

5 ENVIRONMENTAL JUSTICE

Since publication of the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the following substantive changes have been made to this chapter:

- The environmental justice (EJ) impacts associated with the engineering and design refinements completed and incorporated into the project plans following the public circulation of the Draft EIR/EIS were evaluated and found to be minor and did not change the overall conclusions described in this chapter.
- Text was added under Section 5.2.1.3 regarding Environmental Justice Order 5610.2B signed by the U.S. Department of Transportation (USDOT) on November 18, 2020.
- This chapter has been revised to be consistent with Federal Railroad Administration (FRA) guidance on the use of the word “significant” and to increase clarity surrounding environmental consequences.
- Text was added regarding Environmental Justice Order 5610.2B signed by the USDOT on November 18, 2020, and FRA’s new regulations implementing the National Environmental Policy Act (NEPA), which were adopted during the preparation of the Draft EIR/EIS. The analysis was refined consistent with the Order.
- Section 5.9 has been updated to finalize the Authority’s EJ findings, including refinements and changes to the disproportionately high and adverse effects determinations. Some findings changed due to the application of IAMFs or mitigation measures (e.g. sound walls) and/or offsetting project benefits (e.g. transportation and cohesion benefits), in order to reconcile inconsistencies, or after factoring in input received directly from environmental justice communities along the corridor at listening sessions conducted in December 2020 and January 2021.
- The location of identified disproportionately high and adverse effects was refined to be as geographically specific as feasible (i.e. by sensitive receptor, by parcels acquired, or by census block groups).
- Impacts are clarified to occur on minority and/or low-income populations, as impacts did not systematically affect both populations. Sections 5.6 and 5.7 have been revised to (1) clarify the distinction between NEPA effects identified for all populations (including EJ populations) and the disproportionately high and adverse effects determinations in Section 5.9 and (2) to clarify the communities that would experience adverse effects.

This chapter addresses potential EJ effects of the Bakersfield to Palmdale Project Section (B-P) of the California High-Speed Rail (HSR) System. The analysis identifies disproportionately high and adverse environmental and health effects on minority and/or low-income populations. Beneficial effects are taken into consideration when determining disproportionately high and adverse effects pursuant to USDOT EJ Order 5610.2(a)¹ and FRA *Procedures for Considering Environmental Impacts* Section 10(b).² As shown in Appendix 5-A, the EJ resource study area (RSA) contains areas with substantial low-income and/or minority populations. As further described in Section 5.3.1.1, an area is identified as having a substantial minority population (meaningfully greater than the general population in the reference community) if the minority population percentage in that census block group was higher than the countywide average for the county in which it was located. Similarly, an area is identified as having a substantial low-income population (meaningfully greater than the general population in the reference community) if the low-income population percentage in that census block group was higher than the countywide

¹ After the Draft EIR/EIS was prepared, on November 18, 2020, the USDOT signed Environmental Justice Order 5610.2B regarding its policy to consider EJ principles in USDOT programs. Based upon a review of Order 5610.2B, the Authority’s EJ analysis and determination are in compliance with the new order.

² While this EIR/EIS was being prepared, FRA adopted new NEPA compliance regulations (23 C.F.R. 771). Those regulations only apply to actions initiated after November 28, 2018. See 23 C.F.R. 771.109(a)(4). Because this EIR/EIS was initiated prior to that date, it remains subject to FRA’s Environmental Procedures rather than the Part 771 regulations.

average for the county in which it was located. The locations of minority and/or low-income populations within the EJ RSA and the reference community are provided in Section 5.4, Affected Environment. This section also summarizes the public engagement process with these affected populations. This EJ analysis has been prepared by the California HSR Authority (Authority) pursuant to 23 U.S. Code 327 and the terms of the NEPA Assignment Memorandum of Agreement (FRA and State of California 2019) assigning the Authority responsibility for complying with NEPA and other federal environmental laws, including U.S. Executive Order (USEO) 12898 and related USDOT orders and guidance.

Summary of Results

Bakersfield to Palmdale Project Section Build Alternatives

The B-P Build Alternatives (including the César E. Chávez National Monument Design Option [CCNM Design Option] and the Refined César E. Chávez National Monument Design Option [Refined CCNM Design Option]), which include the portion of the Bakersfield to Palmdale Project Section between Oswell Street in Bakersfield and Avenue O in Palmdale, would result in disproportionately high and adverse effects on minority and/or low-income populations related to the following during construction:

- Residential and business displacement and relocation (portions of Lancaster)³

The B-P Build Alternatives (including the CCNM Design Option and Refined CCNM Design Option) would also result in disproportionately high and adverse effects on minority and/or low-income populations related to the following during operation:

- Noise (portions of Northeast Bakersfield, Edison, and Lancaster)
- Community cohesion (portions of Edison)

It should be noted the Preferred Alternative (Alternative 2 with the Refined CCNM Design Option) would result in the same impacts to low-income and/or minority populations as Alternative 2 because the differences between Alternative 2 and the Preferred Alternative are limited to sparsely populated rural areas without any substantial low-income and/or minority populations.

Bakersfield Station—Fresno to Bakersfield Locally Generated Alternative from the Intersection of 34th Street and L Street to Oswell Street

As described in Section 2.3.3, this EIR/EIS incorporates by reference the results of analysis included in the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority 2019a) and *Fresno to Bakersfield Section Final Supplemental EIR* (Authority 2018b) for the Fresno to Bakersfield Locally Generated Alternative (F-B LGA) and the results of technical studies related to the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street in Bakersfield. The proposed Bakersfield Station—F-B LGA, which includes the portion of the alignment from the intersection of 34th Street and L Street (F Street Station) to Oswell Street in Bakersfield, would result in many of the same disproportionately high and adverse effects on minority and/or low-income populations as the Hybrid Alternative. Construction activities associated with this portion of the F-B LGA would have impacts on nearby communities in the study area, including minority and/or low-income populations. The F-B LGA would result in disproportionately high and adverse effects on minority and/or low-income populations related to the following during operation:

- Noise (portions of Bakersfield)
- Residential and business displacements and relocation (portions of Bakersfield)

Palmdale Station Site

Similar to the B-P Build Alternatives (including the CCNM Design Option) and the Refined CCNM Design Option, the proposed Palmdale Station, which includes the area between Avenue O and

³ Refer to Section 5.9 for the specific Census block groups where disproportionately high and adverse effects would occur.

Spruce Court in Palmdale, would result in disproportionately high and adverse effects on minority and/or low-income populations related to the following during construction:

- Residential and business displacement and relocation (portions of Palmdale)

The proposed Palmdale Station would result in disproportionately high and adverse effects on minority and/or low-income populations related to the following during operation:

- Noise (portions of Palmdale)

Maintenance Facilities

The Lancaster North B Maintenance-of-Way Facility (MOWF) and the Avenue M LMF/MOWF would not result in disproportionately high and adverse effects on minority and/or low-income populations during either construction or operation.

Beneficial Effects

The HSR project would also result in beneficial effects to all populations, including low-income and/or minority populations. The HSR project would result in beneficial effects related to sales tax gains, regional employment, regional transportation, transportation safety, and regional air quality. The operation of the HSR project could also result in beneficial sales tax gains in all of the communities along the B-P Build Alternatives; however, those benefits would be particularly concentrated in the vicinity of the Bakersfield and Palmdale station sites and the maintenance facilities, which are located in or near areas where low-income and/or minority populations live. Construction of the HSR project would result in a beneficial effect on regional employment, and the Authority has programs (i.e., a Small and Disadvantaged Business Policy and a Targeted Worker Program) in place to ensure that low-income and/or minority populations would benefit from HSR construction.

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would provide benefits to the regional transportation system by providing another mode of transportation for intercity passenger trips, thereby reducing vehicle trips on freeways. All communities, including minority and/or low-income populations, would benefit from the reduction in roadway congestion and increase in transportation options. At the regional level, operation of the HSR system would result in lower pollutant emissions, resulting in a net benefit to regional air quality. All communities would experience regional air quality benefits resulting from the reduction of vehicle trips, including low-income and/or minority populations. The HSR project would improve safety and security for motor vehicle passengers, pedestrians, and bicyclists through the replacement of at-grade crossings over existing railroad lines. In addition, the HSR system would use contemporary signaling and be fully grade-separated to prevent conflicts with vehicles, pedestrians, and bicyclists. This effect would benefit all communities in the region, including minority and/or low-income populations.

5.1 Introduction

The EJ analysis in this chapter complies with USEO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, which requires federal agencies to assess the potential for their actions to have disproportionately high and adverse environmental and health effects on minority and/or low-income populations. This chapter also complies with the USDOT updated *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (USDOT Order 5610.2(a)), USDOT Order 5610.2B, and the FRA *Procedures for Considering Environmental Impacts* (64 Federal Register 28556).⁴ The roots of EJ are in Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, and national origin, including the denial of meaningful access for limited English proficiency (LEP) persons, in programs and activities receiving federal

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

financial assistance. Following the direction of USEO 12898, federal agencies developed guidelines to foster equitable outcomes for low-income and/or minority populations.

Where appropriate, this analysis also incorporates guidance from the Federal Highway Administration and the Federal Transit Administration. The guidance includes the *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (Federal Highway Administration Order 6640.23A) and *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (Federal Transit Administration Circular 4703.1).

This chapter describes the existing conditions related to low-income and/or minority populations within the reference community and RSA, which are defined in Section 5.3.1. The potential for identified adverse effects to affect minority and/or low-income populations was assessed to determine whether the project may have disproportionately high and adverse environmental and health effects on minority and/or low-income populations.

The data used in the analysis are derived from various sources, including the U.S. Census Bureau 2010 Decennial Census and U.S. American Community Survey (ACS)⁵ 2009–2013 dataset, and the California Department of Finance (CDOF). In all cases, the most current reliable data available at the start of the analysis were used to document the characteristics of the region and the RSA as they relate to EJ.

This chapter describes the regulatory setting and affected environment for EJ, the effects that would result from the Bakersfield to Palmdale Project Section of the California HSR Project, and the project design features and mitigation measures that would reduce these effects.

Demographic analysis related to EJ, including race, ethnicity, and income, is provided in the *Bakersfield to Palmdale Project Section: Community Impact Assessment Technical Report* (CIA) (Authority 2018a) and the *Bakersfield to Palmdale Project Section Community Impact Assessment Technical Report Supplement* (Authority 2020). For information on how to access and review technical reports, please refer to the Authority's website at www.hsr.ca.gov.

Federal agencies are required to address EJ, to the greatest extent practicable and permitted by law, in order to identify and address, as appropriate, the potential disproportionately high and adverse human health and environmental effects, including interrelated social and economic effects, of their programs, policies, and activities on minority and/or low-income populations. This chapter is largely based on the CIA, but also draws on impact analysis in Chapter 3, including:

- Section 3.2, Transportation
- Section 3.3, Air Quality and Global Climate Change
- Section 3.4, Noise and Vibration
- Section 3.5, Electromagnetic Interference and Electromagnetic Fields
- Section 3.6, Public Utilities and Energy
- Section 3.10, Hazardous Materials and Wastes
- Section 3.11, Safety and Security
- Section 3.12, Socioeconomics and Communities
- Section 3.13, Station Planning, Land Use, and Development
- Section 3.14, Agricultural Farmland and Forest Land
- Section 3.15, Parks, Recreation, and Open Space
- Section 3.16, Aesthetics and Visual Quality
- Section 3.19, Cumulative Impacts

Three technical appendices support the analysis in this chapter and are found in Volume 2.

These appendices include: Appendix 5-A. Environmental Justice Figures, Appendix 5-B. Environmental Justice Outreach Plan, and Appendix 5-C. Key Environmental Justice Stakeholder Outreach Meetings.

⁵ The ACS is an annual survey conducted by the U.S. Census Bureau. Data is published annually and for 3- and 5-year average data series, thereby providing communities current information they need to plan investments and services. The ACS replaced the long-form decennial census questionnaire following the 2000 Census.

The *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System* (Authority and FRA 2005) and the *Final Bay Area to Central Valley High-Speed Train Partially Revised Program Environmental Impact Report* (Authority 2012g) identified mitigation strategies for socioeconomic and community-related effects. Strategies incorporated into the Bakersfield to Palmdale Project Section to date include involving the community early in the project (including outreach to minority and/or low-income populations in compliance with USEO 12898), conducting station design workshops, and maintaining the connectivity of pedestrian, bicycle, and vehicular crossings of the rail corridor to sustain neighborhood and community integrity.

5.2 Laws, Regulations, and Orders

5.2.1 Federal

5.2.1.1 *Title VI of the Civil Rights Act (42 U.S. Code § 2000(d) et seq.)*

Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, national origin, age, sex, or disability in programs and activities receiving federal financial assistance. Under Title VI, each federal agency is required to ensure that no person, on the grounds of race, color, or national origin, is excluded from participation in, denied the benefits of, or subjected to discrimination under any program or activity receiving federal financial assistance.

5.2.1.2 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (U.S. Executive Order 12898)*

USEO 12898 outlines the federal government's EJ policy. The USEO requires federal agencies to identify and to address to the greatest extent practicable and permitted by law the disproportionately high adverse human health and environmental effects of their programs, policies, and activities on minority and/or low-income populations in the U.S.

5.2.1.3 *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (U.S. Department of Transportation Orders 5610.2(a) and 5610.2B)*

On November 18, 2020, the USDOT signed Environmental Justice Order 5610.2B regarding its policy to consider EJ principles in USDOT programs, describing how the objectives of EJ are to be integrated into planning and programming, rulemaking, and policy formulation for USDOT programs, policies, and activities. This order affects the process for identifying and addressing, as appropriate, disproportionately high and adverse effects on minority populations or low-income populations through EJ analyses conducted as part of the planning and project delivery process for federally funded or approved transportation projects. USDOT Order 5610.2B also specifies the measures to be taken to address instances of disproportionately high and adverse effects and requires consideration of the benefits of transportation programs, policies, and other activities where minority populations and low-income populations benefit, at a minimum, at the same level as the general population as a whole when determining impacts on minority and/or low-income populations.

At the time the data and analyses that support the EIR/EIS were collected and conducted, the Authority relied on USDOT Order 5610.2(a) to implement USEO 12898. USDOT Order 5610.2(a) applies to actions undertaken by USDOT operating administrations, including FRA.⁶ USDOT Order 5610.2(a) affirms the importance of considering EJ principles as part of early planning activities in order to avoid disproportionately high and adverse effects. Order 5610.2(a) defines "disproportionately high and adverse effect on minority and/or low-income populations" to mean an adverse effect that is predominantly borne by a minority population or a low-income population, or that would be suffered by the minority population or low-income population, and

⁶ Based upon a review of Order 5610.2B, the Authority's EJ analysis and determination are in compliance with the new order.

that is appreciably more severe or greater in magnitude than would be suffered by the nonminority or non-low-income population.

5.2.1.4 Presidential Memorandum Accompanying U.S. Executive Order 12898

The Presidential Memorandum accompanying USEO 12898 calls for specific actions to be directed in NEPA related activities. They include:

- Analyzing environmental effects, including human health, economic, and social effects on minority populations and low-income populations when such analysis is required by NEPA
- Ensuring that mitigation measures outlined or analyzed in Environmental Assessments, EISs, and Records of Decision, whenever feasible, address disproportionately high and adverse environmental effects or proposed actions on minority populations and low-income populations
- Providing opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving accessibility to public meetings, official documents, and notices to affected communities

5.2.1.5 Improving Access to Services for Persons with Limited English Proficiency (U.S. Executive Order 13166)

USEO 13166 requires each federal agency to ensure that recipients of federal financial assistance provide meaningful access to their programs and activities by LEP applicants and beneficiaries. Meaningful access can include availability of vital documents; printed and internet-based information in one or more languages, depending on the location of the project; and translation services during public meetings.

5.2.1.6 Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S. Code § 61)

The Uniform Relocation Assistance and Real Property Program ensures that persons displaced as a result of a federal action or by an undertaking involving federal funds are treated fairly, consistently, and equitably. This helps to ensure persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

5.2.2 State

5.2.2.1 California Government Code 65040.12(e)

Section 65040.12(e) defines EJ as “the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.” It does not, however, require an analysis of effects to these populations as part of the California Environmental Quality Act process.

5.2.2.2 California High-Speed Rail Authority Environmental Justice Policy

In August 2012, the Authority adopted an EJ policy (Authority 2012d). The policy states:

- The Authority shall develop and maintain an EJ Guidance document in compliance with Title VI of the Civil Rights Act of 1964, Presidential EO 12898, and California law (Government Code Section 65040.2 et seq. and Public Resources Code Section 1110 et seq.).
- The Authority will promote EJ in its programs, policies, and activities to avoid, minimize, or mitigate disproportionately high human health and environmental effects, including social and economic effects, on minority and/or low-income populations.
- The Authority will duly emphasize the fair and meaningful involvement of all people regardless of race, color, national origin, or income with respect to HSR project planning, development, operations, and maintenance.
- The Authority will engage the public through public participation forums so that decisions are mitigated and reflect EJ for all communities.

5.2.2.3 California High-Speed Rail Title VI Plan

In March 2012, the Authority adopted a policy and plan to ensure that the California HSR Program complies with Title VI. The policy states:

- The Authority is committed to ensuring that no person in the State of California is excluded from participation in, or denied the benefits of, its programs, activities, and services on the basis of race, color, national origin, age, sex, or disability, as afforded by Title VI of the Civil Rights Act of 1964 and related statutes.
- The Authority, as a federal grant recipient, is required by the FRA to conform to Title VI of the Civil Rights Act of 1964 and related statutes. The Authority's subrecipients and contractors are required to prevent discrimination and ensure nondiscrimination in all of their programs, activities, and services.
- As permitted and authorized by Title VI, the Authority will administer a Title VI Program in accordance with the spirit and intent of the nondiscrimination laws and regulations.

The Title VI Plan includes a commitment to inclusive public involvement of all persons affected by the HSR project (Authority 2012b).

5.2.2.4 California High-Speed Rail Limited English Proficiency Policy and Plan

In May 2012, the Authority adopted a policy and plan to ensure the California HSR Program complies with the requirements of USEO 13166. The policy states:

- It is the policy of the Authority to communicate effectively and provide meaningful access to LEP individuals to all the Authority's programs, services, and activities. The Authority will provide free language assistance services to LEP individuals encountered or whenever an LEP individual requests language assistance services.
- The Authority will treat LEP individuals with dignity and respect. Language assistance will be provided through a variety of methods, including staff interpreters, translation and interpreter service contracts, and formal arrangements with local organizations providing interpretation or translation services or telephonic interpreter services.

The LEP Policy and Plan supplements the Title VI Plan (Limited English Proficiency Plan) (Authority 2012c) and Resolution 12-15 (Authority 2012h).

5.2.2.5 California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund (Senate Bill 535, De León)

This bill requires the California Environmental Protection Agency to identify disadvantaged communities for investment opportunities, as specified. The bill requires the CDOF, when developing a specified 3-year investment plan, to allocate 25 percent of the available moneys in the Greenhouse Gas Reduction Fund to projects that provide benefits to disadvantaged communities, as specified, and to allocate a minimum of 10 percent of the available moneys in the Greenhouse Gas Reduction Fund to projects within disadvantaged communities, as specified. The bill requires the CDOF, when developing funding guidelines, to include guidelines for how administering agencies should maximize benefits for disadvantaged communities. The bill requires administering agencies to report to the CDOF, and the CDOF to include, in a specified report to the state Legislature a description of how administering agencies have fulfilled specified requirements relating to projects providing benefits to, or located in, disadvantaged communities.

5.2.3 Regional and Local

This section addresses local and regional regulations pertaining to low-income and/or minority populations in each of the two counties and the cities or communities in the EJ RSA. Appendix 2-H in Volume 2 of this EIR/EIS includes a list of adopted regional and local plans and policies pertaining to EJ.

5.2.3.1 Regional and Local Policy Analysis

Because the HSR project is an undertaking of the Authority in its capacity as state and federal lead agency, the Authority is neither subject to the jurisdiction of local governments nor required to comply with local plans. Council on Environmental Quality (CEQ) and FRA regulations nonetheless call for the discussion of any incompatibility or conflict of a proposed action with regional or local plans and laws. Where incompatibilities or conflicts exist, the CEQ and the FRA require a description of the extent of reconciliation and the reason for proceeding if full reconciliation is not feasible (Code of Federal Regulations Title 40, 1506.2(d),⁷ and *Federal Register* Volume 64, Page 28545, 14(n)(15)). The CEQA Guidelines also require that an EIR discuss the incompatibilities between the proposed project and applicable general plans, specific plans, and regional plans (CEQA Guidelines, Section 15125(d)). It should be noted that any incompatibility with such plans is not considered an environmental effect. An analysis of regional and local policies is included to provide the local planning context. Appendix 2-H in Volume 2 of this EIR/EIS lists local and regional policies, goals, and objectives related to EJ, describing the compatibility of the project section with each local policy.

