Alignment with Turlock Station, Livingston Station, Merced Station, and Merced Layover & Maintenance Facility	Yes	Yes	Yes	Yes	
Multiple Segments						
MS-1	Independent ROW	Yes	Yes	Yes	Yes	

Code	Title of Alternative	Enhance intercity transit connectivity?	Reduce congestion, improve air quality, and reduce GHG emissions?	Promote land use and transportation sustainability goals?	PASS?	Notes
MS-2	Dedicated passenger line within UPRR ROW	Yes	Yes	Yes	Yes	
MS-3	Grade separate rail crossings	Yes	Yes	Yes	Yes	
Operational						
OPS-1	Split train scenario	No	Yes	Yes	No	Split train operations would slow service times due to the time necessary to connect and disconnect trains along each run and would also increase operational complexity and would have additional equipment challenges.
OPS-2	DMU, Lathrop-Merced	Yes	Yes	Yes	Yes	
OPS-3	DMU, Stockton-San Jose	Yes	Yes	Yes	Yes	
OPS-4	Merced-Gilroy Bus	Yes	Yes	Yes	Yes	
OPS-5	Union City Weekend Service	Yes	Yes	Yes	Yes	
TRAC Northern San Joaquin Valley/Altamont Pass Rail Concepts						
TRAC-1	Consolidate San Joaquins Service with ACE Service on the UPRR Fresno Subdivision between Merced and Lathrop	Yes	Yes	Yes	Yes	
TRAC-2	Implement the Altamont Corridor Vision	Yes	Yes	Yes	Yes	
TRAC-3	West Side Line	Yes	Yes	Yes	Yes	
ACE = Altamont Corridor Express CEQA = California Environmental Quality Act DMU = diesel multiple units GHG = greenhouse gas HSR = California High-Speed Rail				ROW = right-of-way SJRRRC = San Joaquin Regional Rail Commission SR = State Route TRAC = Train Riders Association of California UC = University of California UPRR = Union Pacific Railroad		

1 **Table 5-13. Alternatives Screening, Tier 2: Feasibility**

Code	Title of Alternative	Technically feasible?	Logistically feasible?	Financially feasible?	Otherwise feasible?	PASS?	Notes
NP	No Project Alternative	Yes	Yes	Yes	Yes	Yes	Required to be analyzed under CEQA
Alternatives Located Between Ceres and Merced							
CM-1	Extension to Merced west of UPRR in SR 99 corridor	Yes	Yes	UNK	Yes	Yes	This alternative would require more roadway grade separations and ROW acquisition and would be more costly than the Proposed Project.
CM-2	Extension to Merced west of SR 99 corridor	Yes	Yes	UNK	Yes	Yes	This alternative would require more roadway grade separations and substantially more ROW acquisition and would be substantially more costly than the Proposed Project.
CM-3	Turlock Station at West Taylor Road/ North Golden State Boulevard	Yes	Yes	Yes	Yes	Yes	
CM-4	Turlock Station on Stanislaus County Fair land	Yes	Yes	Yes	Yes	Yes	
CM-5	Atwater Station with double-loaded 90-degree parking	Yes	No	Yes	Yes	No	There is inadequate space to implement this alternative without displacing adjacent buildings.
CM-6	UC Merced Connection	Yes	Yes	UNK	Yes	Yes	This alternative would require more roadway grade separations and substantially more ROW acquisition and would be substantially more costly than the Proposed Project.
CM-7	Combined ACE Layover & Maintenance Facility with HSR heavy maintenance facility	Yes	No	Yes	Yes	No	The potential locations for a HSR heavy maintenance facility are far to the north or south of Merced and would result in the need for construction of additional trackwork (adding cost and construction impacts) and additional deadhead travel (adding cost and additional fuel consumption and emissions) for the ACE service.
CM-8	Atwater Station Alternative	Yes	Yes	Yes	Yes	Yes	
CM-9	Merced Layover Facility Alternative	Yes	Yes	Yes	Yes	Yes	

