

California High-Speed Rail Authority

Fresno to Bakersfield *Section*

Draft Supplemental
Environmental Impact
Report/Environmental
Impact Statement

Summary

November 2017



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California High-Speed Rail Project

Draft Supplemental Environmental Impact Report / Environmental Impact Statement Fresno to Bakersfield Section

Summary

Prepared by:

California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814
Contact: Mark McLoughlin
916-956-8731

Chief of Environmental and Corridor Planning
Federal Railroad Administration
Office of Program Delivery
1200 New Jersey Avenue SE W36-317
Washington, D.C. 20590
Contact: Marlys Osterhues
202-493-0413

Cooperating Agencies:

United States Army Corps of Engineers
1325 J Street, Room 1350
Sacramento, CA 95814
Contact: Zachary Fancher
916-557-6643

Surface Transportation Board
395 E Street SW
Washington, D.C. 20423
Contact: David Navecky
202-245-0294

U.S. Bureau of Reclamation
2800 Cottage Way, MP-730
Sacramento, CA 95825
Contact: Allison Jacobson
916-978-5075

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California High-Speed Rail: Fresno to Bakersfield Section

Draft Supplemental Environmental Impact Report / Environmental Impact Statement

Pursuant to:

California Environmental Quality Act, P.R.C. 21000 et seq.; State of California CEQA Guidelines, California Administrative Code, 15000 et seq.; and National Environmental Policy Act (42 U.S.C. 4332 et seq.), 40 C.F.R. Part 1500, and 64 Fed. Reg. 28545

Prepared by the

California High-Speed Rail Authority

and the

Federal Railroad Administration

With Cooperating Agencies:

United States Army Corps of Engineers,

Surface Transportation Board,

and

U.S. Bureau of Reclamation



Thomas Fellenz
Interim Chief Executive Officer
California High-Speed Rail Authority



Paul Nissenbaum
Associate Administrator for
Railroad Policy and Development
Federal Railroad Administration
United States Department of Transportation

Date: October 18, 2017

Date: 10/27/17

The following individuals may be contacted for additional information concerning this document:

Mark McLoughlin
California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

Stephanie B. Perez
Office of Program Delivery
Federal Railroad Administration
1200 New Jersey Ave SE, W36-444
Washington, D.C. 20590

Abstract: This document considers, describes, and summarizes the environmental impacts of an approximately 23-mile portion of the Fresno to Bakersfield Section High-Speed Rail (HSR) Project, which is an approximately 114-mile portion of a larger HSR System that is intended to connect to sections traveling west to San Francisco, south to Los Angeles, and later, north to Sacramento. The project is designed as a steel-wheel-on-steel-railway completely grade-separated from other modes. The need for this project is directly related to the population growth and increased intercity travel demand over the next 20 years, and beyond, and the increased travel delays and congestion that would result on California's highways and airports. On May 7, 2014, the Authority Board certified the Fresno to Bakersfield Section Final EIR/EIS and approved the Preferred Alternative south from Fresno to 7th Standard Road, the northern city limits of Bakersfield. Based on an analysis of potential impacts and substantive agency and public comments, including comments filed after issuance of the Final EIS, the Federal Railroad Administration (FRA) selected the Preferred Alternative by issuing its Record of Decision on June 27, 2014. On

June 5, 2014, the City of Bakersfield filed a lawsuit challenging the Authority's EIR and approvals under the California Environmental Quality Act. The City of Bakersfield noted that the Preferred Alternative alignment identified in the Fresno to Bakersfield Section Final EIR/EIS would severely impact the City's facilities, freeway projects, and businesses, including its Municipal Services Corporation Yard, Rabobank Arena parking, in addition to private residences, businesses, schools, churches, and medical facilities. In a Settlement Agreement between the City of Bakersfield and the Authority, the two agencies agreed to work together to develop and study an alternative that would be acceptable to the City and meet the Authority's design requirements. The Fresno to Bakersfield Section Locally Generated Alternative (F-B LGA) evolved from this mutual cooperation and subsequent public input and is the subject of this Draft Supplemental EIR/EIS, a supplement to the Fresno to Bakersfield Section Final EIR/EIS. The F-B LGA provides an alternative alignment for a portion of the Fresno to Bakersfield Section between the City of Shafter and the City of Bakersfield. The F-B LGA F-Street Station (F Street Station) would be located at the intersection of State Route 204 (SR 204) and F Street. A maintenance of infrastructure facility (MOIF) would be located along the F-B LGA in northern Shafter between Poplar Avenue and Fresno Avenue. Potential environmental impacts from the F-B LGA include: displacement of commercial, residential, and agricultural properties; increases in noise; increases in traffic at the F Street Station; impacts on historic and archaeological sites; impacts on parks and recreational resources; visual impacts; impacts on sensitive biological resources and wetlands; and uses of energy. Mitigation measures are described to address impacts identified in the Draft Supplemental EIR/EIS. This California High-Speed Rail (HSR) F-B LGA Draft Supplemental EIR/EIS is being made available to the public in accordance with the California Environmental Quality Act and the National Environmental Policy Act (NEPA).

FRA plans on issuing a single document that consists of the Final Environmental Impact Statement and Record of Decision pursuant to 49 U.S.C. § 304a unless it is determined that statutory criteria or practicability considerations preclude issuance of such a combined document.

Visit the California High-Speed Rail Authority [website](#), where you can:

- View and download this Draft Supplemental EIR/EIS
- Request a CD-ROM of this Draft Supplemental EIR/EIS
- Locate a library near you to review a hardcopy of this Draft Supplemental EIR/EIS

Printed copies have been provided at a number of repositories throughout the project area, including at the main libraries in Shafter and Bakersfield.

Additional Information

As permitted under the Surface Transportation Project Delivery Program (STPD Program), the State of California has requested that the FRA assign its responsibilities under NEPA and related Federal environmental laws to the Authority. The STPD Program is authorized by 23 U.S.C. § 327 and has been implemented by the Federal Highway Administration, FRA, and the Federal Transit Administration through joint regulations defining project and applicant eligibility, the application requirements, and the requirements for a written Memorandum of Understanding (MOU) approving the assignment.

During the application process, the public will be given two opportunities to review application materials and provide comments: one opportunity to review a draft application as part of a state public comment process, and another opportunity provided by FRA to review the final application and a draft MOU. These comment periods do not substitute for, or duplicate, the comment period for this Supplemental Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Locally Generated Alternative.

Since the Authority is still developing its application, FRA remains the NEPA lead agency under NEPA for this Draft Supplemental EIR/EIS. However, if the Authority formally submits an application and FRA approves the application prior to the Record of Decision (ROD), the Authority may issue the ROD and finalize any related environmental reviews in lieu of FRA.

Draft Supplemental EIR/EIS — Fresno to Bakersfield Section

Document Organization Guide

Hard Copy Binder	Contents
Volume I	Front Matter through Chapter 15
Volume II Technical Appendices	Appendix 1-A through Appendix 8-A
Volume III Section A	Alignment Plans
Volume III Section B	Composite Utility Plans
Volume III Section C	HSR Elevated Structures Plans
Volume III Section D	Maintenance of Infrastructure Facility Plans, Profiles and Cross Sections
Volume III Section E	Roadway and Roadway Structure Plans
Volume III Section F	Station Drawings
Volume III Section G	Systems Schematic, Traction Power, Train Control and Communications Site and Access Roadway Plans

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PREFACE

What are the Project Changes that Require an Environmental Document?

The *Fresno to Bakersfield Section California High-Speed Train Final Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* (Authority and FRA, 2014) considered several alternatives between the cities of Fresno and Bakersfield and ultimately identified a Preferred Alternative from the Fresno High-Speed Rail (HSR) Station to the Bakersfield HSR Station to Oswell Street in Bakersfield. The Preferred Alternative identified in the Final EIR/EIS consists of the BNSF Alternative with the Kings/Tulare – East Station in combination with the Corcoran Bypass, Allensworth Bypass, Bakersfield Hybrid alternatives, and the Truxtun Avenue Station. In this Draft Supplemental EIR/EIS, approximately 24 miles of the Preferred Alternative is referred to as the “May 2014 Project,” which consists of a portion of the BNSF Alternative (from Poplar Avenue to Hageman Road) and the Bakersfield Hybrid Alternative (from Hageman Road to Oswell Street). The May 2014 Project included a station that would be constructed at the corner of Truxtun and Union Avenues/State Route (SR) 204 as well as a maintenance of infrastructure facility (MOIF) that would be located along the alignment just north of the City of Bakersfield and 7th Standard Road. For the purposes of this Draft Supplemental EIR/EIS, the “May 2014 Project” refers to the portion of the Preferred Alternative alignment from north of Poplar Avenue in Shafter to Oswell Street in Bakersfield.

Following publication of the Final EIR/EIS, in May 2014, the California High-Speed Rail Authority (Authority) Board of Directors (Board) certified the Fresno to Bakersfield Section Final EIR/EIS and approved the Preferred Alternative from the southern limit of the Fresno Station to the north side of 7th Standard Road, the city limit of the City of Bakersfield.

In June 2014, the Federal Railroad Administration (FRA) issued a Record of Decision (ROD), which considered the information and analysis contained in the 2011 Draft EIS, the 2012 Supplemental Draft EIS, and the 2014 Final EIS, and substantive public and agency comments, including comments filed after the issuance of the Final EIS. Through the ROD, the FRA approved the Preferred Alternative in its entirety from the Fresno Station to the Bakersfield Station at Truxtun Avenue.

As a result of coordination by the Authority with local agencies and stakeholders, a new alternative was identified for the Fresno to Bakersfield project. The Locally Generated Alternative includes an alternative alignment from Poplar Avenue north of Shafter to Oswell Street south of Bakersfield. An alternative HSR Station would be located at the intersection of F Street and SR 204 (Golden State Avenue). The new alternative, the Fresno to Bakersfield Locally Generated Alternative (F-B LGA), includes an MOIF in Shafter.

What is this Document?

This document is a draft combined Supplemental Environmental Impact Report/Environmental Impact Statement (Draft Supplemental EIR/EIS) to the Fresno to Bakersfield Section Final EIR/EIS. This document evaluates the potential environmental impacts from a new project alternative and compares those alternative-specific environmental impacts with the environmental impacts from the portion of the Preferred Alternative south of Poplar Avenue in the Fresno to Bakersfield Section Final EIR/EIS (i.e., May 2014 Project).

This Draft Supplemental EIR/EIS provides the following environmental information to assist the Authority and the FRA in understanding the potential impacts of the F-B LGA:

- Describes the new alternative, the F-B LGA and analyzes its potential environmental impacts
- Identifies feasible avoidance and minimization measures and mitigation including, where appropriate, compensation for adverse impacts, for the potential impacts of the F-B LGA
- Considers cumulative impacts of the F-B LGA
- Supports the FRA’s Air Quality Conformity Determination, Section 4(f) determinations, and environmental justice considerations

Why is this Document a Supplemental EIR/EIS?

The Authority is preparing a CEQA Supplemental EIR to evaluate the F-B LGA, pursuant to CEQA Guidelines sections 15162 and 15163. As described above, the area of the F-B LGA and the May 2014 Project extends south from Poplar Avenue in Kern County into downtown Bakersfield, and thus represents a geographically discrete subsection of the Fresno to Bakersfield Section.

Under regulations implementing the National Environmental Protection Act (NEPA) (40 C.F.R. 1502.9), a supplement to a draft or final Environmental Impact Statement (EIS) may be prepared “when the agency determines that the purposes of NEPA would be furthered by doing so” or if “1) the agency makes substantial changes in the proposed action that are relevant to environmental concerns, or 2) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed actions or its impacts”.

The FRA has determined that NEPA requires preparation of a Supplemental EIS because the consideration of an additional alignment (i.e., the F-B LGA) that was not included in the Fresno to Bakersfield Section Final EIR/EIS is a substantial change in the proposed action or a significant new circumstance that is relevant to environmental concerns.

What else is happening on the Fresno to Bakersfield Project?

The Authority is currently advancing project activities within the approved portion of the Fresno to Bakersfield section between the Fresno station and Poplar Avenue in Kern County. These activities are consistent with the Authority’s May 2014 approval and the FRA’s June 2014 ROD, and the Mitigation Monitoring and Enforcement Plan (MMEP) for this section. Key milestones include:

Acquire Right-of-Way

- Acquire right-of-way for Fresno/Bakersfield section north of Poplar Avenue
- Conduct property maintenance activities (e.g., fencing, mowing, establishing fire breaks, etc.)
- Demolish structures and capping wells to maintain public health, safety, and welfare
- Close real estate transactions
- Acquire additional property in excess of right-of-way
- Resolve severed access issues, consistent with MMEP
- Implement Farmland Consolidation Program

Retain Design-Build Contractors, Develop Design, Begin Construction, Work with Stakeholders and Public as Project is Implemented

- Retain design-build contractors to construct Fresno to Bakersfield section alignment between Fresno and Poplar Avenue in Kern County
- Refine project electrical interconnection facilities
- Adopt Design Criteria Manual (May 2015)
- Advance project design to final design, including some refinements such as:
 - Utility relocations and other early work
 - Closing some roadways and opening others
 - Refining the vertical profile of the track
 - Shifting the alignment to avoid major infrastructure
 - Adding drainage basins
 - Column placement based on refined bridge design
- Implement impact avoidance and minimization measures and mitigation measures
- Engage with stakeholders and public as project is implemented

Implement Habitat Mitigation

- Retain habitat mitigation services firm
- Proceed with real estate transactions
- Establishing fencing and habitat restoration

Ongoing Collaboration with Local Agencies

- Develop and implement early works for Tulare County
- Final design of grade separation of BNSF railway
- Eliminate an over crossing at the request of local residents
- Coordinate with Ponderosa Pines neighborhood

Study Electrical Interconnections and Network Upgrades

- Project changes to electrical interconnection facilities resulting from further design include:
 - Minor movement of traction power supply stations, switching stations, and electrical tie-lines
 - Expansion of the existing substation to accommodate HSR equipment
 - New utility switching stations and HSR traction power supply station
- Completion of the Pacific Gas & Electric 2015 Technical Study Report, reviewed by the Authority and its technical consultant, determined what network upgrades would be required to existing Pacific Gas & Electric infrastructure to meet the projected power demands of the HSR system. Within the geographic limits of the F-B LGA, it was determined that PG&E network upgrades would not be immediately needed.

As part of the design/build process, contractors may propose project design refinements as project engineering advances. In response to these refinements, the Authority and FRA determine whether a subsequent or supplemental environmental document should be prepared and circulated. Both agencies have determined the project design refinements incorporated to date do not result in any new or substantially more severe impacts than previously identified in the Fresno to Bakersfield Section Final EIR/EIS.

How will the Authority and FRA use this Document?

The Authority is the State Lead Agency and the FRA is federal Lead Agency. The purpose of this Fresno to Bakersfield Section LGA Supplemental EIR/EIS is to inform the Authority's project approval into the City of Bakersfield and to present FRA with the potential impacts of the F-B LGA so that FRA may consider whether it is appropriate to modify to its June 2014 ROD. There are three cooperating agencies included in the NEPA review process: the United States Army Corps of Engineers (USACE), the United States Bureau of Reclamation (BOR), and the Surface Transportation Board (STB).

California High-Speed Rail Authority

Although the Authority Board certified the Fresno to Bakersfield Section Final EIR/EIS, which evaluated the alignment from the Fresno HSR Station to the Bakersfield Truxtun Avenue HSR Station, the Authority Board only approved the project from the Fresno HSR Station to 7th Standard Road (7th Standard Road is the northern city limit of the City of Bakersfield). In May 2016, the Authority Board determined that the F-B LGA is the Preliminary Preferred Alternative between 7th Standard Road and Oswell Street. The Authority Board will determine if it will approve the F-B LGA, the comparable segment of the May 2014 Project, or no project at all based on the analysis in this Draft Supplemental EIR/EIS, agency comments, public comments and testimony, and a Findings of Fact and Statement of Overriding Consideration.

Federal Railroad Administration

The FRA issued a ROD in June 2014 based on the environmental analysis in the Fresno to Bakersfield Section Final EIR/EIS. Its decision extends from the Fresno HSR Station through the

Bakersfield Truxtun Avenue HSR Station to Oswell Street. The Authority requested the FRA prepare a joint Draft Supplemental EIR/EIS to evaluate the potential impacts of the F-B LGA.

How Do I Use this Document?

The purpose of environmental documents prepared under NEPA and CEQA is to disclose information to decision makers and the public as part of the decision making process for project approval, denial, or approval with conditions. Although the science and analysis that supports this Draft Supplemental EIR/EIS is complex, this document is intended for the general public. Every attempt has been made to limit technical terms and the use of acronyms. Where this cannot be avoided, the terms and acronyms are defined the first time they are used in each chapter, and a list of acronyms and abbreviations is provided (please refer to Chapter 15 of this Draft Supplemental EIR/EIS). This Draft Supplemental EIR/EIS has been prepared in compliance with Americans with Disabilities Act (Section 508) Standards for Electronic and Information Technology and can be found on the [Authority website](#) and [FRA website](#).

Volume I of this Draft Supplemental EIR/EIS is organized into 15 chapters and a Summary. Volume II contains the technical appendices. Volume III shows the F-B LGA alignment and other F-B LGA design plans.

For a reader with only a short time to devote to this document, the Summary is the place to start. It provides an overview of all of the substantive chapters in this document and includes a table listing the potential environmental impacts at the project level for each environmental resource topic. If more information is desired, the Summary directs the reader to the place in the document where more details are available. Readers interested in a direct comparison between the May 2014 Project and F-B LGA should turn to Chapter 8, Comparison of Alternatives and Identification of the Preferred Alternative, and, for more detail related to the May 2014 Project, to Technical Appendix 8-A in Volume II of this Draft Supplemental EIR/EIS.

Chapter 1.0, Project Purpose, Need, and Objectives, explains why the F-B LGA alignment is proposed and provides a history of the planning process.

Chapter 2.0, F-B LGA Description, describes the California HSR Project Background, Fresno to Bakersfield Section Final EIR/EIS Background, and development of the F-B LGA and F-B LGA F Street Station. This chapter explains that the F-B LGA will be compared to the May 2014 Project that was evaluated in the certified Fresno to Bakersfield Section Final EIR/EIS. The F-B LGA and its design options are described in Chapter 2 with visual representations (illustrations and maps) for the reader. Chapter 2 also describes modifications of Caltrans/State Facilities; travel demand and ridership forecasts; operations and service plans; additional HSR development considerations; construction plan and phased implementation strategies; and permits and approvals.

