

## 3.0 Affected Environment, Environmental Consequences, and Mitigation Measures

### 3.1 Introduction

This chapter addresses existing environmental conditions and the project's impacts on environmental resources, examining each resource in a separate subsection. FRA is preparing an EIS for the Merced to Fresno Section of the HST project under NEPA and the Authority is preparing an EIR under CEQA. CEQA guidelines encourage the preparation of joint NEPA-CEQA documents and the use of an EIS to satisfy CEQA requirements, where possible and appropriate. The FRA and the Authority have used their best judgment in preparing this combined EIR/EIS to satisfy both NEPA and CEQA requirements.

NEPA requires the consideration of potential environmental impacts in the evaluation of any proposed federal agency action. NEPA also obligates federal agencies to consider the environmental consequences and costs in their projects and programs as part of the planning process. General NEPA procedures are set forth in the Council on Environmental Quality regulations (40 CFR 1500-1508). FRA implements NEPA through its *Procedures for Considering Environmental Impacts* (64 FR 101, 28545).

CEQA (Section 21000 et seq.) and CEQA Guidelines (Section 15000 et seq.) require state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, when feasible. Public Resources Code Section 21100(b)(3) provides that an EIR shall include a statement setting forth the mitigation measures proposed to minimize the significant effects on the environment.

The requirements of NEPA and CEQA are not necessarily the same; similar requirements found in both statutes may have different levels of stringency, and some provisions that appear in one statute may not appear in the other. In addition, the proposed project is subject to federal and state environmental statutes and regulations that are separate from NEPA and CEQA but which require analyses that must be incorporated into the EIR/EIS. In circumstances where more than one regulation or statute might apply, this joint EIR/EIS has been prepared in compliance with the more stringent or inclusive set of requirements, whether federal or state.

The Authority and FRA have focused on avoiding and minimizing potential impacts through rigorous planning and thoughtful design. The project-level environmental analysis conducted for this EIR/EIS and described in this chapter includes consideration of means to avoid, minimize, and mitigate potential adverse environmental impacts. In balance with other considerations, the Authority has defined alignments along existing transportation corridors and rights-of-way to the extent feasible, while accommodating the appropriate features and design standards for the Merced to Fresno Section of the HST Project, to minimize overall impact potential. When necessary and appropriate, this chapter identifies site-specific mitigation for the HST project, including those specific to alternative alignments, stations, and the other facilities, such as the power conveyance and heavy maintenance facilities.

The Authority and FRA will make a decision on the north-south alignment between Merced and Fresno based on information provided in the Merced to Fresno Section Project EIR/EIS. The Authority and FRA will make a decision about the wye connection as part of their decision on the east-west alignment between San Jose and Merced, which will be analyzed in the upcoming San Jose to Merced Section Project

#### More About Schools

Impacts on schools in the project vicinity can be found in the following sections:

- 3.3, Air Quality and Global Climate Change
- 3.4, Noise and Vibration
- 3.5, Electromagnetic Fields and Electromagnetic Interference
- 3.10, Hazardous Materials and Wastes
- 3.11, Safety and Security
- 3.12, Socioeconomics, Communities, and Environmental Justice
- 3.13, Station Planning, Land Use, and Development
- 3.15, Parks, Recreation, and Open Space
- 3.19, Cumulative Impacts

EIR/EIS. While the Authority and FRA will not make a decision about the wye connection as part of this Merced to Fresno Section Project EIR/EIS, the Merced to Fresno Section Project EIR/EIS describes and analyzes the two wye connections along Avenue 24 and Avenue 21 to show how the wyes would influence impacts associated with the north-south alignment. The San Jose to Merced Section Project EIR/EIS will fully analyze all wye connections to the Merced to Fresno Section, including the SR 152 Wye.

### 3.1.1 Chapter 3 Purpose and Content

This chapter consists of three sections—the Affected Environment, Environmental Consequences, and Mitigation Measures—for each resource topic. The first section describes existing environmental conditions in the areas that would be affected by the proposed Merced to Fresno Section of the HST Project and the No Project Alternative. This is followed by a discussion of potential environmental impacts associated with constructing and operating the HST alternatives. The sections in this chapter then conclude with the identification of site-specific mitigation measures where impacts cannot be otherwise avoided or reduced through design.

