

3.0 Affected Environment, Environmental Consequences, and Mitigation Measures

3.1 Introduction

This chapter addresses existing environmental conditions and the project's potential impacts on environmental resources, examining each resource in a separate subsection. The FRA is preparing an EIS for the Fresno to Bakersfield Section of the HST Project under NEPA and the Authority is preparing an EIR under CEQA. The 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 Fed. Reg. 101, 28545).

CEQA (Public Resources Code Section 21000 et seq.) and CEQA Guidelines (14 CCR 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 Fresno to Bakersfield Section of the HST project, to minimize overall impact potential. When necessary, this chapter identifies site-specific mitigation strategies for the HST project, including those specific to each alternative alignment, proposed stations, and the other facilities, such as the power conveyance and heavy maintenance facilities (HMFs).

As discussed in Chapter 2.0, Alternatives, after public circulation of the Draft EIR/EIS for the Fresno to Bakersfield Section, the Authority decided to reintroduce an alignment west of Hanford consistent with the preferred alternative identified in the Statewide Program EIR/EIS. The Authority also decided to add another alternative through the Bakersfield area (the Bakersfield Hybrid Alternative). After evaluating the proposed addition of the Hanford West Bypass Alternatives, the Bakersfield Hybrid Alternative, and refinements being considered for existing Fresno to Bakersfield alternatives, the Authority and FRA determined that these changes made it necessary to prepare a revised Draft EIR and a supplement to the Draft EIS. Information on the

affected environment, environmental consequences, and mitigation measures resulting from changes in project alternatives, as well as information and analysis provided in response to public and agency comments on the Draft EIR/EIS for the Fresno to Bakersfield Section, are provided in this chapter and highlighted in gray.

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 Fresno to Bakersfield 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 alignments, 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 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

The asterisks in this list indicate sections supported by a technical report containing additional detailed analyses. In

More About Schools

Analysis of schools in the project vicinity can be found in the following sections:

- 3.2, Transportation
- 3.3, Air Quality and Global Climate Change
- 3.4, Noise and Vibration
- 3.5, Electromagnetic Fields and Electromagnetic Interference
- 3.8, Hydrology and Water Resources
- 3.10, Hazardous Materials and Waste
- 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

addition, other technical appendices to several resource topics provide key information used in preparing the affected environment discussions. See the Table of Contents for a list of all technical appendices.

3.1.3 Approach to the Analysis

This section provides a summary of the type of information contained in the subsections for each resource and generally describes the approach to the impact analysis.

In all sections, information flows in the following geographic and project order: north to south for alignment alternatives and their corresponding station alternatives followed by the HMF study alternatives. The alternative alignments considered for the Fresno to Bakersfield Section include seven alternative alignments in the more rural area between Fresno and Bakersfield and three alternative alignments in Bakersfield. Any combination of these alternatives could comprise the complete alignment from Fresno to Bakersfield, creating a total of 72 distinct alternative alignment combinations. Instead of discussing 72 alternatives, all sections begin with a single alignment from Fresno to Bakersfield (the BNSF Alternative); then the additional alternatives that would deviate from this alignment are presented, beginning in the north and proceeding to the south in the following order: Hanford West Bypass 1, Hanford West Bypass 2, Corcoran Elevated, Corcoran Bypass, Allensworth Bypass, Wasco-Shafter Bypass, Bakersfield South, and Bakersfield Hybrid.

The project vicinities used for description and illustration of affected environment and impacts center around the cities of Fresno, Hanford, Corcoran, Wasco, Shafter, and Bakersfield. Analysts use smaller geographic areas, such as around the HST stations, to demonstrate the design options within the Fresno to Bakersfield corridor at a more detailed scale. Each resource topic addressed in Chapter 3 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.

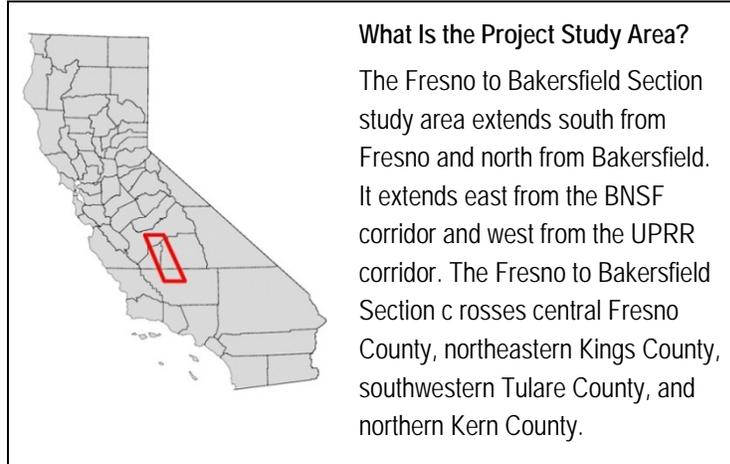
Laws, Regulations, and Orders. The laws, regulations, and orders discussion for each resource topic identifies the relevant regulatory framework, and includes statutes of CEQA and NEPA, as well as other regulatory agency guidelines relevant to project approvals or decisions for that resource topic.