Chapter 3.0, Affected Environment, Environmental Consequences, and Mitigation Measures, is where the reader can find information about the existing transportation, environmental, and social conditions in the area of the F-B LGA. This chapter provides the findings of the analysis of potential environmental impacts, along with methods to reduce these impacts (called mitigation measures). Chapter 3 is divided into environmental resource topics subsections including:

- Transportation
- Air Quality and Global Climate Change
- Noise and Vibration
- Electromagnetic Fields and Electromagnetic Interference
- Public Utilities and Energy
- Biological Resources and Wetlands
- Hydrology and Water Resources
- Geology, Soils, Seismicity, and Paleontological Resources
- Hazardous Materials and Waste
- Safety and Security

- Socioeconomics and Communities
- Station Planning, Land Use, and Development
- Agricultural Lands
- Parks, Recreation, and Open Space
- Aesthetics and Visual Resources
- Cultural Resources
- Regional Growth
- Cumulative Impacts

Chapter 4.0, Section 4(f)/Section 6(f) Evaluation, provides the analysis to support FRA's determinations under Section 4(f) of the Department of Transportation Act of 1966 and Section 6(f) of the Land and Water Conservation Fund Act.

Chapter 5.0, Environmental Justice, summarizes how federal agencies to the greatest extent practicable and permitted by law, are required to achieve environmental justice by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental impacts, including interrelated social and economic effects, of their programs, policies, and activities on minority and low-income populations.

Chapter 6.0, Cost and Operations, summarizes the estimated capital, operations, and maintenance cost for the F-B LGA evaluated in the Draft Supplemental EIR/EIS, including funding and financial risk.

Chapter 7.0, Other CEQA/NEPA Considerations, summarizes the F-B LGA's significant adverse environmental effects of the F-B LGA, the significant adverse environmental effects that cannot be avoided if the F-B LGA is implemented, and the significant irreversible environmental changes that would occur as a result of F-B LGA implementation or irretrievable commitments of resources or foreclosure of future options.

Chapter 8.0, Comparison of Alternatives and Identification of the Preferred Alternatives, identifies the Authority's and FRA's Preferred Alternative for the segment of the Fresno to Bakersfield Section just north of Poplar Avenue in the City of Shafter and Oswell Street in the City of Bakersfield. This chapter provides the comparative data (between the May 2014 Project and the F-B LGA) related to the Authority's and FRA's Preferred Alternative.

Chapter 9.0, Public and Agency Involvement, contains summaries of coordination and outreach activities with agencies and the general public.

Chapter 10.0, Draft Supplemental EIR/EIS Distribution, identifies the individuals and organizations informed about the availability of this Draft Supplemental EIR/EIS.

Chapter 11.0, List of Preparers, provides the names and responsibilities of the authors of this Draft Supplemental EIR/EIS.

Chapter 12.0, References/Sources Used in Document Preparation, cites the references and contacts used in writing this Draft Supplemental EIR/EIS.

Chapter 13.0, Glossary of Terms, provides a definition of certain terms used in this Draft Supplemental EIR/EIS.

Chapter 14.0, Index, provides a tool to cross-reference major topics used in this Draft Supplemental EIR/EIS.

Chapter 15.0, Acronyms and Abbreviations, defines the acronyms and abbreviations used in this Draft Supplemental EIR/EIS.

Appendices and Technical Reports provide additional details on the F-B LGA and Draft Supplemental EIR/EIS process. The technical appendices, included in Volume II, are related to the affected environment and environmental consequences analyses. These appendices are numbered to match their corresponding environmental elements in Chapter 3, as well as in Chapters 1, 2, and 5 of the Draft Supplemental EIR/EIS. It should be noted that only technical appendices from the Fresno to Bakersfield Section Final EIR/EIS that needed to be updated to be

consistent with the F-B LGA were revised. The new and revised technical appendices for this Draft Supplemental EIR/EIS include:

- **Appendix 1-B Benefits**, introduces benefits of the HSR system, the Fresno to Bakersfield Project, and F-B LGA as they relate to the 2016 Business Plan (approved May 1, 2016).
- **Appendix 2-A Road Crossings**, provides a list of roads that the F-B LGA crosses over and under.
- **Appendix 2-B Railroad Crossings**, provides a list of railroad tracks that are overcrossed by the F-B LGA.
- **Appendix 2-G Mitigation Monitoring and Enforcement Plan (as amended)**, provides avoidance, minimization measures, and mitigation measures from the May 2014 Project that are applicable to the F-B LGA. This appendix also includes newly identified mitigation measures that would be applicable only to the F-B LGA.
- **Appendix 2-H Functions of Avoidance and Minimization Measures**, provides a description of how the avoidance and minimization measures incorporated into the F-B LGA would reduce the severity of impacts.
- **Appendix 3.4-B Noise and Vibration**, provides a summary of long-term and short-term noise level measurements, vibration level measurements, and operational noise levels and contours.
- **Appendix 3.4-C Noise and Vibration Mitigation Guidelines**, provides noise mitigation that must be considered when noise impacts are identified.
- **Appendix 3.7-B Comparison of Impacts on Biological Resources by Alternatives**, summarizes and compares impacts of biological resources from implementation of the May 2014 Project and F-B LGA.
- **Appendix 3.8-A Water Bodies Crossed by Project Alternatives**, summarizes and compares the water bodies that are crossed by the May 2014 Project and F-B LGA.
- **Appendix 3.12-B Effects on School District Funding and Transportation Bus Routes**, summarizes the effects the F-B LGA would have on school district funding and transportation bus routes.
- **Appendix 3.12-C Effects on Children's Health and Safety**, summarizes the effects the F-B LGA would have on children's health and safety.
- **Appendix 3.13-A Land Use Plans, Goals, and Policies**, presents land use plans, goals, and policies of local jurisdictions that are applicable to implementation of the F-B LGA.
- **Appendix 3.14-A Results and Findings of Land Evaluation and Site Assessment Pursuant to the Farmland Protection Act**, presents the Land Evaluation and Site Assessment Model and process that was used to determine effects of on Important Farmland (Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and Farmland of Local Importance) from implementation of the F-B LGA and May 2014 Project.
- **Appendix 3.14-B Remnant Parcel Analysis**, summarizes the results of the remnant parcel analysis for the F-B LGA and the corresponding section of the May 2014 Project.
- **Appendix 3.19-A Planned and Potential Projects**, provides a list of land development projects that were considered during cumulative analysis of the F-B LGA.
- **Appendix 3.19-B Planned Transportation Projects**, provides a list of transportation projects that were considered during cumulative analysis of the F-B LGA.
- **Appendix 8-A Analysis of the Comparable Section (May 2014 Project)**, provides a comparable level of detail and analysis for the May 2014 Project to help facilitate the comparison with the F-B LGA.

Detailed technical reports prepared for: transportation; air quality and global climate change; noise and vibration; biological resources and wetlands; hazardous materials and wastes; community impact assessment and relocation impacts; cultural resources; and Section 4(f) and 6(f) methodology are available at the [Authority's website](#) and at locations identified in Chapter 10, EIR/EIS Distribution.

What is the Analysis Based On?

The methods used to collect data and evaluate potential impacts in this Draft Supplemental EIR/EIS are similar and consistent to the data collection and impact evaluation methods used in the Fresno to Bakersfield Section Final EIR/EIS. The resource study areas presented in the Fresno to Bakersfield Section Final EIR/EIS are used to evaluate resources in this Draft Supplemental EIR/EIS, as appropriate. Where applicable, data collected for the Fresno to Bakersfield Section Final EIR/EIS (including data from 2010) has been used to evaluate impacts associated with development of the F-B LGA.

The types of data sets that were used for the Fresno to Bakersfield Section Final EIR/EIS have been used for the evaluation of the F-B LGA so that a direct comparison between the May 2014 Project and the F-B LGA could be made. Any data sets updated for the analysis of the F-B LGA were also updated for the May 2014 Project to account for any changes that have occurred since circulation of the Fresno to Bakersfield Section Final EIR/EIS, to reflect the most current conditions in the project area, and to provide an accurate and equivalent comparison with the F-B LGA. For example, analysis of the F-B LGA station (proposed F Street Station) required current traffic counts, so updated traffic counts were taken for study area roadways and intersections in the vicinity of the F-Street Station and the Truxtun Station to accurately reflect roadway modifications not yet developed nor planned when the Fresno to Bakersfield Section Final EIR/EIS was approved. Data sets for socioeconomics and communities and agricultural lands were also updated for the May 2014 Project analyses.

What Happens Next?

This Draft Supplemental EIR/EIS will be circulated for a 60-day public review period consistent with the requirements of CEQA and NEPA. The public and public agencies will have the chance to provide comments on environmental issues and the project. At the close of the 60-day public review period, the Authority and FRA will develop the F-B LGA Final Supplemental EIR/EIS. This document will contain the information that was revised from the F-B LGA Draft Supplemental EIR/EIS following consideration of the comments received during the public review period. The F-B LGA Final Supplemental EIR/EIS will also contain responses to the comments received during the public review period. Once the F-B LGA Final Supplemental EIR/EIS is prepared, the document will be considered by the Authority and FRA for approval decisions.

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FACT SHEET

Project Name

California High-Speed Rail Project, Fresno to Bakersfield Section Locally Generated Alternative (F-B LGA)

Project Description

The California High-Speed Rail Authority (Authority) proposes that the Fresno to Bakersfield Section project will consist of building and operating an approximately 114-mile portion of a larger high-speed rail (HSR) system that is intended to connect to sections traveling west to San Francisco, south to Los Angeles and, later, north to Sacramento. The Preferred Alternative identified in the *Fresno to Bakersfield Section California High-Speed Train Final Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* consists of portions of the “BNSF Alternative” in combination with the “Corcoran Bypass,” “Allensworth Bypass,” and “Bakersfield Hybrid” alternatives. On May 7, 2014, the Authority certified the Fresno to Bakersfield Section Final EIR/EIS and approved the Preferred Alternative south from Fresno to 7th Standard Road, the northern city limits of Bakersfield. Based on an analysis of potential impacts and substantive agency and public comments, including comments filed after issuance of the Final EIS, the Federal Railroad Administration (FRA) approved the Preferred Alternative by issuing its Record of Decision on June 27, 2014.

On June 5, 2014, the City of Bakersfield filed a lawsuit challenging the Authority’s EIR and approvals under the California Environmental Quality Act (CEQA). The City noted that the Preferred Alternative alignment identified in the 2014 Fresno to Bakersfield Section Final EIR/EIS would severely impact the City’s facilities, freeway projects, and businesses, including its Municipal Services Corporation Yard, and Rabobank Arena parking, in addition to private residences, businesses, schools, churches, and medical facilities. In a Settlement Agreement signed December 19, 2014, between the City of Bakersfield and the Authority, the two agencies agreed to work together to develop and study an alternative that would be acceptable to the City of Bakersfield, and meet the Authority’s design requirements. The F-B LGA evolved from this mutual cooperation and subsequent public input and is the proposed project evaluated in this Fresno to Bakersfield Section Supplemental EIR/EIS. (Although the Authority Board certified the Fresno to Bakersfield Section Final EIR/EIS, which evaluated the alignment from the Fresno HSR Station to the Bakersfield Truxtun Avenue HSR Station, the Authority Board only approved the HSR alignment extended from downtown Fresno to approximately 7th Standard Road.)

The F-B LGA provides a 23.13-mile alternative alignment for a segment of the Fresno to Bakersfield Section between the City of Shafter and the City of Bakersfield. The F-B LGA station (F Street Station) would be located at the intersection of State Route 204 (SR 204) and F Street. A maintenance of infrastructure facility would be located along the F-B LGA in northern Shafter between Poplar Avenue and Fresno Avenue. Potential environmental impacts from the F-B LGA include: displacement of commercial, residential, and agricultural properties; increases in noise; increases in traffic at the F Street Station; impacts on historic and archaeological sites; impacts on parks and recreational resources; visual impacts; impacts on sensitive biological resources and wetlands; and uses of energy. Mitigation measures are described to address impacts identified in the Draft Supplemental EIR/EIS.

Joint Lead Agencies

Federal Railroad Administration
1200 New Jersey Avenue SE MS-20 Washington, D.C. 20590

California High-Speed Rail Authority 770 L Street, Suite 800
Sacramento, CA 95814

NEPA Lead Agency

The Federal Railroad Administration (FRA) is the lead agency for National Environmental Policy Act (NEPA) compliance.

As permitted under the Surface Transportation Project Delivery Program (STPD Program), the State of California has requested that the FRA assign its responsibilities under NEPA and related Federal environmental laws to the Authority. The STPD Program is authorized by 23 U.S.C. § 327 and has been implemented by the Federal Highway Administration, FRA, and the Federal Transit Administration through joint regulations defining project and applicant eligibility, the application requirements, and the requirements for a written Memorandum of Understanding (MOU) approving the assignment.

During the application process, the public will be given two opportunities to review application materials and provide comments: one opportunity to review a draft application as part of a state public comment process, and another opportunity provided by FRA to review the final application and a draft MOU. These comment periods do not substitute for, or duplicate, the comment period for this Draft Supplemental EIR/EIS for the F-B LGA.

Since the Authority is still developing its application, FRA remains the NEPA lead agency under NEPA for this Draft Supplemental EIR/EIS. However, if the Authority formally submits an application and FRA approves the application prior to the Record of Decision, the Authority may issue the Record of Decision and finalize any related environmental reviews in lieu of FRA.

Responsible NEPA Official

Marlys Osterhues, Chief of Environmental and Corridor Planning
FRA, Office of Program Delivery
1200 New Jersey Ave SE, W36-317
Washington, D.C. 20590

CEQA Lead Agency

The California High-Speed Rail Authority is the lead agency for CEQA compliance.

Responsible CEQA Official

Thomas Fellenz, Interim Chief Executive Officer California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

Document Availability

This Supplemental EIR/EIS is available online at: <http://www.hsr.ca.gov/>.

Printed copies of this Supplemental EIR/EIS and related appendices are available at the California High-Speed Rail Authority Office, public libraries, and community centers (see List of Recipients).

Contact Information

This Draft Supplemental EIR/EIS in its entirety has been posted on the Authority's [website](#) as well as FRA's [website](#). In addition, the Authority published materials online (in English and Spanish) summarizing the purpose and contents of the document and how to participate in the public comment period. To obtain a copy of the environmental documents, contact:

California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814
(916) 324-1541

Permits, Approvals, and Consultations

Federal

- **Surface Transportation Board** – Authority to construct and operate the project under Sections 10502 and 10901 of the ICC Termination Act of 1995.
- **U.S. Army Corps of Engineers** – Section 404 Permit for Discharge of Dredge or Fill Materials into Waters of the U.S., including wetlands. Also, Section 10 Permit for construction of any structure in or over any Navigable Water of the U.S.
- **U.S. Environmental Protection Agency** – Review of Environmental Justice conclusions; General Conformity Determination.
- **Federal Railroad Administration**, in consultation with the **California Office of Historic Preservation** and the **Advisory Council on Historic Preservation** – National Historic Preservation Act, Section 106 Consultation.
- **U.S. Department of Transportation** – Section 4(f) Evaluation.
- **U.S. Department of Interior/National Park Service** – Section 6(f) Evaluation.
- **U.S. Fish and Wildlife Service** – Section 7 Consultation and Biological Opinion.
- **U.S. National Marine Fisheries Service** – Section 7 Consultation and Biological Opinion.
- **U.S. Bureau of Reclamation** – Permits to Enter; Temporary Construction Permits; Acquisition of Land Rights.

State

- **California Department of Fish and Wildlife** – California Endangered Species Act (CESA) permits; Section 1602 Lake and Streambed Alteration Agreement.
- **California Department of Transportation (Caltrans)** – Encroachment permits.
- **California Public Utilities Commission** – Approval for construction and operation of railroad crossing of public roads and for construction of new transmission lines and substations.
- **California State Lands Commission** – Lease for crossing state sovereign lands.
- **State Water Resources Control Board, Central Valley Regional Water Quality Control Board** – Permits under Clean Water Act Section 401 Water Quality Certification; Section 402 National Pollutant Discharge Elimination System (NPDES) Waste Discharge Permit; Statewide Stormwater General Permit for Construction; Statewide Stormwater General Permit for Industrial Activities, Dewatering Permit (Order No. 98-67); Spill Prevention, Control and Countermeasures (SPCC) Plan (part of Section 402 process); Stormwater Construction and Operation Plan (part of Section 402 process).
- **Central Valley Flood Protection Board** – Encroachment permit under Section 208.10 (designated streams, flood control and protection facilities).

Regional

- **San Joaquin Valley Air Pollution Control District** – Permits under Rule 201, General Permit Requirements; Rule 403, Fugitive Dust; Rule 442 Architectural Coatings; Rule 902 Asbestos.

Authors and Principal Contributors

Please see List of Preparers under Chapter 11 of this Supplemental EIR/EIS.

Public Release of Draft EIR/EIS

November 9, 2017

Subsequent Steps

This Supplemental EIR/EIS will be circulated for a 60-day public review period per regulations set forth by CEQA and NEPA. The public and public agencies will have the chance to provide comments on environmental issues and the project. At the close of the 60-day public review period, the Authority will develop the F-B Final Supplemental EIR/EIS. This document will contain the information that was revised from the F-B LGA Draft Supplemental EIR/EIS in accordance with the comments received during the public review period. The F-B LGA Final Supplemental EIR/EIS will also contain responses to the comments received during the public review period of the F-B LGA Draft Supplemental EIR/EIS. Once the F-B LGA Final Supplemental EIR/EIS is prepared, the document will be considered by the Authority for an approval decision. In accordance with Section 1319 of the Moving Ahead for Progress in the 21st Century Act (MAP- 21), the FRA's Record of Decision may be circulated with the Final EIS.

S SUMMARY

S.1 Introduction and Background

This section will introduce the California High-Speed Rail Project Fresno to Bakersfield Locally Generated Alternative (F-B LGA), and will summarize the background, development, and findings of this Fresno to Bakersfield Section Draft Supplemental Environmental Impact Report/Environmental Impact Statement (Supplemental EIR/EIS).

High-Speed Rail System

The system that includes the HSR guideways, structures, stations, traction-powered substations, and maintenance facilities.