The planning and environmental processes for the HSR project have provided, and would continue to provide, extensive opportunities for members and representatives of affected communities to participate in the planning, evaluation, and decision-making processes for this project. Refer to the Environmental Justice Outreach Plan in Appendix 5-B for further information.

Alternatives 1, 2, 3, and 5 were evaluated for compatibility with regional and local policies pertaining to EJ. Table 5-1 provides a summary of the HSR project's compatibility with applicable local and regional policies, goals, and objectives pertaining to EJ. Incompatibilities between Alternatives 1, 2, 3, and 5 and policies pertaining to other resource topics were identified (refer to Sections 3.2 through 3.6, and Sections 3.10 through 3.17), but there are no incompatibilities with regional and local policies relating to EJ anticipated from the proposed project.

Table 5-1 Local and Regional Plan Policy Compatibility Analysis Summary

Plan	Segments	Alternatives	Consistency
Kern County General Plan (2007): Circulation Element	Unincorporated Kern County	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.
Kern County Economic Development Strategy Update (2010)	Unincorporated Kern County	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.
Metropolitan Bakersfield General Plan (2008): Housing Element	City of Bakersfield, Unincorporated Kern County	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.
Los Angeles County General Plan (2015): Mobility Element	Unincorporated Los Angeles County	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.
City of Lancaster General Plan 2030 (2013): Housing Element (2014–2021)	City of Lancaster	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.

⁷ The Council on Environmental Quality (CEQ) issued new regulations, effective September 14, 2020, updating the National Environmental Policy (NEPA) implementing procedures at 40 Code of Federal Regulations (C.F.R.) 1500–1508. However, because this project began the NEPA process before September 14, 2020, it is not subject to the new regulations. The Authority is relying on the regulations as they existed prior to September 14, 2020. Therefore, all citations to CEQ regulations in this environmental document refer to the 1978 regulations, pursuant to 40 C.F.R. 1506.13 (2020) and the preamble at 85 Fed Reg. 43340.

Plan	Segments	Alternatives	Consistency
City of Lancaster Master Plan of Trails and Bikeways (2011)	City of Lancaster	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.
Kern Council of Governments Regional Transportation Plan/Sustainable Communities Strategy (2014)	Kern County	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.
2016–2040 SCAG RTP/SCS (2016)	Los Angeles County and five other counties in the SCAG Region	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Consistent.

Source: California High-Speed Rail Authority, 2018

B-P = Bakersfield to Palmdale Project Section

CCNM = César E. Chávez National Monument

HSR = high-speed rail

RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy

SCAG = Southern California Association of Governments

5.3 Methodology

The method for identifying low-income and/or minority populations followed the guidance provided in the *Project Environmental Impact Report/Environmental Impact Statement: Environmental Methodology Guidelines, Version 5.09* (Authority 2017). The methodology used to identify low-income and/or minority populations also incorporates guidance from the CEQ, which has oversight of the federal government’s compliance with EO 12898 and NEPA (CEQ 1997). This methodology also incorporates guidance pursuant to U.S. Department of Transportation EJ Order 5610.2(a) and the FRA Procedures for Considering Environmental Impacts Section 10(b). This chapter contains substantial analysis based on the 2009–2013 ACS to determine the presence or absence of areas with low-income and/or minority populations along the B-P Build Alternatives.

Addressing EJ issues involves procedural and technical considerations. Procedural considerations include reaching out to ensure that minority and/or low-income populations and other traditionally underserved populations are effectively engaged in public involvement processes. The following section does not address the procedural process, but rather focuses on the technical analysis conducted for this EIR/EIS (refer to Section 5.3.2 and Appendix 5-B for a discussion on procedural considerations and the complete Environmental Justice Outreach Plan). Technical considerations involve such issues as the choice of appropriate data sets and assumptions used for the identification of potentially affected populations for EJ assessments. The basic steps undertaken for this analysis are outlined in Section 5.3.1, Data Collection and Analysis, below.

5.3.1 Data Collection and Analysis

5.3.1.1 Step 1: Initial Screening to Identify Minority and/or Low-Income Populations

The CEQ guidance recommends identifying minority populations where either (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Although the official definition of “low-income” in USEO 12898 is based on the U.S. Department of Health and Human Services’ poverty guidelines, due to limitations, the CEQ guidance recommends identifying low-income populations in an affected area by applying the annual statistical poverty thresholds from the U.S. Census Bureau Current Population Reports, Series P-60 on Income and Poverty.⁸

⁸ The official U.S. poverty measure is a measurement of cash resources that assumes all people living together who are related by birth, marriage, or adoption share an income. This poverty measure assumes food costs for a household amount to three times the cost of 1963 food prices, and it does not take into account geographic variations in cost of living

The following populations were considered in assessing whether the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in disproportionate adverse effects to low-income and/or minority populations and whether those alternatives would result in benefits for those populations:

- **Minority Population**—Defined as all individuals who did not self-identify as White only when completing their 2009–2013 ACS survey; it includes those who identified as Hispanic or Latino, regardless of race. A census block group was identified as an Environmental Justice community if it had a substantial minority population (meaningfully greater than the general population in the reference community) and the minority population percentage in that block group was higher than the countywide average for the county in which it was located. Because the Bakersfield to Palmdale Project Section includes portions of two counties, each of which has different racial ethnic demographics, the combined demographic data for both counties was not used to generate a single reference community for the entire project section. Instead, this analysis considers each county to serve as a reference community for the census block groups within it. In Kern County, substantial minority populations were identified in block groups with a minority population percentage greater than 62.1 percent. In Los Angeles County, substantial minority populations were identified in block groups with a minority population percentage greater than 72.5 percent.
- **Low-Income Population**—Defined as all individuals with incomes below the U.S. Census poverty threshold. A census block group was identified as an Environmental Justice community if it had a substantial low-income population (meaningfully greater than the general population in the reference community) and the low-income population percentage in that census block group was higher than the countywide average for the county in which it was located. Because the Bakersfield to Palmdale Project Section includes portions of two counties, each of which has different household income characteristics, the combined demographic data for both counties was not used to generate a single reference community for the entire project section. Instead, this analysis considers each county to serve as a reference community for the census block groups within it. In Kern County, substantial low-income populations were identified in block groups with a low-income population percentage greater than 22.9 percent. In Los Angeles County, substantial low-income populations were identified in block groups with a low-income population percentage greater than 17.8 percent.

For a comprehensive discussion on EJ populations, refer to the CIA (Authority 2018a).

As shown on Figure 5-A-1 (Appendix 5-A), the EJ RSA crosses urbanized areas (i.e., the Cities of Lancaster and Palmdale and Metropolitan Bakersfield) and rural areas (i.e., the agricultural lands and open space between those communities). Therefore, population density was also considered as part of the low-income and/or minority population identification process.

5.3.1.2 Step 2: Comparison of Block/Block Group/Census Tract Data

The analysis conducted at the block level is much more precise than the analysis at block-group or census-tract levels. This is a result of the fact that the block group and census tract areas extend well beyond the area within 0.5 mile of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) (Figure 5-A-1), making it sometimes difficult to pinpoint the locations of low-income and/or minority populations within the EJ RSA.

in the U.S. (U.S. Census Bureau 2017). In 2013, the poverty threshold for a couple with two children was \$18,769 (U.S. Census Bureau 2013).

Table 5-2 provides the total population of the census blocks, block groups, and tracts in the EJ RSA that are partially or entirely within 0.5 mile of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), as reported in the 2010 Census. As shown in Table 5-2, 86,687 (approximately 40 percent) of the 214,654 individuals living in the more expansive block groups are actually more than 0.5 mile from the B-P Build Alternatives. These individuals are therefore not likely to experience direct and indirect effects of construction and operation of the B-P Build Alternatives and should not be considered in the EJ analysis. This fact is even more pronounced with the census tracts, which include 2.2 times the population of the blocks.

The imprecision of the block group and census tract data requires the validation of the preliminary conclusions regarding the presence or absence of low-income and/or minority populations drawn from the review of census data. This validation process is detailed in Step 3 below.

Table 5-2 Population Within 0.5 Mile of the Bakersfield to Palmdale Project Section Build Alternatives

Area Partially or Completely Within 0.5 Mile of the B-P Build Alternatives	Population
Census blocks	127,967
Census block groups	214,654
Census tracts	282,469

Source: U.S. Census Bureau, Table DP-1, 2010
 B-P = Bakersfield to Palmdale Project Section HSR = high-speed rail

5.3.1.3 Step 3: Validation of Environmental Justice Areas Identified Using Census Data

Given the imprecision of the block group data, the EJ RSA was examined quantitatively and qualitatively to ensure that no pockets of low-income or minority populations were overlooked inadvertently due to data limitations.

The validation process involved coordinating with the community outreach team to confirm that the identified populations matched up with the comments raised during public information meetings regarding the project (refer to Appendix 5-B for the Environmental Justice Outreach Plan). The collected census data were shared with the community outreach team for its review and input to help determine that low-income and/or minority populations were accurately identified. Through this collaborative effort, it was determined that more detailed research was needed to substantiate the likely presence of a low-income population in the community of Edison. Therefore, the project team also researched proxy data on participation in school free or reduced-fee lunch programs in the EJ RSA. These participation data were available by ZIP code and allowed for identification of the current participants in these programs. This ZIP code analysis was most useful in urban areas where there are multiple ZIP codes for smaller areas, thereby allowing for a more detailed examination of specific locations. Analysis of this data set confirmed the low-income areas identified using the 2009–2013 ACS.

5.3.1.4 Step 4: Identification of Disproportionate High and Adverse Effects on Environmental Justice Populations

The baseline analysis conducted in Steps 1 through 3 above identified the location of substantial low-income and/or minority populations in the EJ RSA. USEO 12898, the federal EJ policy, requires federal agencies to address the potential for their programs, policies, and activities to have disproportionately high and adverse human health and environmental effects on minority and/or low-income populations. USDOT Order 5610.2(a) on EJ interprets a “disproportionately high and adverse effect on minority and/or low-income populations” to mean an adverse effect that is predominantly borne by a minority population and/or a low-income population, or will be suffered by the minority population and/or low-income population, and is appreciably more severe

or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population.

Analyses conducted by various resource specialists identified the project's effects on environmental resources in the EJ RSA. Project effects for each resource area are summarized in the NEPA effects summary tables provided at the end of each resource section.

While the effects for each resources area were identified by region, alternative alignment, and type of effect, the NEPA summary tables provided at the end of each resource section do not identify adverse effects. Instead, each NEPA effect determination is classified into one of three categories: no effect, impact, or beneficial effect. Therefore, it was incumbent upon the EJ analysts to carefully scrutinize those impacts and determine whether they would represent an adverse effect under NEPA.

For this EJ analysis, findings from the pertinent resource analyses were reviewed and summarized in Section 5.7, Summary of Effects. In the event that impacts would remain after implementation of impact avoidance and minimization features (IAMF) and mitigation measures, the context and intensity of those impacts were evaluated to determine whether they would represent an adverse effect under NEPA. Project effects on environmental resources in the EJ RSA also considered beneficial effects from the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), including benefits from proximity and access to stations, employment opportunities (before and after construction), and property and sales tax revenue changes. The potential geographic distribution of any adverse effects was then examined in an effort to determine whether any areas with substantial low-income and/or minority populations would be affected. Where effects were found not to be adverse (or there was determined to be no effect), no further analysis was conducted on the potential to impact low-income or minority populations.

Any adverse effects that would affect areas with substantial low-income and/or minority populations were then further analyzed to determine whether they would disproportionately affect such populations. This analysis involved determining whether any of the adverse effects occurred disproportionately in areas with substantial minority and/or low-income populations, or if the adverse effects were of a disproportionately high magnitude in areas with substantial minority and/or low-income populations. If any adverse effect were disproportionate in an area with a substantial concentration of minority and/or low-income populations, then there would be a potential for disproportionately high and adverse effects on minority and/or low-income populations.

Consistent with its Environmental Methodology Guidelines (2017), the Authority's determinations whether an adverse effect would be disproportionately high reflect its careful consideration of the totality of the circumstances.

A summary of the degree of effects is provided in Section 5.7, Summary of Effects. A conclusion regarding whether each B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option), maintenance facility, and station site would result in disproportionately high and adverse effects on low-income and/or minority populations is provided in Section 5.9, Environmental Justice Determination.

USEO 12898 requires that federal agencies ensure effective public participation and access to information. Consequently, a key component of compliance with USEO 12898 is outreach to the potentially affected minority and/or low-income populations to discover issues of importance that may not otherwise be apparent. Outreach to affected communities has been and would continue to be conducted as part of the Authority's decision-making processes. An extensive public and agency outreach program was conducted throughout the EIR/EIS process, and would continue through the design and construction phases. Refer to Appendix 5-B for the Environmental Justice Outreach Plan. Many meetings were held with local officials; public, local, and regional organizations; government agencies; and other interested parties and stakeholders. Meetings were also held with representatives of affected communities along the B-P Build Alternatives

(including the CCNM Design Option and the Refined CCNM Design Option), including those communities containing predominantly minority and/or low-income populations.

5.3.2 Environmental Justice Engagement

Laws, regulations, and orders pertaining to low-income and/or minority populations are listed in Section 5.2 of this chapter. The Authority requires that, for each project section, an Environmental Justice Outreach Plan be developed in support of the EIR/EIS. Refer to Appendix 5-B for the Environmental Justice Outreach Plan. The Outreach Plan serves to accomplish several things, including:

- A summary of the demographics in the EJ RSA
- Identification of EJ advocacy and community group stakeholders
- Description of a strategy for reaching out to, engaging, and gathering input from low-income and/or minority populations
- Identification of specific outreach methods
- A list of the sources of documentation for the EJ outreach effort

Refer to Appendix 5-B for the complete Environmental Justice Outreach Plan.

5.4 Affected Environment

5.4.1 Reference Community and Resource Study Area Definition

The terms “reference community” and “resource study area” are defined in the following sections.

5.4.1.1 Reference Community

The reference community for the environmental analysis includes Kern and Los Angeles Counties. Each county serves as the reference community for the census block groups within it.

5.4.1.2 Resource Study Area

The RSA for the EJ analysis includes all census tracts within a 0.5-mile radius of the project alignment footprint and a 0.5-mile radius of the edges of a rectangular box around the perimeter of the proposed MOWF site footprint. Figure 5-A-1 shows the location of the RSA for the EJ analysis, the census tracts in that RSA, and the boundaries of the incorporated cities and unincorporated communities in that RSA.

5.4.2 Reference Community Demographics

Table 5-3 provides key demographics for Kern and Los Angeles Counties and the two-county region, including the total area, total population, total households, and median household income for each geographic region. Table 5-3 also provides the percentage of the population in Kern and Los Angeles Counties and the two-county region that is low-income, is minority, is over the age of 65, and is unemployed, as well as the percentage of the households in each of those areas that is LEP. Although combined demographic data for the two-county region is presented in Table 5-3, because Los Angeles County contains more than 11 times as many residents as Kern County and the countywide demographics are not similar, this combined demographic data for both counties was not used to generate a single reference community for the entire project section.

Instead, as described above in Section 5.4.1.1, this analysis considers each county to serve as a reference community for the census block groups within it. Nevertheless, data for the two-county region is provided for informational purposes.

5.4.2.1 Minority

As shown in Table 5-3, minority populations represented a substantial part of the populations in Kern County (62.1 percent) and Los Angeles County (72.5 percent) and the two-county region overall (71.7 percent) in the 2009–2013 ACS estimate period.

Table 5-3 Environmental Justice Reference Community and Resource Study Area Demographic Characteristics

Characteristics	Reference Community			Resource Study Area						
	Kern County	Los Angeles County	Total	Bakersfield Station—F-B LGA Subsection	San Joaquin Valley Subsection	Tehachapi Mountains Subsection	Rural Antelope Valley Subsection ¹	Urban Antelope Valley Subsection ²	Palmdale Station Subsection	Total
Size in square miles	8,163	4,751	12,914	23.7	1,057.4	1,319.2	1,728.1	38.8	55.0	4,222.2
Total population	848,204	9,893,481	10,741,685	87,394	52,296	26,134	23,194	63,069	39,679	291,766
% of population	N/A	N/A	N/A	30.0	17.9	9.0	7.9	21.6	13.6	100.0
Total households	255,271	3,230,383	3,485,654	27,090	14,863	9,915	7,875	20,177	10,981	90,901
% population low-income ³	22.9	17.8	18.2	41.5	27.5	10.8	15.7	28.1	36.4	31.6
Median household income	\$48,552	\$55,909	\$55,370	\$31,415	\$36,151	\$58,131	\$50,820	\$40,156	\$41,965	\$39,148
% minority ⁴	62.1	72.5	71.7	70.1	75.8	26.1	41.2	72.3	81.2	68.2
% LEP households ⁵	9.1	14.5	14.1	11.7	12.6	1.4	3.5	7.6	14.1	9.8
% over 65 years old	9.2	11.2	11.1	8.2	8.5	17.1	16.0	10.2	7.0	9.7
% unemployed	13.6	11.4	11.6	21.1	18.4	10.8	13.5	16.3	19.5	17.6

Sources: Total population and the percentage of residents over 65 are calculated using the 2009–2013 ACS, Table B01001 (U.S. Census Bureau, 2014).

Total number of households is calculated using the 2009–2013 ACS, Table S1101.

The percentage of the population that is low-income is calculated using the 2009–2013 ACS, Table B17001.

Median household income is calculated using the 2009–2013 ACS, Table S1903.

The minority percentage is calculated using the 2009–2013 ACS, Table B03002.

The percentage of LEP households is calculated using the 2009–2013 ACS, Table B16002.

The percentage of unemployed is calculated using the 2009–2013 ACS, Table B23025.

¹ The Rural Antelope Valley subsection includes the Lancaster North B MOWF.

² The Urban Antelope Valley subsection includes the Avenue M LMF/MOWF.

³ Includes those individuals with household incomes below the U.S. Census poverty threshold (in 2013, the U.S. Census poverty threshold for a family of four with two related children was \$23,624).

⁴ Includes all individuals not identified as “White only” in the 2010 Census, including those identified as Hispanic or Latino.

⁵ Includes households where all members 14 years old and over have at least some difficulty speaking English. Also includes the unemployed population in the civilian labor force that is 16 years old and over.

ACS = American Community Survey

F-B LGA = Fresno to Bakersfield (Locally Generated Alternative) portion from the intersection of 34th Street and L Street to Oswell Street

MOWF = maintenance-of-way facility

LEP = limited English proficiency

N/A = not applicable

U.S. = United States

5.4.2.2 *Low-Income*

Table 5-3 shows that low-income populations represent 18.2 percent of the population in the two-county region. Kern County has a slightly higher percentage of low-income residents (22.9 percent) than Los Angeles County (17.8 percent) or the two-county region.

5.4.3 *Resource Study Area Demographics*

Table 5-3 provides key demographics of the population within the EJ RSA for each of the seven geographic subsections, including the three station areas, defined for the Bakersfield to Palmdale Project Section. The demographics of the population within the proposed Lancaster North B MOWF and the Avenue M LMF/MOWF are included in the Rural Antelope Valley and Urban Antelope Valley subsections, respectively. For a comprehensive discussion on EJ reference community and RSA demographic characteristics, refer to the CIA (Authority 2018a).

5.4.3.1 *Minority*

Table 5-3 shows that the minority population percentages in the EJ RSAs for the Bakersfield Station—F-B LGA subsection (70.1 percent), and the San Joaquin Valley subsection (75.8 percent) are each higher than those of Kern County (62.1 percent) and the San Joaquin Valley subsection is higher than the two-county region (71.7 percent).⁹ In comparison, the minority population percentages in the EJ RSAs for the other Kern County subsections, including the Tehachapi Mountains subsection (26.1 percent) and the Rural Antelope Valley subsection (41.2 percent), are each much lower than those of Kern County (62.1 percent) and the two-county region (71.7 percent).

