

3 Affected Environment, Environmental Consequences, and Mitigation Measures

3.1 Introduction

Chapter 3 addresses existing environmental conditions relevant to the Central Valley Wye alternatives and the potential impacts of the Central Valley Wye alternatives, examining each environmental resource topic in a separate section. The project footprints of the Central Valley Wye alternatives are located in portions of Merced and Madera Counties. Network upgrades would also be necessary in Fresno and Stanislaus Counties to support the electrical load requirements of the high-speed rail (HSR) system. Accordingly, as appropriate, all four counties are included in the analyses in Chapter 3.

This introduction lists the environmental resource topics covered in this chapter, describes the key changes in the analysis since publication of the *Merced to Fresno Section California High-Speed Train Final Project Environmental Impact Report (EIR)/Environmental Impact Statement (EIS)* (Merced to Fresno Final EIR/EIS) (Authority and FRA 2012), and describes the organization and content of each section.

3.1.1 Chapter 3 Environmental Resource Topics

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 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, 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, Land Use and Development
- Section 3.14, Agricultural Farmland
- Section 3.15, Parks, Recreation, and Open Space
- Section 3.16, Aesthetics and Visual Resources*
- Section 3.17, Cultural Resources*
- Section 3.18, Regional Growth
- Section 3.19, Cumulative Impacts

The asterisks (*) in the list of Chapter 3 sections indicate topics that have a separate technical report providing more detailed technical analyses and data than that included in this Chapter 3.¹ In addition to the technical reports, Volume II, Technical Appendices, provides detailed, resource-specific background information, data, and other evidence supporting some of the analysis and conclusions in this chapter. These appendices include a comprehensive inventory of regional and local policies in Appendix 3.1-A, Regional and Local Plans and Laws Inventory;

¹ All Merced to Fresno: Central Valley Wye Technical Reports were finalized in 2016; however, the content of this Draft Supplemental EIR/EIS has continued to evolve to incorporate the most current data and other sources of information relevant to the environmental analyses, some of which were not available at the time that the technical reports were prepared. As a result, some of the information presented in the Draft Supplemental EIR/EIS is more current than the information presented in the technical reports. To provide clarity on any information and data differences between the Draft Supplemental EIR/EIS and the technical reports and the location of the most current information, a Central Valley Wye Technical Report Memorandum of Updates has been produced and included as Appendix 3.1-D, Central Valley Wye Technical Report Memorandum of Updates.

detailed mapping of the parcels intersected by each of the Central Valley Wye alternatives in Appendix 3.1-B, Parcels Within the Central Valley Wye Alternatives Project Footprints; Appendix 3.1-C, Comparison of Central Valley Wye Mitigation Measures and Merced to Fresno Final EIR/EIS Mitigation Measures; and Appendix 3.1-D, Central Valley Wye Technical Report Memorandum of Updates. The technical reports and Volume II technical appendices prepared for this Draft Supplemental EIR/EIS are available on the California High-Speed Rail Authority's (Authority) website:

http://hsr.ca.gov/Programs/Environmental_Planning/supplemental_merced_fresno.html

3.1.2 Changes in Analysis since the Merced to Fresno Final EIR/EIS

To improve readability, the structure of the impact analysis in this document is different from that used in the Merced to Fresno Final EIR/EIS. The structure in this *Merced to Fresno Section: Central Valley Wye Draft Supplemental EIR/EIS* (Draft Supplemental EIR/EIS) differs with respect to the following items.