The California High-Speed Rail Authority (Authority), a state governing board formed in 1996, has responsibility for planning, designing, constructing, and operating the California High-Speed Rail (HSR). Its mandate is to develop a high-speed rail system coordinating with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

The California High-Speed Rail System (HSR System) will provide electrified intercity, high-speed service on nearly 800 miles of tracks throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. Figure S-1 shows this system. It will use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train-control systems, with trains capable of operating up to 220 miles per hour (mph). When completed, the HSR system would provide new passenger rail service to more than 90 percent of the state's population, providing more than 200 weekday trains to serve the statewide intercity travel market.

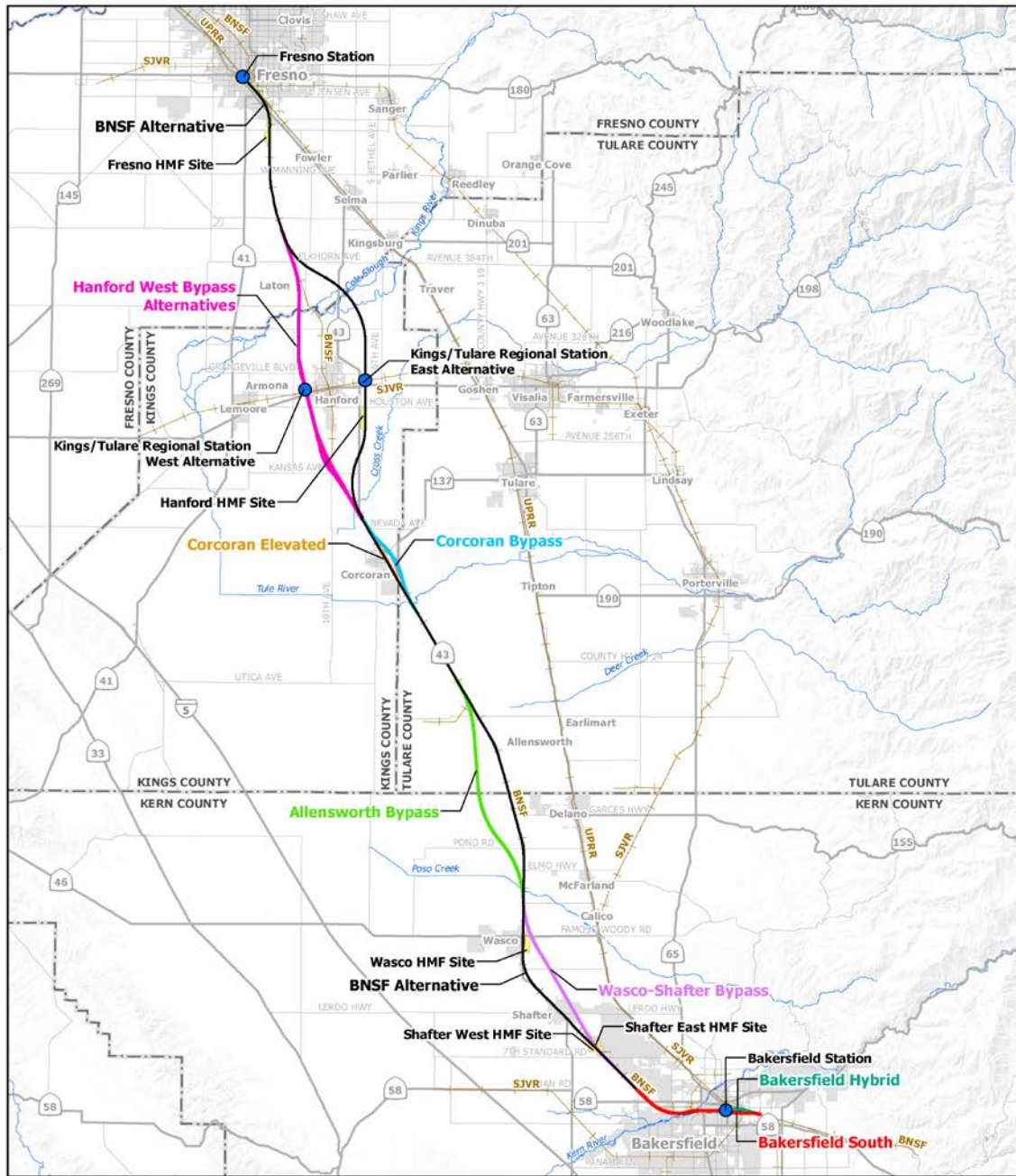
As described in *Connecting and Transforming California, 2016 Business Plan* (Authority 2016), the Authority intends to implement this system in two phases. Phase 1¹ will connect San Francisco Bay Area to Los Angeles Basin via the Central Valley with a mandated express travel time of 2 hours and 40 minutes or less. Phase 2 will extend the system from Merced to Sacramento in the north, and from Los Angeles to San Diego via the Inland Empire in the south.

The Fresno to Bakersfield HSR Section as shown on Figure S-2 is a critical Phase 1 link connecting to the Merced to Fresno and Bay Area HSR sections to the north and the Bakersfield to Palmdale and Los Angeles HSR sections to the south. Figure S-2 shows the Fresno to Bakersfield Section project alternatives that includes HSR stations in the cities of Fresno and Bakersfield and a third station east of Hanford (the Kings/Tulare Regional Station) that would serve the Hanford, Visalia, and Tulare areas. The Fresno and Bakersfield stations are the Fresno to Bakersfield HSR Section's beginning and ending points, or project termini. The Preferred Alternative as shown on Figure S-3 identified in the California High-Speed Rail Authority *Fresno to Bakersfield Section Final Environmental Impact Report/Environmental Impact Statement* (Fresno to Bakersfield Section Final EIR/EIS) (Authority and FRA 2014) consists of the BNSF Alternative in combination with the Corcoran and Allensworth Bypasses, and the Bakersfield Hybrid Alternative and Bakersfield Hybrid Station (Truxtun Avenue Station).

On May 7, 2014, the Authority certified the Fresno to Bakersfield Section Final EIR/EIS (Authority and FRA 2014). While the analysis in the Final EIR/EIS was certified from the Fresno Station to the Bakersfield Station, the Authority's project approval was from the southern limit of the Fresno Station to the north side of 7th Standard Road, the city limit of the City of Bakersfield.

¹ Phase 1 would be built in stages dependent on funding availability.

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Source: URS/HMM/Arup JV, 2013.

November 20, 2013

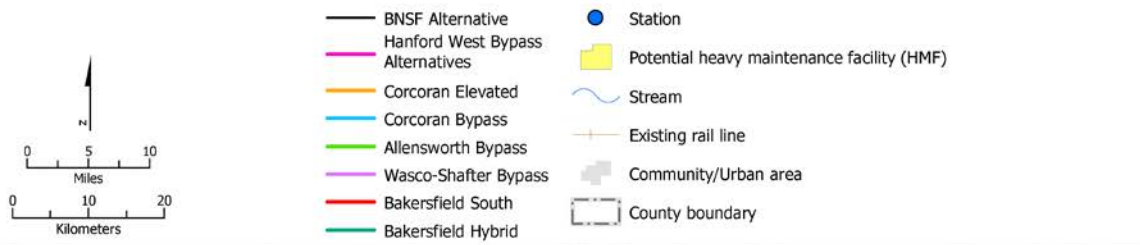


Figure S-2 Fresno to Bakersfield Section project alternatives

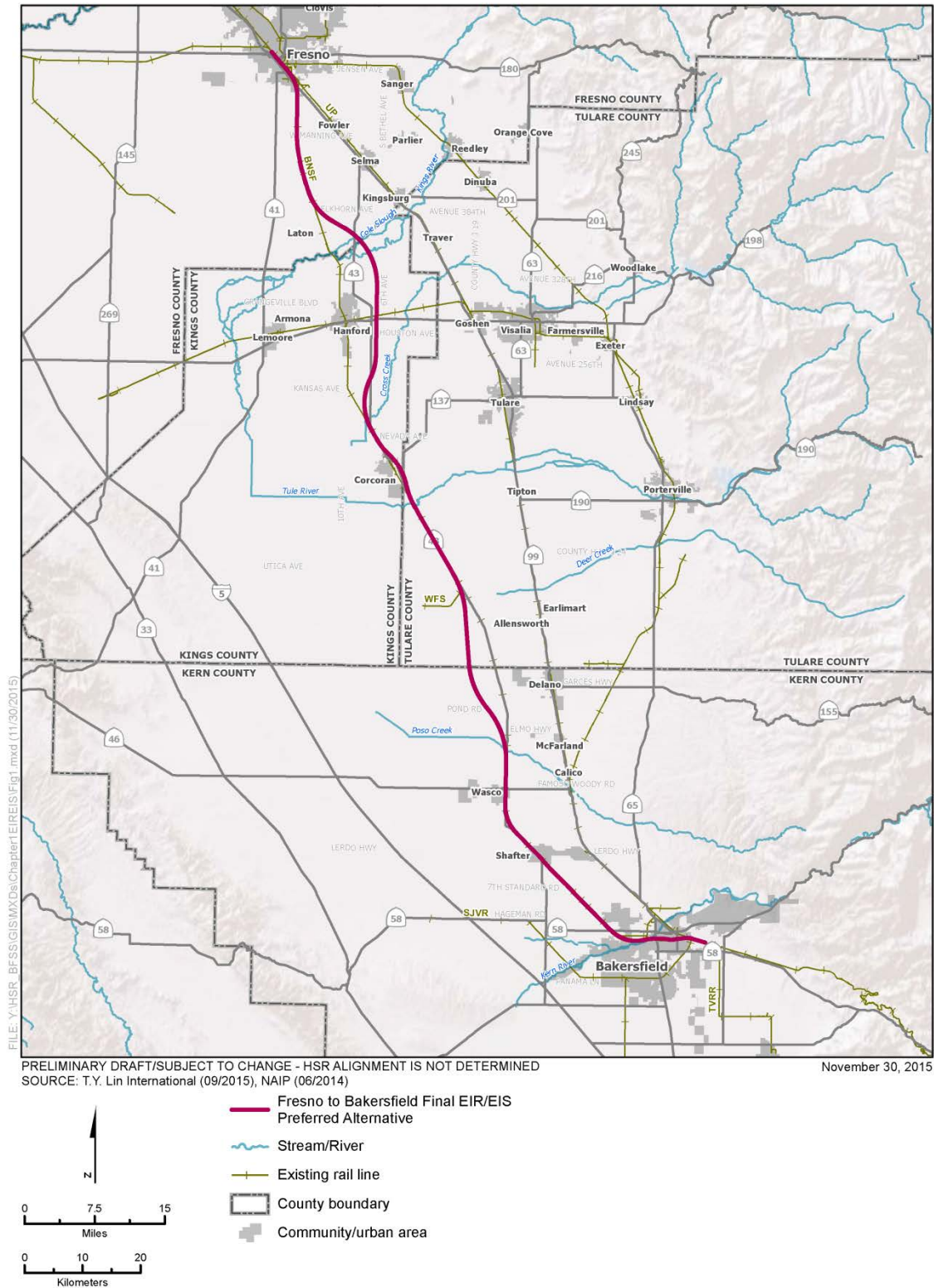


Figure S-3 Fresno to Bakersfield Section Final EIR/EIS Preferred Build Alternative

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Based on the analyses in the Fresno to Bakersfield Section Final EIR/EIS and after consideration of public and agency comments received on the Final EIR/EIS, the Federal Railroad Administration issued a Record of Decision (ROD) on June 27, 2014 that approved the entire Preferred Alternative in the Fresno to Bakersfield Section Final EIR/EIS, from the Fresno Station to the Bakersfield Station at Truxtun Avenue. The ROD includes findings in compliance with Section 106 of the National Historic Preservation Act, Section 4(f) of the Department of Transportation Act of 1966, and Section 7 of the Federal Endangered Species Act. Pursuant to Executive Orders the FRA made findings on Wetlands, Floodplains, and Environmental Justice. Finally, it makes a General Conformity Determination for implementation of the State's Implementation Plan as required by the Clean Air Act. The Fresno to Bakersfield Section Final EIR/EIS considered the impacts associated with three alternative alignments through Bakersfield, and ultimately the Authority and FRA selected the Bakersfield Hybrid as the best of the three Bakersfield alternatives.

On June 5, 2014, the City of Bakersfield filed a state lawsuit challenging the Authority's May 7, 2014, approvals under the California Environmental Quality Act (CEQA). The City claimed that the Preferred Alternative identified in the Fresno to Bakersfield Section Final EIR/EIS would severely impact the City's ability to utilize existing city assets, including its corporation yard, senior housing, and parking facilities at the Rabobank Arena, Theatre and Convention Center; would render unusable one of the city's premier health facilities; and would affect the Bakersfield Commons project, a retail/ commercial/ residential development. In a Settlement Agreement signed December 19, 2014 between the City of Bakersfield and the Authority, the two agencies agreed to work together to develop and study the F-B LGA. The F-B LGA described and analyzed in this Fresno to Bakersfield Section Draft Supplemental EIR/EIS evolved from this mutual cooperation and subsequent public input. The Authority has also collaborated with the City of Shafter and Kern County in developing the F-B LGA.

When developing the geographic scope of the F-B LGA, the Authority and FRA identified a northern terminus (i.e., Poplar Avenue) allowing for a full evaluation of the impacts that could result from the F-B LGA. This enables the agencies to focus their review on an alignment and station alternative that was not evaluated in the Fresno to Bakersfield Section Final EIR/EIS. While the northern terminus is within the section of the Fresno to Bakersfield Project Section approved by both the Authority and FRA, no final design or construction activities will occur in areas being analyzed in this Draft Supplemental EIR/EIS prior to its approval. However, this does not preclude the Authority from advancing project activities north of Poplar Avenue including those described in Sections 2.1.1 through 2.1.6 of this Draft Supplemental EIR/EIS.

The Authority and FRA have prepared this Draft Supplemental EIR/EIS to supplement the Final EIR/EIS for the Fresno to Bakersfield Section. The F-B LGA provides an alternative alignment for a 23.13-mile segment of the Fresno to Bakersfield Section between the City of Shafter and the City of Bakersfield. The F-B LGA station (F Street Station) would be located at the intersection of State Route (SR) 204 and F Street. A maintenance of infrastructure facility (MOIF) would be located along the F-B LGA in northern Shafter between Poplar Avenue and Fresno Avenue.

As previously discussed, the 2014 Fresno to Bakersfield Section Preferred Alternative consists of the BNSF Alternative in combination with the Corcoran and Allensworth Bypasses, and the Bakersfield Hybrid Alternative and Bakersfield Hybrid Station (Truxtun Avenue Station). The portion of the Preferred Alternative which is comparable to the F-B LGA is referred to as the "May 2014 Project" in this Draft Supplemental EIR/EIS. The May 2014 Project is a 23.13-mile portion of the Preferred Alternative, encompassing the BNSF Alternative from Poplar Avenue to Hageman Road and the Bakersfield Hybrid from Hageman Road to Oswell Street (Figure S-4; see also Figure 2-30 [page 2-35] of the Fresno to Bakersfield Section Final EIR/EIS for a depiction of the BNSF Alternative and the Bakersfield Hybrid from Shafter to Bakersfield).

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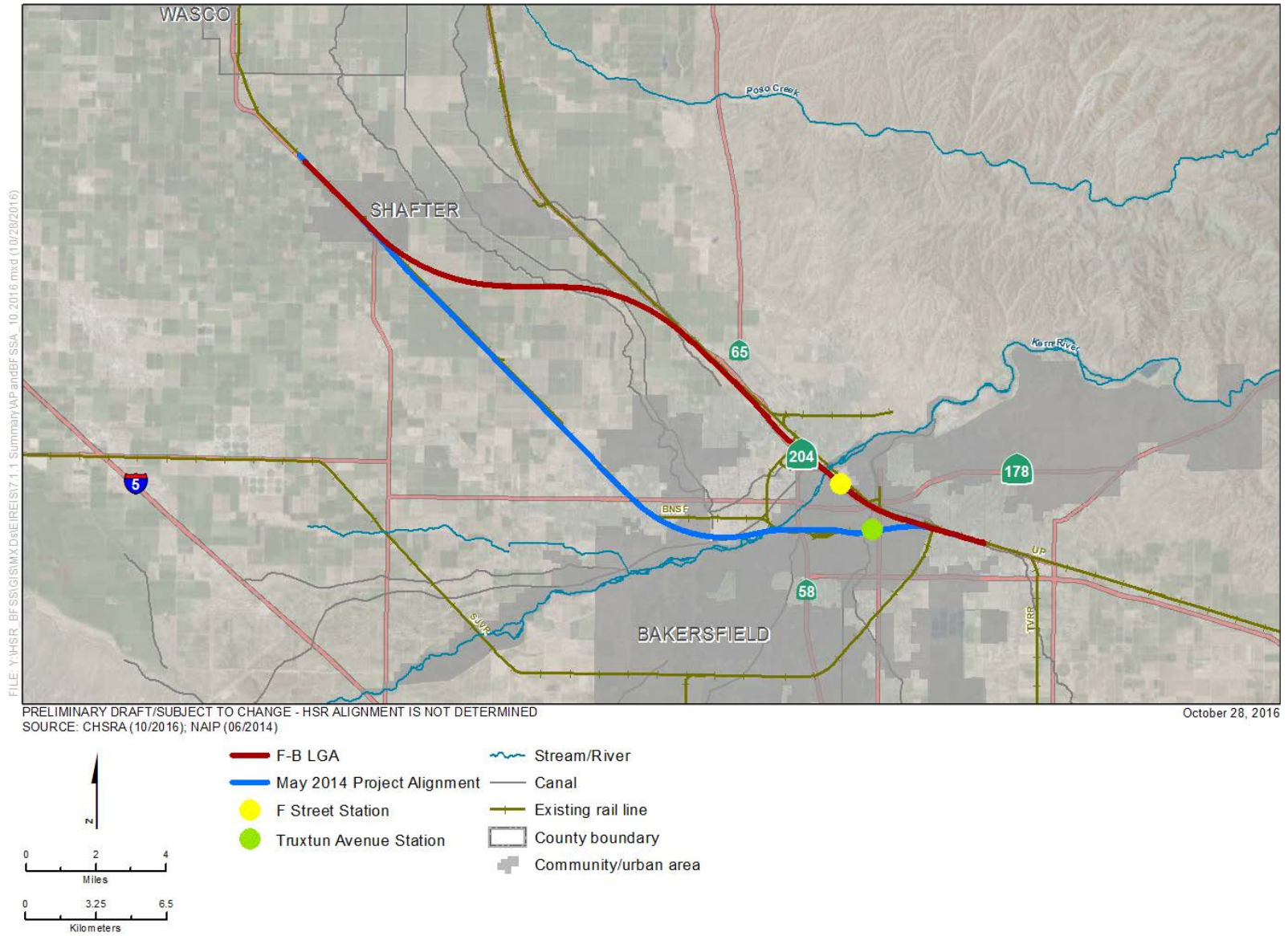


Figure S-4 May 2014 Project and F-B LGA Alignment Comparison

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The May 2014 Project alignment runs primarily at-grade as it follows the BNSF corridor and SR 43 through Shafter and SR 58 into Bakersfield. It parallels the F-B LGA until approximately Beech Avenue, where it diverges from the F-B LGA, parallels the BNSF right-of-way in a southeasterly direction, and then curves back to the northeast to parallel the BNSF tracks toward Kern Junction. After crossing Truxtun Avenue, the alignment curves to the southeast to rejoin the F-B LGA and parallel the UPRR tracks and Edison Highway to its terminus at Oswell Street. The May 2014 Project includes a station at the corner of Truxtun and Union Avenues/SR 204 as well as a MOIF located along the alignment just north of the City of Bakersfield and 7th Standard Road. See Figure S-4 for a comparison of the May 2014 Project and F-B LGA alignments and stations. This Draft Supplemental EIR/EIS in its entirety has been posted on the Authority's [website](#) as well as FRA's [website](#). In addition, the Authority has published materials online (in English and Spanish) summarizing the purpose and contents of the document and how to participate in the public comment period.