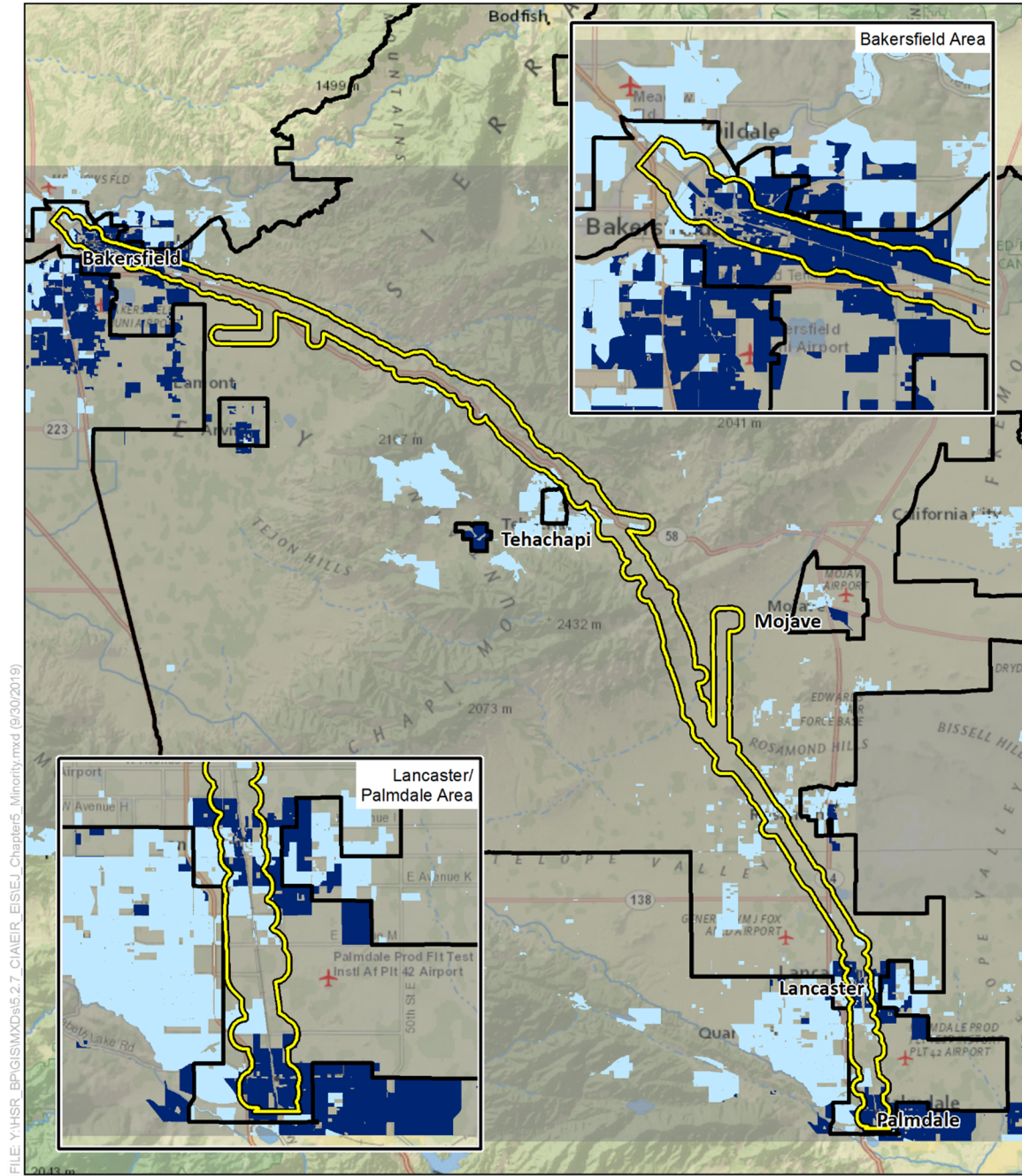
Table 5-3 also shows that the minority population percentage in the EJ RSA for the Urban Antelope Valley subsection (72.3 percent) is slightly lower than that of Los Angeles County (72.5 percent), but higher than that of the two-county region (71.7 percent). The minority population percentage in the EJ RSA for the Palmdale Station subsection (81.2 percent) is higher than that of Los Angeles County (72.5 percent) and the two-county region (71.7 percent).

Figure 5-1, *Minority Populations*, shows an overview of the location of the project area's minority populations. The areas shown in dark blue on Figure 5-1 are the high-population-density census blocks with a population density of 128 people per square mile or greater (high-population-density areas) in those census block groups in which the percentage of minority population is substantial or higher than the average for the county in which they are located. The areas shown in gray are the low-population-density census blocks that have a population density of fewer than 128 people per square mile (low-population-density areas). As shown on Figure 5-1, the majority of the census block groups in the Bakersfield area have substantial minority populations. Figure 5-1 also shows that most of the census block groups within 0.5 mile of the project footprint in Palmdale have substantial minority populations. About half of the project footprint in Lancaster also has substantial minority populations. For more specific detail on the minority populations by census block group please see Figure 5-A-2 in Appendix 5-A.

5.4.3.2 *Low-Income*

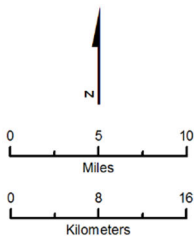
Table 5-3 shows that the low-income population percentages in the EJ RSAs for the Bakersfield Station—F-B LGA subsection (41.5 percent), and the San Joaquin Valley subsection (27.5 percent) are each higher than those of Kern County (22.9 percent) and the two-county region (18.2 percent). In comparison, the low-income population percentages in the EJ RSAs for the other Kern County subsections, including the Tehachapi Mountains subsection (10.8 percent) and the Rural Antelope Valley subsection (15.7 percent), are each lower than those of Kern County (22.9 percent) and the two-county region (18.2 percent).

⁹ The two-county region is provided as a comparison for informational purposes. However, as described above in Section 5.4.1.1, this analysis considers each county to serve as a reference community for the census block groups within it.



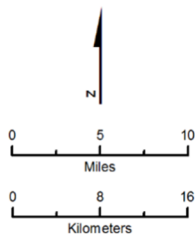
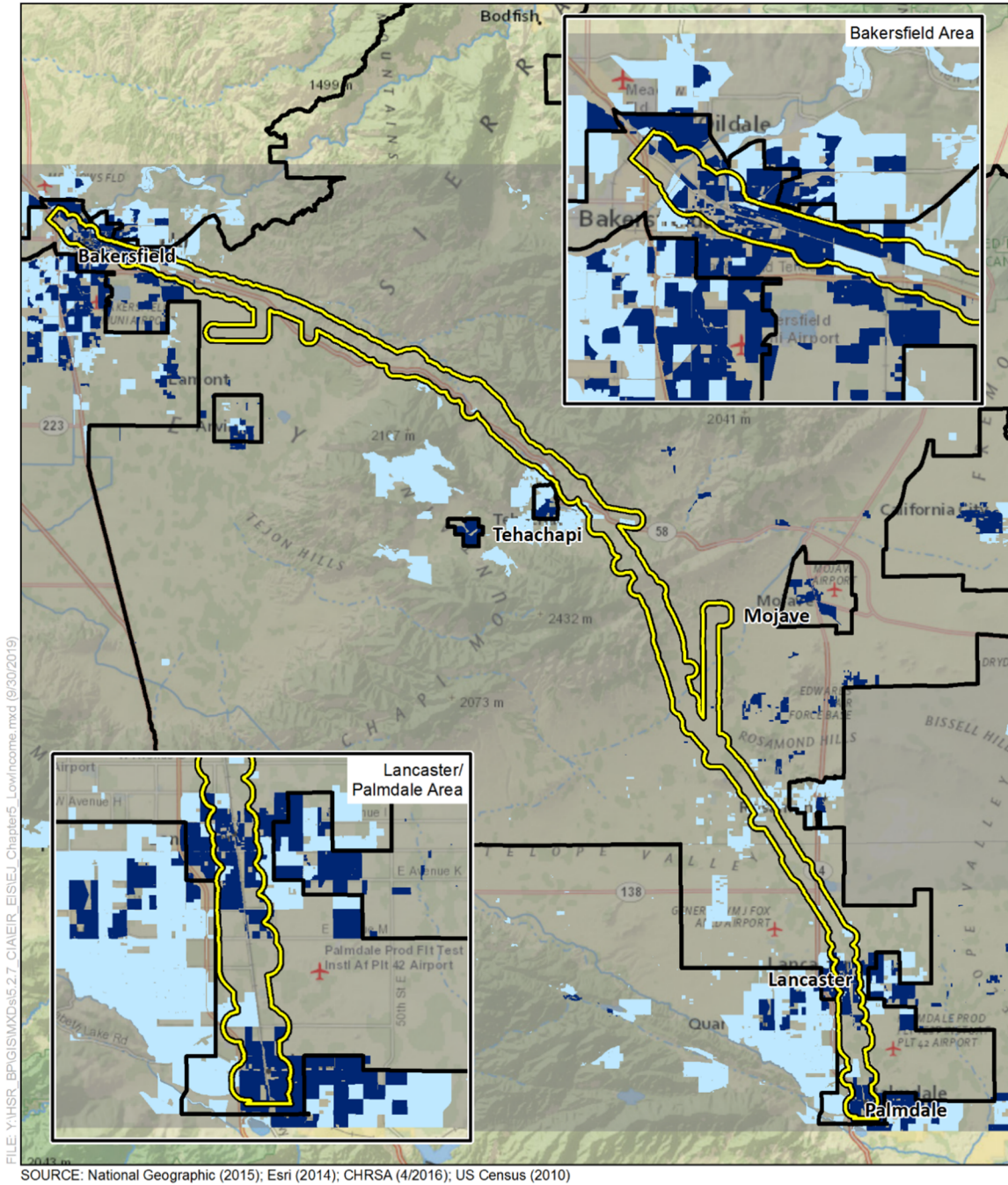
FILE: Y:\HSR_BP\GIS\MXDs\5.2.7_CIA\EIR_EISEJ_Chapter5_Minority.mxd (9/30/2019)

SOURCE: National Geographic (2015); Esri (2014); CHRSA (4/2016); US Census (2010)



- Half-Mile Radius of Project Footprint and Maintenance Facilities
 - Environmental Justice RSA
 - Minority Population**
 - Substantial
 - Less Than Substantial
 - Low Population Density (Less Than 128 People Per Square Mile)
- Note: Substantial minority populations are identified in Census block groups where the minority population (non-White only; including Hispanic/Latino, regardless of race) percentage exceeds the county-wide average. (62.1 percent for Kern County; 72.5 percent for Los Angeles County)

Figure 5-1 Minority Populations



- Half-Mile Radius of Project Footprint and Maintenance Facilities
- Environmental Justice RSA
- Low-Income Population**
 - Substantial
 - Less Than Substantial
 - Low Population Density (Less Than 128 People Per Square Mile)

Note: Substantial low income populations are identified in Census block groups where the low income population percentage (income below the U.S. Census poverty threshold) exceeds the countywide average. (22.9 percent for Kern County; 17.8 percent for Los Angeles County)

Figure 5-2 Low-Income Populations

Table 5-3 also shows that the low-income population percentages in the EJ RSA for the Urban Antelope Valley subsection (28.1 percent) and the Palmdale Station subsection (36.4 percent) are each higher than those of Los Angeles County (17.8 percent) and the two-county region (18.2 percent).

Figure 5-2 shows an overview of the locations of the low-income populations in the project area. The areas shown in dark blue on Figure 5-2 are the high-population-density areas in those census block groups in which the percentage of low-income residents is substantial or higher than the average for the county in which they are located.¹⁰ As with Figure 5-2, the low-population-density census block groups are shown in gray. As shown on Figure 5-2, substantial low-income populations were identified in most of the census block groups in the Bakersfield area to the west of Weedpatch Highway/Morning Drive. Figure 5-2 also shows that substantial low-income populations were identified in the majority of census block groups within 0.5 mile of the project footprint in Lancaster and Palmdale. For more specific detail on the low income populations by census block group, see Figure 5-A.3 in Appendix 5-A.

5.5 Environmental Justice Engagement

As discussed in Section 5.3, Methodology, the Outreach Plan identified an outreach strategy designed to reach a broad array of interests throughout the corridor (refer to Appendix 5-B for the complete Environmental Justice Outreach Plan). This strategy has been and will continue to be used to engage key stakeholders during project development and environmental review.

5.5.1 Affected Populations and Communities

5.5.1.1 Engagement Methods

The Authority implements several methods of outreach to reach specific audiences and achieve an intended outcome. Public meetings are being used to disseminate key Authority EIR/EIS updates to all stakeholders and receive suggestions and feedback in a more conventional, traditional manner. Organizational stakeholder contact involves connecting with EJ advocacy and community groups to gauge interest in scheduling meetings with the project team to offer project suggestions and inform stakeholder outreach processes. This establishes a direct line of communication with influential groups in the EJ RSA and helps the project team gather valuable local opinions and insight with regard to the challenges low-income and/or minority populations in the area face.

Local stakeholder contact intends to directly engage members of low-income and/or minority populations in HSR conversations to share information, answer questions, and listen to perspectives in an informal, conversational manner. This type of contact takes place most effectively at HSR tables and booths at local fairs and community events or in specific “pop-ups” or “community coffees” in targeted neighborhood areas. Group stakeholder meetings intended to gather and record topical HSR information as it pertains to low-income and/or minority populations to inform HSR processes take place in multiparticipant collaborative or round-table meetings. Finally, digital engagement opportunities are being made available for participation via online and mobile options to directly engage members of minority and/or low-income populations without requiring in-person participation so feedback can be submitted at the participant’s leisure. Engagement platforms include social media, among others.

Materials are made available to attendees at the various public meetings and events, including project fact sheets, welcome sheets, comment cards, and graphic displays. All materials provided, along with meeting advertisements, are translated as appropriate and are consistent with the Authority’s LEP requirements, in addition to having Spanish translation services present at all open house meetings. Furthermore, bilingual members of the outreach team (Spanish speakers) attend all meetings to provide additional support at registration/information tables. Meeting notices were also published in Spanish in the following Spanish-language publications:

¹⁰ Refer to the CIA (Authority 2018a) for the Bakersfield to Palmdale Project Section for a discussion of the methods used to identify low-income populations.

- *El Popular News*
- *La Gaceta*
- *La Prensa Popular*

In addition to meetings with the general public, the project team also identifies on-the-ground opportunities to further engage and interact with low-income and/or minority populations. These opportunities are noticed and scheduled in advance to provide for maximum engagement. The materials presented at these opportunities are tailored for low-income and/or minority populations and presented in a way that is easily distributed to their constituents or communities, including, but not limited to, newsletters and community news items.

The project team also conducts regular Stakeholder Working Group (SWG) meetings in each county within the project section over the course of the environmental review process as a key venue for collaborative problem solving, information sharing, and feedback. Organizations that act on behalf of low-income and/or minority populations are identified for participation in each SWG.

To augment public outreach, the project team also coordinates with the project cultural resources specialists to ensure that historic resources that might be associated with well-established ethnic or other groups are identified. These properties have the potential to be eligible for the National Register of Historic Places as Traditional Cultural Properties. Traditional Cultural Properties can generally be defined as those properties that are eligible for inclusion in the National Register of Historic Places because of their association with cultural practices or beliefs of a living community that are rooted in that community’s history and that are important in maintaining the continuing cultural identity of the community. “Traditional” in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is significance derived from the role the property plays in a community’s historically rooted beliefs, customs, and practices. Outreach and ongoing communication with low-income and/or minority populations assists the project team in ensuring that culturally meaningful resources are properly considered in the planning process.

5.5.1.2 Outreach Events

A list of key environmental stakeholder outreach meetings and events held between March 2012 and April 2021 is contained in Table 5-C-1 in Appendix 5-C, including meetings and events held since the publication of the Draft EIR/EIS. For the Bakersfield to Palmdale Project Section, the Authority has held more than 150 meetings, briefings, and conversations to date with the community stakeholders, businesses, local agencies, and elected officials to gather, confirm, and understand key community concerns so that these concerns are incorporated both into the development of alternatives and during the environmental process. Additional outreach is planned throughout the remainder of the project development.

5.5.2 Issues and Concerns

5.5.2.1 Areas of Concern

Table 5-4 provides a summary of areas of concern that were discussed during the Bakersfield to Palmdale Project Section public outreach events. The summary is organized by community and includes discussions regarding community meetings, stakeholder workshops, and open houses.

Table 5-4 Summary of Areas of Concern during the Bakersfield to Palmdale Project Section Public Outreach Events

Community	Comments and Issues from Stakeholders and Residents	Issues Raised by Open House Attendees
Community of Edison	<ul style="list-style-type: none"> ▪ Mobility, economic development, and access to good jobs and educational opportunities ranked high at previous SWG meetings. ▪ Improving air quality, providing more jobs, and contracting opportunities to residents and businesses in EJ areas were also deemed critical to SWG participants. ▪ Concerns were raised about noise levels close to Edison Middle School. ▪ Concerns were raised about the number of homes and businesses that would be displaced in Edison. ▪ Concerns were raised about the number of acres of farmland that would be impacted. 	<ul style="list-style-type: none"> ▪ Concerns regarding potential effects to local properties
Community of Rosamond ¹	<ul style="list-style-type: none"> ▪ Improving pedestrian and bicycle access was deemed very important by SWG participants, and a suggestion was made to create bicycle and pedestrian lanes, as well as to pave some of the area’s dirt roads. ▪ Dust control management and Valley Fever are key issues that need to be addressed in relation to construction of the project. ▪ Promoting economic development, requiring local hiring for this project, and improving the local economy by siting the Authority’s heavy maintenance facility in Kern County were mentioned by several SWG participants. 	<ul style="list-style-type: none"> ▪ Concerns about the right-of-way process and compensation, loss of views, effects to quality of life, noise pollution, aesthetics, seismic safety, and effects to local businesses ▪ Concerns regarding sound walls, an overpass at 60th Street W and Rosamond Boulevard, the closing of two water wells, electricity being taken from the Rosamond grid, and Valley Fever from dust ▪ Concerns regarding the alternatives selection process; a possible decrease in property values; loss of key access roads and train crossings; noise, wind, and visual effects; crosswinds and gusts; and off-road users’ access to mountain areas

Community	Comments and Issues from Stakeholders and Residents	Issues Raised by Open House Attendees
City of Lancaster	<ul style="list-style-type: none"> ▪ Concerns were raised by SWG participants that the project not block local streets and that traffic circulation be maintained in the area. ▪ Improving connectivity and accessibility, improving pedestrian and bicycle access, and enhancing mobility choices were deemed important by a large number of SWG participants. ▪ Economic development, job creation, and quality education were also highly ranked by SWG participants. ▪ For SWG participants representing local school districts in the area, rail safety was their top priority, including the use of fencing around HSR tracks. ▪ Traffic fatalities are an ongoing issue for the City of Lancaster, with representatives stating that accessibility and mobility are of key importance. ▪ Emergency vehicle access to rural areas needs to be maintained during and after construction. ▪ Noise, light, air quality, and dust issues are very important to rural communities in the area. ▪ Concerns were raised about the disruption to trail connections. ▪ Concerns were raised about impacts to older hotels and motels along the alignment and to a mobile home park near Avenue L. ▪ Concerns were raised about impacts to access to the University of Antelope Valley. ▪ Concerns were raised about disruptions of AVTA bus services. 	<ul style="list-style-type: none"> ▪ Concerns about creating a dead end on Sierra Highway, seismic safety, aesthetics, train speed, noise and vibration, and effects to downtown Lancaster. ▪ Several attendees preferred the 2012 Supplemental Alternatives Analysis Report alignment through Rosamond, as well as having the HSR alignment go through solar/wind farms to protect residential properties. ▪ Making improvements to SR 138. ▪ Concerns about potential effects of train noise on senior centers and senior housing, local access roads for residents, equestrian access, and the location of substations, radio towers, and new power lines. ▪ Concerns were also raised about potential motel property acquisitions along Sierra Highway.
City of Palmdale	<ul style="list-style-type: none"> ▪ Concerns were raised about relocating impacted auto uses/service businesses. ▪ Suggestion that the Authority should consider assistance in developing affordable housing for displaced residents. ▪ Concerns about the displacement of Gabriel's House near the Palmdale Station. ▪ Suggestions for a day care center in the Palmdale Station. ▪ Interest was expressed in apprenticeship program/work force training center in Selma. 	<ul style="list-style-type: none"> ▪ Concerns about station connectivity, right-of-way, business and job opportunities, operational noise and vibration effects, flooding, and height restrictions on Sierra Highway.

¹ As a result of the alternatives analysis process, areas with substantial low-income and/or minority populations within the community of Rosamond were avoided.

Authority = California High-Speed Rail Authority
 AVTA = Antelope Valley Transit Authority SR = State Route
 EJ = Environmental Justice SWG = Stakeholder Working Group
 HSR = high-speed rail

5.5.2.2 Design Refinements

As stated in Section 5.8.3, Environmental Justice Community Engagement, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) include design refinements designed to minimize effects on low-income and/or minority populations.

The Authority has refined the design of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) in response to input from community stakeholders, businesses, local agencies, and elected officials. Community engagement has resulted in the refinement of the B-P Build Alternative alignments in the community of Edison to minimize potential visual, noise, air quality, and land effects to Edison Middle School and adjacent low-income and/or minority populations. As described in the 2016 *Supplemental Alternatives Analysis Report* (Authority 2016b), the B-P Build Alternative alignments through Edison were moved to the southwest compared to the previous 2012 and 2014 studies completed in support of the alternatives analysis. The alternatives analysis process evaluated design options within individual alternatives in order to isolate concerns and to screen and refine the overall alternatives to avoid key environmental issues or improve performance. Alternatives 1, 3, and 5 were moved 100 feet farther away from Edison Middle School than the 2012 alternatives. Under those B-P Build Alternatives, State Route (SR) 58 would also be relocated to the southwest, resulting in the movement of freeway traffic further from the school, which might result in improved air quality at the school. The Alternative 2 alignment was moved even farther southwest compared to Alternatives 1, 3, and 5, resulting in the HSR tracks being moved 240 feet farther away from Edison Middle School than the 2012 alternatives, which would reduce any potential HSR noise and vibration effects to the school. These refinements are considered part of the HSR project as they are incorporated into the design of the B-P Build Alternatives.

