

3 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

3.1 Introduction

Since publication of the Burbank to Los Angeles Project Section Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the following substantive changes have been made to this section:

- Two footnotes were added to Section 3.1, Introduction, regarding the Federal Railroad Administration’s (FRA) new regulations implementing the National Environmental Policy Act (NEPA), which were adopted during preparation of the Draft EIR/EIS, and updated Council on Environmental Quality regulations issued after release of the Draft EIR/EIS.
- A reference providing the source for designated tribal lands was added to Section 3.1.3.3.
- Text was added to Section 3.1.3.5 clarifying the purpose of the Affected Environment sections and explaining that they may incorporate new information provided in public comments.
- The website address and reference to the 2016 Business Plan were added to Section 3.1.3.6.
- In the Ridership Forecasts and Impacts Analysis portion of Section 3.1.3.6, the date of Authority Board adoption of the 2020 Business Plan was clarified.
- Text was added to Section 3.1.3.6 addressing various engineering and design refinements made to the HSR Build Alternative’s design after release of the Draft EIR/EIS. An evaluation of the various engineering refinements was added as Appendix 3.1-C.

This chapter addresses existing environmental conditions relevant to the High-Speed Rail (HSR) Build Alternative and the project’s potential impacts on environmental resources, examining each resource in a separate subsection. Section 3.1 describes the federal and state requirements to address potential environmental impacts, the purpose of this chapter, the environmental resources considered, and the organization and content of each resource subsection.

The California High-Speed Rail Authority (Authority) has prepared an EIS for the Burbank to Los Angeles Project Section of the California HSR Project under the NEPA and an EIR under the California Environmental Quality Act (CEQA). The Authority has prepared this EIR/EIS as a joint NEPA/CEQA document. The Authority has used its best judgment in preparing this combined EIR/EIS to satisfy both NEPA and CEQA requirements.

NEPA requires federal agencies to consider the context and the intensity of potential environmental impacts (both adverse and beneficial) in the evaluation of any proposed federal agency action. NEPA also obligates federal agencies to consider the environmental consequences and costs of their projects and programs as part of the planning process. Pursuant to a Memorandum of Understanding executed by the FRA and the State of California, the Authority serves as the lead federal agency responsible for implementing the requirements of NEPA. The Authority carries out its obligations under NEPA through compliance with Council on Environmental Quality regulations (Code of Federal Regulations [C.F.R.] Title 40, Parts 1500–1508) implementing NEPA and FRA’s Procedures for Considering Environmental Impacts (64 *Federal Register* 28545).^{1,2}

¹ While this EIR/EIS was being prepared, the FRA adopted new NEPA compliance regulations (23 C.F.R. 771). Those regulations only apply to FRA actions initiated after November 28, 2018. See 23 C.F.R. 771.109(a)(4). Because this EIR/EIS was initiated prior to that date, it remains subject to FRA’s Environmental Procedures rather than the Part 771 regulations.

² The Council on Environmental Quality issued new regulations on July 14, 2020, effective September 14, 2020, updating the NEPA implementing procedures at 40 C.F.R. 1500. However, this project initiated NEPA before the effective date and is not subject to the new regulations, relying on the 1978 regulations as they existed prior to September 14, 2020. All subsequent citations to Council on Environmental Quality regulations in this environmental document refer to the 1978 regulations, pursuant to 40 C.F.R. 1506.13 (2020) and the preamble at 85 Fed. Reg. 43340.

CEQA (California Public Resources Code 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Title 14, 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. California 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 performance criteria, and some requirements that appear in one statute may not appear in the other. In addition to NEPA and CEQA, the proposed project is subject to additional federal and state environmental statutes and regulations, which also require analyses that must be incorporated into the EIR/EIS. For example, construction and operation of the project would require compliance with both federal and state regulations protecting endangered species. 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 has focused on avoiding and minimizing potential impacts through rigorous planning and thoughtful design, informed by the decisions they made at the conclusion of the first-tier EIR/EIS process, including the adopted mitigation strategies. The alternatives described in Chapter 2 and analyzed in Chapter 3 incorporate as part of their description means to avoid and minimize impacts through design, compliance with applicable laws and regulations, and compliance with established industry standards, including best management practices, as reflected in Appendix 2-D, Applicable Design Standards. 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 Burbank to Los Angeles Project Section to minimize overall impact potential. When necessary, this chapter identifies site-specific mitigation strategies for the HSR project, including those specific to the alignment, proposed stations, and the other facilities, such as ancillary and support facilities.