S.2 Public Involvement

Pursuant to the requirements of National Environmental Policy Act and CEQA, the Authority and FRA conducted an extensive public and agency involvement program as part of the Fresno to Bakersfield Section environmental review process, including during the preparation of the August 2011 Draft EIR/EIS, the July 2012 Revised Draft EIR/Supplemental Draft EIS, and the April 2014 Final EIR/EIS. Beginning in 2007, the Authority held statewide agency meetings for the Fresno to Bakersfield project section. Public workshops, open houses, and other informational sessions were held; public comments were accepted; and draft documents were widely circulated and made available. For more detail on the public coordination that occurred through March 2014, see the Fresno to Bakersfield Final EIR/EIS, Chapter 8.0. These efforts are consistent with the Authority's emphasis on public and agency outreach throughout the development of the statewide high-speed rail system. This includes public involvement and outreach through meetings, presentations, and materials, agency consultations, and notification and circulation of the Statewide Program EIR/EIS.

During the development of this Draft Supplemental EIR/EIS for the F-B LGA, the Authority and FRA consulted with federal, state, and local agencies including Native American tribes, and held meetings to provide project updates and obtain feedback from the public. The Authority and FRA held informal and formal public meetings during the Draft Supplemental EIR/EIS preparation process for the F-B LGA, as summarized below. The Authority held four community open houses between August 25, 2015 and August 25, 2016, in the cities of Bakersfield and Shafter to provide information to the interested public and agencies about the F-B LGA. These community open houses provided the community an opportunity to ask questions and provide comments about the F-B LGA. Approximately 753 community members attended these events. Ninety comments were received. Of these, 33 were in favor of the F-B LGA or the project in general, 10 comments expressed opposition to the alignment or the HSR project, and 7 comments expressed a preference for the previously approved Bakersfield Hybrid Alternative (i.e., Truxtun Avenue station in downtown Bakersfield) or a different alignment. Other comments received were associated with impacts to homes, businesses, and public facilities; construction costs or job creation; station connectivity to other transportation modes; suggestions for alternative alignments or opposition to the project; water storage; electromagnetic field and noise impacts; airport conflicts; the potential Shafter Heavy Maintenance Facility (HMF)²; and security concerns during operation. The Authority has also conducted numerous outreach meetings with potentially

² An HMF is a maintenance facility that supports delivery, testing, and commissioning on the first completed segment of the HSR System. Trainset assembly, testing and commissioning, train storage, inspection, maintenance, retrofitting, and overhaul are typical HMF activities. A MOIF is a facility where HSR infrastructure would be maintained and would be located on 150-mile intervals along the HSR System. MOIFs provide equipment, materials and replacement parts for the HSR system subdivision it serves. MOIFs would be locations of regional maintenance machinery servicing storage, materials storage, personnel, and maintenance and administration staff.

affected property owners, businesses, and school and special districts since 2015. See Chapter 9.0 of this Draft Supplemental EIR/EIS for more information on the Public and Agency Involvement for the F-B LGA.

Communities with high concentrations of minority or low-income populations along the alignment were identified and targeted for additional public outreach, in accordance with NEPA requirements. The communities included Shafter and the area identified as East Bakersfield (generally east of Union Avenue between the Union Pacific Railroad tracks and California Avenue). These efforts included holding meetings to provide information about possible alignments and the proposed station locations, canvassing in areas near the proposed alignment, conducting educational workshops to inform the public about the release of the environmental document, and directing outreach to vendors in proximity to the alignment. Special outreach conducted for minority and low-income populations in these communities included availability of Spanish-language versions of presentation materials and availability of Spanish-language interpreters at public meetings.

S.3 Purpose and Need for the High-Speed Rail System and the Fresno to Bakersfield Section, including the F-B LGA

The need for a HSR system exists statewide, and the Fresno to Bakersfield Section is an essential component. The purpose, need, and objectives documented in the Fresno to Bakersfield Section Final EIR/EIS have not changed and are included below for context and readability. The purpose of the HSR system is as follows:

The purpose of the statewide HSR System is to provide a reliable high-speed electrified train system that links the major metropolitan areas of the state, and that delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources. (Authority and FRA 2005)

The purpose of this project is to implement the Fresno to Bakersfield Section of the California HSR System to provide the public with electric-powered HSR service that provides predictable and consistent travel times between major urban centers and connectivity to airports, mass transit, and the highway network in the south San Joaquin Valley, and that connects the northern and southern portions of the system. This region contributes significantly to the statewide need for a new intercity transportation service that would connect with the major population and economic centers and to other regions of the state.

The Fresno to Bakersfield Section is an essential part of the statewide HSR System. As part of the Central Valley section of the HSR System, the Fresno to Bakersfield Section would provide Shafter and Bakersfield access to a new transportation mode, and would contribute to increased mobility throughout California. This section will connect the south San Joaquin Valley region to the rest of the statewide HSR System via Fresno, Kings, Tulare, and Kern counties.

The approximately 23.13-mile-long F-B LGA provides an alternative alignment to the selected alternative for the southern terminus of the Fresno to Bakersfield Section (from Poplar Avenue in the City of Shafter to Oswell Street in the City of Bakersfield).

The Fresno to Bakersfield Section of the HSR System would help meet the need for improvements to intercity travel in California in response to future growth in demand for intercity travel, increased congestion and travel delays on highways, unreliability and decreased safety, reduced mobility, and poor and deteriorating air quality and pressure on natural resources and agricultural lands, resulting from expanded highways and urban development. For a more detailed description of the purpose, objectives, and need of the HSR System, including the F-B LGA, refer to the Program EIR/EIS documents and the Fresno to Bakersfield Section Final EIR/EIS.

S.4 Alternatives

S.4.1 Alternatives Evaluated in the Fresno to Bakersfield Section EIR/EIS

The Authority developed the alternatives evaluated in the Fresno to Bakersfield Section Final EIR/EIS based on input provided by stakeholders during the preparation of the *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the proposed California High-Speed Train System (2005 Statewide Program EIR/EIS)* (Authority and FRA 2005) and the 2008 Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008), public and agency input from the scoping process, extensive local and agency involvement during Technical Working Group³ meetings, other stakeholder meetings, and public and agency comments on the Draft EIR/EIS and Revised DEIR/Supplemental DEIS.

The Fresno to Bakersfield Section Final EIR/EIS considered several alternatives between the cities of Fresno and Bakersfield: (1) No Project Alternative; (2) BNSF Alternative; (3) Hanford West Bypass 1 Alternative; (4) Hanford West Bypass 1 Modified Alternative; (5) Hanford West Bypass 2 Alternative; (6) Hanford West Bypass 2 Modified Alternative; (7) Corcoran Elevated Alternative; (8) Corcoran Bypass Alternative; (9) Allensworth Bypass Alternative; (10) Wasco-Shafter Bypass Alternative; (11) Bakersfield South Alternative; and (12) Bakersfield Hybrid Alternative. Ultimately, as described above, the Authority and FRA identified a Preferred Alternative that consisted of the BNSF Alternative in combination with the Corcoran and Allensworth Bypasses, and the Bakersfield Hybrid Alternative and Bakersfield Hybrid Station (Truxtun Avenue Station). While the analysis in the Final EIR/EIS was certified from the Fresno Station to the Bakersfield Station, the Authority's project approval was from the southern limit of the Fresno Station to the north side of 7th Standard Road, the city limit of the City of Bakersfield.

For a complete discussion of the alternatives considered during development of the Fresno to Bakersfield Section, please refer to Chapter 2, Alternatives, Sections 2.4.2 and 2.4.3 of the Fresno to Bakersfield Section Final EIR/EIS (pages 2-54 through 2-72) (Authority and FRA 2014). Additionally, Section 2.2 of the Fresno to Bakersfield Section Final EIR/EIS (page 2-3) provides information on HSR system performance criteria, infrastructure, and systems, which would apply to the HSR, including the F-B LGA.

S.4.2 May 2014 Project

The May 2014 Project⁴ consists of a portion of the Preferred Alternative identified for the Fresno to Bakersfield Section in the Final EIR/EIS. The May 2014 Project alignment runs primarily at-grade as it follows the BNSF corridor and SR 43 through Shafter and SR 58 into Bakersfield. It parallels the F-B LGA until approximately Beech Avenue, where it diverges from the F-B LGA, parallels the BNSF right-of-way in a southeasterly direction, and then curves back to the northeast to parallel the BNSF tracks toward Kern Junction. After crossing Truxtun Avenue, the alignment curves to the southeast to rejoin the F-B LGA and parallel the UPRR tracks and Edison Highway to its terminus at Oswell Street. The May 2014 Project begins at-grade but elevates through Shafter for a distance of about 4 miles between North Shafter Avenue and Cherry Avenue and in Bakersfield at Country Breeze Place and continues as an elevated structure all the way to the project terminus at Oswell Street. The May 2014 Project Station would be built at the corner of Truxtun and Union Avenues/SR 204. A MOIF would be located along the May 2014 Project just north of the City of Bakersfield and 7th Standard Road.

³ Technical Working Groups were composed of senior staff from county and city public works, planning, economic development, and administrative departments.

⁴ The May 2014 Project is the complementary portion of the Preferred Alternative that was identified in the Fresno to Bakersfield Section Final EIR/EIS. That portion consists of the portion of the BNSF Railway Alternative from Poplar Avenue to Hageman Road and the Bakersfield Hybrid from Hageman Road to Oswell Street.

S.4.3 Fresno to Bakersfield Locally Generated Alternative (F-B LGA)

As described above, in a Settlement Agreement between the City of Bakersfield and the Authority, the two agencies agreed to work together to develop and study an alternative that would respond to concerns raised by the City and meet the Authority's design requirements. The F-B LGA evolved from this mutual cooperation and subsequent public input. It provides an alternative alignment between Poplar Avenue in Shafter and Oswell Street in Bakersfield to the east of the Preferred Alternative described in the Fresno to Bakersfield Section Final EIR/EIS.

The F-B LGA alignment would begin north of Shafter, continuing southeasterly until just north of Burbank Street where it would turn east until reaching the UPRR corridor. At this point, the alignment would turn and continue southeasterly, adjacent to, and west of, the UPRR corridor. The alignment would continue southeasterly into Bakersfield and would deviate from the UPRR corridor at Airport Drive. Southwest of the community of Oildale, the alignment would cross SR 99 and continue southeast. South of Airport Drive, the alignment would cross and run parallel to the west side of SR 204. This route would continue until the SR 178 crossing, where the alignment would turn east and parallel to the UPRR corridor. The F-B LGA would continue generally east within the Sumner Street and Edison Highway corridors and would terminate at Oswell Street. The F-B LGA station would be located at the intersection of SR 204 and F Street. A MOIF would be located along the F-B LGA in the City of Shafter between Fresno Avenue and Poplar Avenue.

S.5 Measures to Avoid and Minimize Impacts

The HSR project includes alternatives and design features that were developed to avoid and minimize environmental impacts. Project design incorporates the following measures:

- Follows existing transportation corridors to the extent feasible
- Uses shared right-of-way when feasible
- Uses a narrowed footprint with elevated or retained cut profile
- Spans water crossings where practical
- Includes passages for wildlife movement
- Avoids sensitive environmental resources to the extent practical

Avoidance and minimization measures for the F-B LGA that are specific to each resource area are discussed in Chapter 3 of this Draft Supplemental EIR/EIS.

S.6 F-B LGA Comparison with May 2014 Project

The following section provides an overview of the effects, including benefits of the F-B LGA and May 2014 Project and proposed mitigation, and compares differences between the impacts and costs of these two alternative alignments. Section S.11 provides a high-level comparison of key features associated with each of the alternative alignments under consideration. A more detailed analysis of the environmental effects associated with the May 2014 Project, and a subsequent summary comparison of impacts between the May 2014 Project and F-B LGA, is provided in Appendix 8-A, Analysis of the Comparable Section (May 2014 Project), of this Draft Supplemental EIR/EIS.

S.6.1 Transportation

The F-B LGA would grade-separate many existing at-grade crossings in Shafter, benefiting traffic safety and circulation. Additionally, the F-B LGA would eliminate seven existing at-grade intersections with the BNSF railway in the City of Shafter.⁵ Removal of the at-grade intersections would improve traffic safety and circulation. Project operation would increase traffic congestion at numerous intersections around the Bakersfield station and result in permanent road closures in urban and rural areas. Potential construction-related cumulative impacts on transportation would be similar for the May 2014 Project and the F-B LGA. Both alternatives would require similar construction techniques, including temporary road closures and delays, but at different locations; avoidance and minimization measures to reduce these delays would be applicable to both alternatives.

Section S.11 includes a comparison of the transportation and traffic impacts associated with the May 2014 Project and the F-B LGA.

S.6.2 Air Quality and Global Climate Change

Implementation of the HSR project is predicted to have a beneficial effect on (i.e., reduce) statewide emissions of CO₂, NO_x, ROG, SO_x, PM₁₀ and PM_{2.5}. The entire Fresno to Bakersfield Section with the inclusion of the F-B LGA, when compared to the entire Fresno to Bakersfield Section with the inclusion of the May 2014 Project, would be expected to have similar changes in vehicles miles traveled and intrastate air travel, as well as similar increases in electrical demand (required to power the HSR). Therefore, as with the May 2014 Project, implementation of the F-B LGA would have a beneficial effect on (i.e., reduce) statewide emissions of all applicable pollutants, as compared to the existing conditions.

Construction of the May 2014 Project and the F-B LGA would result in criteria pollutants and greenhouse gas emissions. Similar to the entire Fresno to Bakersfield Section with the inclusion of the May 2014 Project, the entire Fresno to Bakersfield Section with the inclusion of the F-B LGA, would be able to offset the greenhouse gas emissions within 12 months of the beginning of operation.

S.6.3 Noise and Vibration

Both the May 2014 Project and the F-B LGA would create noise impacts during construction. These impacts would be temporary and mitigated through the implementation of project design features and mitigation measures identified in the Fresno to Bakersfield Section Final EIR/EIS. Mitigation for these impacts includes noise monitoring during construction and requiring the contractor to implement one or more noise control measures to meet the noise limits. The F-B LGA could also result in building damage from construction vibration when fragile/historic buildings and residential structures are located approximately 77 feet and 55 feet, respectively, from pile driving activities. Mitigation for vibration impacts includes preconstruction surveys to document the existing condition of buildings located within 50 feet of pile installation and using methods other than a hammer to install piles close to buildings that could be damaged by vibration.

⁵ Analysis the Authority conducted shows that five grade separations of rail lines from cross vehicle traffic would adequately maintain present and future-condition traffic circulation in Shafter (Poplar, Fresno, Central, East Lerdo Highway, and Riverside). A sixth, at Shafter Avenue, is not necessary to maintain adequate traffic circulation. It is evaluated in this environmental document for informational purposes only, at the request of Shafter and in attempt to settle litigation (not concluded) Shafter filed in 2014; its inclusion in this document does not commit the Authority to include it in any project the Authority approves at the conclusion of the environmental process. Similarly, Zachary Avenue, Driver Road and Zerker Road are existing north-south roadways the LGA would cross as it traverses between the BNSF and SR-99. The LGA design includes openings under the HSR tracks to allow for the current roadway and Shafter's desired future improvements, however it is likely that one or more of these three roadways are not required to remain open to maintain adequate circulation. These three openings are included in this environmental document at the request of Shafter and in attempt to settle litigation (not concluded) Shafter filed in 2014; their inclusion in this document does not commit the Authority to their inclusion in any project the Authority approves at the conclusion of the environmental process.

The existing noise environment near the BNSF rail line in the city of Shafter includes noise generated from BNSF rail operations and train horns. The BNSF rail line in the city of Shafter would be elevated as part of the proposed F-B LGA HSR Project. Noise levels generated from the BNSF rail operations would continue, but would generally be lower due to shielding of the retained fill and elimination of the train horns. Since the background noise level would either be the same or lower, noise impacts from both the elevated BNSF railway and proposed F-B LGA would remain the same.

Both alternatives would create operational noise impacts. After mitigation, noise associated with operation of the F-B LGA would severely impact a total of 152 sensitive receptors, including 149 residences, compared to 305 sensitive receptors, including 299 residences, that would be impacted under the May 2014 Project.

S.6.4 EMF/EMI

During construction, only a slight measurable increase of electromagnetic field (EMF)/electromagnetic interference (EMI) levels would occur and within a very limited geographical area.

Under both alternatives, EMF impacts on the general public and people in nearby schools, hospitals, businesses, colleges, and residences would be below the Institute of Electrical and Electronics Engineers Standard limit of 9,040 milli-Gauss. Even within the mainline right-of-way, this limit would not be reached. A review of land uses along the May 2014 Project identified two potentially sensitive receptors (i.e., medical imaging facilities) within the 200-foot study area that would be impacted by HSR-produced EMI. No sensitive receptors were identified within 1,000 feet of the F-B LGA. Although the Fresno to Bakersfield Section Final EIR/EIS identified a mitigation measure to provide adequate shielding to medical imaging facilities, the F-B LGA would be located at a distance greater than the potential area of impact to such facilities.