In response to concerns raised in public meetings in the Rosamond area, the Authority evaluated alternatives to minimize disruption to neighborhoods and communities, right-of-way acquisitions, the division of an established community, and conflicts with community resources. The objectives in Rosamond were to minimize potential visual, noise, air quality, and land use impacts to Rosamond neighborhoods, businesses, and EJ communities. Therefore, options to shift the centerline of alternatives to the east or to the west to achieve these objectives were evaluated. The resulting refinements identified alignment locations that minimized potential impacts within Rosamond to the greatest extent possible while still meeting the project objectives for the Bakersfield to Palmdale Project Section. This evaluation process resulted in an alignment that minimized the number of parcels affected and avoided the Willow Springs Raceway (a historic resource). Other refinements resulted in a reduction in fill heights to a minimum height while still enabling the alignment to cross over rather than bisect existing roadways.

The Nuestra Señora Reina de La Paz/César E. Chávez National Monument (La Paz) in the community of Keene is an important cultural resource for the Latino population and is therefore considered an EJ Cultural Resource Facility. The Authority and FRA have engaged in extensive consultation with National Chávez Center representatives and evaluated the project's potential effects on La Paz. In 2016, 2017, and 2018, the Authority and FRA engaged in further consultation regarding La Paz. Meetings were also held with the National Park Service, the National Chávez Center, the Advisory Council on Historic Preservation, and the National Parks Conservation Association regarding potential impacts on La Paz. This consultation effort resulted in the development of the César E. Chávez National Monument Design Option (CCNM Design Option) evaluated in this EIR/EIS. In response to concerns expressed by consulting parties between June 2017 and February 2019, the Authority developed 10 design options that either avoided or minimized adverse effects to the National Historic Landmark. In 2019, the Authority issued the *Design Options Screening Report for the César E. Chávez/Nuestra Señora Reina de la Paz National Historic Landmark* (Authority 2019b) and the *Addendum to the Design Options Screening Report for the César E. Chávez/Nuestra Señora Reina de la Paz National Historic Landmark* (Authority 2019c), which evaluate the 10 potential design options developed to avoid or minimize impacts on La Paz. This process resulted in the Refined CCNM Design Option for the project section evaluated in this EIR/EIS.

Additionally, in response to public comments received on the Draft EIR/EIS, the project footprint at the W Avenue I underpass in the City of Lancaster was reduced to avoid a planned low-income housing development in the immediate vicinity. This refinement reduced the impacts by avoiding the acquisition of four parcels of land from the housing development site, due to a temporary construction easement and partial permanent acquisitions.

Following the public circulation of the Draft EIR/EIS, various engineering and design refinements were completed to reduce the environmental impacts resulting from the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). These refinements included reductions in the numbers of property acquisitions and relocations associated with each of the HSR Build Alternatives, especially within areas with substantial low-income and/or minority populations.

5.6 Environmental Consequences

As described in Section 5.3.1.4, Step 4: Identification of Disproportionate High and Adverse Effects on Environmental Justice Populations, this section summarizes the NEPA effect determinations provided in Chapter 3 of this EIR/EIS, which consider the implementation of IAMFs and mitigation measures. In the event that impacts were identified in Chapter 3, the context and intensity of those impacts were evaluated to determine whether they would represent an adverse effect under NEPA. Between the publication of the Draft EIR/EIS and this Final EIR/EIS the Authority conducted additional analyses to refine its adverse environmental justice effects findings based on the mandatory direction of USDOT Order 5610.2B to include offsetting project benefits in determining whether the project would have disproportionately high and adverse effects. The revisions also reconsidered the benefits of IAMFs and mitigation measures. Upon closer analysis of the project's noise effects during operation, the application of sound barriers have resulted in a reduction in operational noise impacts, resulting in the removal of adverse effects on minority populations from operational noise effects under each of the B-P Build Alternatives. Upon closer analysis of the project's cumulative effects across several impact areas, it was determined that either the project did not have cumulative effects on EJ communities, because there were no project effects that contributed to significant cumulative effects or that mitigation could be increased (i.e., noise barriers) that would remove the project's contribution to those effects and therefore, would no longer result in a cumulative effect. Community cohesion effects EJ findings during construction for all B-P Build Alternatives and the Palmdale Station were revised in part due to consideration of EJ community input and revised findings in Section 3.12, Socioeconomics and Communities, both of which identified certain project elements as beneficial to community cohesion. These revisions had the effect of minimizing double-counting of displacements effects (once under community cohesion and again under residential and business displacements), and the revisions considered the benefits of the IAMFs and mitigation measures discussed in Section 3.12, Socioeconomics and Communities. The potential geographic distribution of any adverse effects was then examined in an effort to determine whether any areas with substantial low-income and/or minority populations would be affected. Any adverse effects that would affect areas with substantial low-income and/or minority populations were then further analyzed in Section 5.7, Summary of Effects, to determine whether they would affect such populations. A conclusion regarding whether each B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option), maintenance facility, and station site would result in disproportionately high and adverse effects on low-income and/or minority populations is provided in Section 5.9, Environmental Justice Determination.

5.6.1 No Project Alternative

The No Project Alternative does not include construction and operation of the HSR project in the Bakersfield to Palmdale Project Section, but it does include many projects that would be implemented by 2040 (refer to Appendix 3.19-A for a complete list of projects that would take place under the No Project Alternative). The No Project Alternative considers the effects of growth planned for the region, as well as existing and planned improvements to the highway, aviation, conventional passenger rail, and freight rail systems in the Bakersfield to Palmdale Project Section

area through the 2040 time horizon for the environmental analysis. A complete description of the No Project Alternative is provided in Section 2.4.1, which provides foreseeable future projects, including large residential and commercial developments as well as transportation projects. Section 3.19, Cumulative Impacts, identifies a number of proposed projects that would affect communities within the EJ RSA. The effects from the No Project Alternative that have potential implications to communities in the EJ RSA include a beneficial effect on air quality and potential impacts to community cohesion. These effects are discussed in more detail below. Overall, all projects requiring discretionary action under the No Project Alternative would be subject to environmental review, through which potential disproportionate impacts to communities (including impacts to EJ populations) associated with these projects would be addressed.

5.6.1.1 Air Quality

The No Project Alternative represents future year 2040 conditions without the HSR project. The general plans of the Cities of Bakersfield and Palmdale and the County of Kern indicate continued land development and population growth within the region over the next 25 years, which would increase regional emissions under the No Project Alternative. However, increasingly stringent federal and state emission-control requirements and the replacement of older, higher-polluting vehicles with newer, less-polluting ones would reduce basin-wide emissions under the No Project Alternative. In addition, air district rules and plans have been established to bring the affected air basins into compliance with the National Ambient Air Quality Standards and California Ambient Air Quality Standards, which would reduce emissions under the No Project Alternative, notwithstanding this growth. Emissions in the region would increase over the next 25 years, but this increase could be mitigated with the general plan policies under the existing conditions and the No Project Alternative. Therefore, air quality is expected to improve in the basins under the No Project Alternative compared to existing conditions. The changes in air quality conditions would benefit all communities in both urban and rural areas of the two counties, including low-income and/or minority populations.

5.6.1.2 Community Cohesion

The No Project Alternative would not include the community benefits associated with the HSR project (i.e., reduction of traffic congestion on highways and major roadways and improved mobility). It is also unlikely that these projects would disrupt community interactions or divide established communities to the same extent as the HSR project.

If the planned projects are carried out, the development is assumed to be consistent with adopted general plans and policies, which aim to strengthen socioeconomic conditions in existing communities and improve neighborhood amenities, potentially benefiting community cohesion. The many development projects planned under the No Project Alternative would include typical design and construction practices to avoid or minimize potential adverse effects to the extent possible. These projects would be subject to separate project-level environmental review processes to identify potentially adverse effects and would include feasible mitigation measures to greatly reduce potential adverse effects.

Based on current development trends, the No Project Alternative would likely affect some community facilities; however, any potential adverse effects are assumed to be mitigated to the fullest extent possible. Emergency response times and access would likely be enhanced by transportation improvements. It is assumed that the projects planned under the No Project Alternative would be subject to a project-level environmental review and include feasible mitigation measures to greatly reduce potential adverse effects.

The planned projects would have temporary adverse effects on health primarily associated with air quality from construction activities. However, the projects are not as large in scale as the HSR project and any adverse effects would likely be smaller. In addition, roadway expansions would likely result in adverse air quality effects in the long term, so the No Project Alternative would not have the same benefits on air quality as the HSR project.

5.6.2 Bakersfield to Palmdale Project Section Build Alternatives

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would generally result in similar types of effects with similar magnitudes on low-income and/or minority populations. However, because the displacement and relocation effects vary somewhat by alternative, those are discussed separately. In addition, the CCNM Design Option and the Refined CCNM Design Option are in an area without any substantial low-income and/or minority populations and would not result in any changes in impacts to low-income and/or minority populations. As such, the Preferred Alternative (Alternative 2 with the Refined CCNM Design Option) would result in the same impacts to low-income and/or minority populations as Alternative 2.

Additionally, the maintenance of infrastructure siding facilities would not result in any changes in impacts to low-income or minority populations because these facilities would not result in any additional impacts to the B-P Build Alternatives. The following resources are not discussed as the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) do not have the potential to result in adverse effects on EJ populations; biological resources and wetlands; hydrology and water resources; and geology, soils, and seismicity.

The impacts analysis considers the potential for avoidance and minimization of impacts resulting from the implementation of programmatic IAMFs and the reduction of impacts resulting from the implementation of mitigation measures. The Authority would implement IAMFs during project design and construction, as relevant to the HSR project section, to avoid or reduce effects. Refer to Section 5.8.1 for additional information regarding the IAMFs that are applicable to the EJ analysis.

Section 5.8.2 provides a list of the mitigation measures that are applicable to the EJ analysis.

5.6.2.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

Table 5-5 identifies whether each B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option) and the two stations, Bakersfield LGA and Palmdale, would result in adverse effects on low-income and/or minority populations during the construction phase for each resource topic.

Transportation

Construction activities related to the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in additional traffic in the EJ RSA as a result of temporary lane closures or modifications. However, temporary road closures and detours would not create operational hazards, inconsistent uses, or safety risks, and would not materially affect traffic circulation because detour routes would be made available.

Access to some areas would be disrupted and detoured for short periods during construction. While these access disruptions and detours would affect diverse populations along much of the HSR alignment, these adverse effects may be more disruptive to produce packing houses in the Edison area during peak harvest seasons because they depend on direct and convenient access to the regional highway network to receive produce from nearby farms and ship it to market.

Table 5-5 Summary of Adverse Effects during Construction—Bakersfield to Palmdale Project Section Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)

Resources	Adverse Effects during Construction		
	B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Bakersfield Station—F-B LGA	Palmdale Station
Transportation	No	No	No
Air Quality	No	No	No
Noise and Vibration	No	No	No
Electromagnetic Interference and Electromagnetic Fields	No	No	No
Public Utilities and Energy	No	No	No
Geology and Soils	No	No	No
Hazardous Materials and Wastes	No	No	No
Safety and Security	No	No	No
Community Cohesion	No	No	No
Construction Employment Resulting in Need for Additional Community Facilities	No	No	No
Displacements and Relocations	Yes	Yes	Yes
Economic and Other Effects	No	No	No
Agricultural Land	No	No	No
Parks, Recreation, and Open Space	No	No	No
Aesthetics and Visual Quality	Yes	No	No
Cumulative Effects	No	No	No

Authority = California High-Speed Rail Authority

B-P = Bakersfield to Palmdale Project Section

CCNM = César E. Chávez National Monument

EJ = environmental justice

F-B LGA = Fresno to Bakersfield (Locally Generated Alternative) portion from the intersection of 34th Street and L Street to Oswell Street

Due to the perishable nature of produce, the packing house industry is especially vulnerable to economic losses in the event of shipping delays. Historically, employment in Central California's produce packing industry has been dominated by low-income and/or minority populations; therefore, adverse economic effects to this industry could affect low-income and/or minority populations in Edison and the surrounding area. Temporary detours during construction of the B-P Build Alternatives would also be required in the City of Lancaster. Because the temporary detour locations in Lancaster would not be in agricultural areas, those closures are not anticipated to affect agricultural operations. A Construction Transportation Plan (CTP) would be prepared to avoid potential transportation effects during construction (TR-IAMF#2). TR-IAMF 2,

Construction Transportation Plan, requires close coordination with each pertinent city or county to maintain traffic flow during peak travel times and includes provisions for emergency vehicle and farm equipment access. The CTP would also require coordination with packing house operators in the Edison area to stage road closures in way that would minimize disruptions to shipping and receiving at those facilities during the peak harvest season.

The construction management plan described in SOCIO-IAMF#1, Construction Management Plan, would maintain property access for local businesses, residences, and emergency services in neighborhoods along the HSR alignment. In addition, the construction management plan would include efforts to consult with local transit providers to minimize adverse effects on local and regional bus routes in affected communities. Any roadways that would need to be moved due to the HSR project right-of-way requirements would be realigned before the closure of the existing roadway to minimize adverse effects. Construction would also require an increase in truck trips that could increase congestion and affect pedestrians, bicyclists, and transit through detours, delays, or increased safety risks. TR-IAMF#1, Protection of Public Roadways During Construction, through TR-IAMF#5, Maintenance of Bicycle Access, and TR-IAMF#7, Construction Truck Routes, through TR-IAMF#11, Maintenance of Transit Access, require adherence to specific procedures to avoid and minimize impacts to access and circulation for all transportation modes during the construction period.

As noted above, implementation of TR-IAMF#2 and SOCIO-IAMF#1 would maintain emergency vehicle access for police and fire protection services at all times. Law enforcement, fire, and emergency services could experience increased response times due to construction-related road closures, detours, and increased traffic congestion in some locations. Implementation of TR-IAMF#2 would minimize potential disruptions to packing houses in the Edison area. TR-IAMF#1 through TR-IAMF#5 and TR-IAMF#7 through TR-IAMF#11 would reduce potential impacts to other modes of transportation during construction. Incorporation of these impact avoidance and minimization features would reduce these temporary effects. However, based on the NEPA analysis, an impact would still occur under all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). As stations and track installation are completed in certain cities, local disruptions would be reduced. Because the CTP (TR-IAMF#2) would be updated as each stage of construction is completed, it would effectively address circulation impacts to emergency responders, pedestrians, bicyclists, and transit and automobile users during the construction period. Therefore, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Because none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse short-term effects related to transportation systems from construction, this resource topic is not discussed further.

Air Quality

Direct emissions from the construction phases of the project subsections within the San Joaquin Valley Air Pollution Control District, the Eastern Kern Air Pollution Control District, and the Antelope Valley Air Quality Management District would exceed the General Conformity rule (GC) applicability thresholds for particulate matter and nitrogen oxide emissions pursuant to the Clean Air Act, which applies to each of those air quality management districts. Construction would also exceed the GC applicability thresholds for volatile organic compounds for the San Joaquin Valley Air Pollution Control District. These exceedances would have the potential to cause regional air quality impacts. The temporary effects of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) related to air quality would be minimized through compliance with AQ-IAMF#1, Fugitive Dust Emissions, and AQ-IAMF#2, Selection of Coatings. Implementation of AQ-IAMF#1 would minimize emissions by requiring the preparation of a fugitive dust control plan, which would identify the minimum features that would be implemented during ground-disturbing activities. Implementation of AQ-IAMF#2 would minimize emissions by limiting the type of paint to be used during construction to those with volatile organic compound content of less than 10 percent (low). Using paint that releases fewer organic compounds into the air after application is an air quality management measure effective in reducing construction emissions and achieving federal and state air quality standards.

With on-site mitigation (i.e., AQ-MM#1: Offset Project Construction Emissions Through an SJVAPCD Voluntary Emission Reduction Agreement [VERA]), the volatile organic compound, nitrogen oxide, and particulate matter effect would be reduced below the GC applicability thresholds through the purchase of offset emissions through a Voluntary Emission Reduction Agreement with the San Joaquin Valley Air Pollution Control District, and emissions offsets from the Eastern Kern Air Pollution Control District's Emission Banking Certificate Program and the Antelope Valley Air Quality Management District's Air Quality Investment Program. Nevertheless, all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in some emissions during construction, which would represent an impact. Based on the regional nature of these emissions impacts and the fact that the emissions can be reduced below the GC applicability thresholds, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects.

Construction and demolition activities related to the B-P Build Alternatives could result in impacts at nearby sensitive receptors (e.g., schools, residences, and healthcare facilities), including receptors in communities with low-income and/or minority populations. During construction, sensitive receptors along the HSR alignment would be subject to an incremental increase in cancer risk associated with emissions from construction equipment and concrete batch plants. The construction activities associated with the guideway/alignment would take place near the sensitive receptors for short periods of time, and air dispersion modeling and health risk assessments indicate that concentration levels and health risks would be below applicable thresholds within each air quality management district. As a result, the localized air quality effects resulting from construction activities near sensitive receptors would be of a very low intensity. Nevertheless, because each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an incremental increase in cancer risk, an impact would occur. Air dispersion modeling and health risk assessments indicate that concentration levels and health risks would be below applicable thresholds. Therefore, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects.

Emissions generated from operation of concrete batch plants, which would produce concrete for the elevated structures (elevated rail) and retaining wall (retained-fill rail), are included in the total regional construction emissions for each B-P Build Alternative (including the CCNM Design Option and Refined CCNM Design Option). These plants would be located along the HSR alignment and could result in effects related to cancer risks, as well as chronic and acute noncancer health effects, especially on sensitive receptors within 1,000 feet of the batch plant. Mitigation Measure AQ-MM#4 (Reduce the Potential Impact of Stationary Sources) would reduce potential effects from concrete batch plants by siting them at least 1,000 feet from sensitive receptors and requiring that they incorporate typical control measures to reduce fugitive dust. Based on the NEPA analysis, with implementation of Mitigation Measure AQ-MM#4, no effect would occur related to health risk impacts on sensitive receptors within 1,000 feet of the batch plant. As such, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects.

Construction emissions associated with the project would be temporary but would cumulatively contribute to air quality degradation and impede the region's ability to attain air quality standards. In addition, past, present, and reasonably foreseeable future projects would have significant volatile organic compound, nitrogen oxide, and particulate matter emissions. Because these projects would be constructed during the same timeframe as the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), there would be a cumulative effect of substantial intensity. Emission offsets would be purchased to reduce these exceedances to less than significant under CEQA as required by Mitigation Measure AQ-MM#2 (Purchase Offsets and Off-Site Emission Mitigation for Emissions Associated with Hauling Ballast Material in Certain Air Districts). With the purchase of offsets, the Bakersfield to Palmdale Project Section would not contribute to cumulative air quality effects, reducing the intensity of effects. Therefore, based on the NEPA analysis, all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in no effect. Because none of the B-P Build

Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse short-term air quality effects from construction activities, this resource topic is not discussed further.

Noise and Vibration

The transportation of materials and workers to construction sites would result in noise. The implementation of NV-IAMF#1, Noise and Vibration, would minimize potential impacts related to noise and vibration during construction by requiring the Contractor to document how federal guidelines for minimizing noise and vibration would be employed when construction is taking place near sensitive receptors (e.g., hospitals, residential neighborhoods, and schools). The projected construction traffic volume would be minimal when compared to existing traffic volumes on affected local streets and, therefore, would not result in an audible change in noise. Thus, potential noise effects from short-term construction-related worker commutes and equipment transport would be nearly unnoticeable. Therefore, based on the NEPA analysis, there would be no effect.

General noise effects from rail corridor construction and the associated drilling, bulldozing, pile driving, and blasting are projected to exceed the FRA's criteria for daytime construction noise. If nighttime construction is required, construction noise effects are expected to exceed the local jurisdictions' nighttime noise standards. As noted above, implementation of NV-IAMF#1, Noise and Vibration, would minimize potential impacts related to noise and vibration during construction. Although these effects would be temporary during construction, potential noise effects would be of substantial intensity. The implementation of Mitigation Measure N&V-MM#1 (Construction Noise Mitigation Measures) would reduce the potential noise impacts through a noise monitoring plan, noise reduction measures, and a toll-free public hotline to address questions and concerns related to noise. The above mitigation measure would reduce the intensity of the construction noise effects; however, based on the NEPA analysis, an impact would occur. Based on the temporary nature of the noise impacts during construction and the effectiveness of the mitigation measure in reducing those impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects under NEPA.