- **Order in which impacts are presented.** Both the Merced to Fresno Final EIR/EIS and this Draft Supplemental EIR/EIS present impacts that could occur during construction and operations. The impact titles and numbers have changed. Some impacts previously listed under construction are now listed under operations because, while the Merced to Fresno Final EIR/EIS asked the underlying question “how long does the impact last?” this Draft Supplemental EIR/EIS asks the question “when does the impact occur?” This means, for example, that an impact that lasts a long time but occurs during construction, such as removing riparian trees to clear the construction site, was moved from the operations analysis in the Merced to Fresno Final EIR/EIS to the construction analysis in this Draft Supplemental EIR/EIS. This organizational shift does not change the overall analysis of impacts in terms of context, duration, or intensity but rather improves the way in which these impacts are organized and presented to the reader.
- **Electrical interconnections and network upgrades.** The Merced to Fresno Final EIR/EIS described and analyzed electrical interconnection facilities associated with the HSR. While network upgrades were anticipated, the locations of such upgrades were unknown. A 2016 Technical Study Report completed by Pacific Gas and Electric (PG&E) determined what network upgrades would be required to existing infrastructure to meet the projected power demands of the HSR system within the 345-mile portion of the train corridor located within PG&E's service territory (PG&E 2016). Appendix 2-D, Electrical Interconnections and Network Upgrades, contains a detailed project description of specific electrical interconnections and network upgrades (EINU) associated with the Central Valley Wye alternatives, as well as the related air quality modeling, noise modeling, and a biological resources survey memo. Archeological and Historical Architectural Survey Reports Addendums have also been prepared and appended to the corresponding technical reports. With the exceptions noted previously, the existing conditions and impact analysis specific to the EINU are contained entirely within the resources sections of this Draft Supplemental EIR/EIS.
- **Impact avoidance and minimization features (IAMF).** Project features identified in the Merced to Fresno Final EIR/EIS that avoid or minimize impacts and are applicable to the Central Valley Wye alternatives are renamed and included in this Draft Supplemental EIR/EIS as IAMFs. IAMFs would be incorporated by the Authority as part of the selected Central Valley Wye alternative's design and would become standard conditions of future construction contracts. In addition, in some cases, mitigation measures identified in the Merced to Fresno Final EIR/EIS are included in this Draft Supplemental EIR/EIS as IAMFs. For example, the Merced to Fresno Final EIR/EIS included mitigation measure Bio-MM#1, Designate Project Biologist(s), Contractor's Biologist(s), and Project Biological Monitor(s). The Authority has since made this a standard program-wide requirement applicable to all HSR project sections, and therefore BIO-MM#1 is now included in this Draft Supplemental EIR/EIS, as well as other HSR project sections, as BIO-IAMF#1, Project Biologist.

- Mitigation measures.** This Draft Supplemental EIR/EIS includes mitigation measures for environmental impacts that could result from construction and operation of the Central Valley Wye alternatives. The mitigation measures in this Draft Supplemental EIR/EIS were largely included in the Merced to Fresno Final EIR/EIS; however, in some cases the mitigation measures in this document are reworded or combined for clarification. For example, the Merced to Fresno Final EIR/EIS included mitigation measure Bio-MM#24, Erect Amphibian Exclusion Fencing, which requires exclusion fencing for the protection of California tiger salamander as well as other amphibious species. This Draft Supplemental EIR/EIS includes BIO-MM#12, California Tiger Salamander Exclusion Fencing, which provides the same level of protection for California tiger salamander, but is worded slightly differently from mitigation measure Bio-MM#24 in the Merced to Fresno Final EIR/EIS to better address specific requirements for this species. Protection for other amphibious species in this Draft Supplemental EIR/EIS is provided in IAMFs and mitigation measures. In some cases, there are also new mitigation measures in this Draft Supplemental EIR/EIS that were not included in the Merced to Fresno Final EIR/EIS.

3.1.3 Chapter 3 Organization and Content

This Draft Supplemental EIR/EIS divides each section for the resource topics in Chapter 3 into the subsections described below.

3.1.3.1 Introduction

The introduction presents an overview of the resource topic and the issues considered in the analysis, and it defines the relevant resource issues. This section also identifies separate technical reports and appendices that support the analysis, as applicable, and other related environmental resource sections where this topic is discussed. This Draft Supplemental EIR/EIS uses many of the same sources and methods as the Merced to Fresno Final EIR/EIS; this section identifies the similarities and differences between the two analyses.

3.1.3.2 Laws, Regulations, and Orders

This section identifies any applicable updates or additions to the legal and regulatory framework that have occurred since publication of the Merced to Fresno Final EIR/EIS.

3.1.3.3 Compatibility with Plans and Laws

This section addresses California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) requirements to describe a proposed project’s inconsistencies or conflicts with applicable federal, state, and local land use and other plans and laws. CEQA Guidelines require that an EIR discuss any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans (CEQA Guidelines, § 15125(d)).² The Council on Environmental Quality (CEQ) regulations require a discussion of conflicts between a proposed undertaking and the objectives of federal, regional, state, local and tribal³ land use plans, policies, and laws, as well as a description of the extent to which the Authority and the Federal Railroad Administration (FRA) would reconcile the inconsistencies (CEQ Regulations, §§ 1502.16(c), 1506.2(d)). This discussion is provided in each resource section under the heading Compatibility

Content of Resource Sections

Each resource section in Chapter 3 includes the following sections:

1. Introduction
 2. Laws, Regulations, and Orders
 3. Compatibility with Plans and Laws
 4. Methods for Evaluating Impacts
 5. Affected Environment
 6. Environmental Consequences
 7. Mitigation Measures
 8. Impacts Summary for NEPA Comparison of Alternatives
 9. CEQA Significance Conclusions
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² All citations in this document to the “CEQA Guidelines” are references to the California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387.