S.6.5 Public Utilities and Energy

Construction of the May 2014 Project and F-B LGA could result in planned temporary interruption of utility service, accidental disruption of services, increased water use, and an increase in waste generation.

Utility demand occurring under the May 2014 Project and F-B LGA would not require expansion of existing facilities or the construction of new facilities or entitlements, including those related to water and wastewater treatment, or stormwater drainage. The F-B LGA would require 1,201.2 total acre-feet of water during construction whereas the May 2014 Project would require 1,333.1 total acre-feet of water. There are 1,892.3 acre-feet per year of existing water uses along the F-B LGA whereas there are 4,999.27 acre-feet per year of existing water uses along the May 2014 Project. The F-B LGA would generate 468,000 cubic yards of waste whereas the May 2014 Project is anticipated to generate 484,068 cubic yards. Finally, with inclusion of the MOIF the F-B LGA would require 1,018.75 billion British thermal units (Btu) of energy during construction whereas the May 2014 Project would require 1,037.7 billion Btu of energy during construction.

S.6.6 Biological Resources and Wetlands

Implementation of the May 2014 Project and F-B LGA would result in direct and indirect impacts on biological resources as a result of both construction period impacts and operation impacts. The following summarizes how temporary and permanent impacts were evaluated for construction and operation of the May 2014 Project and F-B LGA:

- Construction and operation impacts were considered temporary if they can be fully restored to pre-disturbance conditions following construction. Temporary impacts would include construction staging areas, construction laydown, relocation of underground utilities, and other workspace that would not be occupied by HSR facilities during project operation.
- Impacts were considered permanent when they have lasting effects beyond the project construction period, or cannot be fully restored following construction. Permanent impacts included right-of-way for at-grade track segments, elevated structure track segments

(everything under the aerial extent of the structure), road crossings, electrical substations, facilities for maintenance-of-way and stations.

Construction activities would result in both permanent and temporary direct or indirect impacts through the disturbance or removal of lands that have been determined to support or could potentially support special-status species, affect habitats of concern, or interfere with wildlife movement corridors. Project operation would result in both permanent and temporary direct and indirect impacts on special-status species and habitats of concern, and would obstruct wildlife movement corridors.

Section S.11 compares the impacts to biological resources and wetlands associated with the two alternatives. Overall, the F-B LGA would result in less impact to special-status plant species, less impact to terrestrial habitats that support special-status wildlife species, greater impacts to black willow thickets, less impact to riparian areas, and fewer direct impacts to jurisdictional waters than the May 2014 Project. A more detailed analysis of the environmental effects associated with the May 2014 Project, and a subsequent summary comparison of impacts between the May 2014 Project and F-B LGA, is provided in Appendix 8-A, Analysis of the Comparable Section (May 2014 Project), of this Draft Supplemental EIR/EIS.

S.6.7 Hydrology and Water Resources

Construction and operational activities associated with the May 2014 Project and F-B LGA could potentially result in hydrology and water quality impacts to existing drainage, irrigation distribution systems, and water quality; however, avoidance and minimization measures have been incorporated into the design to reduce impacts on hydrology and water resources. These measures include, but are not limited to, project design features for storm water management and flood protection, and erosion and sedimentation controls, tracking controls, and waste management and materials pollution controls.

The F-B LGA would result in impacts associated with hydrology and water quality in similar ways to the May 2014 Project. There may be site-specific differences in the location of potential impacts due to routing variations included under the F-B LGA (e.g., major water body crossings, water districts); however, the nature and intensity of potential impacts would be largely comparable. The F-B LGA would require two more water body crossings and would affect one additional water district with infrastructure in the study area compared to the May 2014 Project. Impacts associated with groundwater and floodplains would be the same for the F-B LGA and the May 2014 Project and are further discussed in Chapter 3.8 of this Draft Supplemental EIR/EIS.

S.6.8 Geology, Soils Seismicity, and Paleontology

Both the May 2014 Project and F-B LGA could result in impacts associated with geologic, soils, and seismic hazards, including unstable slopes, soil settlement, accelerated erosion, expansive and corrosive soil properties, and earthquake-induced ground liquefaction and slope destabilization. Potential impacts would be addressed through implementation of conventional foundation design methods for elevated structure, retained-fill, at-grade, and retained-cut facilities. Impacts associated with the May 2014 Project and the F-B LGA are comparable for this issue area.

The F-B LGA would impact fewer active, idle, new, and plugged wells (11) when compared to the May 2014 Project (28). There are 5 active wells within 150 feet of the May 2014 Project centerline and none within 150 feet of the F-B LGA centerline.

For both the F-B LGA and the May 2014 Project, no specific paleontological resources have been recorded within the study areas, although five geologic formations that intersect the study area are considered highly sensitive for potentially significant, yet unidentified, paleontological resources. Under both alternatives, the potential for project activities to affect paleontological resources would depend upon the required depth of ground disturbances during construction, and a Paleontological Resource Monitoring and Mitigation Plan would be implemented to address potential impacts.

S.6.9 Hazardous Materials and Wastes

Construction and operation of the May 2014 Project and F-B LGA could cause ground disturbance (including disturbance of groundwater or surface water) near known contaminated site or sites, or where contamination could exist in the study area. Construction and operation of both alternatives could also involve the use, storage, and disposal of hazardous materials and wastes in the study area. Impacts associated with the May 2014 Project and the F-B LGA are generally comparable for hazardous materials and wastes, except that substantially more Potential Environmental Concern (PEC) sites are within 150 feet of the F-B LGA footprint (149 PEC sites for F-B LGA compared to 2 PEC sites for May 2014 Project), resulting in the need for additional investigation during the final engineering and design phase. Increased activities associated with the investigation and remediation of PEC sites would be required under the F-B LGA when compared to the May 2014 Project, due to the increased concentration of PEC sites along the alignment. However, potential impacts would be similar between the May 2014 Project or F-B LGA, and the same types of mitigation actions would be required.

S.6.10 Safety and Security

Both alternatives could increase demand for local emergency responders around the stations due to station activity and associated redevelopment and increased commercial development/increased employees in the area, which could increase response times and require new or physically altered government facilities that might impact the environment.

The fire and law enforcement departments and hospitals that would provide services to the F-B LGA are the same as those for the May 2014 Project. Three heliports are located within 2 miles of both the May 2014 Project and the F-B LGA, and one public-service airport is located within 2 miles of the F-B LGA, whereas no public-service airports are located within 2 miles of the May 2014 Project. There are a total of 25 at-grade railroad crossings within the F-B LGA footprint: 8 at-grade crossings in the City of Shafter and 17 in the City of Bakersfield. FRA records indicate that historically, for the 8 at-grade crossings in Shafter, there have been 29 at-grade roadway crossing accidents, resulting in 10 injuries and 10 fatalities (FRA 2016). According to FRA accident/incident reports, 108 train accidents/incidents occurred in the Kern County portion of the study area between January 2004 and December 2009, resulting in 5 fatalities and 22 injuries. According to records, 89 train accidents/incidents at highway/rail grade crossings occurred in the study area between January 2004 and December 2009, resulting in 12 fatalities and 11 injuries (FRA 2010b). The crossings within the May 2014 Project footprint have more accidents/incidents and have resulted in more fatalities, but fewer injuries. Design and implementation of the F-B LGA would eliminate at-grade crossings resulting in the elimination of pedestrian and vehicle conflicts with BNSF currently experienced throughout the City of Shafter. Sixteen schools are located within 0.25 mile of the F-B LGA construction footprint. Notably, a portion of the F-B LGA construction footprint would be located on two parcels occupied by Valley Oaks Charter School and Free Will Christian Academy. Temporary construction easements would more than likely be required for these parcels occupied by these two schools and a permanent easement would be required to accommodate the 34th Street access for Valley Oaks Charter School, which would directly impact one of the school's buildings.

Project design features, plans, and protocols developed as part of the May 2014 Project would avoid or minimize most safety and security impacts and would also be applicable to the F-B LGA.

S.6.11 Socioeconomics and Communities

Potential impacts that would result from the May 2014 Project and F-B LGA include the disruption and division of communities and economic effects. Many of these impacts are related to the displacement and relocation of residences, businesses, agricultural operations, and community facilities as a result of property acquisitions for the May 2014 Project and F-B LGA. As the F-B LGA would follow existing and long-established highway and railroad corridors through the urban areas, and would not bisect established neighborhoods, it would cause less disruption than the May 2014 Project, which traverses residential areas in the northwest district of Bakersfield. Additionally, the F-B LGA would not pass through the community of Crome, where approximately

one-third of the homes and the only church in this community would be displaced under the May 2014 Project. However, sufficient comparable residential units are available to accommodate displaced residents under either of the alternatives, and therefore no additional housing would need to be constructed as a result of the HSR project.

The F-B LGA would result in the displacement of 15 fewer businesses equating to 277 more employees when compared to the May 2014 Project. Many of the business relocations that would occur under the F-B LGA are located in the community of Oildale, where the alignment would run through a heavily industrial area that would be avoided by the May 2014 Project. However, sufficient replacement space for these businesses is available under either of the alternatives. The overall impact of these relocations on business operations, however, would be significant under either alternative.

The F-B LGA would result in an additional 12 agricultural parcels being split into two or more pieces by the HSR project footprint, relative to the May 2014 Project. Implementation of both the F-B LGA and May 2014 Project would result in one displaced agricultural facility. Both alternatives would have approximately the same impact to the number of jobs lost in the agricultural industry.

Both the F-B LGA and May 2014 Project would result in loss of sales tax revenue associated with displacement of businesses. However, construction-related sales tax gains would help to offset these losses and sales tax losses associated with displacements would begin to decrease as displaced businesses become re-established at new locations and new businesses move in to replace those that did not reopen. The local construction expenditures on materials and supplies under the F-B LGA are estimated to be \$318.7 million, while the associated local sales tax revenues generated are estimated to be around \$3.53 million, amounting to an average of \$707,000 annually over the six-year construction period. The sales tax revenues lost from displaced businesses under this alternative are estimated to be approximately \$653,000 per year, \$130,000 per year higher for the F-B LGA than for the May 2014 Project. The construction-related sales tax gains would help to offset these losses, reducing them to approximately \$54,000 per year over the construction period for the F-B LGA. The May 2014 Project has been estimated to generate \$758,000 in annual sales tax revenues for the region during the construction period; increases in tax revenues for Kern County is estimated to be \$3.79 million under the May 2014 Project.

Project operation is expected to have an overall positive impact on sales taxes collected by local governments under both the May 2014 Project and F-B LGA.

S.6.12 Station Planning, Land Use, and Development

Construction of the May 2014 Project and F-B LGA would result in temporary impacts, including an increase in noise and pollutants and disruption of access during the construction period. These impacts also include temporary use of land for construction staging that would cease when construction is complete. The lands would be restored to their pre-construction condition at the end of construction and returned to the landowner, with restored access, utility connections, and other infrastructure already existing.

Project operation impacts are permanent impacts and include acquisition of property, even though that acquisition would occur before construction. Both the May 2014 Project and the F-B LGA would result in permanent conversion of land currently in other uses (agricultural, residential, industrial, and commercial uses) to transportation-related uses, but would not change existing adjacent land uses. Overall, the May 2014 Project would result in greater impacts associated with land conversion than the F-B LGA (976 acres compared to 819 acres under the F-B LGA).

S.6.13 Agricultural Land

Construction of both alternatives would result in the temporary use of agricultural land, including Important Farmland, for construction sites outside of the permanent right-of-way, such as for staging and material laydown areas. This land would be restored and returned to agricultural use after project construction is completed. The F-B LGA would result in similar impacts to the May

2014 Project for the following issues: effects on confined animal agriculture, effects on irrigation distribution canals, noise effects on grazing animals, wind-induced effects, and effects on aerial spraying.

Both the May 2014 Project and F-B LGA would convert Important Farmland to nonagricultural uses, bisect agricultural parcels, and require full or partial acquisition of parcels under Williamson Act and Farmland Security Zones (FSZ) contract. In addition to full or partial acquisitions, the F-B LGA would also implement a Farmland Consolidation Program to reduce impacts caused by parcel severance; while parcel ownership may change due to severance, the larger remnant parcels would remain in agricultural use. The F-B LGA would result in lesser permanent agricultural land impacts as it would permanently convert fewer acres of Important Farmland to nonagricultural use, and receives an overall lower Land Evaluation and Site Assessment System farmland conversion rating (the F-B LGA would result in the loss of 372 acres of Important Farmland whereas the May 2014 Project would result in the loss of 485 Important Farmland). In addition, a remnant parcel analysis was conducted to determine which Important Farmland parcels severed by the project footprint would continue to remain economically viable for agriculture or would be necessary to convert from agricultural use to nonagricultural use. Severed parcels determined necessary to convert to nonagricultural use are referred to as "noneconomic parcels." The F-B LGA would result in fewer total non-economic remnant parcels (12 remnant parcels) than the May 2014 Project (18 remnant parcels) and would affect more acres (114) of protected farmland (i.e., Williamson Act) than the May 2014 Project (47 acres).

S.6.14 Parks, Recreation, and Open Space

There are two fewer parks located within 300 feet of the centerline (three versus five) of the F-B LGA than the May 2014 Project. In addition, while more parks would be located within 0.5 mile of the F-B LGA passenger station than the May 2014 Project passenger station (six versus three), more schools (whose spaces can serve as recreational spaces) would be located within 0.5 mile of the May 2014 Project passenger station than the F-B LGA passenger station (three versus one). Moreover, six more schools would be located within 1,000 feet of the May 2014 Project centerline than the F-B LGA centerline (eight versus two). This indicates that quantitatively, a smaller number of parks and open space resources (including school recreational resources) would be located within close proximity to the F-B LGA than the May 2014 Project. The following information provides a qualitative comparison of resources affected under each alternative:

- Of all park and open space resources identified within the study area (1,000 feet from the proposed centerlines), the Kern River Parkway would be affected by both the May 2014 Project and the F-B LGA, while Weill Park would only be affected by the F-B LGA, and Mill Creek Linear Park would only be affected by the May 2014 Project.
- At the Kern River Parkway, the F-B LGA and the May 2014 Project would both result in temporary construction closures, permanent acquisition of portions of the Kern River Parkway, and introduce a new visual feature to users of the park; the F-B LGA crossing would primarily affect the existing bike path, while the May 2014 Project would affect the bike path as well as a grassy area with trees that provides the entryway to the Subpark D parking lot. The nature and extent of potential impacts at the Kern River Parkway would be more intense under the May 2014 Project, due to the visual effects associated with both the bike path and the entryway to the Subpark D parking lot.
- At Weill Park, the F-B LGA would introduce noise, vibration, and visual impacts that would not occur under the May 2014 Project. Weill Park is less than two acres in size, consisting of grassy fields, and is not adjacent to residences. The F-B LGA would result in the permanent acquisition of the northern portion of Weill Park; however, the proposed F Street Station would include new park space, which would at least partially offset the parkland that would be acquired for construction of the F-B LGA and would provide new parkland in generally the same area as the parkland being acquired. Weill Park would not be affected by the May 2014 Project. Therefore, although impacts to Weill Park would be more intense under the F-B LGA, the portion displaced would be replaced by the new park space included at the proposed F Street Station.

- At Mill Creek Linear Park, the May 2014 Project would introduce a new 90-foot-wide maintenance easement to accommodate the placement of permanent footings for columns that would support the guideway through the portion of the park that straddles Kern Island Canal south of the existing BNSF right-of-way. Mill Creek Linear Park is a discontinuous resource of approximately eight acres in total size. Mill Creek Linear Park would not be affected by the F-B LGA. Therefore, the nature and extent of impacts at Mill Creek Linear Park would be more intense under the May 2014 Project.

S.6.15 Aesthetics and Visual Resources

Overall aesthetic impacts during construction would be the same for both the F-B LGA and the May 2014 Project. Under both alternatives, HSR construction in the vicinity of the Kern River Parkway Bike Trail would temporarily obstruct scenic views of natural vegetation and landforms, and could increase light and glare, reducing visual quality from moderately high to moderate. Similarly, construction of both the F-B LGA and the May 2014 Project would have an adverse effect on visual quality in the rural San Joaquin Valley and urban Bakersfield portions of the alignment, as well as through the City of Shafter, and result in a significant impact from obstruction, light, and glare.

Because the F-B LGA would shift the HSR elevated viaduct in rural Shafter eastward toward SR 99, it would not pass near rural residents at the intersection of 7th Standard Road and Santa Fe Way. Therefore, the F-B LGA would avoid the May 2014 Project’s adverse operation-period effect to these residents.

The F-B LGA would also avoid the May 2014 Project’s operation impacts to single-family residential neighborhoods in the Rosedale/Greenacres landscape unit. Instead, it would cross the North Bakersfield landscape unit along SR 99, passing within approximately 300 feet of single- and multi-family residences along Norris Road. Although the F-B LGA would introduce aesthetic impacts in North Bakersfield, the number of receptors affected in this area would be substantially less than the number of receptors affected in the Rosedale/Greenacres area under the May 2014 Project.

In the Central Bakersfield landscape unit, the F-B LGA would avoid visual impacts in downtown Bakersfield by realigning the HSR elevated viaduct eastward between SR 99 and the Union Pacific Railroad tracks. In the East Bakersfield landscape unit, the F-B LGA would avoid impacts to residences while introducing impacts to a commercial district.

Overall, the F-B LGA would substantially reduce the number of adversely affected residential receptors. Aesthetic impacts during construction and on schools would be similar. Overall, aesthetic impacts associated with the May 2014 Project and the F-B LGA would be comparable with regards to the impact determinations on the individual landscape units; however, the F-B LGA would not be as impactful based on the reduced impacts to residential receptors.

S.6.16 Cultural Resources

Activities that cause impacts on cultural resources are typically associated with construction of a project: disturbance of the ground, material, or physical alteration of the built environment, or alteration of the visual setting. Construction of the May 2014 Project and F-B LGA would occur in both urban and rural/undeveloped areas. Both alternatives would have the greatest potential to affect historic architectural and historic-era archaeological resources in the urban areas and the greatest potential to affect undisturbed prehistoric archaeological sites in rural/undeveloped areas. The F-B LGA would result in indirect adverse visual effects to four historic architectural resources that are listed or eligible for listing on the National Register of Historic Places (NRHP) and qualify as historical resources under CEQA. One CEQA-only historical resource was identified within the F-B LGA project area. The May 2014 Project may result in a direct effect on one archaeological resource that is assumed eligible for listing in the NRHP and CRHR, and would result in an indirect adverse visual effect on one historic architectural resource that is listed or eligible for listing on the NRHP, and substantial adverse changes to four CEQA historical resources.