The analyses address the impacts of the alternative design options, wyes, stations, and other related HST facilities as described in Chapter 2, Alternatives. They also incorporate impacts associated with related infrastructure changes required to accommodate the HST alternatives, such as roadway and interchange modifications, utility relocation, and addition of power substations, and identify key differences among the impacts associated with the alternatives. This document analyzes mitigation, impacts resulting from mitigation, and feasibility of mitigation

Analysts used many sources to prepare this document. Chapter 10, References/Sources Used in Document Preparation, lists these sources.

### 3.1.2 Organization of This Chapter

Chapter 3.0 presents each environmental resource topic in its own section, as follows:

- Section 3.2 Transportation\*
- Section 3.3 Air Quality and Global Climate Change\*
- Section 3.4 Noise and Vibration\*
- Section 3.5 Electromagnetic Fields and Electromagnetic Interference
- Section 3.6 Public Utilities and Energy
- Section 3.7 Biological Resources and Wetlands\*
- Section 3.8 Hydrology and Water Resources\*
- Section 3.9 Geology, Soils, and Seismicity\*
- Section 3.10 Hazardous Materials and Waste\*
- Section 3.11 Safety and Security
- Section 3.12 Socioeconomics, Communities, and Environmental Justice\*
- Section 3.13 Station Planning, Land Use, and Development
- Section 3.14 Agricultural Lands
- Section 3.15 Parks, Recreation, and Open Space
- Section 3.16 Aesthetics and Visual Quality\*
- Section 3.17 Cultural and Paleontological Resources\*
- Section 3.18 Regional Growth
- Section 3.19 Cumulative Impacts

#### California High-Speed Train Authority Web Site

Information on HST project, including downloadable versions of the EIR/EIS, technical appendices, technical reports and memorandums, and other documents are available on-line at:

[www.cahighspeedrail.ca.gov](http://www.cahighspeedrail.ca.gov)

The asterisks in this list indicate sections supported by a *technical report*, which is posted on the Authority's website and contains additional detailed analyses. In addition, *technical appendices* to several resource topics provide key information used primarily in preparing the affected environment discussions appear in Volume II of this EIR/EIS. See the Table of Contents for a list of all technical appendices.

### 3.1.3 Approach to the Analysis

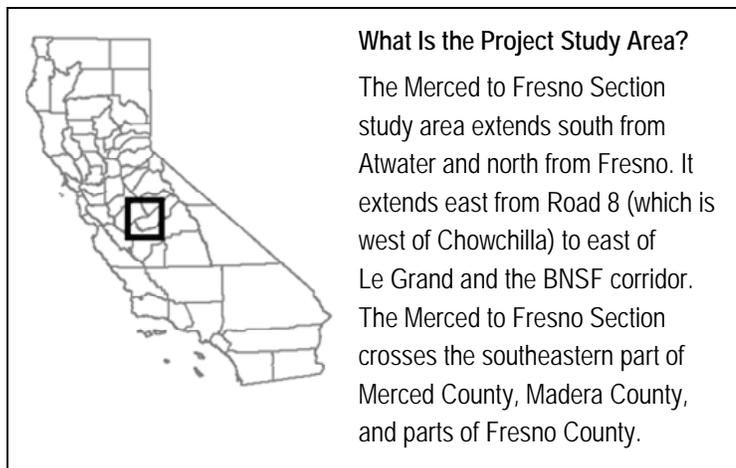
In all sections, information is presented in the following geographic and project order: north to south for the UPRR/SR 99 Alternative, then the BNSF Alternative, next the Hybrid Alternative, and finally the Heavy Maintenance Facility (HMF) study alternatives. The project vicinities used for description and illustration of affected environment and impacts center around the cities of Merced, Chowchilla, Madera, and Fresno. Analysts use smaller geographic areas, such as around the HST Stations, to demonstrate the design options within the Merced to Fresno corridor at a more detailed scale. As described in Chapter 2, the UPRR/SR 99, BNSF, and Hybrid alternatives each include design options and wye connections to the west. Each resource topic addressed in Chapter 3.0 includes the following sections:

**Introduction.** The introduction presents the reader with an overview to the topic and the critical issues and concerns considered in the analysis.

**Laws, Regulations, and Orders.** The laws, regulations, and orders discussion for each resource topic identifies the relevant regulatory framework as well as other regulatory agency guidelines relevant to project approvals or decisions for that resource topic.