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.** The requirements specify that project effects be evaluated based on the criteria of context and intensity. This section describes criteria that qualify impacts as having negligible, moderate, or substantial intensity under NEPA.
- **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 proposed HST right-of-way and associated facilities such as traction-power substations and 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 120 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 150-foot) site adjacent to the HST alignment.
- Switching and Paralleling Stations – switching stations each would need a site of approximately 9,600 square feet (generally 120 by 80 feet) and paralleling stations each would need a site of approximately 8,000 square feet (generally 100 by 80 feet) adjacent to the proposed HST.
- 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 154 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 roadway 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:
 - New two-lane overcrossings over the HST right-of-way.
 - Shift two-lane frontage roads (two to four lanes, with shoulders) that parallel the HST right-of-way.



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. These remnant parcels would not be used for construction and would be sold after project construction. The HMF sites and other identified sites along the alignment would be considered for construction staging.

Affected Environment. The affected environment discussion summarizes the information providing the basis for analysis of potential impacts on each environmental resource. Information in the affected environment discussion is presented for the entire Fresno to Bakersfield Section, including a discussion of the regional context. The affected environment discussions describe the existing conditions available in the most recent publicly available data or collected during field work in 2009, 2010, and 2011. 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 were 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 impacts¹ 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.

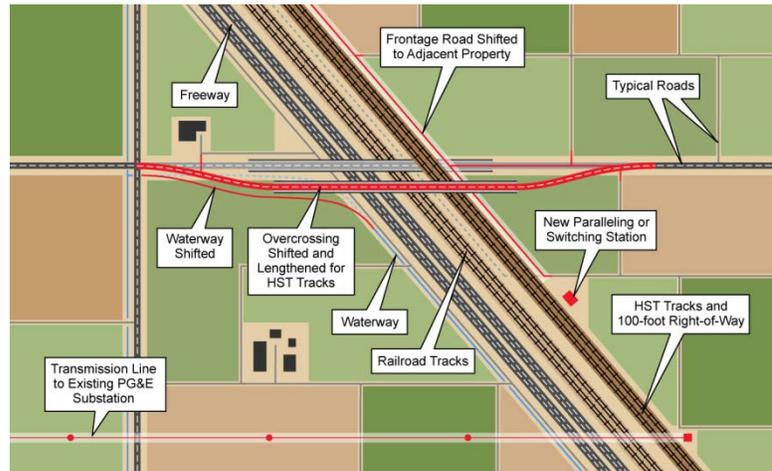


Figure 3.1-1
 Shifts of Roadways and Other Infrastructure

- *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 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. These terms have the following meanings:

- *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 intensity 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) that will reduce or minimize the project's impacts. 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 identification of potentially adverse effects and the suggestion of appropriate mitigation measures. CEQA requires that each significant impact of a

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

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. The mitigation measures are based on the mitigation strategies presented in the Final Statewide Program EIR/EIS (2005) and the Bay Area to Central Valley Program EIR/EIS (2008; Revised Final EIR/EIS 2010), as they may apply to the Fresno to Bakersfield Section. The mitigation measures included in this EIR/EIS were refined from the program-level documents. The mitigation measures that will be applied to the HST Project 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 resources it is AVR-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 an impact with negligible, moderate, or substantial intensity. The section also provides a summary of the relative context of the impact. Based on the intensity and context, this section provides a conclusion about whether the impacts considered are significant or not under NEPA. Residual adverse impacts after mitigation are described.

CEQA Significance Conclusions. This section lists 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 are 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 and the relative importance of the HST Project's contribution to any significant cumulative impact.

3.1.4 Legal Authority to Implement Offsite Mitigation

The rest of Chapter 3.0 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 design-build contractors), among others. Similarly, mitigation that involves the Authority's contributing its fair share of the cost of future services is largely within the Authority's control.

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 "offsite" mitigation. Mitigation that would occur on property not owned by the Authority would require working with the property owners involved or with the jurisdiction that regulates the property in order to accomplish that mitigation. Therefore, although the Authority is committed to that mitigation, it cannot fully guarantee that it will be implemented because the final decision is outside the Authority's control.

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 confirm that the Authority can implement all traffic mitigations/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 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 has continued to work with local governments to confirm that traffic mitigation meets the identified performance standards in Section 3.2, Transportation, and can be accomplished.

Other “offsite” 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; preservation, restoration, or creation of biological resources; conservation of agricultural lands through conservation easements; new plantings (for visual screening) outside of the HST Project right-of-way; and relocation of historical structures. The Authority cannot force these property owners to accept mitigation measures; however, by providing funding to willing sellers in selected instances (such as for the acquisition of agricultural conservation easements, or for habitat restoration), it is considered likely that the mitigation can be accomplished.

This page intentionally left blank