³ No designated tribal lands exist in the vicinity of the Central Valley Wye alternatives and no analysis of tribal land use policies is provided.

with Plans and Laws. A complete inventory of the pertinent regional and local Plans and Laws appears in Appendix 3.1-A.

3.1.3.4 Methods for Evaluating Impacts

This section defines the resource study area (RSA), describes the methods used to evaluate the impacts of implementing the Central Valley Wye alternatives, and discusses the thresholds used for determining significance under CEQA for each resource topic. The methods for evaluating NEPA impacts are consistent with FRA Procedures for Considering Environmental Impacts (64 Fed. Reg. 28545), and the methods for evaluating CEQA impacts are consistent with the CEQA Guidelines.

The methods for evaluating impacts apply to the analysis for both NEPA and CEQA unless otherwise indicated. In most cases, the methods used to collect data and evaluate potential impacts for each resource topic are the same as the data collection and impact evaluation methods found in the Merced to Fresno Final EIR/EIS. A complete description of the methods is presented in the sections for each resource along with a description of any substantive differences in the methods for analysis between the Draft Supplemental EIR/EIS and the Merced to Fresno Final EIR/EIS. In some instances, the Authority and FRA updated their methods for the impact analysis or the Authority uses new thresholds for determining significance under CEQA. This Draft Supplemental EIR/EIS includes updated data collected since the Merced to Fresno Final EIR/EIS was approved. If still current, data collected for the Merced to Fresno Final EIR/EIS also informs this impact evaluation.

Definition of Resource Study Areas

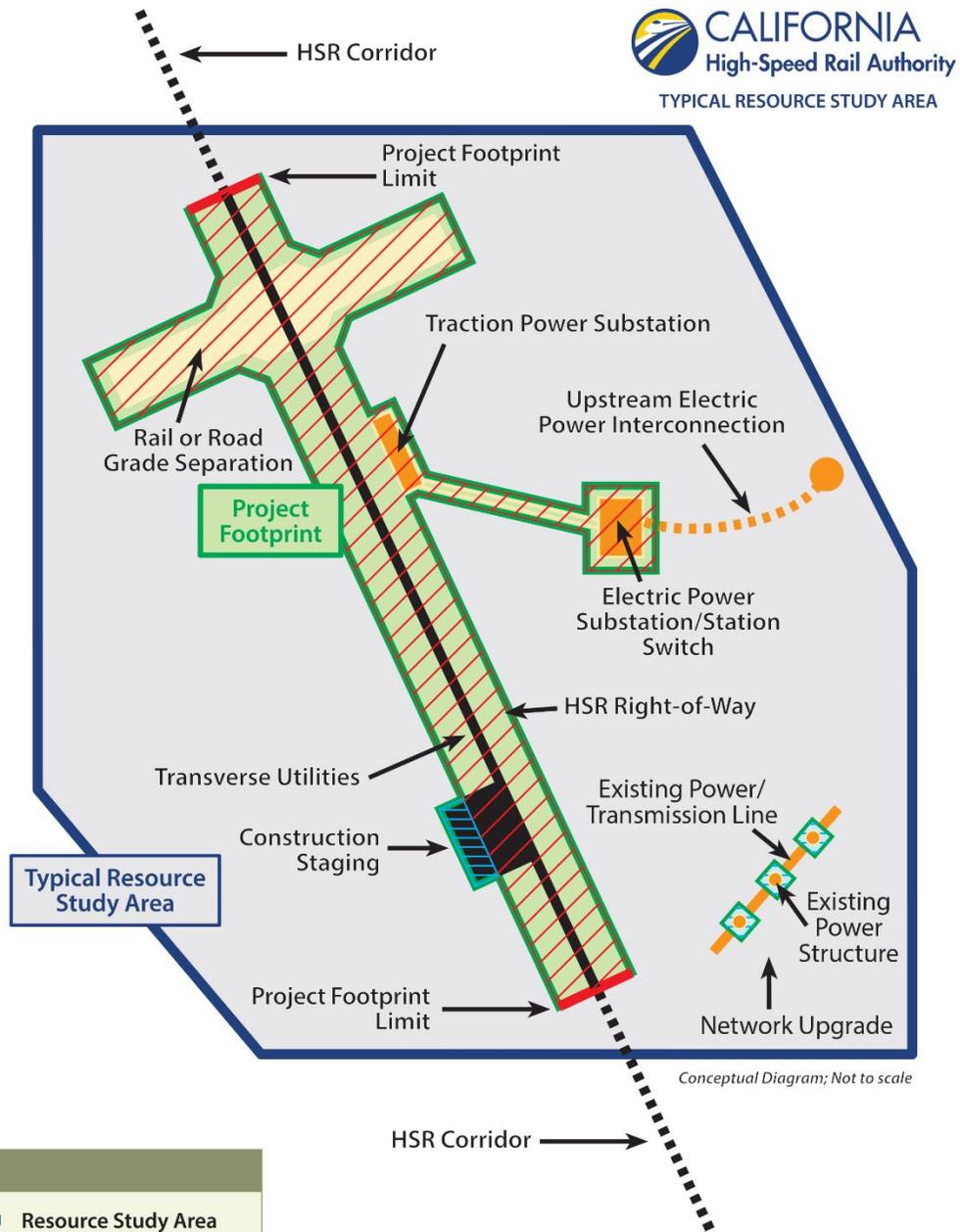
The RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted and therefore vary in context by each resource topic. A resource topic may have more than one RSA depending on the impacts being analyzed. The RSAs pertinent to each specific resource topic are described in each resource subsection (Section 3.2 through Section 3.18) and for cumulative impacts (Section 3.19). Figure 3.1-1 illustrates the components of a typical RSA.