**Methods of Evaluation of Impacts.** This section describes the methods used to collect data and evaluate potential impacts. This includes the following:

- **Methods for Evaluating Impacts Under NEPA.** Requirements which specify that project effects (beneficial and adverse) be evaluated based on the criteria of context and intensity.
- **CEQA Significance Criteria.** For each resource topic, analysts use significance criteria to identify when impacts are considered adverse and warrant mitigation measures to help reduce the magnitude and severity of these impacts. These criteria are largely based on CEQA guidelines, which generally describe when impacts would be considered *significant* or when there would be a *substantial*, or *potentially substantial*, adverse change in any of the physical conditions within the area affected by the project. Where possible, significance criteria use state or federal standards. For example, air quality significance criteria follow the state and federal ambient air quality standards; noise significance criteria use thresholds defined by the FRA. In other cases, for example the visual resources analysis, the significance criteria rely on guidelines and policies, assessment methodologies such as those used by the FRA and professional standards.
- **Study Area for Analysis.** The study area includes the area surrounding all project components and a buffer specific to each resource area. The project components include the HST right-of-way and associated facilities such as traction-power substations, switching and paralleling stations, as well as the shifts in roadway rights-of-way associated with those facilities—including overcrossings and interchanges—that would be modified or shifted to accommodate the HST project, as described in Chapter 2, Alternatives. The area of permanent effect would include the following:
  - HST Right-of-Way – would vary between 100 feet for rural areas and as little as 50 feet in constrained areas.
  - Traction-Power Substations – would each require a 30,000-square-foot

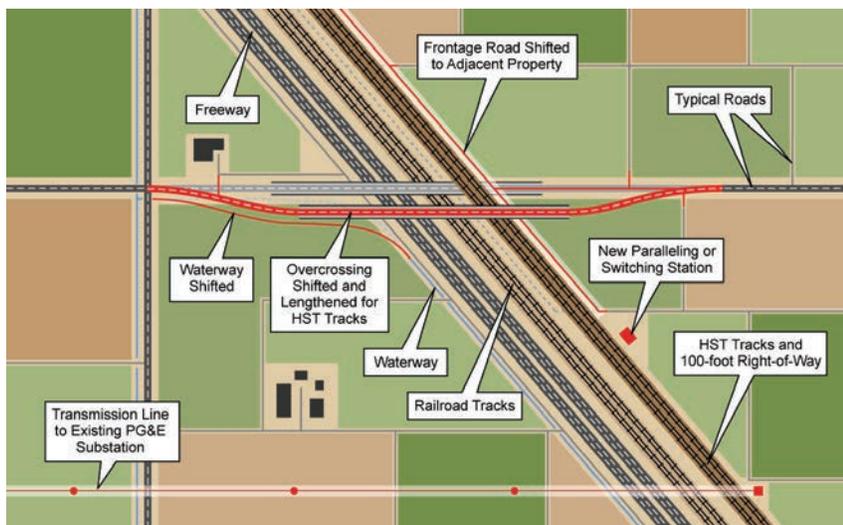
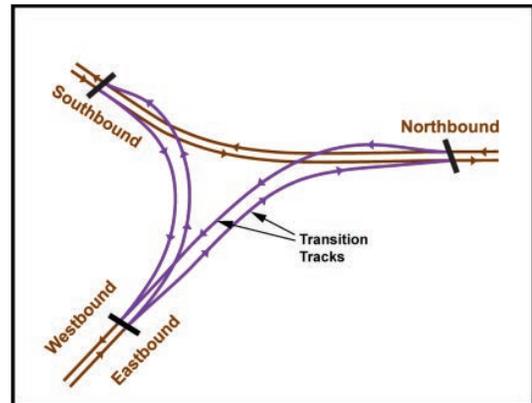


(or 200-foot by 160-foot) site adjacent to the HST alignment and a 20-foot-wide access lane to the nearest roadway.

- Switching and Paralleling Stations – each would need a site approximately of 9,600 square feet (generally 80 by 120 feet) adjacent to the proposed HST and a 20-foot-wide access lane to the nearest roadway.
- Wye Design Option (included in the analysis for informational purposes only) – the wye connection would include an area of four tracks with a maximum width of 160 feet extending up to 2 miles.
- HST Stations – the stations and associated structures including parking are analyzed as city blocks.
- Heavy Maintenance Facility Alternatives – depending on the site, each HMF may be up to 300 acres and generally 10,560 feet long by 3,000 feet wide at the widest portion. Two access tracks would diverge from the through tracks (four tracks total) on either side of the HMF, requiring a 160-foot HST right-of-way along the access tracks.
- Project roadways modifications – would have varying right-of-way and distance from the HST right-of-way, as illustrated in Figure 3.1-1, and would include the following:
  - o New two-lane overcrossings over the HST right-of-way.
  - o Shift of frontage roads (two to four lanes, with shoulders) that parallel the HST right-of-way.