3.1.1 Chapter 3 Purpose

For each environmental resource, the section addresses the following five primary topics of environmental information:

- **Regional and Local Policy Analysis**—Discussion of HSR project consistency with adopted regional and local plans, policies and laws
- **Affected Environment**—Existing environmental conditions in the areas that would be affected by the proposed Burbank to Los Angeles Project Section
- **Methods for Evaluating Impacts**—Methods used to analyze potential environmental impacts that would be caused by the HSR Build Alternative and to determine the extent of both adverse and beneficial impacts
- **Environmental Consequences**—Potential environmental impacts associated with constructing and operating the HSR Build Alternative
- **Mitigation Measures**—Site-specific mitigation measures where impacts cannot be otherwise avoided or reduced through design or through implementation of best management practices during HSR construction and operation

The analyses in this chapter address the impacts of the HSR Build Alternative, including the track, new and modified stations, and other related HSR facilities described in Chapter 2, Alternatives. The analyses also evaluate impacts associated with related infrastructure changes required to accommodate the HSR Build Alternative, such as roadway and interchange modifications, utility relocation, and addition of power substations. This chapter also analyzes mitigation, impacts resulting from mitigation, and the feasibility of mitigation.

Analysts used many sources to prepare this document. Chapter 12, References, lists these sources.

3.1.2 Chapter 3 Organization

Chapter 3 presents the environmental resource topics 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 Interference and Electromagnetic Fields
- Section 3.6, Public Utilities and Energy
- Section 3.7, Biological and Aquatic Resources *
- Section 3.8, Hydrology and Water Resources*
- Section 3.9, Geology, Soils, Seismicity, and Paleontological Resources*
- Section 3.10, Hazardous Materials and Wastes*
- Section 3.11, Safety and Security
- Section 3.12, Socioeconomics and Communities*
- Section 3.13, Station Planning, Land Use, and Development
- Section 3.14, Agricultural Farmland and Forest Land
- Section 3.15, Parks, Recreation, and Open Space
- Section 3.16, Aesthetics and Visual Quality*
- Section 3.17, Cultural Resources*
- Section 3.18, Regional Growth
- Section 3.19, Cumulative Impacts

The asterisks (*) in the above list of Chapter 3 sections indicate environmental resources that have a separate technical report that provides more detailed technical analyses and data. In addition to the technical reports, Volume 2, Technical Appendices, provides detailed, resource-specific background information, data, and other evidence supporting analysis and conclusions in this chapter. The Volume 2 technical appendices prepared for this EIR/EIS are available on the Authority's website: www.hsr.ca.gov/.

3.1.3 Chapter 3 Content

This EIR/EIS divides each of the environmental resource sections in Chapter 3 into the following subsections, which are discussed below:

- Introduction
- Laws, Regulations, and Orders
- Consistency with Plans and Laws
- Methods for Evaluating Impacts
- Affected Environment
- Environmental Consequences
- Mitigation Measures
- NEPA Impact Summary
- CEQA Significance Conclusions

3.1.3.1 Introduction

The introduction presents the reader with an overview to the resource topic and the critical issues and concerns considered in the analysis. This section also identifies separate technical reports and appendices that support the analysis, as applicable, as well as other related environmental resource sections where this topic is discussed. It also defines key resource-specific terms.

3.1.3.2 Laws, Regulations, and Orders

The laws, regulations, and orders discussion identifies the relevant regulatory framework, including topical CEQA and NEPA guidance, as well as other federal, state, regional, and local regulatory agency guidelines relevant to project approvals or decisions for the resource topic.

3.1.3.3 Consistency with Plans and Laws

This section addresses CEQA and NEPA requirements to describe a proposed project's inconsistencies or conflicts with applicable regulations, plans, and policies. The Council on Environmental Quality regulations require a discussion of conflicts between the proposed undertaking and the objectives of federal, state, regional, and local, and tribal³ land use regulations, plans, policies, and controls for the areas concerned, as well as a description of the extent to which the Authority would reconcile the inconsistencies (Council on Environmental Quality Regulations, Sections 15.02.16(c) and 1506.2(d)). A complete inventory of the pertinent regional and local policies appears in Volume 2, Appendix 3.1-B, Regional and Local Policy Inventory.

3.1.3.4 Methods for Evaluating Impacts

This section describes the methods used to collect data and evaluate potential impacts. This includes the following:

Definition of Resource Study Area

The resource study area (RSA) is the area in which all environmental investigations specific to each EIR/EIS resource are conducted to determine the resource characteristics and potential impacts of the project section. RSAs therefore vary in context by resource topic. Figure 3.1-1 illustrates the components of a typical RSA. A resource topic may have more than one RSA depending on the impacts being analyzed. The RSAs contain these components:

- All facilities or features within the project footprint, particularly stations, and consequential actions that would affect the environmental resource
- Areas necessary to determine characteristics and context for a specific resource within the project footprint
- Areas specific to each resource to evaluate the intensity and determine the significance of the HSR project's direct and indirect impacts, both beneficial and adverse
- Areas needed to implement, operate, or maintain mitigation measures
- Areas to identify and analyze potential secondary impacts of implementing mitigation