Each RSA covers a geography that includes:

- Area necessary to define characteristics and context of the resource
- Facilities or features within the project footprints of the Central Valley Wye alternatives and associated activities that could affect the resource
- Area necessary to determine the direct and indirect impacts (both beneficial and adverse) of the Central Valley Wye alternatives

Impact Avoidance and Minimization Features

The evaluation of impacts takes into account the beneficial influence of IAMFs, which are part of the Central Valley Wye alternatives and would be included by the Authority as part of final design and construction to avoid and minimize impacts (see Section 2.2.3.7, Impact Avoidance and Minimization Features, for more information). IAMFs are standard practices and design features that provide specific means to avoid and minimize 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. IAMFs differ from mitigation measures in that they are part of the Central Valley Wye alternatives and would be implemented by the Authority as a binding commitment included as part of project approval. In contrast, mitigation measures (where adopted) would further reduce, compensate for, or offset impacts of the Central Valley Wye alternatives. This Draft Supplemental EIR/EIS labels and numbers IAMFs. For example, AG-IAMF#1 refers to the first agricultural (AG) resources-related IAMF.



Conceptual Diagram; Not to scale

LEGEND	
	Resource Study Area
	Project Footprint
	Permanent Impact Area
	Temporary Impact Area

11/30/16

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

Source: Authority and FRA 2017

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Figure 3.1-1 Typical Resource Study Area

Methods for NEPA and CEQA Impact Analysis

Each resource section describes the methods and data sources analysts used for identifying impacts on that resource. The methods for analysis vary by resource and rely on both quantitative and qualitative techniques. Where appropriate to understand the impacts, fieldwork was conducted to collect data. The sections identify any differences in methods or data sources employed between this Draft Supplemental EIR/EIS and the Merced to Fresno Final EIR/EIS. In most cases, the methods are the same and are presented again in each section to facilitate a clear understanding. However, in some instances, the methods have been refined, and these updates are presented in each section.

While the terms “context” and “intensity” themselves are not used in the analysis, these concepts are employed to fully illustrate the impacts and facilitate comparison between alternatives. *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; location and extent of the impact; 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 the magnitude of the impact; no explicit judgment of its significance is made.

Conversely, CEQA requires the identification of each “significant effect on the environment” resulting from the project and uses a threshold-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. 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.