Both alternatives have the potential to cause impacts to unknown archaeological resources. Impacts to cultural resources associated with the May 2014 Project and the F-B LGA would be comparable with regards to the impact determinations on unidentified archaeological resources. Mitigation for the identified and potential impacts includes implementing the resource treatment plans for prehistoric and historic resources developed in coordination with the State Historic Preservation Officer, as well as complying with the mitigation framework outlined in the Programmatic Agreement and Memorandum of Agreement for cultural resources protection that have been developed for this project.

S.6.17 Regional Growth

Both the May 2014 Project and F-B LGA could result in impacts associated with short- and long-term growth in the region. Construction of the May 2014 Project would result in new, near-term construction-related employment that may draw additional workers to the region, thereby increasing the population. Operation of the project also has the potential to induce growth in the region as a result of new direct jobs to operate and maintain the HSR project, indirect and induced jobs created to support new operations workers, and additional jobs created as a result of the improved connectivity of the region to the rest of the state, which is anticipated to increase the competitiveness of the region's industries and overall growth in the regional economy. The May 2014 Project and F-B LGA would have similar impacts to regional growth. Over the six-year construction period, the May 2014 Project would result in the creation of approximately 846 more one-year full-time job equivalents in Kern County than the F-B LGA; however, both would create over 11,000 jobs in the County. It is anticipated that these jobs would generally be filled by local residents and would not result in a substantial increase in the population. Even accounting for the requirements of residents displaced by construction of the F-B LGA, there is a surplus of housing in the Project area, with additional development in Kern County ongoing, so it is unlikely that new housing would be required for any incoming workers.

The May 2014 Project and F-B LGA would both result in approximately the same length of railroad tracks that would require maintenance, and one train station and one maintenance of infrastructure facility that would require operation and maintenance. Therefore, the number of direct, indirect, and induced jobs generated by operation of the system would be the same for both of the alternatives. The population growth and associated land use consumption that would occur as a result of the HSR System would also be the same for both of the alternatives. Although both the May 2014 Project and the F-B LGA would result in the creation of additional short-term annual jobs in the region during the construction period, these jobs would generally be filled by local residents and would not result in a substantial increase in the population.

S.6.18 Cumulative and Secondary Impacts

When combined with other past, present, and reasonably foreseeable projects, cumulative impacts under the May 2014 Project and the F-B LGA would be comparable. Further, the May 2014 Project and the F-B LGA would result in a similar contribution to cumulative effects. In summary, the differences between the May 2014 Project and the F-B LGA relevant to cumulative impacts are not substantial, and there are no significant differentiating features for this issue area.

S.6.19 Section 4(f)-6(f) Evaluation

Implementation of the May 2014 Project would result in a permanent 4(f) use impact to the Kern River Parkway and Mill Creek Linear Park. Mitigation would include deliberate placement of abutments and supports, as well as temporary easements for construction, to avoid the primary or secondary floodways and park amenities, to the extent possible and depending on the limits of each resource verified through coordination with the owner agency. Any trails impacted would be re-routed and maintained for use during construction, and temporarily relocated if needed. The F-B LGA would result in a de minimis Section 4(f) impact to the Kern River Parkway and Weill Park. Weill Park is not affected under the May 2014 Project; however, the May 2014 Project has a permanent Section 4(f) use impact to Mill Creek. None of the historic resources identified within the project area was determined to have a Section 4(f) use. No Section 6(f) resources were identified within the May 2014 Project or F-B LGA study area. Impacts to Section 4(f) resources

under the May 2014 Project are greater than those under the F-B LGA. There are no Section 6(f) resources under either alternative.

S.6.20 Environmental Justice

Similar to the May 2014 Project, the F-B LGA would result in disproportionately high and adverse effects on minority and low-income populations. A comparison of the intensity of these high and adverse effects under each alternative as they relate to each of the resource areas discussed in this Draft Supplemental EIR/EIS shows that: four resource areas have lesser affects under the F-B LGA and one has comparable effects (see Table 5-3 in Chapter 5 of this Draft Supplemental EIR/EIS). Cumulative impacts are also comparable between the May 2014 Project and the F-B LGA. The F-B LGA includes mitigation measures that would minimize or avoid most of the impacts associated with project construction and operation. Where mitigation measures would not completely reduce the impacts in areas with minority and low-income populations, disproportionately high and adverse effects on minority and low-income populations would occur. With implementation of the F-B LGA, displacement and community disruption, noise and vibration, visual, and cumulative impacts would have disproportionately high and adverse effects on minority and low-income populations.

S.6.21 Capital Cost Comparison between F-B LGA and May 2014 Project

Table S-1 compares the construction and operation costs for the May 2014 Project and the F-B LGA.

Table S-1 Cost and Operation Impact Comparison between the May 2014 Project and F-B LGA

	May 2014 Project	F-B LGA
Capital Cost for Alignment	\$2,893.7 million	\$2,687.5 million
Operations and Maintenance Cost	Costs for the May 2014 Project and the F-B LGA are considered to be the same, and range from \$57.7 million, with higher fares, to \$80.7 million, with lower fares (2010 dollars)	

As shown in Table S-1, the May 2014 Project’s estimated construction costs are \$206.2 million higher than those estimated for the F-B LGA. The May 2014 Project and the F-B LGA have approximately the same number of trainset miles, stations, and route miles. Therefore, Operations and Maintenance costs for each of these alignments are considered to be the same. The costs associated with “Operation & Maintenance Equipment” for the May 2014 Project and the F-B LGA are apportioned on the basis of trainset miles operated within the May 2014 Project and the F-B LGA. The costs associated with “Maintenance of Infrastructure” of the May 2014 Project and the F-B LGA are apportioned as a ratio of 23.13 route miles to the 800 total route miles. The costs associated with “Stations” for the May 2014 Project and the F-B LGA are apportioned as a ratio based on 1 of the 24 stations being located in the May 2014 Project and the F-B LGA. The costs of “Administration” and “Contingency” are each calculated to be ten percent of the overall system costs. Operation and maintenance costs for the May 2014 Project and the F-B LGA are considered to be the same.

S.7 Areas of Controversy

Based on the public outreach efforts throughout the environmental review process, the following are known areas of controversy:

- Selection of the preferred HSR alternative.
- Impacts on special-status plants and wildlife and wildlife habitat preserves.
- Impacts on corridor communities (including noise, visual quality impacts, loss of community character and cohesion, and right-of-way acquisition).

- Impacts on farmlands (including severance of farmlands, loss of productive farmland, and loss of agricultural enterprises).
- Trade-offs between corridor communities and agricultural lands.

S.8 Public and Agency Comment Summary

Statewide agency meetings were held starting in 2007 for the Fresno to Bakersfield project section. Public workshops, open houses, and other informational sessions were held, public comments were accepted, and draft documents were widely circulated. Refer to Chapter 8 of the Fresno to Bakersfield Section Final EIR/EIS (page 8-1) for more detail on the public coordination that occurred through March 2014.

Throughout the Draft Supplemental EIR/EIS development process, some of the most frequently asked questions were related to noise generation (discussed further in Section 3.4, Noise and Vibration of this Draft Supplemental EIR/EIS), property values (property values of parcels that would be acquired due to project implementation) (discussed further in Section 3.12, Socioeconomics and Communities of this Draft Supplemental EIR/EIS), right-of-way acquisition (discussed further in Appendix 3.12-A of the Fresno to Bakersfield Section Final EIR/EIS), and construction employment opportunities. At the project open houses, project staff addressed these and other questions, often referring to the environmental analysis underway for this Draft Supplemental EIR/EIS and informing people of upcoming opportunities to provide comments. Those comments raised by the public have informed this Draft Supplemental EIR/EIS. When developing the F-B LGA, project staff also considered alternative alignments or design modifications that individuals and organizations had suggested (refer to the Draft Feasibility Summary Memorandum of this Draft Supplemental EIR/EIS). When questions could not be answered at a public meeting, outreach staff followed up with inquiring party(ies) or included the discussion as items to be addressed at future public meetings. With information gathered during public meetings the Authority, in cooperation with the City of Bakersfield, and also the City of Shafter and Kern County, conducted a high-level analysis to assess the feasibility and practicability of potential alternatives to carry forward into the preliminary design and environmental review in this Draft Supplemental EIR/EIS. Further discussion of this analysis is provided in Chapter 2 Section 2.1.1 of this Draft Supplemental EIR/EIS.

During the development of the Draft Supplemental EIR/EIS for the F-B LGA, the Authority and FRA consulted with federal, state, and local agencies, and held meetings to provide project updates and obtain feedback from the public. A summary of these activities is provided in Chapter 9 of this Draft Supplemental EIR/EIS.

S.9 Identification of Preferred Alternative

At the November 2015 Board meeting, the Board discussed the opportunity of identifying a Preliminary Preferred Alternative in the Fresno to Bakersfield Section Draft Supplemental EIR/EIS. The advantage of identifying the Preliminary Preferred Alternative in the Draft Supplemental EIR/EIS is that the public would be able to comment sooner on the Preliminary Preferred Alternative allowing the FRA and Authority to take such comments into consideration and revise aspects of the project as applicable.

At the May 2016 Board meeting, Authority staff recommended that the Board identify the F-B LGA as the Preliminary Preferred Alternative in the Fresno to Bakersfield Draft Supplemental EIR/EIS. The Board concurred with staff's recommendation that the F-B LGA be designated as the Preliminary Preferred Alternative in this Draft Supplemental EIR/EIS.

The Authority and FRA have determined that sufficient information will be available to identify the F-B LGA as the Preferred Alternative as described in this Draft Supplemental EIR/EIS. The Preferred Alternative extends from Poplar Avenue, north of Shafter, to Oswell Street in Bakersfield. The station associated with the Proposed Preferred Alternative would be located at the intersection of SR 204 and F Street in Bakersfield. The Preferred Alternative is estimated to cost approximately \$2,687.5 million (in 2010 dollars). The Preferred Alternative would have lower capital costs than the May 2014 Project, which is estimated at \$2,893.7 million.

The F-B LGA reflects the ability and willingness of the Authority to work with local stakeholders to refine the HSR project to achieve positive outcomes for affected communities and the natural environment, while still meeting the overall project objectives consistent with the voter-approved Proposition 1A. The F-B LGA is the Preferred Alternative because it is supported by the local community (e.g., City of Bakersfield); would result in lesser impacts associated with agricultural lands, residential displacements, special-status plant species, riparian areas, and permanent impacts to jurisdictional waters; would cost less to construct; would improve traffic, pedestrian, and bicycle safety and circulation in the City of Shafter; and would reduce overall system-wide travel time.

S.10 Next Steps in the Environmental Process

The Authority and FRA are circulating the Draft Supplemental EIR/EIS to affected local jurisdictions, elected officials, state and federal agencies, tribes, community organizations, other interest groups, interested individuals, and the public. The document also is available at the Authority offices, public libraries in the study area, and on the Authority’s website. The following discussion explains the decision-making processes of the agencies relying on the information included in this Draft Supplemental EIR/EIS.

The Draft Supplemental EIR/EIS will be circulated for a 45-day comment period, which will include open houses and a public hearing. Information about the schedule for these meetings is available on the [Authority’s website](#).

S.10.1 FRA Decision-Making

The FRA issued a ROD in June 2014 based on the environmental analysis in the Fresno to Bakersfield Section Final EIR/EIS. That decision extends from the Fresno HSR Station through the Bakersfield Truxtun Avenue HSR Station to Oswell Street. FRA would consider the information and analysis regarding the potential impacts of the F-B LGA contained in this Draft Supplemental EIR/EIS, along with public and agency comments, to determine whether to modify its decision for the Fresno to Bakersfield Section. Pursuant to 49 U.S.C. § 304a(b), FRA is required to expeditiously develop a single document consisting of the Final EIS and ROD to the maximum extent practicable, unless the Final EIS makes substantial changes to the proposed action that are relevant to environmental safety or concerns, unless there is significant new information relevant to environmental concerns bearing on the proposed action or its impacts.

S.10.2 U.S. Army Corps of Engineers Decision-Making

The Fresno to Bakersfield Section of the HSR System will require permits from the United States Army Corps of Engineers under Section 404 of the Clean Water Act and Section 14 of the Rivers and Harbors Act (33 U.S.C. 408). The United States Army Corps of Engineers is using the Fresno to Bakersfield Section Final EIR/EIS to integrate the procedural and substantive requirements of NEPA and its permitting responsibilities (including consideration of EPA’s 404(b)(1) Guidelines in determining the Least Environmentally Damaging Practicable Alternative). The EIR/EIS enables informed decision-making by the United States Army Corps of Engineers to support adoption of the EIS, issuance of ROD(s), Statement of Findings, and Section 404 permit and Section 408 permit decisions (as applicable).

S.10.3 Surface Transportation Board

If the Authority approves the F-B LGA as its new preferred alternative for the Fresno to Bakersfield project, and the FRA approved the F-B LGA in a modified Record of Decision, the Authority would submit a petition to the Surface Transportation Board for authorization to construct the F-B LGA. The Surface Transportation Board would consider the Transportation merits of the project, review the environmental record, and decide whether to deny, approved, or approve with conditions (including environmental conditions) the Authority’s construction request.

S.10.4 U.S. Bureau of Reclamation

The Bureau of Reclamation (Reclamation) may issue rights of entry permits for pedestrian surveys and ground disturbing investigations, such as geotechnical investigations, or other

information gathering activities. It may grant temporary construction permits for the relocation of facilities and equipment such as pipes, canals, and pumps. If the facilities are relocated outside of Reclamation's ownership, the Authority will acquire any needed land rights necessary for future operations and maintenance needs and/or relocated Reclamation features. After construction, the Authority will transfer to Reclamation necessary land rights. Reclamation will grant or transfer land rights as appropriate to the Authority. The HSR alignment crosses Reclamation lands and facilities, one of which is the Friant-Kern Canal. Impacts to Reclamation facilities within the F-B LGA project footprint are analyzed in this Draft Supplemental EIR/EIS.

S.10.5 California High-Speed Rail Authority Decision-Making

Although the Authority Board certified the Fresno to Bakersfield Section Final EIR/EIS, which evaluated the alignment from the Fresno HSR Station to the Bakersfield Truxtun Avenue HSR Station, the Board only approved the project from the Fresno HSR Station to 7th Standard Road, which is the northern limit of the City of Bakersfield. The Board determined that the F-B LGA is the Preliminary Preferred Alternative in May 2016. The Board will determine if based on the analysis in this Draft Supplemental EIR/EIS, agency comments, public comments and testimony, and a Findings of Fact and Statement of Overriding Consideration, it will approve the F-B LGA, the comparable segment of the May 2014 Project, or no project at all.

S.11 Project Implementation

After the issuance of the FRA ROD and the Authority's Notice of Determination, the Authority would complete final design, obtain construction permits, and acquire property before starting construction. The Authority has commenced the right-of-way acquisition process in Bakersfield on long-lead locations, and right-of-way acquisition of the alignment is anticipated to commence in summer 2018.

Table S-2 provides a high-level comparison of key features associated with each of the alternative alignments presented in this Draft Supplemental EIR/EIS. Table S-2 provides a comparison of impacts with discernable difference between the May 2014 Project and the F-B LGA. Where impacts between the two alternatives are similar, a summary statement identifying the similar nature of impacts has been included. A more detailed analysis of the environmental effects associated with the May 2014 Project, and a subsequent summary comparison of impacts between the May 2014 Project and F-B LGA, is provided in Appendix 8-A, Analysis of the Comparable Section (May 2014 Project), of this Draft Supplemental EIR/EIS.

Table S-2 Impact Comparison between May 2014 Project and F-B LGA

Impact	May 2014 Project	F-B LGA
Project Costs		
Project Costs Base Year 2010 Dollars (millions)	\$2,893.7	\$2,687.5
Transportation Impacts		
Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for transportation and traffic. Approximately 170 peak-hour trips would be added to roadways during construction for the May 2014 Project and F-B LGA.		
Project Impacts:		
TR#11: Changes in Vehicle Movements and Flows on Highways and Roadways	14 permanent road closures	10 permanent road closures
TR#13: Impacts on the Local Roadway Network due to Station Activity	No roadway segments would experience a significant impact under Existing Plus Project Conditions.	One roadway segments would experience a significant impact under Existing Plus Project Conditions.

Impact	May 2014 Project	F-B LGA
	No roadway segments would experience a significant impact under Future (Year 2035) with Project Conditions (operational)	Two roadway segments would experience a significant impact under Future (Year 2035) with Project Conditions (operational)
	11 study intersections would experience a significant impact under Future with Project Conditions.	9 study intersections would experience a significant impact under Future with Project Conditions.

Air Quality and Global Climate Change Impacts

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for air quality and global climate change.

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for air quality and global climate change.

Noise and Vibration Impacts

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for noise and vibration.

Project Impacts:

N&V#3: Moderate and Severe Noise Impacts from Project Operation to Sensitive Receivers	305 severe noise impacts post mitigation from operations	152 severe noise impacts post mitigation from operations
N&V#5: Impacts from Project Vibration	0 properties affected by vibration.	18 properties affected by vibration.

Electromagnetic Fields and Electromagnetic Interference Impacts

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for EMF/EMI.

Project Impacts: Two sensitive receptors (hospitals) are located within 200 feet of the May 2014 Project and there are none located within 200 feet of the F-B LGA. Impacts would be less with F-B LGA implementation compared to implementation of the May 2014 Project.

Public Utilities and Energy

Construction Impacts:

PU&E#3: Water demand during construction	265.3 AFY (1,333.1 total acre-feet)	244.05 AFY (1,201.25 total acre-feet)
PU&E#4: Waste Generation during construction	484,068 cubic yards	468,000 cubic yards
PU&E#5: Energy Consumption during construction	998.48 billion BTU (no MOIF) 1,037.7 billion BTU (with MOIF)	980.53 billion BTU (no MOIF) 1,018.75 billion BTU (with MOIF)

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for public utilities and energy.