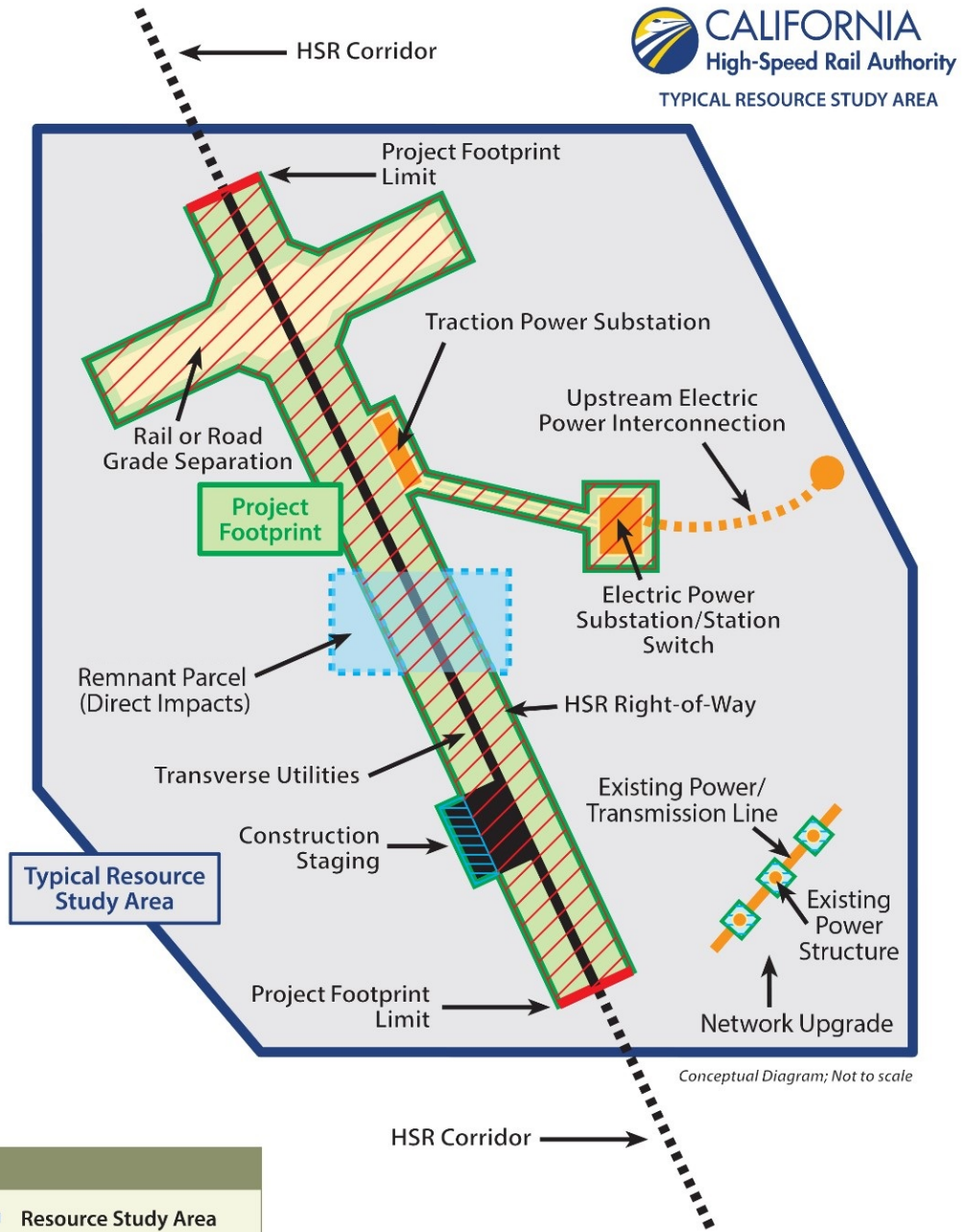
The project footprint is a more focused area that includes all project components and right-of-way needed to construct and operate the HSR project. The project footprint components include the proposed HSR right-of-way and associated facilities, such as switching and paralleling stations. The project footprint also includes the shifts in roadway rights-of-way associated with those facilities—including access roads, rerouting, and grade separations—that would be modified or shifted to accommodate the HSR project, as described in Chapter 2, Alternatives. The project footprint, shown in Appendix 3.1-A, Parcels Affected by the Project Footprint, includes areas of permanent impact (e.g., areas occupied by HSR infrastructure or permanent changes to roadways or freight tracks), as well as areas of temporary impact (e.g., construction staging areas or construction easements). The project footprint includes the following:

- **HSR Right-of-Way**—The Burbank to Los Angeles Project Section would be implemented largely within the existing railroad right-of-way, which is approximately 100 feet wide in this urban corridor. In constrained areas along the corridor, the width of the existing right-of-way is approximately 70 feet. Additional right-of-way may be required beyond the existing right-of-way in certain areas. Alignment details are illustrated in Volume 3 (Alignments and Other Plans).