Vibration effects from rail corridor construction would occur during drilling, bulldozing, pile driving, and blasting. Vibration effects from drilling and bulldozing could potentially damage fragile or historic structures within a distance of 15 feet and residential structures within a distance of 20 feet. Vibration effects from pile driving could potentially damage historic structures within 55 feet and residential structures within 77 feet. Because vibration-sensitive structures are within these distances from rail corridor construction that would exceed the construction damage criteria, potential vibration effects would be of substantial intensity. Implementation of NV-IAMF#1, Noise and Vibration, would minimize potential impacts related to vibration during construction. In addition, the implementation of Mitigation Measure N&V-MM#2, which requires the use of alternative methods to pile driving (such as cast-in-drilled-holes), would reduce the intensity of potential vibration impacts. Although implementation of Mitigation Measure N&V-MM#2 would reduce the vibration impacts, based on the NEPA analysis, an impact would occur. Given the minor intensity of the remaining vibration impacts and the localized nature of those impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects.

Noise effects from roadway construction would exceed the FRA's daytime construction noise criteria. If typical roadway construction activities are done in conjunction with pile driving, the noise effects would be even greater. Although these impacts are temporary during construction, potential noise effects would be of substantial intensity. The implementation of Mitigation Measure N&V-MM#1 (Construction Noise Mitigation Measures) would reduce the potential noise impacts through a noise monitoring plan, noise reduction measures, and a toll-free public hotline to address questions and concerns related to noise. As a result of the above mitigation measure, the intensity of construction noise effects would be reduced. Nevertheless, based on the NEPA analysis, an impact would occur. Given the minor intensity of the remaining noise impacts and the

localized nature of those impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects.

Roadway construction would likely use a bulldozer and may require the use of pile drivers. As schools, residences, and other noise-sensitive land uses would be within 63 to 135 feet of bulldozing, vibration levels generated from bulldozing would result in annoyance. However, schools and residences would not be within 15 feet of bulldozing driving and fragile or historic structures would not be within 20 feet of bulldozing that would result in building damage. Implementation of NV-IAMF#1, Noise and Vibration, would minimize potential impacts related to noise during construction. Based on the NEPA analysis an impact would occur. Given the minor intensity of the remaining noise impacts and the localized nature of those impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects.

For the B-P Build Alternatives (including the CCNM Design Option and Refined CCNM Design Option), during construction, sensitive receptors within 114 feet during the daytime hours and within 330 feet during nighttime hours of construction areas would be impacted (Figure 5-A-4 [Appendix 5-A]). In Figure 5-A-4, urbanized areas are those areas that are not identified as Low Population Density. As shown on Figure 5-A-4, all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would cause temporary construction noise impacts that would affect substantial low-income and/or minority populations (or some combination of minority and/or low-income populations) within the following urbanized areas within the RSA:

- **Bakersfield Station Subsection**—Within the east Bakersfield area, within Census Tracts 3, 4, 6, 11.03, 12.02, 13, 15, 16 (partial), 17, and 23.01 (Figure 5-A-4, Sheet 2), with the heaviest concentrations of low-income and/or minority populations on the north side of the HSR alignment
- **San Joaquin Valley Subsection**—Within the east Bakersfield area, within Census Tracts 11.01, 11.02, and 23.01 (Figure 5-A-4, Sheet 3), mostly on the north side of the HSR alignment
- **Urban Antelope Valley Subsection**—Within Lancaster, within Census Tracts 9006.02, 9006.06, 9006.07, 9005.01, 9005.04, 9008.03, 9008.06, 9007.01, and 9007.04, on both sides of the HSR alignment (Figure 5-A-4, Sheet 11)
- **Palmdale Station Subsection**—Within Palmdale, within Census Tracts 9105.01, 9105.04, 9105.05, 9102.01, 9104.02, 9104.03, and 9104.04, on both sides of the HSR alignment (Figure 5-A-4, Sheet 12)

However, with implementation of Mitigation Measures N&V-MM#1 and N&V-MM#2 (described in further detail in Section 3.4.7), the intensity of the project's temporary noise and vibration effects on nearby properties would be reduced by reducing noise and vibration related to the construction process and by limiting or avoiding certain noisy activities during nighttime hours. Based on the NEPA analysis, an impact would occur. Given the minor intensity of the remaining noise and vibration impacts and the localized nature of those impacts after implementation of mitigation measures, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. No communities, including low-income and/or minority populations, would experience adverse effects related to short-term noise and vibration effects during construction. Therefore, this resource topic is not discussed further.

Electromagnetic Interference and Electromagnetic Fields

For all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), construction equipment would generate low levels of electromagnetic fields (EMF) through electric motors and radio and mobile phone use. For a more detailed description of electromagnetic interference EMI/EMF effects, refer to Section 3.5.6.3. The contribution of B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option)

construction would result in EMI levels in the RSA that would be at or near existing levels that are unlikely to cause adverse EMI effects at nearby land uses or hazards to workers. Implementation of EMI/EMF-IAMF#1, Controlling Electromagnetic Fields/Electromagnetic Interference, would avoid or minimize effects related to EMI during construction by identifying and addressing potential construction-related EMI/EMF impacts in accordance with international guidelines, federal and state laws, and regulations. Mitigation Measure EMI/EMF-MM#1, which would reduce construction-related EMI/EMF impacts, would also apply if sensitive equipment is identified. With implementation of EMI/EMF-IAMF#1 and EMI/EMF-MM#1, and compliance with Federal Communications Commission regulations, construction of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have an impact. However, given the relatively minor intensity of the remaining EMI/EMF impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore, this resource topic is not discussed further.

Public Utilities and Energy

Construction of the HSR project would also require the temporary interruption of utility services. Implementation of PU&E-IAMF#1 and PU&E-IAMF#2 would require advance public notification of utility disruptions and would minimize disruptions through coordination with the utility providers. Utility interruptions would be brief and noticeable to utility users. Based on the NEPA analysis, with regard to temporary interruption to utility services, an impact would occur. Given the temporary and highly localized nature of potential utility disruptions, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. No communities, including low-income and/or minority populations, would experience adverse effects related to short-term, construction-phase utility interruptions. Therefore, this resource topic is not discussed further.

Construction of the HSR project could also result in the accidental disruption of utility services. While PU&E-IAMF#2 would reduce the likelihood of accidental utility interruption, based on the NEPA analysis, the effects of accidental utility interruptions would be an impact. Given the temporary and highly localized nature of potential utility disruptions, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. No communities, including low-income and/or minority populations, would experience adverse effects as a result of potential construction-related accidental disruptions to utility services. Therefore, this resource topic is not discussed further.

Geology and Soils

Section 3.9.6.3 addresses the effects of seismicity and associated hazards on the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). These effects are summarized in the operational impact analysis in Section 5.6.2.2.

Hazardous Materials and Wastes

Construction of any of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in increased hazardous materials use and waste generation, including asbestos-containing material and lead-based paint. For a more detailed description of hazardous materials and wastes effects, refer to Section 3.10.6.3. Implementation of HMW-IAMF#1, Property Acquisition Phase 1 and Phase 2 Environmental Site Assessments, through HMW-IAMF#8, Environmental Management System, would reduce effects arising from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The potential for accidental spills and releases would be reduced with implementation of regulatory requirements and the above IAMFs. Mitigation Measure HMW-MM#1, Limit Use of Extremely Hazardous Materials near Schools During Construction, would also help to minimize the potential release of hazardous materials through limiting the use of extremely hazardous materials near schools during construction. Although implementation of HMW-MM#1 would reduce most of the impacts, an impact would occur. Given the relatively minor intensity of the remaining impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore,

no communities, including low-income and/or minority populations, would experience adverse effects from hazardous materials. Accordingly, this resource topic is not discussed further.

Temporary hazardous material and waste activities within 0.25 mile of schools could occur during the construction period. The HSR project would comply with all applicable federal, state, and local regulations and would implement HMW-IAMF#1, Property Acquisition Phase 1 and Phase 2 Environmental Site Assessments, through HMW-IAMF#8, Environmental Management System, reducing the intensity of potential effects. Mitigation Measure HMW-MM#1 (Limit Use of Extremely Hazardous Materials near Schools During Construction) would also apply to minimize the potential release of hazardous materials. The short-term effects relating to temporary hazardous materials and waste activities would be reduced with implementation of the IAMFs and mitigation measures detailed above; however, an impact would occur pursuant to NEPA. Given the relatively minor intensity of the remaining impacts, none of the B-P Build Alternatives (including the CCNM Design Option and Refined CCNM Design Option) would result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects from hazardous materials. As a result, this resource topic is not discussed further.

Safety and Security

During construction, there is a potential for accidents at construction sites and accidents associated with construction-related detours that could result in accidental injuries and deaths of workers or the general public. For a more detailed description of safety and security effects, refer to Section 3.11.6.3. A description of effects related to the risk of wildfires is provided in Section 5.6.2.2 below. Employees engaged in construction activities would follow all applicable construction safety codes and regulations. Standard implementation of a construction safety and health plan during construction, in compliance with legal requirements, would reduce risk to human health during construction. In addition, contractors would be required to develop Safety and Security Management Plans, Site-Specific Health and Safety Plans and a Site-Specific Security Plan. With implementation of S&S-IAMF#2, Safety and Security Management Plan, the potential for construction site accidents would be greatly reduced for all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). With respect to the potential for accidents at construction sites and accidents associated with construction-related detours, based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a temporary impact. Given the relatively minor intensity of the remaining impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects related to accidents at construction sites and accidents associated with construction-related detours. Accordingly, this resource topic is not discussed further.

There is a potential for employees to become infected with Valley Fever during ground-disturbing activities. Valley Fever is an infection caused by a fungus that lives in arid soils in the southwestern U.S. Appropriate precautions would be taken to educate construction workers and contractors about the signs and risks of Valley Fever. Additionally, Construction Safety and Health Plans would be implemented during construction (S&S-IAMF#2) that would include measures to reduce the likelihood of Valley Fever fungal infection during construction. With implementation of S&S-IAMF#2, the intensity of effects related to Valley Fever is expected to be minimized; however, an impact would occur under all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). Given the relatively minor intensity of the remaining impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects related to Valley Fever during construction. As such, this resource topic is not discussed further.

Under all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), road closures and modified traffic routing along the HSR alignment during construction could result in increased response times for emergency responders. Temporary construction-related closures would occur at the following locations:

Alternatives 1, 3, and 5

Edison

- Edison Road: Temporary Closure for Construction
- Malaga Road: Temporary Closure for Construction
- Comanche Drive: Temporary Closure for Construction
- Tejon Highway: Temporary Closure for Construction

Lancaster

- Avenue G: Temporary Closure for Construction
- Avenue H: Temporary Closure for Construction
- Avenue I: Temporary Closure for Construction
- Lancaster Boulevard: Temporary Closure for Construction
- Avenue J: Temporary Closure for Construction
- Avenue K: Temporary Closure for Construction
- Avenue L: Temporary Closure for Construction

Alternative 2

Lancaster

- Avenue G: Temporary Closure for Construction
- Avenue H: Temporary Closure for Construction
- Avenue I: Temporary Closure for Construction
- Lancaster Boulevard: Temporary Closure for Construction
- Avenue J: Temporary Closure for Construction
- Avenue K: Temporary Closure for Construction
- Avenue L: Temporary Closure for Construction

Emergency responders within the RSA would be notified in advance of any road closures that could potentially disrupt access or result in delays in emergency response times, and appropriate detour routes with advance signage to notify emergency providers of road closure would be provided. The above measures would reduce the intensity of effects for all the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option); however, an impact would occur. Given the relatively minor intensity of the remaining impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects related to emergency response during construction. Accordingly, this resource topic is not discussed further.

Criminal activity around HSR construction sites would be typical of the types of crimes that occur at other heavy construction sites, such as theft of equipment and materials or vandalism after work hours. Construction contractors would institute security measures common to construction sites, including securing equipment and materials in fenced and locked storage areas, as well as the use of security personnel after working hours. Security lighting would be required to be focused on the site, minimizing light spillage onto neighboring properties. With respect to criminal activity, based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a temporary impact. Given the relatively minor intensity of the remaining impacts, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects related to criminal activity at construction sites. As a result, this resource topic is not discussed further.

Socioeconomics and Communities

Community Cohesion

Temporary Disruption of Community Cohesion and Division of Existing Communities

Construction of any of the B-P Build Alternatives (including the CCNM Design Option and Refined CCNM Design Option) would cause temporary increases in noise and dust, visual changes, and traffic congestion related to road closures or detours over the three-year period when heavy

construction would take place. In addition, access to some community facilities could be modified temporarily during construction, potentially inconveniencing patrons. Implementation of NV-IAMF#1, Noise and Vibration, AQ-IAMF#1, Fugitive Dust Emissions, and AQ-IAMF#2, Selection of Coatings, would minimize the HSR project's temporary impacts related to noise and air quality. The temporary impacts related to community circulation from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would be minimized through compliance with SOCIO-IAMF#1, Construction Management Plan. Implementation of these IAMFs would minimize the potential for construction to temporarily disrupt community cohesion or divide existing communities; however, some temporary effects related to air quality and noise and access to park facilities would remain. Because these effects would represent short-term social changes within affected communities along the HSR project, the remaining effects would be reduced.

Implementation of Mitigation Measure AQ-MM#1 would reduce the temporary air quality impacts from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) on nearby properties by reducing emissions. Implementation of Mitigation Measures N&V-MM#1 and N&V-MM#2 would reduce the temporary noise and vibration effects from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) on nearby properties by reducing noise and vibration related to the construction process and by limiting or avoiding certain noisy activities during nighttime hours.

Implementation of Mitigation Measure PR-MM#1 would reduce the temporary impacts on access to park facilities from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) by ensuring that connections to unaffected trail portions and nearby roadways are maintained during construction. Implementation of Mitigation Measures AVQ-MM#1 and AVQ-MM#2 would reduce the temporary aesthetic effects from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) by reducing visual disruption and light disturbance during construction.

After implementation of the mitigation measures described above, the intensity of the B-P Build Alternatives' (including the CCNM Design Option and the Refined CCNM Design Option) effects related to temporary disruptions to community cohesion would be reduced. Given the relatively minor intensity of the remaining impacts, none of the B-P Build Alternatives would result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse short-term, construction-related effects to communities under any of the B-P Build Alternatives. Accordingly, this resource topic is not discussed further.

Permanent Disruption of Community Cohesion and Division of Existing Communities

Construction of any of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) could potentially divide or disrupt communities adjacent to the HSR alignment by permanently displacing residents, businesses, and important community facilities. Implementation of IAMFs would minimize the potential for construction to permanently disrupt community cohesion or to divide existing communities. The permanent effects related to displacements and relocations from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would be minimized through compliance with SOCIO-IAMF#2, Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act, and SOCIO-IAMF#3, Relocation Mitigation Plan.

For a more detailed description of the community cohesion effects (largely beneficial) associated with each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), refer to Section 3.12.6.2. All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would also enhance connectivity and improve community cohesion in Edison, Lancaster, and Palmdale by constructing new grade separations in those communities, which are currently divided by existing railroad lines. Following the evaluation of comments on the Draft EIR/EIS by the City of Lancaster, the Authority refined the project design to retain the connectivity of Lancaster Boulevard as an underpass. With the connection at Lancaster Boulevard, the connection of Milling Street across the HSR alignment is no longer proposed. These design refinements would result in increased connectivity and community cohesion in Lancaster.

Since publication of the Draft EIR/EIS, upon closer analysis of the project's community cohesion effects during construction, cohesion effects during construction resulting from the displacement of residents and businesses were removed under each of the B-P Build Alternatives to avoid double-counting displacements effects (once under construction community cohesion and again under residential and business displacements). These effects would relocate a substantial number of residences and businesses (in Lancaster and Palmdale), and result in noticeable permanent social changes (in Lancaster). However, these the remaining effects would not result in an impact. The connectivity improvements under all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would be of moderate intensity. With these beneficial effects, the permanent effects on community cohesion from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in an impact under NEPA.

Mitigation Measure SO-MM#3, which would apply to all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), requires that the Authority consult with appropriate parties prior to land acquisition to assess potential opportunities to reconfigure buildings and/or relocate affected facilities, as necessary, to minimize any disruptions to activities and services at those facilities.

Implementation of the mitigation measures described above would minimize or mitigate the project's potential to permanently disrupt community character and cohesion. Therefore, after implementation of the mitigation measures described above, the effects related to the permanent disruption of community character and cohesion from all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not remain and would not result in an impact under NEPA.

Temporary Construction Employment Resulting in the Need for Additional Community Facilities

Construction of the HSR project would result in temporary increases in employment. However, the temporary employment generated by the B-P Build Alternatives would represent a small percentage of the two-county region's forecasted employment growth. This small percentage increase would not be substantial enough to greatly attract workers to the region. Therefore, the construction of the B-P Build Alternatives would not result in the need to construct new or expand existing community facilities to serve the expanded population and employment base.

Employment effects associated with HSR project construction would vary by each B-P Build Alternative due to differences in construction difficulty and construction activity type. Generally, higher spending on construction leads to greater direct job creation, as well as the associated indirect and induced employment. Overall, it is expected that employment growth associated with construction of the HSR project would be a net benefit for the region, as it would spur additional economic activity in areas currently experiencing high unemployment.

The temporary effects resulting from construction of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a noticeable economic change within the two-county region. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a short-term beneficial effect that would be experienced by all communities within the RSA on some level, including low-income and/or minority populations as well as nonlow-income and nonminority populations. Therefore, this resource topic is not discussed further.

Displacements and Relocations

For displacements and relocations, construction-phase effects is first discussed for Alternatives 1, 2, and 3, and then for Alternative 5. For a more detailed description of displacements and relocations effects, refer to Section 3.12.6.2.

Alternatives 1, 2, and 3

Project-related displacements during the construction process would result in the division of some communities by removing numerous homes, businesses, and community services or amenities.

Alternatives 1, 2, and 3 would displace approximately 243, 243, and 244 residential units (respectively) in the Northeast Bakersfield District, Edison, Tehachapi, Rosamond, Lancaster, and unincorporated areas in Kern and Los Angeles Counties. These residential displacements

would correlate to approximately 712, 712, and 715 displaced residents for Alternatives 1, 2, and 3 respectively. Residential displacements and the displacement of facilities of concern for low-income populations under these three B-P Build Alternatives would be very similar with or without the CCNM Design Option and the Refined CCNM Design Option.

The greatest concentration of these displacements would occur in Lancaster. Of the 196 residential displacements in Lancaster under Alternatives 1, 2, and 3, 179 (or approximately 91 percent) would occur in areas with substantial low-income populations and 44 (or approximately 22 percent) would occur in areas with substantial minority populations. The remaining residential displacements related to Alternatives 1, 2, and 3 would occur along the proposed HSR alignment through the Northeast Bakersfield District, Edison, Tehachapi, Rosamond, and unincorporated areas in Kern and Los Angeles Counties. Of the non-Lancaster residential displacements, only 1 residential displacement would occur in an area with a substantial low-income population and only 5 residential displacements would occur in areas with substantial minority populations. No residential displacements would occur in the portion of Palmdale north of Avenue O.

One of the displacements in Lancaster is an affordable housing apartment complex reserved for residents age 55 and older. According to the City of Lancaster's Affordable Housing Database, 96 of these units are subject to long-term affordability covenants that expire in 2029 (an on-site management unit is not subject to income restrictions) (City of Lancaster 2014). Figure 5-A-5 (Appendix 5-A) shows the location of this affordable senior housing complex and several other facilities of concern in Lancaster that would be displaced by the B-P Build Alternatives (see below for additional discussion regarding the affected facilities). The facilities shown on Figure 5-A-5 are also listed in Table 5-6, which provides a brief overview of each facility along with the potential effects that could occur under the various B-P Build Alternatives.

Table 5-6 Facilities of Concern for Low-Income Populations in Lancaster

Address	Type of Facility	Potential Displacement Effect	Displaced?	
			Alts. 1, 2, and 3	Alt. 5
531 W Jackman St	Affordable Housing (apartment complex)	36 residential units; all are subject to long-term affordability covenants that expire in 2060	No	Yes
45134 Sierra Hwy	Homeless Service Center (provides meals, groceries, classes, and necessities; no on-site housing)	Service center	No	Yes
44219 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	200 rooms	No	Yes
43321 Sierra Hwy	Senior Affordable Housing (apartment complex)	97 residential units; 96 units are subject to long-term affordability covenants that expire in 2029	Yes	Yes
43145 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	21 rooms	Yes	Yes
43135 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	19 rooms	Yes	Yes
42943 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	18 rooms	Yes	Yes
42445 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	26 rooms	Yes	Yes
42329 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	13 rooms	Yes	Yes
42233 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	15 rooms	Yes	Yes
42137 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	21 rooms	Yes	Yes
42047 Sierra Hwy	<i>De Facto</i> Affordable Housing (motel)	22 rooms	Yes	Yes

Sources: California High-Speed Rail Authority, 2017; City of Lancaster, 2014
Alt. = Alternative

Alternatives 1, 2, and 3 would displace eight older motels along Sierra Highway in Lancaster that appear to rent rooms on a weekly and/or monthly basis to low-income populations. Rooms available for rent on a weekly or monthly basis often serve as *de facto* affordable housing for low-income populations who are unable to move into more permanent rental housing due to bad credit, gaps in work history, a lack of credible references, and/or insufficient financial resources to pay for a security deposit and the first month's rent. The residents of these motels are not eligible to receive relocation benefits under the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) unless they have been living in their current residence for 30 days or longer. The displacement of these motels would impact low-income populations; however, given the uncertainty surrounding how many of the rooms are currently being rented on a weekly or monthly basis, the extent of this effect remains unknown.