Each impact is identified by a name and number (e.g., Impact AG#1, Temporary Use of Important Farmland). The impact names in this Draft Supplemental EIR/EIS are similar to the impact names in the Merced to Fresno Final EIR/EIS. Any differences in the impact names are the result of organizational changes made to improve readability, changes in the approach to identifying construction impacts and operations impacts, and impacts that are specific to either document.

Determining Significance under CEQA

The Authority has established thresholds in each resource category 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, the first significant impact discussed is Impact NV#1: Temporary Exposure of Sensitive Receivers to Construction Noise, and mitigation measure NV-MM#1: Construction Noise Mitigation is provided to reduce this impact. If mitigation does not reduce an impact below the threshold, the impact remains significant after mitigation. The CEQA thresholds of significance are presented in each resource section.

3.1.3.5 Affected Environment

The affected environment section describes the existing conditions within the RSA for that resource. The affected environment section provides the basis and context for environmental analysis and evaluation of impacts. This Draft Supplemental EIR/EIS updates the descriptions in the Merced to Fresno Final EIR/EIS with new information about conditions of resources in the affected environment for each resource and extends the Merced to Fresno wye design options to include the area west of Road 8 (see Section 2.2.1, Central Valley Wye Alternatives, for additional information). The area associated with the electrical interconnections and network upgrades are also included as part of the Central Valley Wye alternatives. The updates focus on changes in the regional setting and context since publication of the Merced to Fresno Final EIR/EIS in 2012, including information updated through additional fieldwork, research, and

meetings with stakeholders. However, for readability, the affected environment is presented comprehensively and includes relevant data from the Merced to Fresno Final EIR/EIS as well information that has been updated since 2012.

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)). The existing conditions baseline year for this Draft Supplemental EIR/EIS is generally 2015, the time when the environmental analysis for the Central Valley Wye alternatives began. As such, this Draft Supplemental EIR/EIS evaluates the impact of the Central Valley Wye alternatives against the current environmental conditions for the purposes of the CEQA analysis. A description of the requirements under NEPA to provide a comparison to the No Project Alternative follows in Section 3.1.3.6, Environmental Consequences.

3.1.3.6 Environmental Consequences

The environmental consequences section describes the impacts resulting from the Central Valley Wye alternatives as well as the impacts resulting from the No Project Alternative.

No Project Alternative

The CEQA Guidelines also require that an EIR examine “what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community service” (CEQA Guidelines § 15126.6(e)(2)). Similarly, NEPA requires that the alternatives analysis in an EIS “include the alternative of no action” (CEQ regulations 1502.14(d)). Accordingly, the No Project Alternative is included in this Draft Supplemental EIR/EIS to provide decision makers and the public with a basis of comparison for evaluating the impacts of the Central Valley Wye alternatives. The No Project Alternative in this Draft Supplemental EIR/EIS serves as both the “no action” alternative under NEPA and the “no project” alternative under CEQA.

Each resource section contains an analysis of the No Project Alternative under a “No Project Alternative” subheading. This analysis is qualitative in nature and considers the impacts of current land use and transportation plans in Merced and Madera Counties, including planned improvements to the highway, aviation, conventional passenger rail, and freight rail systems through the 2040 planning horizon for the environmental analysis. The No Project Alternative assumes no high-speed rail is constructed in the area of the Central Valley Wye alternatives, but that the construction that is currently underway in the Merced to Fresno section would continue to completion and connect to the adjacent Fresno to Bakersfield section, which is also under construction. The No Project Alternative also assumes that other parts of the Phase 1 HSR System between San Francisco and Los Angeles would be built and operational by 2040, achieving many, but not all, of the benefits of a continuous, 540 mile Phase 1 system. A gap in the Phase 1 HSR System in the wye area, like a gap in the system anywhere else in the state, would reduce the transportation connectivity and environmental benefits of the Phase 1 system as a whole until the gap is eliminated.

As noted in Section 2.2.2, the EINU proposed in Merced, Madera, Fresno, and Stanislaus Counties are ancillary project features, specifically designed to allow PG&E to accommodate the planned electrical load required for the HSR system only. Consequently, if none of the Central Valley Wye alternatives is approved, these upgrades would not be required. It is anticipated that the network upgrade areas in Merced, Madera, Fresno, and Stanislaus Counties would remain the same as the existing conditions for the foreseeable future because no other PG&E projects are currently proposed or reasonably foreseeable. Therefore, the analysis of the No Project Alternative throughout this chapter is focused on Merced and Madera Counties where reasonably foreseeable consequences of not implementing the Central Valley Wye alternatives would occur.