What is a Project Footprint?

The project footprint is the area required to build, operate, and maintain high-speed rail service based on the following elements of design: station areas, hydrology, track, roadway, structures, systems, and utilities.

³ No designated tribal lands exist in the vicinity of the Burbank to Los Angeles Project Section (https://www3.epa.gov/region9/air/maps/ca_tribe.html; accessed November 6, 2020); therefore, no analysis of tribal land use policies is provided.



Note: The resource study area for analysis of proposed off-site mitigation impacts may occur outside the project footprint.

Figure 3.1-1 Typical Resource Study Area

- **HSR Guideway**—The HSR system would travel on different track types with varying profiles. Low, near-the-ground tracks are at grade; higher tracks are on retained fill (earth); and below-grade tracks are in a tunnel, cut and cover, or trench. Types of bridges that might be built include full-channel spans, large box culverts, or, for some wider river crossings, limited piers within the ordinary high-water channel.
- **Grade Separations**—The HSR Build Alternative would be grade-separated, with new roadway overcrossings or undercrossings at existing at-grade crossings.
- **Switching and Paralleling Stations**—One switching station is proposed in Los Angeles, south of Verdant Street and west of the railroad right-of-way. One paralleling station is proposed and would be located in Los Angeles, south of Main Street between the railroad right-of-way and the Los Angeles River. Each switching station would need a site of approximately 14,400 square feet (generally 160 by 90 feet), and each paralleling station would need a site of approximately 9,600 square feet (generally 120 by 80 feet) adjacent to the proposed HSR.
- **Communications Facilities**—Most communications equipment and 100-foot-tall radio towers would be co-located with traction power and train control facilities. Standalone communications facilities would be placed where spacing between the co-location sites exceeds 3 miles.
- **Utility Connections**—Right-of-way would be required for new power transmission lines to provide a utility connection between electrical power substations and station switching facilities.
- **Utility Relocations**—The construction of the HSR would require the relocation of existing utility lines, which requires additional right-of-way to accommodate these relocations.
- **HSR Stations**—The Burbank to Los Angeles Project Section would include HSR stations in Burbank (west of Hollywood Way and east of Hollywood Burbank Airport) and Los Angeles (at Los Angeles Union Station).
- **Project Roadway Modifications**—These changes would have varying rights-of-way and distance from the HSR right-of-way and would include access roads to facilities, realignment of roadway crossings, and modifications to bridges.
- **Temporary Construction Areas**—The project footprint includes the identification of areas needed during construction, such as construction staging and temporary construction easements, as well as areas that may be necessary for temporary relocation of facilities during the construction process.

There are two types of HSR facilities that are not included within the Burbank to Los Angeles Project Section: maintenance facilities and traction power substations. The HSR System generally includes four types of maintenance facilities (i.e., maintenance of infrastructure facilities, maintenance of infrastructure siding facilities, heavy maintenance facilities, and light maintenance facilities). However, the design and spacing of maintenance facilities along the HSR alignment do not require them to be included within Burbank to Los Angeles Project Section. Therefore, no analysis is carried forward for maintenance facilities. Similarly, a traction power substation is not required for the Burbank to Los Angeles Project Section because of the system's facilities-spacing requirements. The Burbank to Los Angeles Project Section would be able to use the traction power substations located within the Palmdale to Burbank Project Section and/or Los Angeles to Anaheim Project Section. In the event that the other project sections of the HSR system are not constructed, a standalone traction power substation would be required within the Burbank to Los Angeles Project Section for purposes of independent utility. Because the addition of a traction power substation would alter the spacing of the other system facilities, further design and environmental study would be required to environmentally clear the traction power substation site. Because this project section does not provide a heavy maintenance facility, light maintenance facility, or maintenance of infrastructure facility, an independent contractor would need to be retained to handle all maintenance functions for vehicles and infrastructure if this

project section were built as a standalone project for purposes of independent utility. Independent utility is discussed further in Chapter 2, Section 2.1.1, Independent Utility.

The HSR 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 be considered for sale after project construction if the Authority determines it has no long-term need for them. They would not be part of the finished project, nor would they be within the HSR right-of-way limits. However, the Authority may conduct various management and maintenance activities (e.g., vegetation management, site security) on such parcels. Property management activities would be designed to avoid impacts; if, once the actual site conditions are known, there would be potential for an impact, a separate environmental evaluation would be triggered.