Code	Title of Alternative	Technically feasible?	Logistically feasible?	Financially feasible?	Otherwise feasible?	PASS?	Notes
CM-10	Merced Station Alternative	Yes	Yes	Yes	Yes	Yes	
PP	Proposed Project: Ceres to Merced Extension Alignment with in Turlock Station, Livingston Station, Merced Station, and Merced Layover & Maintenance Facility	Yes	Yes	Yes	Yes	Yes	
Multiple Segments							
MS-1	Independent ROW	Yes	UNK	No	No	No	An entirely separate ROW would be highly costly to acquire. Additional cost would be construction of entirely new railroad tracks, bridges, road crossings and other railway infrastructure. Uncertain ability to obtain all the necessary ROW and to obtain regulatory permits for an entirely new ROW. CHSRA investigated a separate ROW as part of the Altamont Corridor Rail Project, and this work was stopped because financing for such infrastructure was not feasible in the foreseeable future.
MS-2	Dedicated passenger line within UPRR ROW	Yes	No	Yes	No	No	UPRR controls the ROW and will not dedicate a passenger line for exclusive passenger rail use because it would not allow UPRR to control freight dispatch. This alternative would also require extensive construction of second tracks in areas of current single track.
MS-3	Grade separate rail crossings	Yes	Yes	No	Yes	No	Grade separation of railway crossings is highly expensive (\$50 million to \$100 million per crossing) and thus not financially feasible with available funding.
Operational							
OPS-1	Split train scenario	Yes	Yes	Yes	Yes	Yes	
OPS-2	DMU, Lathrop-Merced	Yes	No	Yes	Yes	No	Dismissed from consideration in the Prior EIR.
OPS-3	DMU, Stockton-San Jose	Yes	UNK	UNK	Yes	UNK	Dismissed from consideration in the Prior EIR.

Code	Title of Alternative	Technically feasible?	Logistically feasible?	Financially feasible?	Otherwise feasible?	PASS?	Notes
OPS-4	Merced-Gilroy Bus	Yes	Yes	Yes	Yes	Yes	
OPS-5	Union City Weekend Service	Yes	Yes	Yes	Yes	Yes	
TRAC Northern San Joaquin Valley/Altamont Pass Rail Concept							
TRAC-1	Consolidate San Joaquins Service with ACE Service on the UPRR Fresno Subdivision between Merced and Lathrop	Yes	UNK	UNK	Yes	UNK	Consolidation would require additional agreement with UPRR to provide additional passenger rail slots. An additional BNSF-UPRR connection would need to be constructed in/near Merced which would have additional cost. UPRR would require construction of additional rail track capacity between Merced and Lathrop to avoid impacts on freight rail capacity. The cost of such improvements and the willingness of UPRR to allow additional slots are unknown.
TRAC-2	Implement the Altamont Corridor Vision	Yes	TBD	TBD	Yes	TBD	The Altamont Corridor Vision includes improvements between Lathrop and San Jose totaling over \$8 billion. While some individual elements of the Altamont Corridor Vision can obtain funding at this time, the total costs are many times higher than the costs of the ACE extension from Ceres to Merced. The Vision also requires the permission of host railroads and regulatory agencies in order to be achieved. The Proposed Project is supportive of the Vision's goals for the short-term and would not preclude implementation of the Vision in the long-term.
TRAC-3	West Side Line	Yes	No	No	Yes	No	Dismissed from consideration in the Prior EIR.
ACE = Altamont Corridor Express					ROW = right-of-way		
CEQA = California Environmental Quality Act					SJRRRC = San Joaquin Regional Rail Commission		
CHSRA = California High-Speed Rail Authority					SR = State Route		
DMU = diesel multiple units					UC = University of California		
HSR = High-Speed Rail					UNK = unknown		
					UPRR = Union Pacific Railroad		

1 **Table 5-14. Alternatives Screening, Tier 3: Environmental Impact**

Code	Title of Alternative	Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
		Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
NP	No Project Alternative	Yes	Yes	No	Yes	This alternative would avoid construction impacts of the Proposed Project and certain operational impacts (like train noise). This alternative would have higher air quality/GHG emissions, higher regional traffic congestion and would not support regional land use/transportation planning. This alternative would have higher vehicle-related safety issues and would require longer freight transit to the Port of Oakland.
Alternatives Located Between Ceres and Merced						
CM-1	Extension to Merced west of UPRR in SR 99 corridor	No	No	No	No	This alternative would not avoid or substantially reduce any significant impacts of the Proposed Project. This alternative would result in greater disruption to residential, commercial, and institutional land uses on the west side of the UPRR corridor.

Code	Title of Alternative	Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
		Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
CM-2	Extension to Merced west of SR 99 corridor	No	No	No	No	This alternative would not avoid or substantially reduce any significant impacts of the Proposed Project. This alternative would result in greater disruption to residential, commercial and institutional land uses on the west side of the UPRR corridor. In addition, this alternative would displace substantially more farmland than the Proposed Project due to the routing away from the SR 99 corridor. This alternative would require more roadway grade separations and substantially more ROW acquisition and would be substantially more costly than the Proposed Project alternatives. The resultant route would be longer than the more direct route along SR 99.
CM-3	Turlock Station at West Taylor Road/ North Golden State Boulevard	No	No	No	No	This alternative would not avoid any significant impacts of Proposed Project.
CM-4	Turlock Station on Stanislaus County Fair land	No	No	No	No	This alternative would result in a significant land use impact associated with conflicts with parking at the Stanislaus County Fair. The proposed Turlock Station would avoid this impact. This alternative would not avoid or substantially reduce significant environmental impacts of the Proposed Project.
CM-5	Atwater Station with double-loaded 90-degree parking	No	No	No	No	This alternative would not avoid any significant impacts of Proposed Project.