Small numbers of residential displacements would affect minority and/or low-income populations in Edison.

Alternatives 1, 2, and 3 would also displace 231 businesses and 1,679 associated employees. The number of businesses displaced under all B-P Build Alternatives are the same with or without the CCNM Design Option and the Refined CCNM Design Option. The majority of these business displacements (188 businesses and 1,365 employees) would be in Lancaster. Of the 188 business displacements in Lancaster under Alternatives 1, 2, and 3, 28 (or approximately 15 percent) would occur in areas with substantial minority populations and 64 (or approximately 34 percent) would occur in areas with substantial low-income populations. As described in Section 5.3.1, Data Collection and Analysis, substantial low-income and/or minority populations were not identified in low-density census blocks (fewer than 128 people per square mile). However, most of the business displacements in Lancaster would occur in established commercial and industrial districts that have very few residents and, thus, do not meet the minimum population density threshold discussed above. Given the short distance between all of the business displacements in Lancaster and the nearby residential areas that do include substantial low-income and/or minority populations, it is likely that a large number of the businesses are owned by, employ, and/or provide goods and services to low-income and/or minority populations.

The remaining 43 commercial and industrial business displacements associated with Alternatives 1, 2, and 3 would be scattered along the HSR alignment in the Northeast Bakersfield District, Tehachapi, Palmdale, and unincorporated areas in Kern and Los Angeles Counties. Of the 3 business displacements in Tehachapi and the 21 business displacements in Palmdale (north of Avenue O), none would occur in areas with substantial low-income or minority populations. And of the 19 businesses that would be displaced in the unincorporated areas of Kern and Los Angeles Counties, only 3 (or approximately 16 percent) would occur in areas with substantial minority populations and 1 (or approximately 5 percent) would occur in areas with substantial low-income populations. Although the communities of Edison and Rosamond have substantial low-income and/or minority populations, no business displacements would occur in those communities. No business displacements would occur in Keene or Golden Hills, which do not include substantial low-income or minority populations.

For Alternatives 1, 2, and 3, it is currently unknown precisely how many of the estimated employees who would be displaced by business relocations are people living within census block groups or tracts that have been identified as having substantial low-income and/or minority populations. It is assumed that at least some portion of these displaced employees are a part of either low-income or minority populations (e.g., lives and works in relatively close proximity rather than commuting from further outlying areas). As further discussed in Section 6.5.2.1, B-P Build Alternatives, of the CIA (Authority 2018a), examination of suitable replacement locations for displaced businesses has determined that a sufficient number of alternative sites are available (for the retail, professional services, and industrial sectors) within the two-county region.

Compliance with the Uniform Act (SOCIO-IAMF#2) would address any effects related to property acquisitions by providing relocation assistance to all residents and businesses displaced by the HSR project. With implementation of SOCIO-IAMF#2, it is expected that most displaced businesses would relocate within relatively close proximity (e.g., within the same community or

city) to their current locations. Therefore, it is expected that displaced workers (including low-income and/or minority populations) would in most cases maintain their jobs, as it is expected they would relocate with their businesses that would be relocating.

After implementation of the IAMFs discussed above, for Alternatives 1, 2, and 3, based on the NEPA analysis, the remaining effects would be an impact. Given the substantial intensity of the remaining impacts and the sheer number of residents and businesses that would be affected, this would represent an adverse effect under NEPA. By far the greatest number of residential and business displacements for Alternatives 1, 2, and 3 would occur in Lancaster, within or adjacent to areas that have substantial minority and/or low-income populations. Therefore, minority and/or low-income populations would experience adverse displacement and relocation effects.

Alternative 5

Alternative 5 would result in many of the same displacements as Alternatives 1, 2, and 3. Alternative 5 would displace approximately 338 residential units, which correlates to approximately 990 displaced residents. Similarly, the majority of these displacements would be in areas with substantial low-income and/or minority populations. The greatest concentration of these displacements would occur in Lancaster. Of the 296 residential displacements in Lancaster under Alternative 5, 279 (or approximately 94 percent) would occur in areas with substantial low-income populations and 185 (or approximately 63 percent) would occur in areas with substantial minority populations. The remaining 42 residential displacements under Alternative 5 would occur along the proposed HSR alignment through the Northeast Bakersfield District, Edison, Tehachapi, Rosamond, and unincorporated areas in Kern and Los Angeles Counties. Of these 42 displacements, only 1 residential displacement would occur in an area with a substantial low-income population and only 5 residential displacements would occur in areas with substantial minority populations. No residential displacements would occur in the portion of Palmdale north of Avenue O.

In addition to the displacements required under Alternatives 1, 2, and 3, Alternative 5 would displace residential units at an affordable housing complex. All residential units at this apartment complex are subject to long-term affordability covenants that expire in 2060 (City of Lancaster 2014). As shown in Table 5-6, Alternative 5 would also displace one additional motel along Sierra Highway and a homeless service resource center, an important community resource for homeless populations in the Antelope Valley.

Alternative 5 would also result in commercial and industrial business displacements that are similar to those under Alternatives 1, 2, and 3. The majority of these displacements (248 businesses [or 86 percent]) would occur in Lancaster. Of the 248 business displacements in Lancaster under Alternative 5, 89 (or approximately 36 percent) would occur in areas with substantial minority populations and 119 (or approximately 48 percent) would occur in areas with substantial low-income populations.

The remaining 41 commercial and industrial business displacements required under Alternative 5 would be scattered along the HSR alignment in the Northeast Bakersfield District, Tehachapi, Palmdale, and unincorporated areas in Kern and Los Angeles Counties. Of the 3 business displacements in Tehachapi, none would occur in areas with substantial low-income or minority populations. Only 1 of the 22 business displacements in Palmdale (north of Avenue O) would occur in an area with a substantial low-income or minority population. And of the 19 businesses that would be displaced in the unincorporated areas of Kern and Los Angeles Counties, only 3 (or approximately 16 percent) would occur in areas with substantial minority populations and 1 (or approximately 5 percent) would occur in areas with substantial low-income populations. Although the communities of Edison and Rosamond have substantial low-income and/or minority populations, no business displacements would occur in those communities. No business displacements would also occur in Keene or Golden Hills, which do not include substantial low-income or minority populations.

For Alternative 5, it is currently unknown precisely how many of the estimated employees, who would be displaced by business relocations, are people living within census block groups or tracts that have been identified as low-income and/or minority populations. It is assumed that at least

some portion of these displaced employees live within low-income and/or minority populations (e.g., live and work in relatively close proximity rather than commuting from further outlying areas). As further discussed in Section 6.5.2.1, B-P Build Alternatives, of the CIA (Authority 2018a), examination of suitable replacement locations for displaced businesses has determined that a sufficient number of alternative sites are available (for the retail, professional services, and industrial sectors) within the two-county region.

Compliance with the Uniform Act (SOCIO-IAMF#2) would address any effects related to property acquisitions by providing relocation assistance to all residents and businesses displaced by the HSR project.

With implementation of SOCIO-IAMF#2, it is expected that most displaced businesses would relocate within relatively close proximity (e.g., within the same community or city) to their current locations. Therefore, it is expected that displaced workers (including those within low-income and/or minority populations) would in most cases maintain their jobs, as it is expected they would relocate with their businesses that would be relocating. After implementation of the IAMFs discussed above, based on the NEPA analysis, under all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), the remaining effects would be an impact.

Given the substantial intensity of the remaining impacts and the sheer number of residents and businesses that would be affected, this would represent an adverse effect under NEPA. By far the greatest number of residential and business displacements for Alternative 5 would occur in Lancaster, within areas that have substantial minority and/or low-income populations. Therefore, minority and/or low-income populations would experience adverse displacement and relocation effects.

Economic and Other Effects

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would restrict access to agricultural operations during construction due to road closures. However, these effects would not be adverse because the project's potential impacts related to agricultural access and road closures would be minimized with the implementation of temporary livestock and equipment crossings (AG-IAMF#2), which would address potential effects of the closures of these unpaved dirt roads on local agricultural operations. The Authority would establish and administer a farmland consolidation program to sell remnant parcels to neighboring landowners for consolidation with adjacent farmland properties (AG-IAMF#3). This program would provide for continued agricultural use on the maximum feasible number of remnant parcels that otherwise may not be economical to farm. Refer to Section 3.12, Socioeconomics and Communities, for additional information on agricultural access impacts.

While the access restrictions would vary by alternative alignment, the effect of these restrictions on low-income and/or minority populations would be similar for each B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option). The construction of the HSR project could also result in beneficial sales tax gains in all of the communities along the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), including communities where low-income and/or minority populations live.

All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) are anticipated to result in a beneficial effect on regional employment, because they would create new jobs in Kern and Los Angeles Counties. Although it would be highly speculative to estimate the percentage of this employment that would be filled by low-income and/or minority populations, the Authority has programs in place to ensure that those populations would realize some of the employment benefits.

In December 2012, the Authority established a Community Benefits Policy, which promotes construction employment and training opportunities for all individuals, especially those residing in extremely economically disadvantaged areas and veterans returning from military service (Authority 2012b). Pursuant to its Community Benefits Policy, the Authority entered into a Community Benefits Agreement (CBA) in August 2013 with the State Building and Construction

Trades Council of California and a group of craft councils and labor unions (Authority 2013). In addition to including a commitment that workforce hiring reflect levels of minority, women, veteran, and other worker utilization at levels that are representative of the relevant workforce as determined by the U.S. Census Bureau, the CBA contains a Targeted Worker Program that ensures that 30 percent of all project work hours are performed by National Targeted Workers and at least 10 percent of those work hours are performed by Disadvantaged Workers.

Although the National Targeted Worker and Disadvantaged Worker categories do not expressly represent low-income populations, residency in an Economically or Extremely Economically Disadvantaged Area, participation in public assistance programs, chronic unemployment, and homelessness all have a strong statistical correlation with having a household income below the U.S. Census Bureau's poverty threshold. Therefore, the Authority's compliance with the CBA would ensure that the jobs created by the HSR program would benefit low-income populations.

The Authority has also established a Small and Disadvantaged Business Policy that seeks to ensure all Small Businesses, Disadvantaged Business Enterprises, Disabled Veteran Business Enterprises, and Microbusinesses are given an opportunity to participate in the construction of the HSR project (Authority 2012f). The Authority implements its Small and Disadvantaged Business Policy through the CBA, which includes an aggressive 30 percent goal for small business participation in addition to a 10 percent Disadvantaged Business Enterprises goal and a 3 percent Disabled Veteran Business Enterprises goal on federally assisted contracts (Authority 2013). The Authority's compliance with the CBA would also ensure that minority-owned businesses would benefit from construction of the HSR project.

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a short-term beneficial effect relating to regional employment within the two-county region during the construction period. As discussed in Section 3.18.5 of the Regional Growth section and presented in Table 5-11 in Section 5.7.1.1, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) are projected to create between 154,300 and 162,000 job years during the 8-year construction period. The CCNM Design Option would create 400 jobs and the Refined CCNM Design Option would create 5,000 jobs. Based on the NEPA analysis, the B-P Build Alternatives would result in a beneficial effect. These beneficial effects would be experienced by all populations living within the two-county region, including populations living within RSA communities, low-income and/or minority populations, and nonlow-income and nonminority populations. Because all construction contractors hired by the Authority on the Bakersfield to Palmdale Project Section would be required to comply with the Authority's CBA, jobs created by the HSR program would benefit low-income populations and minority-owned businesses. Therefore, this resource topic is not discussed further.

Agricultural Land

Construction of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in the conversion of Important Farmland to nonagricultural use. For a more detailed description of effects to agricultural lands, refer to Section 3.14.6. This effect to agricultural land would remain substantial after the implementation of IAMFs and mitigation measures. An impact would occur under all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). Given the intensity of the remaining impacts, this would not represent an adverse effect under NEPA. The farmland conversion differs by B-P Build Alternative in three 12- to 14-mile locations, but the effect that these agricultural effects may have on low-income and/or minority populations would not differ by B-P Build Alternative. As such, this resource topic is not discussed further.

Parks, Recreation, and Open Space

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in impacts on parks, recreation facilities, and open-space resources primarily associated with displaced park use during construction and acquisition of park property for HSR right-of-way. For a more detailed description of parks and recreation and open space effects, refer to Section 3.15.6. All temporary construction effects would be avoided, minimized, or

mitigated through implementation of IAMFs and mitigation measures. Based on the CEQA analysis, the remaining short-term effects would be considered an impact. Given the relatively minor intensity of the remaining short-term effects, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects related to short-term effects on parks, recreation, and open space during construction. As a result, this resource topic is not discussed further.

Aesthetics and Visual Quality

All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have temporary effects related to new sources of light, glare, and dust during construction. For a more detailed description of aesthetics and visual quality effects, refer to Sections 3.16.5.3 and 3.16.5.4. These effects would be localized, temporary, and, with appropriate mitigation, would minimally affect nearby residences and other sensitive receptors. In addition, construction activities such as earth preparation, railbed or column and guideway construction, and associated truck hauling and other major material and equipment storage and movement would be highly visible. However, construction equipment would be removed, staging areas dismantled, and areas disturbed by construction remediated after completion. Staging areas and concrete batch plants during construction also could introduce major, unsightly visual changes to their immediate surroundings. Together, construction activities potentially represent substantial adverse changes to visual quality. Implementation of Mitigation Measures AVQ-MM#1 and AVQ-MM#2 would reduce the potential construction effects of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) related to visual quality, as described within Section 3.16.6; however, this would result in an impact under NEPA. Given the relatively minor intensity of the remaining impacts, this would not represent an adverse effect under NEPA. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects related to short-term effects on visual quality during construction. Accordingly, this resource topic is not discussed further.

Regarding permanent construction effects, all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have adverse effects on visual quality in some areas, either by blocking scenic views or by visual intrusion of the HSR, guideways, associated road crossings, and other project structures that would be out of character or scale with the surroundings. These effects would most likely occur where project components would be near historic resources or residential areas with high-sensitivity viewers. In those contexts, the degradation of visual quality would represent an impact under NEPA; however, given the reduced intensity of these effects, with the implementation of mitigation measures described above, there would be no adverse effects.

Construction of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in any adverse effects on any scenic vistas, because there are no designated scenic vistas within the Bakersfield to Palmdale Project Section. With regard to scenic vistas, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in no effect.

Under the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), the permanent construction of HSR structures would permanently affect existing visual quality for some East Bakersfield residents, at La Paz, for Pacific Crest Trail hikers, and for some Tehachapi and Rosamond residents. The impacts in these locations could not be fully mitigated because of the proximity of sensitive viewers to the HSR alignment or, in the case of La Paz, the incompatibility of HSR with the natural and cultural environments. Therefore, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact relating to visual quality in those locations.

Table 5-7 provides a summary of the permanent changes in visual quality under the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) on key viewpoints (KVP), including whether each KVP is in an area with a substantial low-income and/or minority population and which mitigation measures would apply.

Table 5-7 Summary of Visual Quality Changes and Impacts at Key Viewpoints

KVP # and Location	Mitigation Measure(s)	NEPA Impact Determination	Adverse Effect?	In Area with a Substantial Minority and/or Low-Income Population?
KVP 1: Sterling Road, looking south	AVQ-MM#3, AVQ-MM#4, and AVQ-MM#5	Impact	No	Yes
KVP 2: SR 178/Morning Drive, looking south	N/A	No effect	No	Yes
KVP 3: School Street, looking southwest	Alternatives 1, 3, 5: N/A Alternative 2: AVQ-MM#3 and AVQ-MM#6	Alternatives 1, 3, 5: No effect Alternative 2: Impact	Alternatives 1, 3, 5: No Alternative 2: Yes	Yes
KVP 4: Jacober Avenue, looking south	AVQ-MM#4, AVQ-MM#6, and AVQ-MM#7	Impact	Yes	Yes
KVP 5: SR 58, looking east-southeast	N/A	No effect	No	No
KVP 6: Bena Road, looking north	N/A	No effect	No	No
KVP 7: SR 58 west of SR 223, looking east-northeast	N/A	No effect	No	No
KVP 8: Bakersfield National Cemetery, looking north	N/A	No effect	No	No
KVP 9: SR 58 east of Bealville Road, looking northwest	AVQ-MM#5, BIO-MM#35, and BIO-MM#49	Impact	No	No
KVP 10: Hart Flat Road, looking east	N/A	No effect	No	No
KVP 11a: La Paz Conference Center, looking north	AVQ-MM#3	Impact	Alternatives 1, 2, 3, and 5: Yes CCNM Design Option: No Refined CCNM Design Option: No	No
KVP 11b: La Paz Conference Center, looking northeast	AVQ-MM#3	Impact	Alternatives 1, 2, 3, and 5: Yes CCNM Design Option: Yes Refined CCNM Design Option: No	No
KVP 11c: La Paz Memorial Gardens, looking north	N/A	No effect	No	No

KVP # and Location	Mitigation Measure(s)	NEPA Impact Determination	Adverse Effect?	In Area with a Substantial Minority and/or Low-Income Population?
KVP 11d: CCNM—Peace Rocks, looking northeast	AVQ-MM#3	Impact	Alternatives 1, 2, 3, and 5: Yes CCNM Design Option: Yes Refined CCNM Design Option: No	No
KVP 11e: CCNM—Road to Villa la Paz, looking north	AVQ-MM#3	Impact	Alternatives 1, 2, 3, and 5: Yes CCNM Design Option: Yes Refined CCNM Design Option: No	No
KVP 12: SR 58 near Broome Road, looking southeast	AVQ-MM#3, AVQ-MM#5, and AVQ-MM#6	Impact	No	No
KVP 13: Tehachapi Loop	N/A	No effect	No	No
KVP 14: Mill Street overpass, looking north-northeast	N/A	No effect	No	No
KVP 15: SR 58, looking southeast	N/A	No effect	No	No
KVP 16: Arabian Drive, looking south-southwest	AVQ-MM#3, AVQ-MM#4, and AVQ-MM#5	Impact	Yes	No
KVP 17: Dennison Road, looking east-northeast	N/A	No effect	No	No
KVP 18a: Pacific Crest Trail, looking west	PCT-MM#1	Impact	Yes	No
KVP 18b: Pacific Crest Trail, looking southwest	PCT-MM#1	Impact	Yes	No
KVP 19: Rosamond Boulevard, looking west-northwest	N/A	No effect	No	No
KVP 20: Gobi Avenue, looking west	AVQ-MM#3, AVQ-MM#4, and AVQ-MM#6	Impact	Yes	No
KVP 21: 40th Street W at Holiday Avenue, looking southwest	N/A	No effect	No	No
KVP 22: Whit Carter Park, looking east	N/A	No effect	No	Yes
KVP 23: Lancaster Avenue, looking east	N/A	No effect	No	Yes
KVP 24: Sierra Highway Bike Path, looking north	N/A	No effect	No	Yes
KVP 25: Avenue L Overpass, looking northwest	N/A	No effect	No	Yes
KVP 26: Desert Sands Park, looking east	N/A	No effect	No	Yes
KVP 27: E Avenue Q, looking northeast	N/A	No effect	No	Yes

KVP # and Location	Mitigation Measure(s)	NEPA Impact Determination	Adverse Effect?	In Area with a Substantial Minority and/or Low-Income Population?
KVP 28: E Avenue Q3, looking northeast	N/A	Beneficial effect	No	Yes
KVP 29: Avenue Q7, looking west	N/A	No effect	No	Yes
KVP 30: E Palmdale Boulevard, looking west	AVQ-MM#3 and AVQ-MM#8	Impact	No	No

Impact determinations are the same for each B-P Build Alternative unless otherwise specified.

KVP = key viewpoint

La Paz = Nuestra Señora Reina de La Paz/César E. Chávez National Monument

N/A = not applicable

NEPA = National Environmental Policy Act

SR = State Route

As shown in Table 5-7, Alternatives 1, 3, and 5 would result in permanent impacts on visual quality at 11 of the 30 KVPs. One of those 11 KVPs are in areas with substantial low-income and/or minority populations. Table 5-7 also shows that Alternative 2 would result in permanent impacts on visual quality at 12 of the 30 KVPs. Two of those 12 KVPs are in areas with substantial low-income and/or minority populations. Under Alternative 2, an impact relating to visual quality would occur in the same locations as with Alternatives 1, 3, and 5, and would also occur for Edison Middle School viewers in the community of Edison.