Central Valley Wye Alternatives

The environmental consequences section continues with a discussion of the potential temporary and permanent impacts resulting from construction and operation of the Central Valley Wye

alternatives. The analysis includes sufficient information to allow for meaningful evaluation, analysis, and comparison of the Central Valley Wye alternatives. The section presents the environmental consequences in comparative form. As described in Chapter 2, Alternatives, the Central Valley Wye alternatives resemble each other because of their geographic proximity and uniform design features, and consequently in many cases they would result in similar impacts. Where the impacts of the alternatives differ, the chapter section identifies those differences to clearly define the choices each of the alternatives presents.

Each impact discussion that addresses a CEQA threshold also includes a subsection entitled CEQA Conclusion. The CEQA Conclusion subsection identifies the relevant CEQA threshold and describes the level of CEQA significance for that threshold. A discussion of mitigation is included where it is required to address a significant CEQA impact. The full text of applicable mitigation measures is provided later in the resource section. For example, Impact NV#1 in Section 3.4 includes mitigation measure NV-MM#1 to reduce the impact. The full text of NV-MM#1 is provided in Section 3.4.7, Mitigation Measures.

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 discusses the Central Valley Wye alternatives' contribution to any cumulative impact for each resource.

3.1.3.7 Mitigation Measures

This section identifies and describes proposed mitigation measures to avoid, minimize, repair or restore, reduce over time, or compensate for adverse impacts. Because this is a supplemental analysis, mitigation measures will apply in the following ways:

- Implementation of the previously adopted mitigation measures from the Merced to Fresno Final EIR/EIS that are applicable to the Central Valley Wye
- Modified mitigation measures from the Merced to Fresno Final EIR/EIS⁴
- New mitigation measures not included in the Merced to Fresno Final EIR/EIS

This approach tailors mitigation to reduce or offset adverse impacts potentially resulting from implementing each of the Central Valley Wye alternatives, including those impacts previously identified in the Merced to Fresno Final EIR/EIS as well as impacts specific to the Central Valley Wye alternatives. Included in the discussion is mitigation adopted as part of the May 2012 Mitigation Monitoring and Reporting Program and the September 2012 Mitigation Monitoring and Enforcement Plan (and subsequent amendments).

A discussion of potential secondary impacts resulting from the implementation of each mitigation measure follows the full text of each measure (CEQA Guidelines § 15126.4[(a)(1)(D)]). If, during project implementation, changing facts or circumstances render mitigation infeasible, additional environmental review may be required. The Authority will continue the current practice of developing memoranda of understanding and funding agreements with local governments to facilitate implementation of off-site mitigation measures on property owned at the local agency level, where required.

Most mitigation measures identified in Chapter 3 would be implemented within the project footprints of the Central Valley Wye alternatives. These measures may include physical actions accomplished within the Central Valley Wye alternatives' rights-of-way (for example, planting trees along the edges of the HSR right-of-way to visually screen the guideway) and construction methods and techniques, among others. In rare cases when mitigation is not possible within the project footprints of the Central Valley Wye alternatives, some of the proposed mitigation would take place outside the project footprints and therefore outside property the Authority would own as part of its right-of-way acquisitions. Such *off-site* mitigation that occurs outside the project

⁴ Measures have been modified to address the specific circumstances of the Central Valley Wye. See Section 3.1.2, Changes in Analysis since the Merced to Fresno Final EIR/EIS, for further information.

footprints would require cooperation with the property owners involved or with the jurisdiction that regulates the property.

3.1.3.8 Impacts Summary for NEPA Comparison of Alternatives

This section summarizes the impacts from implementing the No Project Alternative and the Central Valley Wye alternatives described in the Environmental Consequences section. This summary of impacts takes into account the effects of the IAMFs. For any listed impacts, mitigation measures that are applied to reduce impacts are also discussed. This summary includes quantitative data, where available.

3.1.3.9 CEQA Significance Conclusions

This section includes a table that summarizes all construction and operations impacts and CEQA significance determinations for the Central Valley Wye alternatives. The table lists impacts identified for each resource (by name and number as presented earlier in the Environmental Consequences section), reports the level of significance of each impact prior to mitigation, indicates mitigation measures that have been developed to reduce significant impacts, and identifies the level of significance after mitigation measures are implemented.