Impact	May 2014 Project	F-B LGA
Biological Resources and Wetlands		
Construction and Project Impacts:		
BIO#1: Impacts to Special-Status Plant Species (Number of acres directly impacted that have the potential to support special-status plant species)	Direct Impacts – 112.26 acres	Direct Impacts – 62.13 acres
BIO#2: Impacts to Special-Status Wildlife Species (Number of acres permanently impacted and temporarily impacted that have the potential to support special-status wildlife species)	Permanent Impacts – 977.42 acres Temporary Impacts – 678.99 acres	Permanent Impacts – 819.31 acres Temporary Impacts – 170.42 acres
bvBIO#3: Impacts to Special-Status Plant Communities	Permanent Impacts – 0.70 acre Temporary Impacts – 0.30 acre	Permanent Impacts – 1.13 acres Temporary Impacts – 0.41 acre
BIO#4: Impacts to Jurisdictional Waters	Permanent Impacts – 17.03 acres Temporary Impacts – 3.11 acres	Permanent Impacts – 15.96 acres Temporary Impacts – 1.18 acres
BIO#5: Impacts to Conservation Areas	Project not located in a Conservation Area; therefore, not quantified	Project not located in a Conservation Area; therefore, not quantified
BIO#6: Impacts to Protected Trees	Number not generated for comparative analysis in documentation.	412
Hydrology and Water Resources		
Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for hydrology and water resources.		
Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for hydrology and water resources.		
Geology, Soils, Seismicity and Paleontology		
Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for geology, soils, seismicity, and paleontology.		
Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for geology, soils, seismicity, and paleontology.		
Hazardous Materials and Wastes		
Construction Impacts:		
HW#3: Construction on or in Proximity to PEC Sites	2 PEC sites within 150 feet of the footprint.	149 PEC sites within 150 feet of the footprint.
HW#4: Temporary Hazardous Material and Waste Activities in the Proximity of Schools.	There are 22 schools with 0.25 mile of the construction footprint.	There are 16 schools within 0.25 mile of the construction footprint.
HW#5: Construction in Proximity to Landfills and Oil Well Sites	There are no active or closed landfills within 0.25 mile of the May 2014 Project footprint.	There are 13 (1 active) landfills within 0.25 mile of the F-B LGA footprint.

Impact	May 2014 Project	F-B LGA
	2 active oil wells within 150 feet of centerline.	0 active oil wells within 150 feet of centerline.

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for hazardous materials and wastes.

Safety and Security

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for safety and security.

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for safety and security.

Socioeconomics and Communities

Construction Impacts:

SO#4: Construction-Related Sales Tax Revenue Gains	\$758,000 annually or \$235,000 when offset with sales tax losses from businesses displaced during construction	\$707,000 annually or \$54,000 when offset with sales tax losses from businesses displaced during construction
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Project Impacts:

SO#6: Disruption to Community Cohesion or Division of Existing Communities from Project Operation	20 key community facilities affected ¹ 2 religious facilities displaced	15 key community facilities affected ¹ 0 religious facilities displaced.
SO#9: Residential Displacements	384 housing units displaced (estimated)	86 housing units displaced (estimated).
SO#10: Commercial and Industrial Business Displacements	392 commercial and industrial businesses displaced (estimated).	377 commercial and industrial businesses displaced (estimated).
SO#11: Project Effects on Agricultural Businesses	Splits 10 agricultural parcels	Splits 22 agricultural parcels
SO#12: Operation-Related Property and Sales Tax Revenue Effects	Loses \$4.2 million in property tax revenue	Loses \$3.6 million in property tax revenue
	Loses approximately \$523,000 in annual sales tax revenues	Loses approximately \$653,000 in annual sales tax revenues
SO#14: Changes in School District Funding and School Access Effects	384 residential units, displacing 101 students.	86 residential units; displacing 22 students.

Station Planning, Land Use and Development

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for station planning, land use and development.

Impact	May 2014 Project	F-B LGA																												
Project Impacts:																														
LU#2: Permanent Conversion of Existing Land Uses to Transportation Use.	<p>The May 2014 Project would result in the permanent conversion of more acres of residential, agricultural, commercial, multi-family and single-family residential, and other uses when compared to the F-B LGA.</p> <table border="0"> <tr> <td>Single-Family</td> <td>53 acres</td> </tr> <tr> <td>Multi-family</td> <td>4 acres</td> </tr> <tr> <td>Commercial</td> <td>25 acres</td> </tr> <tr> <td>Industrial</td> <td>54 acres</td> </tr> <tr> <td>Community Facilities²</td> <td>17 acres</td> </tr> <tr> <td>Agriculture³</td> <td>429 acres</td> </tr> <tr> <td>Other⁴</td> <td>394 acres</td> </tr> </table>	Single-Family	53 acres	Multi-family	4 acres	Commercial	25 acres	Industrial	54 acres	Community Facilities ²	17 acres	Agriculture ³	429 acres	Other ⁴	394 acres	<p>The F-B LGA would result in the permanent conversion of more acres of industrial, and community facility uses, when compared to the May 2014 Project.</p> <table border="0"> <tr> <td>Single-Family</td> <td>1 acres</td> </tr> <tr> <td>Multi-family</td> <td>2 acres</td> </tr> <tr> <td>Commercial</td> <td>20 acres</td> </tr> <tr> <td>Industrial</td> <td>115 acres</td> </tr> <tr> <td>Community Facilities²</td> <td>76 acres</td> </tr> <tr> <td>Agriculture³</td> <td>323 acres</td> </tr> <tr> <td>Other⁴</td> <td>281 acres</td> </tr> </table>	Single-Family	1 acres	Multi-family	2 acres	Commercial	20 acres	Industrial	115 acres	Community Facilities ²	76 acres	Agriculture ³	323 acres	Other ⁴	281 acres
Single-Family	53 acres																													
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Community Facilities ²	17 acres																													
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Other ⁴	394 acres																													
Single-Family	1 acres																													
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Commercial	20 acres																													
Industrial	115 acres																													
Community Facilities ²	76 acres																													
Agriculture ³	323 acres																													
Other ⁴	281 acres																													

Agricultural Land

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for agricultural land.

Project Impacts:

AG#4: Permanent Conversion of Agricultural Land to Nonagricultural Use	485 acres of Important Farmland. Farmland conversion impact rating is 144.	372 acres of Important Farmland. Farmland conversion impact rating is 140.
AG#5: Effects on Agricultural Land from Parcel Severance	18 non-economic remnant parcels totaling 10 acres.	12 non-economic remnant parcels totaling 20 acres.
AG#6: Effects on Land Under Williamson Act or FSZ Contracts, Local Zoning	47 acres of Williamson Act lands.	114 acres of Williamson Act lands.

Parks, Recreation and Open Space

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for parks, recreation, and open space.

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for parks, recreation, and open space.

Aesthetics and Visual Resources

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for aesthetics and visual resources.

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for aesthetics and visual resources.

Cultural Resources

Construction Impacts:

CUL#1: Potential Adverse Effects on Archaeological Resources Due to Construction Activities	One archaeological resource identified within the Area of Potential Effect (APE) presumed NRHP-eligible for lack of access.	No archaeological resources identified within the APE.
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Impact	May 2014 Project	F-B LGA
CUL#2: Potential Adverse Effects on Historic Architectural Resources Due to Construction Activities	Indirect adverse visual effect on one Section 106 historic property and substantial adverse changes to five CEQA historical resources.	Indirect visual effects on four historic properties (also considered CEQA historical resources).
	No direct adverse effects or indirect adverse visual effect on the Sociedad Juarez Mutualista Mexicana TCP with implementation of the conditions described in the Fresno to Bakersfield Section Memorandum of Agreement (MOA) to avoid and minimize potential adverse effects.	Indirect adverse visual effects on the Noriega Hotel from the introduction of visual features that would diminish the integrity of the historic property (Section 106).

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for cultural resources.

Regional Growth

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for regional growth.

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for regional growth.

Cumulative Impacts

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for cumulative impacts.

Project Impacts: There is no significant differentiating project impact between the May 2014 Project and F-B LGA for cumulative impacts.

Section 4(f)-6(f) Evaluation

Construction Impacts: Construction impacts for the May 2014 Project exceed those of the F-B LGA for Section 4(f) Properties. Neither alternative has Section 6(f) impacts.

Project Impacts: Project impacts for the May 2014 Project exceed those of the F-B LGA for Section 4(f) Properties. Neither alternative has Section 6(f) impacts.

Environmental Justice

Construction Impacts: There is no significant differentiating construction impact between the May 2014 Project and F-B LGA for environmental justice.

Project Impacts: Lesser impacts would occur under the F-B LGA as it would not pass through established neighborhoods, while the May 2014 Project would traverse residential areas in the Northwest District of Bakersfield and divide the community of Crome.

¹ Socioeconomic effects include displacement, temporary restricted access, impacts such as noise, dust, and glare during construction which would disrupt use.

² Community Facilities includes government and other public and quasi-public agency uses, public parks, and schools.

³ Agriculture includes mineral and petroleum, resource management areas and floodplains.

⁴ Other includes right-of-way, transportation, and vacant lands.

AG = Agricultural Resources

APE = Area of Potential Effects

BIO = Biological Resources and Wetlands

BTU = British thermal unit

CEQA = California Environmental Quality Act

CUL = Cultural Resources

EMF/EMI = electromagnetic field/electromagnetic interference

F-B LGA = Fresno to Bakersfield Locally Generated Alternative

FSZ = Farmland Security Zones

HW = Hazardous Wastes and Materials

LU = Land Use

MOA = memorandum of agreement

MOIF = maintenance of infrastructure facility

N&V = Noise and Vibration

NRHP = National Register of Historic Places

PEC = potential environmental concern

PU&E = Public Utilities and Energy

SO = Socioeconomics and Communities

TCP = traditional cultural property

TR = Transportation

Table S-3, F-B LGA Mitigation Measures identifies the potentially significant impacts of the F-B LGA, as well as any new mitigation measures applied to the F-B LGA. It should be noted that Table S-3 only shows impacts that are applicable to the F-B LGA. In cases where impacts are not applicable to the F-B LGA but are applicable to the May 2014 Project impact statements are not included in Table S-3. Mitigation measures developed specifically for the F-B LGA are N&V-MM#9, N&V-MM#10, and N&V-MM#11, as well as S&S-MM#2, S&S-MM#3, and S&S-MM#4. Some significant impacts would remain significant after mitigation. These impacts are: N&V#5, N&V#7, BIO#7, LU#2, AG#4, AVR#4, AVR#5, CUL#2, CUM-N&V and Environmental Justice impacts for noise, community impacts, and aesthetics.

Table S-3 F-B LGA Mitigation Measures

Impact	Mitigation Measure
Transportation	
Construction Impacts	
TR #1: Construction (Not Including Stations) Impacts on Circulation and Emergency Access TR #5: Impacts on Circulation from Bakersfield Station Alternatives Construction TR #7: Impacts on Circulation from Rural Area Construction TR #8: Regional Transportation Impacts from Construction Material Hauling TR #9: Construction (Not Including Stations) Impacts on School Districts	No mitigation required.
Project Impacts	
TR #10: Impacts on Regional Transportation System TR #11: Changes in Vehicle Movements and Flow on Highways and Roadways TR #12: Loss of Property Access as a Result of Road Closures	No mitigation required.
TR #13: Impacts on the Local Roadway Network due to Station Activity Existing Plus Project Conditions.	TR MM#3: Add Signal to Intersection to Improve LOS/Operation. TR MM#5: Revise Signal Cycle Length. TR MM#6: Widen Approaches to Intersections. TR MM#7: Add Exclusive Turn Lanes to Intersections. TR MM#8: Add New Lanes to Roadway. TR MM#9: Restripe Roadway Segment TT MM#10: Convert Intersection to an all-way stop.
Air Quality and Global Climate Change	
Construction Impacts	
AQ #1: Regional Air Quality Impacts During Construction	AQ-MM#1: Reduce Criteria Exhaust Emissions from Construction Equipment. AQ-MM#2: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment. AQ-MM#4: Offset Emissions Through the VERA Program.

Impact	Mitigation Measure
AQ #2: Compliance with Air Quality Plans	AQ-MM#1: Reduce Criteria Exhaust Emissions from Construction Equipment. AQ-MM#2: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment. AQ-MM#4: Offset Emissions Through the VERA Program.
AQ #3: Material hauling outside of SJVAB	AQ-MM#2: Reduce Criteria Exhaust Emissions from On-Road Construction Equipment. AQ-MM#5: Purchase Offsets for Emissions Associated with Hauling Ballast Material in Certain Air Districts (i.e., Mojave Desert AQMD, BAAQMD, and the South Coast AQMD).
AQ # 8: Localized Air Quality Impacts from Concrete Batch Plants	AQ-MM #3: Reduce the potential impact of concrete batch plants.
AQ #4: Greenhouse Gas Emissions During Construction AQ #5: Asbestos and Lead-Based Paint Exposure During Construction AQ #6: Localized Air Quality Impacts During Guideway/Alignment Construction AQ #7: Localized Air Quality Impacts to Schools and Other Sensitive Receptors During Station Construction AQ #9: Localized Air Quality Impacts from MOIF	No mitigation required.
Project Impacts	
AQ #10: Regional Criteria Pollutant Emissions AQ #11: Greenhouse Gas Analysis During Operation AQ # 12: Localized Air Quality Impacts During Train Operations AQ #13: Localized Mobile Air Toxics Analysis AQ #14: Microscale CO Impact Analysis AQ #15: Localized PM ₁₀ /PM _{2.5} Hot-Spot Impact Analysis AQ #16: Localized Air Quality Impacts to Sensitive Receptors Including Schools AQ #17: Odor Impacts from Operations AQ #18: Compliance with Air Quality Plans	No mitigation required.
Noise and Vibration	
Construction Impacts	
N&V #1: Construction noise	N&V-MM#1: Construction noise mitigation measures.
N&V #2: Construction vibration	N&V-MM#2: Construction vibration mitigation measures.

Impact	Mitigation Measure
Project Impacts	
N&V #3: Moderate and severe noise impacts from project operation to sensitive receptors.	N&V-MM #3: Installation of noise barriers, installation of building insulation, or full property acquisition for noise impacts from HSR operations.
N&V #5: Impacts from Project Vibration	N&V-MM #5: Special trackwork at crossovers and turnouts
N&V #7: Noise from HSR Stationary Facilities	N&V-MM #7: Station, Maintenance of Infrastructure Facility, and Traction Power Supply Station noise mitigation measure.
N&V #4: Noise Effects on Wildlife and Domestic Animals N&V #6: Traffic Noise	No mitigation required.
Electromagnetic Fields and Electromagnetic Interference	
Construction Impacts	
EMF/EMI #1: Impacts During Construction	No mitigation required.
Project Impacts	
EMF/EMI #2: General Human Exposure to EMF EMF/EMI #3: People with Implanted Medical Devices and Exposure to EMF EMF/EMI #4: Livestock and Poultry Exposure EMF/EMI #5: Effects on Sensitive Equipment from EMI EMF/EMI #6: EMI Effects on Schools EMF/EMI #7: Potential for Corrosion of Underground Pipelines and Cables and Adjoining Rail EMF/EMI #8: Potential for Nuisance Shocks EMF/EMI #9: Effects on Adjacent Existing Rail Lines	No mitigation required.
Public Utilities and Energy	
Construction Impacts	
PU&E #1: Temporary Interruption of Utility Service PU&E #2: Accidents and Disruption of Service PU&E #3: Water Demand during Construction PU&E #4: Waste Generation during Construction PU&E #5: Energy Consumption during Construction	No mitigation required.

Impact	Mitigation Measure
Project Impacts	
<p>PU&E #6: Conflicts with Existing Utilities</p> <p>PU&E #7: Reduced Access to Existing Utilities in the HSR Right-of-Way</p> <p>PU&E #8: Upgrade or Construction of Power Lines</p> <p>PU&E #9: Potential Conflicts with Electrical Facilities</p> <p>PU&E #10: Potential Conflicts with Natural Gas Lines (High Pressure)</p> <p>PU&E #11: Potential Conflicts with Petroleum and Fuel Pipelines</p> <p>PU&E #12: Potential Conflicts with Water Facilities</p> <p>PU&E #13: Wastewater Facilities – Conflicts and Capacity</p> <p>PU&E #14: Storm Drain Facilities – Conflicts and Capacity</p> <p>PU&E #15: Waste Generation during Operation</p> <p>PU&E #16: Hazardous Waste Generation during Operation</p> <p>PU&E #17: Energy Consumption – Project Period Impacts</p>	<p>No mitigation required.</p>
Biological Resources and Wetlands	
Construction Impacts	
<i>Special-Status Plants</i>	
<p>BIO #1: Construction Effects on Special-Status Plant Species</p>	<p>BIO-MM #1: Designate Project Biologist(s), Regulatory Specialist (Waters), Project Botanist, and Project Biological Monitor(s)</p> <p>BIO-MM #2: Regulatory Agency Access</p> <p>BIO-MM #3: Prepare and Implement a Worker Environmental Awareness Program</p> <p>BIO-MM #4: Prepare and Implement a Weed Control Plan and Annual Vegetation Control Plan</p> <p>BIO-MM #5: Prepare and Implement a Biological Resource Management Plan</p> <p>BIO-MM #6: Prepare and Implement a Restoration and Revegetation Plan</p> <p>BIO-MM #7: Delineate Environmentally Sensitive Areas and Environmentally Restricted Areas (on plans and in field)</p> <p>BIO-MM #9: Equipment Staging Areas</p> <p>BIO-MM #11: Vehicle Traffic</p> <p>BIO-MM #13: Work Stoppage</p> <p>BIO-MM #14: "Take" Notification and Reporting</p> <p>BIO-MM #15: Post-Construction Compliance Reports</p> <p>BIO-MM #16: Conduct Protocol-Level Preconstruction Surveys for Special-Status Plant Species and Special-Status Plant Communities</p> <p>BIO-MM #17: Prepare and Implement Plan for Salvage, Relocation and/or Propagation of Special-Status Plant Species</p>