Implementation of Mitigation Measures AVQ-MM#3, #4, #5, #6, and #7 would be required to reduce the various impacts to visual quality. However, even with the implementation of these mitigation measures, all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact under NEPA. Given the remaining intensity of the impacts, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in adverse effects. Therefore, this resource topic is not discussed further.

Cumulative Effects

Based on the NEPA analysis, cumulative effects are summarized below for specific resource topics where cumulative effects would occur.

Noise and Vibration

Construction of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) in conjunction with other cumulative projects would result in temporary and intermittent noise effects. It is possible that multiple projects in urban areas close to the Bakersfield to Palmdale Project Section— such as the Lockheed Martin Aeronautics Replacement Site in Palmdale, the North Valley Regional Water Infrastructure Section Recycled Water Pipeline Project in Palmdale, the Lancaster Business Park Specific Plan in Lancaster, the State Route 184 Widening project north of Edison, the Challenger Drive Extension project in Tehachapi, the BNSF Tunnel Modification project in Tehachapi, and the San Joaquin Corridor Project in Bakersfield—would be under construction at the same time as the HSR project. The Bakersfield to Palmdale Project Section includes project-level mitigation to minimize temporary construction noise, as discussed above. With incorporation of mitigation measures, the proposed improvements within the Bakersfield to Palmdale Project Section would not cause or contribute to a cumulative noise impact during construction. Therefore, based on the NEPA analysis, an adverse cumulative construction noise effect would not occur. Thus, this resource topic is not discussed further.

Socioeconomics and Communities

Construction of projects within the EJ RSA under the cumulative scenario could contribute to cumulative effects associated with the disruption or division of communities and the displacement

and relocation of residents, businesses, and community facilities from areas along the HSR alignment. Some of the cumulative projects are also anticipated to directly affect community cohesion and displace residents and businesses. Temporary effects associated with the construction of projects adjacent to each other and the Bakersfield to Palmdale Project Section could contribute to increased traffic and changes to traffic patterns, changes in access to community facilities, and increased construction noise and dust.

Disruption or division of communities could result from construction of the Bakersfield to Palmdale Project Section and other cumulative projects. Construction and right-of-way acquisition activities associated with these projects could affect access and community cohesion due to displacements and relocations, increased congestion, out-of-direction travel associated with detours, and lane or road closures, including to nonmotorized circulation and access (sidewalks, bicycle lanes, and other similar facilities).

Emergency access for police and fire protection services would be maintained at all times, but response times could be increased due to closures and detours requiring out-of-direction travel. As discussed above under Transportation, a CTP would be developed as an IAMF. This plan would require the design-build contractor to implement activities to be carried out in each construction phase in order to maintain traffic flow during peak travel periods.

Construction of the Bakersfield to Palmdale Project Section and other cumulative projects could result in the disruption or division of communities, because it would displace residents and businesses. The HSR project includes mitigation measures that would reduce impacts to disruption and division of residential neighborhoods and communities by providing outreach and making efforts to locate suitable replacement properties. Based on the reduced intensity of the remaining effects, under the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in a cumulative impact relating to disruption or division of communities. No adverse cumulative effects would occur in areas where low-income and/or minority populations live. Therefore, this resource topic is not discussed further.

Although sufficient replacement housing and commercial space are available to accommodate the residential and business relocations related to the Bakersfield to Palmdale Project Section, there would be a deficit of available industrial spaces available to accommodate business relocations in the Lancaster and Palmdale area. These resources—particularly in the Lancaster and Palmdale area—could be strained if relocations associated with cumulative projects were to occur concurrently with those related to the HSR project. However, the Bakersfield to Palmdale Project Section and other cumulative projects that result in property acquisitions would be required to comply with the Uniform Act. Additionally, the project includes IAMFs and mitigation measures aimed at reducing effects associated with the division of communities and residential neighborhoods through relocation programs for displaced residents; community workshops for affected residents; and outreach to homeowners, residents, business owners, and community organizations in order to maintain community cohesion and to avoid physical deterioration.

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would be required to implement Mitigation Measure CUM-SO-MM#1 (Coordination with Cumulative Construction Project Sponsors), which is detailed below. With implementation of CUM-S&C-MM#1, cumulative effects relating to socioeconomic and communities for the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would be reduced.

- CUM-SO-MM#1**—During construction of the Bakersfield to Palmdale Project Section, coordination would occur with the project sponsors or other entities, including local or regional governments, to coordinate construction schedules and potential closures, detours, and other elements of construction to the greatest extent feasible in order to minimize impacts to surrounding communities. Such coordination would include planning for vehicular, pedestrian, and bicycle detours; performing community outreach to ensure residents and businesses are aware of potential issues in advance; and allowing for public input and feedback in planning for construction.

IAMFs and mitigation measures would be implemented for the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), to mitigate effects from displacements and relocations. Therefore, the cumulative effect would not be adverse related to displacement and relocation of residents, businesses, and community facilities. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in a cumulative impact.

The Bakersfield to Palmdale Project Section could affect some properties (residential, commercial, industrial, and agricultural), and by association could affect the sales and property tax bases of the municipalities in which those properties are located. Many of these effects to property and sales tax bases would be temporary, as it is expected that displaced residents and businesses could be relocated within their existing municipalities. Effects to the local tax base are anticipated to be offset by additional revenues resulting from indirect local economic activity associated with construction spending.

Under the cumulative condition, several projects are planned to accommodate the current and projected growth of the two-county RSA. Similar projects could also displace residents and businesses, but they would also contribute to an increase in area construction jobs and sales tax revenue associated with construction spending. Potential indirect (i.e., nonconstruction) job increases could occur as well. Given that the region has higher-than-average unemployment rates, it is anticipated that the local job market would be able to respond to the demand for workers. The construction of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) and other cumulative projects would result in a cumulatively beneficial effect on the regional economy. Therefore, this resource topic is not discussed further.

Agricultural Land

The construction of cumulative projects in areas designated as Important Farmland, including Important Farmland that is under a Williamson Act contract and Important Farmland zoned for agricultural uses, may result in temporary effects to Important Farmland to accommodate construction-related uses such as material laydown areas and equipment staging areas. Approximately 275 to 320 acres of Important Farmland would be occupied for temporary use during construction of the Bakersfield to Palmdale Project Section. The HSR project would restore and return the temporarily affected Important Farmland to agricultural use after project construction is completed. It is assumed that other cumulative projects would take the same approach to restoring Important Farmland temporarily used for construction activities. Therefore, based on the NEPA analysis, when the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) are considered along with cumulative projects, the cumulative effect would be a temporary impact to Important Farmland within the RSA.

The construction of cumulative projects in areas designated as Important Farmland, including Important Farmland that is under a Williamson Act contract and Important Farmland zoned for agricultural use, would contribute to the permanent conversion of Important Farmland to nonagricultural use. Implementation of the Fresno to Bakersfield Project Section of the HSR system would result in the conversion of a maximum of 1,649 acres of Important Farmland in Kern County. Construction of the Bakersfield to Palmdale Project Section would convert approximately 700 to 800 acres of Important Farmland to nonagricultural use. While the cumulative projects and the Bakersfield to Palmdale Project Section include measures to mitigate for the loss of Important Farmland, such as funding the purchase of agricultural conservation easements at a ratio of not less than 1:1, the mitigation measures would not create new farmland (i.e., convert natural land to agriculture) and therefore would not address the net loss of Important Farmland. Given the value, quantity, and quality of the impacted agricultural land, the cumulative effect would be a long-term impact associated with the loss of Important Farmland within the RSA. Because the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would permanently convert Important Farmland to nonagricultural use, based on the NEPA analysis, a long-term cumulative impact would occur.

The construction of other cumulative projects on Important Farmland governed by Williamson Act contracts in the RSA would result in the conversion of Important Farmland governed by

Williamson Act contracts to nonagricultural use. Implementation of the Fresno to Bakersfield Project Section of the HSR system would result in the conversion of approximately 603 acres of agricultural land in Kern County that is under a protected status (Williamson Act and Farmland Security Zone Land), some of which is designated as Important Farmland. Construction of the Bakersfield to Palmdale Project Section would convert just under 150 acres of Important Farmland under Williamson Act contracts.

IAMFs and mitigation measures would be used to reduce and minimize effects relating to the loss of Important Farmland, including that governed by a Williamson Act contract. However, because the mitigation measures would not create new Important Farmland that could be included in the Williamson Act Program, the mitigation measures would not fully mitigate impacts to Important Farmland governed by a Williamson Act contract. Although the Bakersfield to Palmdale Project Section would result in the conversion of considerably less acreage of Important Farmland governed by a Williamson Act contract than other cumulative projects, the cumulative effect would still be a long-term impact associated with the loss of Important Farmland governed by a Williamson Act contract in the RSA.

The construction of other cumulative projects on Important Farmland zoned for agricultural use in the RSA would result in the conversion of Important Farmland zoned for agricultural use to a nonagricultural use. These include such projects as the BNSF Railway/Union Pacific Railroad Mojave Subdivision Tehachapi Rail Improvement Project and the FRV Orion and Maricopa Sun solar projects. Implementation of the Fresno to Bakersfield Project Section of the HSR system would also result in the conversion of Important Farmland zoned for agricultural use in Kern County by converting approximately 3,390 to 3,490 acres of Important Farmland zoned for agricultural use to a nonagricultural use. The construction of the Bakersfield to Palmdale Project Section would convert approximately 670 to 720 acres of Important Farmland zoned for agriculture. No mitigation measures have been prescribed to address the loss of agricultural zoning from proposed development. Therefore, the cumulative effect would be a long-term impact associated with conversion of Important Farmland zoned for agricultural use to nonagricultural uses.

Overall, the temporary use of agricultural land and permanent conversion of agricultural land associated with construction of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not directly affect low-income and/or minority populations. Alternatives 1, 3, and 5 would result in an estimated loss of 42 jobs in Kern County. Alternative 2 is estimated to result in 40 jobs lost, and the CCNM Design Option and Refined CCNM Design Option are not expected to result in any additional agricultural job losses. These job losses would occur in the agricultural areas of Kern County, the majority of which is an area of low population density. However, associated impacts on the agricultural economy and the disruption or division of communities would affect low-income and/or minority populations. Given the relatively minor intensity of these effects, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects. Therefore, this resource topic is not discussed further.

5.6.2.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

Table 5-8 identifies whether each B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option) and the two stations, Bakersfield Station F-B LGA and Palmdale, would result in adverse effects on low-income and/or minority populations during the operational phase for each resource topic.

Table 5-8 Summary of Adverse Effects during Operation

Resources	Adverse Effects during Operation		
	B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Bakersfield Station—F-B LGA	Palmdale Station
Transportation	No	No	No
Air Quality	No	No	No
Noise	Yes ²	Yes ²	Yes
Electromagnetic Interference and Electromagnetic Fields	No	No	No
Public Utilities and Energy	No	No	No
Geology and Soils	No	No	No
Hazardous Materials and Wastes	No	No	No
Safety and Security	No	No	No
Community Cohesion	Yes	Yes	Yes
Displacements and Relocations	No	No ¹	No
Disruption to Community Facilities	No	No	No
Economic and Other Effects	No	No	No
Agricultural Land	No	No	No
Parks, Recreation, and Open Space	No	No	No
Aesthetics and Visual Quality	No	No	No
Cumulative Effects	No	No	No

¹ Displacement impacts are discussed during operation in the Fresno to Bakersfield Section Final EIR/EIS, Authority and FRA 2014b; and the Fresno to Bakersfield Section Final Supplemental EIS, Authority and FRA 2019.

² Only applies to noise impacts. No adverse vibration effects were identified.

Authority = California High-Speed Rail Authority

B-P = Bakersfield to Palmdale Project Section

CCNM = César E. Chávez National Monument

EIR = Environmental Impact Report

EIS = Environmental Impact Statement

EJ = environmental justice

F-B LGA = Fresno to Bakersfield (Locally Generated Alternative) portion from the intersection of 34th Street and L Street to Oswell Street

FRA = Federal Railroad Administration

N/A = not applicable

Transportation

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would provide benefits to the regional transportation system by reducing vehicle trips on freeways by providing another mode of transportation for intercity passenger trips. All communities, including minority and/or low-income populations, would benefit from the regional

reduction in roadway congestion and an increase in transportation options. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in permanent beneficial effects.

Operation of the project would require the construction of roadway crossings and permanent closure of some roads. The road closures have the potential to result in a loss of property access. The adverse effects to roadways, intersections, and property access would affect all communities in the EJ RSA, including low-income and/or minority populations. Implementation of Mitigation Measures SO-MM#1, SO-MM#2, SO-MM#3, and SO-MM#4, detailed in Section 3.2.7, would generally reduce the project's permanent effects by implementing measures to diminish the division of residential neighborhoods and communities while moderating the need to relocate important facilities, and also by providing access modifications to affected farmlands. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact based on the NEPA analysis with regard to alternative transportation modes (i.e., transit, bicycles, and pedestrians). Given the reduced intensity of the impact and its highly localized context, it would not result in an adverse effect.

Operation of the HSR project would have effects on transit, bicycle, and pedestrian facilities. Transit routes would be altered only slightly in Lancaster, and TR-IAMF#12, Pedestrian and Bicycle Safety, and TR-IAMF#13, Bicycle Facilities, would avoid performance or safety effects to bicycle and pedestrian facilities.

Both the beneficial effects and the impacts related to transportation from operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Option) would equally affect all communities living in the EJ RSA. After weighing of the substantial off-setting transportation benefits of the project, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in adverse effects and this resource topic is not discussed further.

Air Quality

Operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) is not expected to result in permanent adverse effects on air quality. While the operation of the HSR system would result in some emissions in areas along the HSR alignment, such as the maintenance facilities and near stations, it is not expected to result in air quality impacts due to the large reduction in greenhouse gas emissions associated with the reductions in automobile trips and air travel once rail service begins. At the regional level, operation of the HSR system would result in lower pollutant emissions, resulting in a net benefit to regional air quality. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a beneficial effect. This effect would benefit all communities in the region, including low-income and/or minority populations. Therefore, this resource topic is not discussed further.

Noise and Vibration

Operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) is anticipated to result in considerable noise effects along the HSR alignment. The increase in noise and vibration would affect all communities near the HSR project, including low-income and/or minority populations. For a more detailed discussion of operation-phase noise and vibration effects, refer to Section 3.4.6. Since the publication of the Draft EIR/EIS, upon closer analysis of the project's noise effects during operation, the application of sound barriers have resulted in a reduction in operational noise impacts.

Operation-phase noise effects on sensitive noise receptors for each alternative are shown on Figures 5-A-6 (Alternative 1), 5-A-7 (Alternative 2), 5-A-8 (Alternative 3), and 5-A-9 (Alternative 5) (provided in Appendix 5-A). Noise effects for all of the sensitive noise receptors are identified as severe, moderate, and none. These figures also show census tracts and census block groups where substantial and less than substantial low-income and/or minority populations exist and where a low population density exists. The severe noise effects depicted on these figures are within areas where substantial low-income and/or minority populations exist. These severe noise

effects are the effects of greatest concern, as they would constitute adverse effects. With the exception of the community of Edison,¹¹ the differences of the alignments of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) are present only in areas where substantial low-income and/or minority populations do not occur; therefore, the discussion of effects in this chapter is the same for all alternatives.

On Figures 5-A-6, 5-A-7, 5-A-8, and 5-A-9, the primary areas where severe effects would occur are within the following areas within the RSA:

- San Joaquin Valley Subsection—Within the east Bakersfield area within Census Tracts 11.01, 11.02, 23.01, and within the community of Edison, within Census Tract 10 (on the north side of the HSR alignment)
- Urban Antelope Valley Subsection—Within Lancaster, Census Tracts 9006.06, 9006.07, 9005.01, 90005.04, 9008.04, 9008.06, 9007.01, and 9007.04, on both sides of the HSR alignment

Table 5-9 provides a breakdown of the severity of operation-phase noise effects (severe, moderate, or none) at noise receptors along each alternative, categorized by the demographic categories of low-income, minority, and low-income and/or minority population. Within each of the three demographic categories, a breakdown is provided for census tracts or block groups where the low-income, minority, and low-income and/or minority population is substantial or less than substantial, or where a low population density exists.

The implementation of noise barriers would reduce the most severe effects. In areas where severely impacted receptors do not meet the minimum requirement for a noise barrier, they would remain impacted. Table 5-10 provides a breakdown of the severe operation-phase noise effects at noise receptors along each alternative, categorized by the demographic categories of low-income and/or minority populations following the implementation of those noise barriers that have been identified as being reasonable and feasible. No vibration effects are expected to occur as a result of the operation of the HSR system. Implementation of Mitigation Measures N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6, as detailed in Section 3.4.7, would reduce the project's permanent effects by addressing vehicle noise specifications and special track work at crossovers, as well as by conducting noise analysis.

Noise effects would not differ among B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). As noted above and shown in Table 5-9, the implementation of noise barriers would reduce most of severe effects; however, all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would still have many severe noise effects at sensitive noise receptors; however, the majority of those noise effects would not affect areas where substantial low-income and/or minority populations exist. Among these noise receptors that would continue to experience severe effects during operation after implementation of the reasonable and feasible noise barriers, between 25.3 percent (74 out of 292 under Alternative 1) and 30.1 percent (93 out of 309 under Alternative 5) of the receptors are in areas where substantial low-income populations exist (after low-population-density areas are removed from consideration) and between 8.9 percent (26 out of 292 under Alternatives 1 and 2) and 15.5 percent (48 out of 309 under Alternative 5) of the receptors are in areas where substantial minority populations exist (after low-population-density areas are removed from consideration). All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would cause substantial adverse noise effects during operations. The implementation of Mitigation Measure N&V-MM#3 would reduce project noise impacts. Based on the NEPA analysis, an impact would occur. Given the substantial intensity of the remaining impacts and the number of affected receptors, this would result in an adverse effect.

¹¹ As discussed in the Community Impact Assessment (Section 5.4.2.2, Low Income), the census data did not accurately reflect the income status in certain portions of the Edison Community block group. Therefore, although a substantial low-income population in Edison was not identified, a review of Free and Reduced-Price Meal eligibility rates indicates that a substantial low-income population exists in the community of Edison.

Table 5-9 Noise Receptor Impacts by Alternative at Sensitive Noise Receptors—Low-Income and/or Minority Populations

	Alternative 1			Alternative 2			Alternative 3			Alternative 5			CCNM Design Option			Refined CCNM Design Option		
	Severe	Moderate	None	Severe	Moderate	None	Severe	Moderate	None	Severe	Moderate	None	Severe	Moderate	None	Severe	Moderate	None
Low-Income																		
Less Than Substantial	569	856	624	542	883	624	569	856	624	569	934	546	No change			No change		
Substantial	722	1769	1412	722	1769	1412	722	1769	1412	722	2188	993	No change			No change		
Low Population Density	152	56	29	153	56	28	152	56	29	152	64	21	No change			-2	No change	No change
Minority																		
Less Than Substantial	423	308	486	396	335	486	423	308	486	423	426	368	No change			No change		
Substantial	868	2317	1550	868	2317	1550	868	2317	1550	868	2696	1171	No change			No change		
Low Population Density	152	56	29	153	56	28	152	56	29	152	64	21	No change			-2	No change	No change
Low-Income and/or Minority Population																		
Less Than Substantial	332	160	157	305	187	157	332	160	157	332	196	121	No change			No change		
Substantial	959	2465	1879	959	2465	1879	959	2465	1879	959	2926	1418	No change			No change		
Low Population Density	152	56	29	153	56	28	152	56	29	152	64	21	No change			-2	No change	No change

CCNM = César E. Chávez National Monument

Table 5-10 Mitigated Noise Receptor Impacts by Alternative at Sensitive Noise Receptors—Low-income and/or Minority Populations

	Alternative 1		Alternative 2		Alternative 3		Alternative 5		CCNM Design Option	Refined CCNM Design Option
	Severe Noise Impacts (with Mitigation)	Percentage of Severely Impacted Receptors (with Mitigation)	Severe Noise Impacts (with Mitigation)	Percentage of Severely Impacted Receptors (with Mitigation)	Severe Noise Impacts (with Mitigation)	Percentage of Severely Impacted Receptors (with Mitigation)	Severe Noise Impacts (with Mitigation)	Percentage of Severely Impacted Receptors (with Mitigation)	Severe Noise Impacts (with Mitigation)	Severe Noise Impacts (with Mitigation)
Low-Income										
Less Than Substantial	569 (114)	39.5% (39.0%)	543 (114)	38.4% (39.2%)	569 (114)	39.5% (39.3%)	581 (133)	40.1% (43.0%)	No change	No change
Substantial	721 (74)	50.0% (25.3%)	721 (74)	51.0% (25.4%)	721 (74)	50.1% (25.5%)	727 (93)	50.1% (30.1%)	No change	No change
Low Population Density	152 (104)	10.5% (35.6%)	151 (103)	10.7% (35.4%)	150 (102)	10.4% (35.2%)	142 (83)	9.8% (26.9%)	No change	-2 (-2)
Minority										
Less Than Substantial	422 (162)	29.3% (55.5%)	396 (162)	28.0% (55.7%)	422 (162)	29.3% (55.9%)	411 (168)	28.3% (54.4%)	No change	No change
Substantial	868 (26)	60.2% (8.9%)	868 (26)	61.3% (8.9%)	868 (26)	60.3% (9.0%)	897 (48)	61.9% (15.5%)	No change	No change
Low Population Density	152 (104)	10.5% (35.6%)	151 (103)	10.7% (35.4%)	150 (102)	10.4% (35.2%)	142 (93)	9.8% (30.1%)	No change	-2 (-2)

CCNM = César E. Chávez National Monument

Potential long-term operational noise effects from the proposed traction power substation would have an effect on one noise-sensitive receiver that consists of a single-family residence at 45900 Schamise Street in the City of Lancaster. Potential noise effects from long-term operations of the proposed substation would be of substantial intensity. However, implementation of Mitigation Measure N&V-MM#7 (Maintenance-of-Way Facility, and Traction Power Substation), which includes noise barriers to reduce long-term operational noise effects, would help reduce the intensity of noise effects in the vicinity of the traction power substation. As a result, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact in the vicinity of the traction power substation. Given the moderate intensity of the remaining impacts, operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an adverse effect. Low-income and/or minority populations would be adversely affected.