Code	Title of Alternative	Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
		Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
CM-6	UC Merced Connection	No	No	No	No	This alternative would not avoid any significant impacts of Proposed Project.
CM-7	Combined ACE Layover & Maintenance Facility with HSR heavy maintenance facility	UNK	UNK	UNK	UNK	CHSRA has not selected its location for their heavy maintenance facility so a specific analysis cannot be conducted. However, all prior candidates are much further from Merced than the proposed layover facility and thus would result in additional air quality and GHG emissions and noise effects.
CM-8	Atwater Station Alternative	No	No	No	No	This alternative would not avoid any significant impacts of Proposed Project.
CM-9	Merced Layover Facility Alternative	No	Yes	No	Yes	This alternative is not located near sensitive receptors. As such, this alternative would have a less than significant noise impact during construction. The proposed Merced Layover & Maintenance Facility would have a significant and unavoidable noise impact during construction. Thus, this alternative would avoid this significant and unavoidable noise impact during construction. Nonetheless, this alternative would result in more severe impacts on biological resources and agricultural resources.

Code	Title of Alternative	Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
		Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
CM-10	Merced Station Alternative	No	Yes	No	Yes	This alternative is not located near sensitive receptors. As such, this alternative would have a less-than-significant noise impact during construction. The proposed Merced Station would have a significant and unavoidable noise impact during construction. Thus, this alternative would avoid this significant and unavoidable noise impact during construction.
PP	Proposed Project: Ceres to Merced Extension Alignment with in Turlock Station, Livingston Station, Merced Station, and Merced Layover & Maintenance Facility	N/A	N/A	N/A	N/A	
Multiple Segments						
MS-1	Independent ROW	No	No	No	No	This alternative would not avoid or substantially reduce any significant impacts of the Proposed Project. This alternative would result in greater disruption to residential, commercial, institutional, recreational, and agricultural land uses along an independent ROW compared to the Proposed Project's use of primarily the existing UPRR ROW.

Code	Title of Alternative	Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
		Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
MS-2	Dedicated passenger line within UPRR ROW	No	No	No	No	This alternative would not avoid or substantially reduce any significant impacts of the Proposed Project. Because this alternative would require additional tracks compared to the Proposed Project, it would expand the width of the construction footprint and in some areas may expand the railroad ROW itself (where there is insufficient space within the ROW for the dedicated track). This alternative would result in greater disruption to land uses along the ROW during construction.
MS-3	Grade separate rail crossings	No	Yes	Yes	Yes	This alternative would avoid train horn noise at the at-grade crossings as well as potential traffic delays during peak hours.
Operational						
OPS-1	Split train scenario	No	No	No	No	This alternative would not avoid or substantially reduce any significant impacts of the Proposed Project. This alternative may result in lower ridership due to longer service times and, if so, would result in greater VMT, air quality emissions, and GHG emissions.

Code	Title of Alternative	Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
		Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
OPS-2	DMU, Lathrop-Merced	No	Yes	Yes	Yes	This alternative would likely slightly lower train noise and may slightly lower emissions, compared to Tier 4 new locomotives.
OPS-3	DMU, Stockton-San Jose	No	Yes	Yes	Yes	This alternative would lower train noise and emissions compared to conventional locomotives.
OPS-4	Merced-Gilroy Bus	No	Yes	Yes	Yes	This alternative would avoid construction impacts, as well as noise due to train operations. While this alternative would provide a connection from Merced to San Jose (via Caltrain at Gilroy) in roughly the same time as the Proposed Project, it would not provide connections from Turlock. Residents in Livingston and Atwater could use the bus from Merced but would have longer commutes with the drive to Merced. In addition, this alternative would not provide timely connections to Tri-Valley, Fremont, or Great America Stations compared to the Proposed Project. Thus, this alternative would have substantially lower transit ridership to the Bay Area and would result in inferior environmental outcomes in terms of air quality, GHG emissions, regional traffic, and VMT.
OPS-5	Union City Weekend Service	No	No	No	No	This alternative would not avoid significant impacts of the Proposed Project.