Impact	Mitigation Measure
	<p>BIO-MM #47: Restore Temporary Riparian Impacts</p> <p>BIO-MM #53: Compensate for Impacts on Special-Status Plant Species</p> <p>BIO-MM #61: Compensate for Permanent Riparian Impacts</p> <p>BIO-MM #62: Prepare and Implement a Site-Specific Comprehensive Mitigation and Monitoring Plan</p> <p>BIO-MM #65: Offsite Habitat Restoration, Enhancement, and Preservation</p>
<i>Special-Status Wildlife Species</i>	
<p>BIO #2: Construction Effects on Special-Status Wildlife</p>	<p>BIO-MM #1 through 7, 9, 11, 13, 14, 15, 61, 62, and 65 as described above under Impact BIO #1.</p> <p>BIO-MM #8: Wildlife Exclusion Fencing</p> <p>BIO-MM #10: Mono-Filament Netting</p> <p>BIO-MM #22: Conduct Preconstruction Surveys for Special-Status Reptile and Amphibian Species</p> <p>BIO-MM #23: Conduct Special-Status Reptile and Amphibian Monitoring, Avoidance, and Relocation</p> <p>BIO-MM #29: Conduct Preconstruction Surveys and Delineate Active Nest Exclusion Areas for Other Breeding Birds</p> <p>BIO-MM #30: Conduct Preconstruction Surveys and Monitoring for Raptors</p> <p>BIO-MM #31: Bird Protection</p> <p>BIO-MM #32: Conduct Protocol and Preconstruction Surveys for Swainson's Hawks</p> <p>BIO-MM #33: Swainson's Hawk Nest Avoidance and Monitoring</p> <p>BIO-MM #34: Monitor Removal of Nest Trees for Swainson's Hawks</p> <p>BIO-MM #35: Conduct Protocol Surveys for Burrowing Owls</p> <p>BIO-MM #36: Burrowing Owl Avoidance and Minimization</p> <p>BIO-MM #37: Conduct Surveys for Nelson's Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse</p> <p>BIO-MM #38: Implement Avoidance and Minimization Measures for Nelson's Antelope Squirrel, Tipton Kangaroo Rat, Dulzura Pocket Mouse, and Tulare Grasshopper Mouse</p> <p>BIO-MM #40: Conduct Preconstruction Surveys for Special-Status Bat Species</p> <p>BIO-MM #41: Bat Avoidance and Relocation</p> <p>BIO-MM #42: Bat Exclusion and Deterrence</p> <p>BIO-MM #43: Conduct Preconstruction Surveys for American Badger and Ringtail</p> <p>BIO-MM #44: American Badger and Ringtail Avoidance</p> <p>BIO-MM #45: Conduct Preconstruction Surveys for San Joaquin Kit Fox</p> <p>BIO-MM #46: Minimize Impacts on San Joaquin Kit Fox</p> <p>BIO-MM #51: Install Flashing or Slats within Security Fencing</p> <p>BIO-MM #52: Construction in Wildlife Movement Corridors</p> <p>BIO-MM #57: Compensate for Impacts on Blunt-Nosed Leopard Lizard, Tipton Kangaroo Rat, and Nelson's Antelope Squirrel</p> <p>BIO-MM #58: Compensate for Loss of Swainson's Hawk Nesting Trees</p> <p>BIO-MM #59: Compensate for Loss of Burrowing Owl Active Burrows and Habitat</p> <p>BIO-MM #60: Compensate for Destruction of San Joaquin Kit Fox Habitat</p>

Impact	Mitigation Measure
<i>Special-Status Plant Communities</i>	
<p>BIO #3: Construction Effects on Habitats of Concern</p>	<p>BIO-MM #1 through 7, 9, 11, 13 through 17, 47, 53, 61, 62, and 65 as described above under Impact BIO #1 and Impact BIO #2.</p> <p>Jurisdictional Waters: BIO-MM #1 through 7, 9, 11, 13, 47, 61, 62, and 65 described above under Impact BIO #1 and Impact BIO #2.</p> <p>BIO-MM #48: Restore Temporary Riparian Impacts</p> <p>BIO-MM #49: Monitor Construction Activities within Jurisdictional Waters</p> <p>BIO-MM #63: Compensate for Permanent and Temporary Impacts on Jurisdictional Waters</p> <p>Conservation Areas: BIO-MM #1 through 7, 17, 47, 48, 49, 52, 61, 62, 63, and 65 described above under Impact BIO #1, Impact BIO #2, and under Jurisdictional Waters of Impact BIO #3.</p> <p>Protected Trees:</p> <p>BIO-MM #50: Mitigation and Monitoring of Protected Trees</p> <p>BIO-MM #64: Compensate for Impacts on Protected Trees</p>
<i>Wildlife Movement Corridors</i>	
<p>BIO #4: Construction Effects on Wildlife Movement Corridors</p>	<p>BIO-MM #52 as described under Impact BIO #2.</p>
Project Impacts	
<i>Special-Status Plant Species</i>	
<p>BIO #5: Project Effects on Special-Status Plant Species</p>	<p>Same Mitigation Measures as listed above under Impact BIO #1.</p>
<i>Special-Status Wildlife Species</i>	
<p>BIO #6: Project Effects on Special-Status Wildlife Species</p>	<p>Same Mitigation Measures as listed above under Impact BIO #2.</p>
<i>Habitats of Concern</i>	
<p>BIO #7: Project Effects on Habitats of Concern</p>	<p>Same Mitigation Measures as listed above under Impact BIO #3.</p>
<i>Wildlife Movement Corridors</i>	
<p>BIO #8: Project Effects on Wildlife Movement Corridors</p>	<p>Same Mitigation Measures as listed above under Impact BIO #4.</p>
Hydrology and Water Resources	
Construction Impacts	
<p>HWR #1: Temporary Changes to Drainage Patterns and Stormwater Runoff</p> <p>HWR #2: Temporary Water Quality Impacts</p> <p>HWR #3: Temporary Impacts on Groundwater</p>	<p>No mitigation required.</p>

Impact	Mitigation Measure
HWR #4: Temporary Impacts on Floodplains	HWR-MM#1: Implement floodplain protection measures during Construction.
Project Impacts	
HWR #5: Permanent Impacts on Hydraulic Capacity and Connectivity HWR #6: Permanent Impacts on Surface Water Quality HWR #7: Permanent Impacts on Groundwater Quality and Volume	No mitigation required.
HWR#8: Permanent Impacts on Floodplains	HWR-MM#2: Implement Best Management Practices for water quality protection.
Geology, Soils, Seismicity, and Paleontology	
Construction Impacts	
GSSP #1: Encountering Unstable Soils during Construction GSSP #2: Soil Settlement as Structures or along Trackway during Construction GSSP #3: Soil Erosion during Construction GSSP #4: Difficult Excavations due to Hardpan Soil and Shallow Groundwater GSSP #5: Encountering Mineral and Energy Resources during Construction and Loss of Availability of Known Mineral or Energy Resources of Statewide or Regional Significance	No mitigation required.
Project Impacts	
GSSP #6: Effects of Unstable Soils on Operations GSSP #7: Effects of Soil Settlement on Operations GSSP #8: Effects of Moderate to High Shrink-Swell Potential on Operations GSSP #9: Effects of Moderately to Highly Corrosive Soils on Operations GSSP #10: Effects of Slope Failure on Operations GSSP # 11: Effects of Seismicity on Operations	No mitigation required.
GSSP #12: Sensitive Paleontological Resources	CUL-MM#16: Engage a Paleontological Resources Specialist to Direct Monitoring during Construction CUL-MM#17: Prepare and Implement a Paleontological Resource Monitoring and Mitigation Plan CUL-MM#18: Halt Construction When Paleontological Resources Are Found

Impact	Mitigation Measure
Hazardous Materials and Wastes	
Construction Impacts	
HMW #1: Temporary Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes HMW #2: Inadvertent Disturbance of Hazardous Materials or Wastes HMW #3: Construction on or Near Potential Environmental Concern Sites HMW #5: Construction in Proximity to Landfills and Oil Well Sites	No mitigation required.
HMW #4: Temporary hazardous material and waste activities in proximity of schools (within 0.25 mile of a school).	HMW-MM#1: Limit use of extremely hazardous materials near schools during construction.
Project Impacts	
HMW #6: Transport, Use, Storage, and Disposal of Hazardous Materials and Wastes HMW #7: Hazardous Materials and Wastes in the Proximity of Schools HMW #8: Operation in Proximity to Landfills and Oil Well Sites	No mitigation required.
Safety and Security	
Construction Impacts	
S&S #1: Accidents and Accidental Releases at Construction Sites S&S #2: Accidents Associated with Construction-Related Detours S&S #3: Crime at Construction Sites	No mitigation required.
Project Impacts	
S&S #4: Train Accidents S&S #5: Motor Vehicle, Pedestrian, and Bicycle Accidents Associated with HSR Operations S&S #6: HSR Accidents Associated with Seismic Events S&S #9: Increased Response Times for Fire, Rescue, and Emergency Services Associated with Access to Elevated Track S&S #11: Accident Risks to Airports, Private Airstrips, and Heliports S&S #12: Hazards to the HSR from Nearby Facilities S&S #13: Hazards to Residences from HSR Derailment S&S #14: Safety Impacts to Schools	No mitigation required.

Impact	Mitigation Measure
S&S #15: Hazards to HSR Passengers and Employees from Flooding S&S #16: Criminal Activity aboard Trains at the F Street Station	
S&S #7: Risk of Fire and Explosions.	S&S-MM #2: Site-specific mitigation for the continued operation of the Halliburton Facility. S&S-MM #3: Site-specific mitigation for the continued operation of the Rain-for-Rent Facility. S&S-MM #4: Site-specific mitigation for the continued operation of the Golden Empire Gleaners Facility.
S&S #8: Increased Response Times for Fire, Rescue, and Emergency Services from Permanent Road Closures S&S #10: Need for Expansion of Existing Fire, Rescue, and Emergency Services Facilities.	S&S-MM #1: Monitor response of local fire, rescue, and emergency service providers to incidents at the Bakersfield F Street Station and provide a fair share cost of service.
Socioeconomics and Communities	
Construction Impacts	
SO #1: Disruption to Community Cohesion or Division of Existing Communities from Project Construction	SO-MM #3: Implement measures to reduce impacts associated with the displacement of religious facilities.
SO #2: Construction Effects on Children's Health and Safety SO #3: Construction-Related Property Tax Revenue Reductions SO #4: Construction-Related Sales Tax Revenue Gains SO #5: Temporary Construction Employment	No mitigation required.
Project Impacts	
SO #6: Displacement of the Bakersfield Homeless Shelter.	SO-MM #1: Disruption to community cohesion and division of existing rural communities during operation.
SO #7: Effects to the Regional Agricultural Community	SO-MM #4: Partial-property acquisitions via measures that will design overcrossings and under crossings to allow farm equipment passage where feasible.
SO #18: Potential for Physical Deterioration	SO-MM #3: Implement measures to reduce impacts associated with the displacement of religious facilities. SO-MM #5: Physical deterioration via measures that will design station and non-station structures to allow for contextual design responses to site-specific or unique conditions
SO #8: Effects of Project Operations on Children's Health and Safety SO #9: Residential Displacements SO #10: Commercial and Industrial Business Displacements SO #11: Project Effects on Agricultural Business	No mitigation required.

Impact	Mitigation Measure
SO #12: Displacement of Community Facilities SO #13: Relocations of Sensitive Populations SO #14: Economic Effects on Agriculture SO #15: Changes in School District Funding and School Access SO #16: Employment Growth SO #17: Operation-Related Property and Sales Tax Revenue Effects	
Station Planning, Land Use, and Development	
Construction Impacts	
LU #1: Potential for Construction to Alter Land Use Patterns	No mitigation required.
Project Impacts	
LU #2: Permanent Conversion of Existing Land Uses to Transportation Use LU #3: Land Use Effects of Parking Demand at Station Site LU #4: Indirect Effects on Surrounding Land Uses from the High-Speed Rail Alignment, High-Speed Rail Station, and the Maintenance of Infrastructure Facility	No mitigation required.
Agricultural Lands	
Construction Impacts	
AG #1: Temporary Use of Agricultural Land AG #2: Temporary Utility and Infrastructure Interruption AG #3: Temporary Noise and Vibration Effects on Adjacent Farm Animals	No mitigation required because agricultural lands would be restored to pre-project conditions.
Project Impacts	
AG #4: Permanent conversion of agricultural land to nonagricultural use.	AG-MM #1: Preserve the total amount of prime farmland, farmland of statewide importance, farmland of local importance, and unique farmland.
AG #5: Effects on Agricultural Land from Parcel Severance.	AG-MM #1: Preserve the total amount of prime farmland, farmland of statewide importance, farmland of local importance, and unique farmland. AG-MM#2: Conserve additional Important Farmland for indirect impacts adjacent to HSR permanently fenced infrastructure.
AG #6: Effects on Land under Williamson Act, Farmland Security Zone Contracts, or Local Zoning AG #7: Effects on Confined Animal Agriculture AG #8: Effects on Irrigation Distribution Canals AG #9: Noise Effects to Grazing Animals	No mitigation required.

Impact	Mitigation Measure
AG #10: Wind-Induced Effects AG #11: Effects on Aerial Spraying	
Parks, Recreation, and Open Space	
Construction Impacts	
PK #1: Construction Impacts on Parks, Recreation, Open Space and School Recreation Facilities	PP-MM #1: Provide Alternate Pedestrian and Bicycle Access During Temporary Closures of Portions of Park Property During Construction.
Project Impacts	
PK #2: Project Acquisition of Parks, Recreation, and Open Space Resources	PP-MM#3: Collect Additional Maintenance Funds.
PK #3: Project Acquisition of School District Play Areas and Recreation Facilities PK #4: Project Changes to Park Character	No mitigation required.
Aesthetics and Visual Resources	
Construction Impacts	
AVR #1: Construction Impacts on Scenic Vistas	No mitigation required.
AVR #2: Construction Impacts on Existing Visual Quality.	AVR-MM #1a: Minimize visual disruption during construction activities.
AVR #3: Construction Impacts from Light and Glare	AVR-MM #1b: Minimize light disturbance during construction.
Project Impacts	
AVR #4: Lower visual quality in the Shafter Town, Rural San Joaquin Valley, North Bakersfield, Kern River and East Bakersfield Landscape Units.	AVR-MM #2a: Incorporate Design Criteria for Elevated and Station Elements That Can Adapt to Local Context (Kings/Tulare Regional Station) AVR-MM #2b: Integrate Elevated Guideway into Affected Cities, Parks, Trail, and Urban Core Designs AVR-MM #2c: Screen Elevated Guideways Adjacent to Residential Areas AVR-MM #2e: Provide Offsite Landscape Screening Where Appropriate AVR-MM #2f: Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST AVR-MM #2g: Provide Sound Barrier Treatments AVR-MM #2i: Install Decorative Parapet Design at Kern River Crossing
AVR #5: Lower visual quality at Valley Oaks Charter School.	AVR-MM #2a: Incorporate Design Criteria for Elevated and Station Elements That Can Adapt to Local Context AVR-MM #2b: Integrate Elevated Guideway into Affected Cities, Parks, Trail, and Urban Core Designs AVR-MM #2e: Provide Offsite Landscape Screening Where Appropriate AVR-MM #2f: Landscape Treatments along the HST Project Overcrossings and Retained Fill Elements of the HST AVR-MM #2e: Provide Offsite Landscape Screening Where Appropriate

Impact	Mitigation Measure
Cultural Resources	
Construction Impacts	
CUL #1: Potential Adverse Effects on Archaeological Resources due to Construction Activities.	CUL-MM #4: Comply with State and Federal Law for Human Remains CUL-MM #5: Conduct Additional Testing and Recovery
CUL #2: Potential Adverse Effects on Historic Architectural (Built) Resources due to Construction Activities: Introduction of Visual Elements	CUL-MM #12: Prepare and Submit Additional Recordation and Documentation CUL-MM #13: Prepare Interpretive or Educational Materials
Project Impacts	
CUL #4: Potential Adverse Effects on Archaeological Resources Due to Operational Activities CUL #5: Potential Adverse Effects on Historic Architectural (Built) Resources due to Operational Activities	No mitigation required.
Regional Growth	
Construction Impacts	
Construction Effects	No mitigation required.
Project Impacts	
Operations Effects on Employment, Population Growth, Land Use Consumption, and, Consistency with Regional Growth Management Plans, Hydrology and Water Resources	No mitigation required.
Cumulative Impacts	
Construction Impacts	
Transportation, Air Quality, Noise and Vibration, EMF/EMI, Public Utilities and Energy, Biological Resources and Wetlands, Geology/Soils/Seismicity/Paleontological Resources, Hazardous Materials and Wastes, Safety and Security, Socioeconomics and Communities, Station Planning/Land Use and Development, Agricultural Lands, Parks/Recreation and Open Space, Aesthetics and Visual Resources, Cultural Resources	No mitigation required.
Project Impacts	
CUM-N&V: The project's contribution to cumulative construction noise and vibration impacts.	CUM-N&V-MM#1: Consult with agencies regarding construction activities to minimize potential overlapping construction activities occurring in the same area.

Impact	Mitigation Measure
Transportation, Air Quality, EMF/EMI, Public Utilities and Energy, Biological Resources and Wetlands, Geology/Soils/Seismicity/Paleontological Resources, Hazardous Materials and Wastes, Safety and Security, Socioeconomics and Communities, Station Planning/Land Use and Development, Agricultural Lands, Parks/Recreation and Open Space, Aesthetics and Visual Resources, Cultural Resources	No mitigation required.
Environmental Justice	
Construction Impacts	
EJ #1: Effect of Project Construction on Minority or Low-Income Populations	No mitigation required.
Project Impacts	
EJ #2: Effects of Project Operation on Minority or Low-Income Populations	No mitigation required.

AG = Agricultural Resources
 AQ = Air Quality
 AQMD = air quality management district
 AVR = Aesthetics and Visual Resources
 BAAQMD = Bay Area Air Quality Management District
 BIO = Biological Resources and Wetlands
 CEQA = California Environmental Quality Act
 CO = carbon monoxide
 CRHR = California Register of Historical Resources
 CUL = Cultural Resources
 CUM = Cumulative Impacts
 HMF = heavy maintenance facility
 HSR = high-speed rail
 HST = high-speed train
 HWM = Hazardous Wastes and Materials
 HWR = Hydrology and Water Resources

LU = Land Use
 MM = Mitigation Measure
 N&V = Noise and Vibration
 NO₂ = nitrogen dioxide
 NO_x = nitrogen oxides
 NRHP = National Register of Historic Places
 O₃ = Ozone
 PK = Parks, Recreation, and Open Space
 PM_{2.5} = particulate matter smaller than or equal to 2.5 microns in diameter
 PM₁₀ = particulate matter smaller than or equal to 10 microns in diameter
 PP = Parks, Recreation, and Open Space (Specific to Project Operations)
 S&S = Safety and Security
 SO = Socioeconomics and Communities
 TR = Transportation
 VERA = Voluntary Emission Reduction Agreement
 VOC = volatile organic compound