The Authority will not acquire temporary construction areas through the right-of-way acquisition process. It will be the responsibility of the design-build contractor to negotiate with property owners to secure access and temporary use of their properties for staging or laydown areas. To provide the design-build contractor with sufficient potential staging areas, this EIR/EIS includes an evaluation of the environmental impacts of various parcels located adjacent to or near parts of the project that would require construction staging and laydown areas. Including the impacts from potential construction staging areas results in a conservative analysis because the limits of impacts for each site are identified by parcel boundaries rather than the number of acres that may be necessary for staging or materials storage.

Impact Avoidance and Minimization Features

The evaluation of impacts considers the beneficial influence of impact avoidance and minimization features (IAMF), which are part of the HSR Build Alternative and would be included by the Authority as part of final design and construction to avoid and minimize impacts (see Section 2.5.2.10, High-Speed Rail Project Impact Avoidance and Minimization Features, for more information). IAMFs are standard practices and design features that provide specific means to avoid and reduce environmental and community impacts. IAMFs may involve the development of a plan or program, such as a dust control plan to minimize impacts on air quality, or require or restrict an action, such as limiting construction material delivery hours to minimize impacts on traffic during peak travel times, to achieve a specific outcome. This EIR/EIS labels and numbers IAMFs. For example, AQ-IAMF#1 refers to the first air quality resource-related IAMF.

IAMFs are incorporated into the HSR Build Alternative. The IAMFs would be implemented by the Authority as an integral part of the HSR Build Alternative if the project is approved. The Authority would implement IAMFs during project design and construction. Therefore, the analysis of impacts of the HSR Build Alternative in each resource section factors in all applicable IAMFs. Appendix 2-B, Impact Avoidance and Minimization Features, provides a detailed description of IAMFs that are included as part of the HSR Build Alternative design.

As discussed below, mitigation measures also are being considered as potential additional measures to further reduce, compensate for, or offset impacts of the HSR Build Alternative. If adopted at the conclusion of the environmental review process, mitigation measures also would be implemented as part of the HSR Build Alternative. See Section 3.1.3.7, Mitigation Measures.

Methods for NEPA and CEQA Impact Analysis

Each resource section describes the methods and data sources analysts used to identify impacts on that environmental resource. The methods for analysis vary by resource and rely on both quantitative and qualitative techniques. For many resource topics, fieldwork was conducted to collect data to support the impact analysis.

While the terms *context* and *intensity* (including duration) themselves are not used in the analysis, these concepts are employed to fully illustrate the impacts and facilitate comparison between alternatives—the No Project Alternative and the HSR Build Alternative. *Context* refers to the environment in which a proposed project occurs and may include affected interests or resources, the specific locality, the region, or society as a whole, depending on the resource. *Intensity* refers

to the severity of the impact; its analysis encompasses the type, quality, and sensitivity of the resource involved; the location and extent of the impact; the duration of the impact; whether the action threatens a violation of federal or state law or requirements imposed for the protection of the environment; and other intensity considerations (40 C.F.R. 1508.27). Under NEPA, once a decision to prepare an EIS is made, the analysis focuses on determining the magnitude of the impact; no explicit determination of significance is made for individual impacts.

Method for Determining Significance under CEQA

In contrast to NEPA, CEQA requires the identification of each “significant effect on the environment” resulting from the project and uses a thresholds-based approach to determine significance (CEQA Guidelines §§ 15064(a) and 15126.4). All significant impacts on the environment must be disclosed and mitigated, if feasible. For each resource, analysts use impact thresholds based predominantly on the CEQA Guidelines to determine whether impacts would be significant (e.g., above the impact threshold). If significant, analysts also use the impact thresholds to determine whether proposed mitigation measures would be capable of reducing the magnitude and severity of significant adverse impacts to a less than significant level (e.g., below the impact threshold). These impact thresholds, also called significance criteria, generally describe whether impacts would be considered significant because 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 FRA. In other cases, the significance criteria rely on guidelines and policies, assessment methodologies such as those used by FRA, and standards of professional practice.

Because of the difference in the approach to the determinations of significance under NEPA and CEQA, impacts determined to be significant under CEQA will not have a similar label under NEPA.

The Authority has established thresholds for each environmental resource based on Appendix G of the CEQA Guidelines to determine the level of significance of impacts under CEQA and, where appropriate, the requirement for mitigation measures to reduce the magnitude and severity of impacts. If a threshold is exceeded, the impact is considered significant and the impact is specifically identified. For significant impacts, feasible mitigation measures are identified. For example, in Section 3.4, Noise and Vibration, the first significant impact discussed is “Impact N&V #1: Temporary Exposure of Sensitive Receivers to Construction Noise” and mitigation measure “N&V-MM#1: Construction Noise Mitigation Measures” is provided to reduce the impact. If mitigation does not reduce an impact below the threshold, the impact remains significant and unavoidable after mitigation. The CEQA thresholds of significance are presented in each resource section.