Code	Title of Alternative	Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
		Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
TRAC Northern San Joaquin Valley/Altamont Pass Rail Concept						
TRAC-1	Consolidate San Joaquins Service with ACE Service on the UPRR Fresno Subdivision between Merced and Lathrop	No	No	No	No	This alternative would require an additional BNSF-UPRR rail connection in Merced and more track construction between Merced and Lathrop which would result in greater construction disruption. This alternative would include more train service along a single corridor which would increase operational noise levels. This alternative would likely require increased right-of-way, which could increase other footprint type impacts. This alternative would not avoid any impacts of the Proposed Project.
TRAC-2	Implement the Altamont Corridor Vision	No	No	No	No	This alternative would not avoid any impacts of the Proposed Project between Merced and Lathrop and would require substantially greater construction between Lathrop and the Bay Area. This alternative would include more train service between Lathrop and the Bay Area along a single corridor which would increase operational noise levels. This alternative would require increased right-of-way, which would increase other footprint type impacts.

		Would the alternative avoid or substantially reduce significant project impacts relative to the following subject areas?				Notes
Code	Title of Alternative	Construction disruption?	Increased noise?	Other impact (see notes)?	Avoids or substantially reduced one or more impacts of the Proposed Project?	
TRAC-3	West Side Line	No	Possibly	No	Possibly	This alternative would introduce construction impacts along West Side Line to Fresno and would likely still require all the track improvements between Merced and Fresno in order to obtain UPRR approval. If freight were relocated, it could reduce some rail noise between Lathrop and Merced (presuming through freight trains are relocated to the West Side Line).
ACE = Altamont Corridor Express				ROW = right-of-way		
CEQA = California Environmental Quality Act				SR = State Route		
DMU = diesel multiple units				TRAC = Train Riders Association of California		
GHG = greenhouse gas				UNK = unknown		
HSR = High-Speed Rail				UPRR = Union Pacific Railroad		
N/A = not applicable				VMT = vehicle miles traveled		

1 **Table 5-15. Alternatives Screening Results**

Code	Title of Alternative	Meets Project Objectives?	Feasible?	Avoids or substantially reduces one or more impacts of the Proposed Project?	Potentially analyzed in the EIR?	Expands range of alternatives?	Recommended for analysis in the EIR?	Notes
NP	No Project Alternative	No	Yes	Yes	Yes	Yes	Yes	Required to be analyzed under CEQA
Alternatives Located Between Ceres and Merced								
CM-1	Extension to Merced west of UPRR in SR 99 corridor	Yes	Yes	No	No	Yes	No	This alternative would not avoid or substantially reduce significant environmental impacts of the Proposed Project.
CM-2	Extension to Merced west of SR 99 corridor	Yes	Yes	No	No	Yes	No	This alternative would not avoid or substantially reduce significant environmental impacts of the Proposed Project.
CM-3	Turlock Station at West Taylor Road/ North Golden State Boulevard	No	Yes	No	No	Yes	No	Station location at the outskirts of Turlock is not consistent with project objectives to support local land use planning seeking transit connections in the center of cities.
CM-4	Turlock Station on Stanislaus County Fair land	Yes	Yes	No	No	Yes	No	This alternative would not avoid or substantially reduce significant environmental impacts of the Proposed Project. This alternative would result in a significant land use impact associated with conflicts with parking at the Stanislaus County Fair. The proposed Turlock Station would avoid this impact.
CM-5	Atwater Station with double-loaded 90-degree parking	Yes	No	No	No	No	No	There is insufficient space without resulting building demolition.
CM-6	UC Merced Connection	Yes	Yes	No	No	Yes	No	This alternative is outside the scope of this project; it would add additional impact and cost.

Code	Title of Alternative	Meets Project Objectives?	Feasible?	Avoids or substantially reduces one or more impacts of the Proposed Project?	Potentially analyzed in the EIR?	Expands range of alternatives?	Recommended for analysis in the EIR?	Notes
CM-7	Combined ACE Layover & Maintenance Facility with HSR heavy maintenance facility	Yes	No	UNK	No	Yes	No	HSR heavy maintenance facility is too far from Merced for ACE service.
CM-8	Atwater Station Alternative	Yes	Yes	Yes	Yes	Yes	Yes	The project would reduce VMT, GHG emissions, and criteria pollutant emissions. Because the Atwater Station would reduce VMT by slightly more than the Proposed Project, it would have greater reductions of GHG and criteria pollutant emissions. Full analysis is included in Chapters 2, 3, and 4.
CM-9	Merced Layover Facility Alternative	Yes	Yes	Yes	Yes	Yes	Yes	This alternative is analyzed in this chapter.
CM-10	Merced Station Alternative	Yes	Yes	Yes	Yes	Yes	Yes	This alternative is analyzed in this chapter.
PP	Proposed Project: Ceres to Merced Extension Alignment with in Turlock Station, Livingston Station, Merced Station, and Merced Layover & Maintenance Facility	Yes	Yes	N/A	Yes	N/A	Yes	Full analysis included in Chapters 2, 3, and 4.
Multiple Segments								
MS-1	Independent ROW	Yes	No	No	No	Yes	No	This alternative is not feasible due to cost. It would not avoid or substantially reduce significant environmental impacts of the Proposed Project.
MS-2	Dedicated passenger line within UPRR ROW	Yes	No	No	No	Yes	No	This alternative is not feasible due to UPRR control of ROW. It would not avoid or substantially reduce significant environmental impacts of the Proposed Project.