**What is a Wye?**

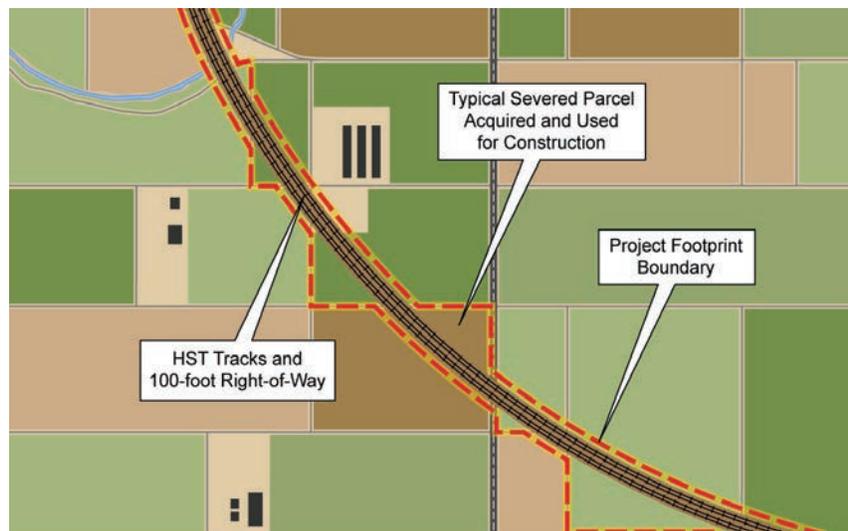
A wye is junction where train tracks branch off a main line to continue in different directions, forming a “Y”-like formation. In this case, the two tracks traveling east-west must become four tracks: a set of two tracks branching northbound and a set of two tracks branching southbound.



**Figure 3.1-1**  
 Shifts of Roadways and  
 Other Infrastructure

- Shift of SR 99 two-lane overcrossings and interchanges and associated two-lane roadway connections.
- Shift of SR 99 between Clinton Avenue and Ashlan Avenue (six lanes) and two new interchanges.

The HST Project would require acquisition of property necessary for project operation. When the remnant portion of an acquired parcel beyond the right-of-way is too small to sustain current use without other modifications, it would also be acquired (as illustrated in Figure 3.1-2). These remnant parcels would be considered a part of the **construction footprint**, or the total area disturbed during construction, and could be used for construction staging. However, these remnant parcels would be restored to original use following construction, if possible. The construction footprint is common to all resource areas. In addition, the HMF sites could be considered for construction staging. (Appendix 3.1-A shows the footprint that could be affected permanently or just during construction.)



**Figure 3.1-2**  
 Parcel Affected Beyond  
 Project Right-of-Way

**Affected Environment.** The affected environment discussion summarizes the conditions in the project area that provide the basis for analysis of potential impacts on each environmental resource. Information in the affected environment discussion is presented for the entire Merced to Fresno Section, including a discussion of the regional context. The affected environment discussions describe the existing conditions available in the most recent publically available data or collected during field work in 2009 and 2010. Where appropriate and not overly speculative, the anticipated 2035 conditions that would pertain without the project are used as the No Project condition. Resource areas that discuss 2035 conditions include, for example, transportation and air quality, for which projected future conditions are defined in plans adopted by regional and local planning agencies.

**Environmental Consequences.** The environmental consequences discussion describes the potential environmental impacts of the No Project Alternative and the HST alternatives. The Environmental Consequences section evaluates direct and indirect impacts<sup>1</sup> for the No Project and HST alternatives for the following periods:

- *Construction Period Impacts* – Temporary (short-term and long-term) impacts associated with the construction of the HST alternative. The construction period includes testing of the HST System prior to passenger service.
- *Project Impacts* – Permanent impacts related to the project operation and maintenance of the HST alternative. Project operations include HST system operations and related project improvements, such as roadway modifications, maintenance of power supply components, and maintenance of the HST, including the HMF site operations. Some permanent impacts initially occur during construction, but because they are permanent, they are associated with the project impacts (for example, conversion of agricultural lands to transportation uses).

The Environmental Consequences section includes a discussion of construction period and project impacts. The analyses assessed whether these impacts would have No Effect, an Adverse Effect, or a Beneficial Effect on environmental resources:

- *No Effect* – The HST alternative would not alter the environmental status quo.
- *Adverse Effect* – The HST alternative would negatively affect the environmental resource value or quality as it exists prior to the project. These effects are qualified as negligible, moderate, or substantial impacts under NEPA and less-than-significant or significant under CEQA.
- *Beneficial Effect* – The HST alternative would result in improvement of the environmental resource value or quality as it exists prior to the project.