3.1.3.5 Affected Environment

Both NEPA and CEQA require discussion of the areas affected by the project as well as nearby areas. CEQA requires an EIR to include a description of the existing physical environmental conditions in the vicinity of the project and states that those conditions will “normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant” (CEQA Guidelines § 15125(a)). Under NEPA, an EIS “shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration” (40 C.F.R. 1502.15). The existing conditions baseline year for this EIR/EIS is generally 2015, the time when the environmental analysis for the Burbank to Los Angeles Project Section began following issuance of the federal Notice of Intent and state Notice of Preparation for the project section. The affected environment discussions describe the existing conditions at the time the Draft EIR/EIS was being prepared. The affected environment discussions describe the existing and planned conditions within the various RSAs based on the most recent, publicly available data as of December 31, 2017, or collected during fieldwork conducted in 2015, 2016, and 2017. Since publication of the Draft EIR/EIS in May 2020, some affected environment discussions have been updated or expanded based on information provided in public comments on the Draft EIR/EIS.

3.1.3.6 **Environmental Consequences**

The environmental consequences discussion describes the potential environmental impacts of the No Project Alternative and the HSR Build Alternative. The discussion of the potential impacts of these alternatives is presented for both project construction and operation.

This EIR/EIS evaluates the impacts of the HSR Build Alternative based on the existing environmental conditions in the resource RSA. The EIR/EIS also evaluates the impacts of the HSR Build Alternative based on the projected 2040 future environmental conditions without the HSR Build Alternative (No Project Alternative), which is the horizon year for analysis of HSR operations. Projected future environmental conditions without the HSR Build Alternative are described under the heading “No Project Alternative” in the Environmental Consequences portion of each resources section. Some resources (transportation, air quality, and energy) include additional discussion of the impacts of the HSR Build Alternative in the opening year, or “date of implementation,” of HSR operations (2029), and is described more specifically in the individual resource sections.⁴

Construction Impacts

Both temporary (short-term) and permanent (long-term) impacts are associated with the construction of the HSR Build Alternative. Construction impacts that occur for a limited time only are considered temporary (e.g., short-term ground disturbance, construction staging and activities, construction associated with implementing mitigation measures). Construction impacts that continue long term are permanent (e.g., land conversion, removal of habitat, elimination of at-grade crossings, construction of permanent structures). The Authority would not acquire temporary construction staging areas through the right-of-way acquisition process. It would be the responsibility of the design-build contractor to negotiate with property owners to secure access and temporary use of their property for staging or laydown areas. To provide the design-build contractor with sufficient potential staging areas, this EIR/EIS includes an evaluation of the environmental impacts of various vacant parcels that are near parts of the project that would require construction staging and laydown areas, such as bridges and elevated structures. Including the impacts from potential construction staging areas results in a conservative analysis because the limits of impact for each site are identified by parcel boundaries, not the actual acreage that may be necessary for staging or storage of materials.

Operations Impacts

Permanent impacts are related to operation and maintenance of the HSR Build Alternative. Project operations include HSR system operations and related project improvements, such as roadway modifications and maintenance of power supply components.

This evaluation of direct and indirect project impacts will occur with consideration of IAMFs, yet before implementation of project mitigation measures. The explanations of impact significance include the context, intensity, and duration of the impact; other impact characteristics as appropriate (e.g., direct, indirect, adverse, or beneficial); and any applicable threshold(s) of significance. For CEQA, a separate discussion explains whether the impact is significant. For impacts that are significant under CEQA, mitigation measures are described and the discussion explains whether the mitigation measures would reduce the impact to a less than significant level.

To fully understand a proposed project’s environmental implications, CEQA and NEPA also require that project impacts be examined in conjunction with other past, present, and reasonably foreseeable projects. Section 3.19 discusses these cumulative impacts for each resource and the relative importance of the HSR Build Alternative’s contribution to any substantial or significant cumulative impacts.

⁴ For purposes of the analysis provided in this EIR/EIS, assumptions from the 2016 Business Plan were used, including an existing conditions baseline of 2015, an opening year for HSR operations of 2029, and a horizon year for HSR operations of 2040 (Authority 2016b; https://hsr.ca.gov/docs/about/business_plans/2016_BusinessPlan.pdf).

Cumulative Impacts

NEPA and CEQA also require examination of a project's cumulative impacts (i.e., a project's impacts considered in conjunction with the impacts of other past, present, and reasonably foreseeable projects causing related impacts). Section 3.19, Cumulative Impacts discusses the Burbank to Los Angeles HSR Build Alternative's contribution to any cumulative impact for each resource.