Code	Title of Alternative	Meets Project Objectives?	Feasible?	Avoids or substantially reduces one or more impacts of the Proposed Project?	Potentially analyzed in the EIR?	Expands range of alternatives?	Recommended for analysis in the EIR?	Notes
MS-3	Grade separate rail crossings	Yes	No	Yes	No	Yes	No	Grade separations are financially infeasible for this project.
Operational								
OPS-1	Split train scenario	No	Yes	No	No	Yes	No	This alternative would not avoid or substantially reduce significant environmental impacts of the Proposed Project. It would increase service times.
OPS-2	DMU, Lathrop-Merced	Yes	No	Yes	Yes	Yes	No	UPRR has stated that they will not allow DMUs to be used for the extension due to safety concerns about the crashworthiness of lightweight DMUs operating on the same lines as heavyweight freight trains.
OPS-3	DMU, Stockton-San Jose	Yes	No	No	No	Yes	No	The Proposed Project does not change train service from Stockton to San Jose and thus there is no nexus for swapping out Stockton to San Jose locomotives and carriages for DMUs.

Code	Title of Alternative	Meets Project Objectives?	Feasible?	Avoids or substantially reduces one or more impacts of the Proposed Project?	Potentially analyzed in the EIR?	Expands range of alternatives?	Recommended for analysis in the EIR?	Notes
OPS-4	Merced-Gilroy Bus	No	Yes	Yes	No	Yes	No	While this alternative would provide for a connection from Merced to San Jose (via Caltrain at Gilroy) in roughly the same time as the Proposed Project, it would not provide connections from Turlock. Residents in Livingston and Atwater could use the bus from Merced but would have longer commutes with the drive to Merced. In addition, this alternative would not provide timely connections to the Tri-Valley, Fremont, or Great America Stations compared to the Proposed Project. Thus, this alternative would have substantially lower transit ridership to the Bay Area and would result in inferior environmental outcomes in terms of air quality, GHG emissions, regional traffic, and VMT.
OPS-5	Union City Weekend Service	No	Yes	No	No	No	No	This alternative is outside the objectives of this project and would not avoid or substantially reduce significant impacts of the Proposed Project.
TRAC Northern San Joaquin Valley/Altamont Pass Rail Concept								
TRAC-1	Consolidate San Joaquins Service with ACE Service on the UPRR Fresno Subdivision between Merced and Lathrop	Yes	UNK	No	No	Yes	No	This alternative does not meet objectives of the Proposed Project and would not avoid or substantially reduce significant impacts of the Proposed Project.

Code	Title of Alternative	Meets Project Objectives?	Feasible?	Avoids or substantially reduces one or more impacts of the Proposed Project?	Potentially analyzed in the EIR?	Expands range of alternatives?	Recommended for analysis in the EIR?	Notes
TRAC-2	Implement the Altamont Corridor Vision	Yes	UNK	No	No	No	No	This alternative is beyond the objectives of the Proposed Project, has unknown feasibility due to substantially higher cost than available funds at this time and the need for host railroad and regulatory agency approvals, and would not avoid or substantially reduce significant impacts of the Proposed Project. The Proposed Project is consistent with the Vision, would support its short-term goals, and would not preclude the implementation of the Vision in the long term.
TRAC-3	West Side Line	Yes	No	Possibly	No	Yes	No	This alternative is not feasible as UPRR will not agree to expand passenger service on the Fresno Subdivision without expansion of rail lines on the Fresno Subdivision.
ACE = Altamont Corridor Express CEQA = California Environmental Quality Act DMU = diesel multiple units HSR = High-Speed Rail N/A = not applicable				ROW = right-of-way SJRRC = San Joaquin Regional Rail Commission SR = State Route UC = University of California UNK = unknown UPRR = Union Pacific Railroad				