**Project Design Features.** The design of the project incorporates design features, standard engineering practices, and compliance with federal and state regulations such as best management practices (BMPs). This section lists such features. If there are no previously identified project design features for a specific resource area, this section is not included.

**Mitigation Measures.** NEPA requires the identification of potentially adverse effects and appropriate mitigation measures to avoid or minimize such effects. CEQA requires that each significant impact of a project be identified and feasible mitigation measures be stated and implemented. Mitigation measures are identified for adverse construction period or project impacts that cannot be avoided or minimized adequately through project design. The Mitigation Measures Section identifies possible measures to avoid, minimize, rectify, reduce, eliminate, or compensate for significant adverse effects. If there are no mitigation measures required, this section is not included. When there are mitigation measures that may be applied to the HST project, they are abbreviated “MM” and numbered in the order identified in the section. For example, the first mitigation measure for air quality impacts is AQ-MM#1, and for aesthetics and visual quality it is VQ-MM#1. Also see Section 3.1.4 below.

**NEPA Impacts Summary.** This section summarizes the environmental consequences specific to NEPA requirements and states whether the impact is beneficial or adverse, and if adverse, whether it is negligible, moderate, or substantial. Residual adverse impacts after mitigation are described.

**CEQA Significance Conclusions.** This section lists and numbers the significant impacts identified in the Environmental Consequences section for each resource, identifies the level of significance prior to mitigation, and indicates which mitigation measures (as identified in the Mitigation Measures section) are

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<sup>1</sup> Direct impacts are changes caused by and immediately related to the project. Indirect impacts are changes in the environment that are not immediately related to the project but which are caused indirectly by the project.

available to reduce the level of each impact. If the measure's implementation would reduce the potential impact below the significance threshold, the impact would be considered less than significant after mitigation. If, however, the impact would remain above the significance threshold with the mitigation measure, the impact would be considered to be significant and unavoidable. This section identifies the level of significance after mitigation.

**Cumulative Impacts.** To understand fully a proposed project's environmental implications, CEQA and NEPA require that its effects be examined in conjunction with other past, present, and reasonably foreseeable projects. Section 3.19 discusses cumulative impacts for each resource.

### 3.1.4 Legal Authority to Implement Off-Site Mitigation

The rest of Chapter 3 analyzes the HST project's potential physical environmental effects on various resource areas. If a potential significant effect is found, mitigation measures are proposed. Most mitigation measures identified are within the Authority's jurisdiction and control. These include physical measures to be done within the HST project right-of-way (for example, sound barriers adjacent to the track), physical modifications to the project design itself, and construction methods and techniques (the Authority will be able to require these of its construction contractors), among others.

Some of the proposed mitigation measures, however, would occur on property the Authority would not own as part of its right-of-way acquisitions. These are sometimes referred to as "off-site" mitigation. Mitigation that would occur on property not owned by the Authority would require working with the owners of the property involved to ensure that mitigation can be accomplished.

For example, the Transportation analysis (Section 3.2) identifies various traffic improvement mitigation measures to occur along the HST alignment. These measures include, for example, installing new traffic signals, modifying lane widths, and adding lanes and turn pockets. In most cases, the roadways and intersections on which mitigation is proposed are owned and controlled by local governments. The Authority intends to work cooperatively with local governments along the HST alignment to ensure the Authority can implement all traffic mitigation/improvements. A local government might, however, find undesirable a particular traffic improvement, and the Authority does not have jurisdiction to require a local government to accept such a measure. As a result, it is theoretically possible that some traffic impacts could go unmitigated or not fully mitigated (i.e., result in a significant and unavoidable impact). This result is considered highly unlikely, because it is anticipated that local governments would prefer traffic mitigation over traffic congestion and would work with the Authority to implement traffic mitigation. The Authority is committed to working with local governments prior to the Final EIR/EIS to confirm that all traffic mitigation is acceptable and can be accomplished.

Other "off-site" mitigation measures that will require working with public and private property owners include, for example, noise insulation at private residences or public buildings, relocation of utilities, shielding of UPRR and BNSF signaling systems, new plantings (for visual screening) outside of the HST project right-of-way, moving historical structures, and relocation of a park. The Authority cannot force these property owners to accept mitigation measures; however, it is considered likely that the mitigation can be accomplished.