Ridership Forecasts and Impacts Analysis

The ridership forecasts used in this environmental analysis correspond to forecasts in the 2016 Business Plan and are based on probability of occurrence. The "medium" forecast (42.8 million) is lower than the "high" forecast but has a higher likelihood of occurrence. For impacts analyses that are related to the level of ridership on the HSR system, the medium and high ridership forecasts provide conservative estimates that have been applied as follows:

The high-ridership forecast (56.8 million) provides for a conservative assessment of adverse impacts in these areas:

- Section 3.2, Transportation—Analysis of transportation effects from increased traffic around station areas
- Section 3.3, Air Quality and Global Climate Change—Analysis of localized air quality effects from increased traffic around station areas
- Section 3.4, Noise and Vibration—Analysis of noise effects from increased traffic around station areas
- Section 3.6, Public Utilities and Energy—Analysis of the electrical demands due to propulsion of the trains, stations, storage depots, and maintenance facilities

The use of the high ridership forecast for these analyses ensures a conservative disclosure of a higher level of adverse environmental effects that could occur if ridership reaches the 2040 forecast of 56.8 million passengers. If HSR ridership proves to be lower than the 56.8 million forecast, adverse environmental impacts would also be lower. However, while a lower level of ridership would reduce adverse environmental impacts, it would also reduce the environmental benefits of the HSR system (e.g., transportation, air quality, and energy).

The medium ridership forecast (42.8 million) provides for a conservative assessment of environmental benefits in these areas:

- Section 3.2, Transportation—Analysis of traffic effects on the regional highway network from reducing automobile vehicle miles traveled
- Section 3.3, Air Quality and Global Climate Change —Analysis of air quality effects from reducing vehicle miles traveled, air travel, and energy use; analysis of effects on greenhouse gas emissions from reducing vehicle miles traveled, air travel, and energy use
- Section 3.6, Public Utilities and Energy—Analysis of energy effects from reducing fossil fuel consumption for automobile, air, and conventional rail travel

The use of the medium ridership forecast for these analyses ensures a conservative disclosure of a lower level of environmental benefit that could occur if ridership reaches the 2040 forecast of 42.8 million passengers, rather than the higher forecast of 56.8 million riders. If HSR ridership proves to be higher than the 42.8 million forecast, environmental benefits would also be higher, but would also bring a higher level of adverse impact as described above.

Since the 2016 Business Plan forecasts were developed, the Authority has adopted its 2018 Business Plan, which was accompanied by updated forecasts (Authority 2016a, 2018a). The 2016 and 2018 Business Plan ridership forecasts were developed using the same travel forecasting model, but differ due to changes in the model's inputs, including the HSR service plan, demographic forecasts, estimates of automobile operating costs and travel times, and airfares. The medium ridership forecast for 2040 decreased by 6.5 percent, from 42.8 million to

40 million, and the high ridership forecast decreased by 10.1 percent, from 56.8 million to 51.6 million. In addition, the 2018 Business Plan assumes an opening year of 2033 rather than 2029 for the full Phase 1 system (Authority 2016b, 2018b).

The Authority released a Draft 2020 Business Plan in February 2020 for public review and comment. Due to ongoing COVID-19 pandemic uncertainty, the Newsom administration and legislative leadership extended the final adoption of the Draft 2020 Business Plan to April 15, 2021. A Revised Draft Business Plan was issued on February 9, 2021. The 2020 Business Plan was adopted by the Authority Board of Directors on Thursday, March 25, and submitted to the state legislature on Monday, April 12, 2021. The 2020 Business Plan forecasts were developed using the same travel forecasting model as the 2016 and 2018 Business Plans, updated for population and employment forecasts. The Phase 1 medium ridership forecast for 2040 is 38.6 million, and the high is 50.0 million (Authority 2021).

To the extent that the lower ridership levels projected in the 2018 Business Plan or the 2020 Business Plan result in fewer trains operating in 2040, the adverse impacts associated with the train operations in 2040 would be somewhat less than the impacts presented in this EIR/EIS, and the benefits accruing to the project (e.g., reduced vehicle miles traveled, reduced greenhouse gas emissions, reduced energy consumption) also would be somewhat less than the benefits presented in this EIR/EIS. As with the impacts, the benefits would continue to build and accrue over time and would eventually reach the levels discussed in this EIR/EIS for the Phase 1 system.

Modifications to the HSR Build Alternative after the Draft EIR/EIS

Chapter 2, Alternatives, of this Final EIR/EIS describes modifications the Authority has made to the project design since publication of the Draft EIR/EIS. Some engineering and design refinements have been made in response to comments on the Draft EIR/EIS or requests from public agencies and other stakeholders. Other engineering and design refinements have been made to improve the design or reduce impacts of the project. These engineering and design refinements have been incorporated into the design of the HSR Build Alternative. Refer to Appendix 3.1-C, Evaluation of Various Engineering Refinements since Publication of the Draft EIR/EIS, for additional analysis of these engineering and design refinements.

This Final EIR/EIS discusses where these engineering and design refinements have resulted in changes to the environmental impacts described in the Draft EIR/EIS, in both narrative and in changes to impact tables. For example, the Introduction section of each resource section within Chapter 3, first provides a bullet list summarizing the substantive changes that have been made since publication of the Draft EIR/EIS. The Environmental Consequences section of each resource section within Chapter 3 then discusses any substantive changes to project impacts that resulted from the engineering and design refinements.

3.1.3.7 Mitigation Measures

NEPA requires federal agencies to identify potentially adverse effects and discuss potential measures to mitigate those impacts. This is accomplished through the IAMFs that are part of the project design and the mitigation measures proposed in this EIR/EIS. CEQA requires that each significant impact of a project be identified and that feasible mitigation measures be stated and implemented. Mitigation measures are identified for significant construction-period or operations impacts.

The Mitigation Measures section identifies possible measures to avoid, minimize, rectify, reduce, eliminate, or compensate for significant adverse effects. In addition, this section identifies and analyzes secondary impacts resulting from implementation of the mitigation. The mitigation measures are based on the mitigation strategies presented in the *Final Program EIR/EIS for the Proposed California High-Speed Train System* (Authority and FRA 2005), the *Bay Area to Central Valley High-Speed Train Final Program EIR/EIS* (Authority and FRA 2008), and the *Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR* (Authority 2012) as they may apply to the Burbank to Los Angeles Project Section. The programmatic mitigation strategies in the Program EIR/EISs provided a foundation for crafting mitigation measures, and additional

mitigation measures specific to the Burbank to Los Angeles Project Section are identified where appropriate. The mitigation measures proposed for the HSR 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 quality is AVQ-MM#1.

3.1.3.8 NEPA Impact Summary

This section summarizes the environmental consequences specific to NEPA requirements for each resource. Based on the discussion of the context, intensity, and duration of the potential impacts, this section reports impacts under NEPA after implementing the recommended mitigation measures.

3.1.3.9 CEQA Significance Conclusions

This section lists, in a table, the impacts identified in the Environmental Consequences section for each resource, reports the level of significance prior to mitigation (i.e., less than significant or significant), and indicates mitigation measures that are recommended to reduce the level of significance for each impact. If implementing one or more mitigation measures would reduce the potential impact below the applicable significance threshold, the impact would be considered less than significant after mitigation. If, however, implementing a mitigation measure cannot reduce the level of impact below the significance threshold, the impact would be considered significant and unavoidable. As such, this section identifies the CEQA level of significance before and after mitigation.

3.1.4 Outreach to Local Agencies

Meetings and other outreach activities were conducted with the staff of local public agencies within the Burbank to Los Angeles Project Section throughout preparation of this EIR/EIS. These meetings and other outreach activities have helped the Authority understand the on-the-ground conditions and local environmental issues, understand the concerns of local agencies and the public, facilitate reconciliation of substantive concerns, and design effective and feasible mitigation measures. Chapter 9, Public and Agency Involvement, is an inventory of outreach activities undertaken during preparation of this EIR/EIS. Specific resource-related issues also are discussed in the respective resource sections of the document.

3.1.5 Legal Authority to Implement Off-Site Mitigation

Chapter 3 analyzes the HSR Build Alternative’s potential physical environmental effects on various resource areas. If a potential substantial or significant adverse effect is found, mitigation measures are recommended. Most mitigation measures identified are within the Authority’s jurisdiction and control. Some of the proposed mitigation measures, however, would need to occur on property the Authority would not own as part of its right-of-way acquisitions, including intersection or roadway improvements off-site, for example. These are sometimes referred to as “off-site” mitigation measures. 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.

The Authority has not identified any off-site mitigation measures that they believe are infeasible or unlikely to occur. The off-site mitigation measures recommended in this EIR/EIS are physically feasible. The Authority will continue its current practice of developing memoranda of understanding and funding agreements with local governments to facilitate agreement on implementation of off-site mitigation measures on property owned at the local agency level.

The existing rail corridor in which the HSR Build Alternative is proposed to be constructed and operated is expected to remain in its current ownership (Los Angeles County Metropolitan Transportation Authority and Union Pacific Railroad). The Authority would enter into the necessary agreements with the current owners of the rail corridor, and current existing operators within the corridor, to allow for construction and operation of the HSR Build Alternative. The Authority has not identified any mitigation measures that they have reason to believe would not be accommodated by the owners of the rail corridor or the current operators in the corridor.