The implementation of Mitigation Measure N&V-MM#3 (Implement Proposed California High-Speed Rail Project Standardized Mitigation Measures) would reduce project noise effects, but moderate and severe noise effects from HSR project operations would remain after mitigation. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the moderate and severe intensity of the remaining impacts, operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an adverse effect on low-income and/or minority populations.

Electromagnetic Interference and Electromagnetic Fields

Measurements of EMF along representative portions of the HSR alignment for the Bakersfield to Palmdale Project Section indicate that background levels for both magnetic and electric fields are well below accepted thresholds applied for the California HSR System relative to human health and interference with other equipment and systems. In the context of this anticipated baseline condition, and based on the intensity of effects and the study area contexts described above, the following discussion summarizes the effects identified in Section 3.5.6, Environmental Consequences.

The EMF effects from station platforms, on trains, and in the heavy maintenance facilities on people at nearby schools, hospitals, businesses, colleges, and residences would be below the exposure limit for the general public, even within the HSR right-of-way. The thresholds for human exposure to EMI/EMFs would not be exceeded within the RSA. Therefore, based on the NEPA analysis, EMF effects to nearby sensitive receptors would be of no effect.

At a certain level of exposure, EMFs may interfere with implanted medical devices, such as pacemakers. EMF levels above the allowable health limits for implanted medical devices would occur only inside traction power facilities and emergency generator rooms, which are unmanned and inaccessible to the general public. The Electromagnetic Compatibility Program Plan cited in EMI/EMF-IAMF#1 precludes HSR employees with implanted medical devices from entering these facilities. Therefore, based on the NEPA analysis, effects on members of the public and employees with implanted medical devices would be of no effect.

Potentially sensitive medical facilities exist within the RSA, but none of the three facilities currently has machinery that is sensitive to magnetic fields. If sensitive medical equipment that could be disrupted by EMFs were identified, based on the NEPA analysis, this impact would be of substantial intensity and would have an impact prior to mitigation. After mitigation, these EMI effects would be reduced to no effect.

Facilities such as underground pipelines, cables, and metal fencing would be exposed to EMFs, which could result in corrosion to underground pipelines and cables lacking adequate grounding systems. However, as a standard engineering practice, appropriate grounding systems and/or installation of insulating joints or couplings would be included in the HSR project design to prevent corrosion of underground infrastructure. Based on the NEPA analysis, the intensity of EMF exposure would be reduced and would result in an impact.

EMF exposure from HSR operations could cause nuisance shocks to people and animals touching ungrounded metal fences and aboveground metal irrigation systems adjacent to the

HSR right-of-way. Grounding of fences and irrigation systems would be a standard design requirement for the project and would reduce the potential for nuisance shocks. Based on the NEPA analysis, the intensity of EMF exposure and associated potential for nuisance shocks at ungrounded metal structures would be reduced and would have an impact.

EMF related to the operation of the HSR system could interfere with Wi-Fi at nearby schools. The use of dedicated frequency blocks and compliance with the EMI/EMF standards cited in EMI/EMF-IAMF#1 would reduce the intensity of possible EMI/EMF effects on schools. Potential interference with school Wi-Fi would be an impact pursuant to NEPA prior to mitigation. After mitigation, the effect of EMF exposure would be reduced to no effect pursuant to NEPA.

Operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact pursuant to NEPA. However, given the reduced intensity of those impacts after application of IAMFs and mitigation measures, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. Therefore, this resource topic is not discussed further.

Public Utilities and Energy

Operation of the Bakersfield to Palmdale Project Section would result in increased energy demands in the state. However, the projected peak energy demand of the HSR system is not anticipated to exceed existing energy reserve amounts. PU&E-IAMF#4 would reduce energy use by incorporating project design elements that minimize electricity consumption, reducing the increase in energy use that would result from the B-P Build Alternatives. Nevertheless, based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the reduced intensity of those impacts after application of the IAMF described above, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.

Geology and Soils

Although operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not cause or exacerbate seismic activity or associated hazards, earthquakes could produce hazards to the HSR system, including moderate to high seismic ground motions, and risks from secondary seismic hazards associated with large seismically induced ground motions. For a more detailed description of effects related to geology, soils, and seismicity, refer to Section 3.9.6.3. All B-P Build Alternatives would avoid or minimize impacts from seismicity during operation through the implementation of GEO-IAMF#7, which addresses seismically induced ground shaking through the evaluation and design methods; GEO-IAMF#8, which includes the installation of a network of instruments to provide ground motion data for use with the HSR instrumentation and controls system to temporarily shut down the HSR operations in the event of an earthquake; GEO-IAMF#10, which provides further design considerations for seismic ground shaking and surface fault rupture; and GEO-IAMF#2, which describes the incorporation of slope monitoring by a Registered Engineering Geologist into the operation and maintenance procedures to address localized slope instabilities. Additionally, the Authority will implement Technical Memoranda and design standards as discussed in Section 3.9.6.3. As a result, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not have an adverse effect on any community, including minority and/or low-income populations, related to operational effects from seismicity. Consequently, this resource topic is not discussed further.

Hazardous Materials

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not create a hazard to the public or the environment due to the routine transport, use, or disposal of hazardous materials. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would also not create a hazard to the public due to the reasonably foreseeable upset and accident conditions that involve the release of hazardous materials into the environment.

No acutely hazardous materials would be required to operate the passenger rail service under any of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) and no educational facilities are within 0.25 mile of the potential maintenance facilities sites. Therefore, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) within 0.25 mile of a school would emit hazardous air emissions or have extremely hazardous substances or mixtures containing extremely hazardous substances that would pose a health and safety hazard to students or employees.

Because there would be no hazards to the public or the environment during operation as a result of the Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), no communities, including low-income and/or minority populations, would experience adverse effects from hazardous materials. Therefore, this resource topic is not discussed further.

Safety and Security

For all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), there would be multiple types of operation-phase effects relating to safety and security, as discussed below.

- **Train-to-Train Collision, Collisions with Vehicles or Other Trains Entering the HSR Corridor, or Train Derailments**—The context for derailments and collisions would be local to the accident site. HSR operations worldwide share the safest travel record of any mode of transportation, as supported in this section. The Authority is committed to the highest design standards, including system-design approach and design standards. As a result of implementing standard design practices, effects of the potential intrusion of motor vehicles or trains into the HSR corridor would be reduced. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the reduced intensity of those impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.
- **Motor Vehicle Passenger, Pedestrian, and Bicyclist Safety**—Project design includes HSR grade separations from automobile and pedestrian traffic throughout the RSA. This would create a safer environment for motorist, cyclists, and pedestrians. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a beneficial effect. Therefore, communities along the HSR alignment, including low-income and/or minority populations, would experience beneficial effects related to safety and security. As a result, this resource topic is not discussed further.
- **Seismic and Fire Hazards**—The context for project effects from fire would be local; seismic hazard contexts could be local or regional. Considering standard design techniques for seismically active regions of California, the fact that the HSR system would not carry fuel or large quantities of flammable materials, and given the safety record of other HSR systems in seismically sensitive areas, the potential for these hazards would be low. Active and abandoned oil and gas wells within 200 feet of the HSR tracks pose a safety and operational hazard for the project. Active wells in this zone would be plugged and relocated, and inactive wells would be examined and re-abandoned, as necessary. Additionally, design features and standard operating and emergency response plans would be implemented. The B-P Build Alternatives pass through areas considered as moderate, high, and very high wildland fire hazard severity zones. Derailment of a train during a seismic event or other natural disaster could ignite a fire in areas designated as fire hazard severity zones adjacent to the HSR corridor. Because the train would be contained in the HSR right-of-way and would not contain cargo or fuel that would result in a fire or explosion, the proposed project would not substantially increase hazards as a result of wildfire. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the reduced intensity of those impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority

populations, would experience adverse effects. As a result, this resource topic is not discussed further.

- **Increased Response Times for Emergency Responders and Their Access to Elevated Tracks**—The context for these project effects is local in urban areas and potentially regional in more remote, rural areas, where responders from multiple jurisdictions may be involved. Standard design features and emergency response plans would be implemented, and the Authority would compensate emergency service providers for increased services required due to the HSR project. Considering the available emergency service equipment and staff in the region, response times, and safety record of international HSR systems, this effect would be minimal. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the relatively minimal intensity of those impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.
- **Increased Demand for Emergency Responses in Station Areas and at the MOWF in the Local Context**—The number of people who may be present at a station may result in a concentration of additional emergencies in a localized area. Although emergency responses may be more frequent, the facilities and emergency responses can be achieved considering the available emergency service equipment and staff in the region. The increase in response times would be minimal. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the relatively minor intensity of those impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.
- **Criminal and Terrorist Activity**—Criminal activity exists within the RSA and could occur on trains and at stations. Standard design features and operating plans would be implemented to reduce the risk of criminal and terrorist activity in the regional/statewide contexts. The probability for criminal or terrorist activity to occur in the project corridor is remote. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the remote potential for impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As a result, this resource topic is not discussed further.
- **Risk of Accidents Affecting the Safety of Residents, Schoolchildren, and School Employees**—The risk of accidents affecting the safety of residents, schoolchildren, and school employees is considered in a local context and would be minimal because the risk is limited to the physical effect of a derailed train leaving the right-of-way, and implementation of standard design features would keep trains within the right-of-way. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the remote potential for impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.
- **Dam Safety and Flooding Risk**—Hazards to passengers and employees would not be adverse because standard design features and operating plans would be implemented to reduce the risk of extreme weather conditions. California's existing dam safety program reduces the risk of flooding from a dam failure affecting HSR facilities so that effects are not adverse in the local or regional contexts. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given the remote potential for impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.
- **Increased Demand for Emergency Response Services**—The associated development that would indirectly result from the presence of the HSR stations could increase demand for local

emergency responders and require new government facilities. Development of new facilities would comply with local site development and permitting processes. The Authority would compensate emergency service providers for increased facilities required due to the HSR project. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. There would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Socioeconomics and Communities

Community Cohesion

Permanent Disruption to Community Cohesion or Division of Existing Communities from Project Operation

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would bring social benefits to the region by improving access to jobs and community amenities, reducing travel times, reducing traffic congestion, and providing new employment opportunities during operation. As discussed in Section 3.18.5 of Section 3.18, Regional Growth, operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a projected 1,400 direct, indirect, and induced jobs in Los Angeles and Kern Counties. The people who live or work in the general vicinity of the proposed station locations would likely benefit the most from the improved access provided by the new HSR facilities. Those who live along the portions of the HSR alignment without station access would not enjoy the same level of mobility and access benefits. Given all of the benefits to community cohesion, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a beneficial effect.

Operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) could also permanently disrupt established patterns of interaction among community residents. Other permanent environmental effects on communities or neighborhoods—such as substantial increases in noise or traffic—could have adverse consequences on community members' interactions in the project vicinity. Similarly, substantial permanent changes in visual quality or aesthetics could result in a perceived change to community character or the quality of life experienced in affected neighborhoods. The community of Edison would experience adverse noise and air quality effects that differ between alternatives. Alternative 2 and the Preferred Alternative would result in the fewest permanent, adverse noise and air quality effects on the community of Edison because these B-P Build Alternatives would be farther from the community than Alternatives 1, 3, and 5.

The HSR project's permanent effects on aesthetics and visual quality would be minimized through compliance with AVQ-IAMF#1, Aesthetic Options, and AVQ-IAMF#2, Aesthetic Review Process.

Implementation of Mitigation Measures N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6 would reduce the HSR project's long-term noise and vibration impacts on nearby properties.

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in changes to visual character and views for residential and public uses (schools). The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would introduce an aerial track section in the unincorporated areas east of Bakersfield along Edison Highway that would be out of scale and inconsistent with the visual character of the residential uses and schools within 0.5 mile of the project footprint. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would introduce large cut slopes in the Tehachapi Mountains, which could result in effects on visual character by altering views for a small number of ridgetop homes in the community of Golden Hills and approximately 50 one-story, single-family homes in the City of Tehachapi. In addition, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would introduce a guideway, a bridge, a berm, and overhead catenary system poles, which would fully obstruct existing scenic views of the Tehachapi foothills for rural residents within 0.25 mile of the new elements. The B-P Build Alternatives (including the CCNM Design Option

and the Refined CCNM Design Option) could result in aesthetic and visual effects on residential uses and/or schools in the unincorporated areas east of Bakersfield, the community of Edison, the community of Golden Hills, the City of Tehachapi, and the community of Rosamond. However, the portions of the community of Golden Hills, the City of Tehachapi, and the community of Rosamond along the alignment do not contain substantial minority or low-income populations.

Implementation of Mitigation Measures AVQ-MM#3, AVQ-MM#4, AVQ-MM#5, AVQ-MM#6, AVQ-MM#7, AVQ-MM#8, and AVQ-MM#9 would reduce the project's permanent aesthetic effects on surrounding properties.

Implementation of the IAMFs and mitigation measures described above would minimize the potential for operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) to permanently affect community character; however, some of the effects related to aesthetics and visual quality and noise would remain. Because operation of the B-P Build Alternatives could permanently affect the community character and quality of life in communities along the HSR alignment, the remaining effects would be of substantial intensity. Based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in an impact. Given that the remaining impacts would be of substantial intensity, this would represent an adverse effect. Therefore, low-income and/or minority populations would be adversely affected.

The beneficial effects resulting from the B-P Build Alternatives would not outweigh the adverse aesthetics and visual quality impacts described above. Therefore, operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have an adverse effect related to community cohesion, specifically in two designated neighborhood portions in the community of Edison.

Permanent Disruption to Community Facilities from Operation

Operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would avoid most community facilities and other properties that provide public services. Nevertheless, Alternatives 1, 2, and 3 would affect 23 community facilities. Alternative 5 would affect 29 community facilities. The majority of the affected community facilities are in Lancaster. Many of these affected facilities would benefit from improved access, circulation, and mobility improvements that the project will bring to Lancaster and Palmdale through new grade separations, eliminating traffic delays due to current need to wait for passing trains and other HSR transportation improvements, including bike lanes, trails, sidewalks. The new sidewalks and bikeways will enhance connectivity and community cohesion.

Implementation of Mitigation Measures N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6 would reduce the project's long-term noise and vibration effects on nearby properties, including community facilities.

While most of the potential effects associated with the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) related to the disruption of community facilities during operation would be minimized, based on the NEPA analysis, because these effects would be permanent and would affect some key community facilities, the operational effects of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) related to disruption of community facilities would result in an impact. However, as described in Chapter 3.12 Socioeconomics, while a few identified community facilities (Los Angeles County Water Works District 4 Office, an associated water tank facility, Grace Reformed Church, and Iglesia de Dios Bethel Church) would be permanently affected by relocation in the Urban Antelope Valley subsection, significant nearby and suitably zoned property is available locally and the relocation of these community facilities is expected to be local, maintaining community ties. Per the conclusions in Section 3.12, Socioeconomics and Communities, displacement of the two churches would not disrupt community cohesion, given the availability of nearby properties for relocation.

The B-P Build Alternatives (including the CCNM Design Option) would affect a few community facilities. However, the effects will likely not affect community cohesion, after application of IAMFs, mitigation measures, and offsetting project benefits (new grade separations). Therefore, operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in adverse effects.

Economic and Other Considerations

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would restrict access to agricultural operations during operation due to road closures. While the access restrictions would vary by alternative alignment, the effect of these restrictions on low-income and/or minority populations would be the same. Compliance with the requirements of the Uniform Act related to property acquisition (SOCIO-IAMF#2) would address potential effects of the loss to local agriculture operations, and potentially the loss of production on agriculture lands, due to the closures of the unpaved dirt roads accessing those lands. The Authority would establish and administer a farmland consolidation program to sell remnant parcels to neighboring landowners for consolidation with adjacent farmland properties (AG-IAMF#2). This program would provide for continued agricultural use on the maximum feasible number of remnant parcels that otherwise may not be economical to farm.

As discussed above, the project's potential impacts related to agricultural access and road closures would be minimized. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not be expected to result in long-term economic changes to the regional economy or to affect the quality of life in any of the communities along the alignments of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in an impact relating to permanent restriction of agricultural operations. Operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in an adverse effect. As such, this resource topic is not discussed further.

Parks, Recreation, and Open Space

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in impacts on 21 recreational resources (e.g., parks, trails, and other recreational facilities). For a more detailed discussion of recreational resources effects, please see Section 3.15, Parks, Recreation, and Open Space. During the operational phase of the HSR project, the HSR facility and trains would be visible and would be heard from the following recreational facilities:

1. Edison Middle School
2. White Wolf-Bodfish Road Trail
3. Greenways (Antelope Run)
4. Planned Challenger Path
5. Pacific Crest Trail
6. Rosamond Community Services District (if the planned resources are operational)
7. Willow Springs International Raceway
8. Avenue G Bike Path (if the planned resource is operational)
9. Sierra Highway Bike Path Extension (if the planned resource is operational)
10. Avenue H Bike Path (if the planned resource is operational)
11. Whit Carter Park
12. Jane Reynolds Park/Webber Pool
13. Life Source International Charter School
14. Sierra Highway Bike Path (existing)
15. Avenue K 8 Bike Path
16. Avenue K 8 Bike Path Bridge (if the planned resource is operational)
17. Avenue L Bike Path (if the planned resource is operational)
18. Dr. Robert C. St. Clair Parkway
19. Hammack Activity Center

20. Poncitlán Square

21. Legacy Commons

Through implementation of the IAMFs and mitigation measures detailed within Section 3.16 (Aesthetics and Visual Resources) and Section 3.4 (Noise and Vibration), the aesthetics and noise effects of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) to these recreational resources would be minimized during the operation phase. With implementation of these IAMFs and mitigation measures, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in permanent impacts to only 3 of the 21 recreational resources listed above. At Edison Middle School, Pacific Crest Trail, and Rosamond Community Services District (potential recreation resources), the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in impacts based on the NEPA analysis if the planned resources are operational. Given the relatively minor intensity of the remaining impacts, no adverse effects would occur. Therefore, this resource topic is not discussed further.

Aesthetics and Visual Quality

None of the operational activities would involve substantial visual changes to the natural or cultural environments. Maintenance activities and security patrols would be infrequent and would not introduce permanent new structures. Lighting associated with maintenance and security would be minimal. Passing HSR trains would blend into the already built HSR structure. HSR train headlights would be directed towards the track. Light generated by HSR trains, tracks, signs, and signals would be minimal and would be directed to the tracks. Light spillover would be minimal. Glare from HSR trains and structures would be minimal. It is assumed that retaining walls, guideways, and other built structures would use materials that do not cause substantial amounts of glare. The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a permanent impact with respect to aesthetic resources. The two specific neighborhoods in Edison with adverse visual quality impacts have been identified in the community cohesion findings. Given the relatively minor intensity of the impacts, no adverse effects would occur. Accordingly, this resource topic is not discussed further.

Cumulative Effects

Cumulative effects are summarized below for specific resource topics where, based on the NEPA analysis, cumulative effects would occur. Since the preparation of the Draft EIR/EIS, upon closer analysis of the project's cumulative effects across several impact areas, it was determined that either the project would not have cumulative effects on EJ communities, because there were no project effects that contributed to significant cumulative effects or that mitigation could be increased (i.e., noise barriers) that would remove the project's contribution to those effects and therefore, would no longer result in a cumulative effect.

Noise and Vibration

The Bakersfield to Palmdale Project Section would create long-term noise effects from the introduction of a new transportation system as described in Section 3.4, Noise and Vibration, of this EIR/EIS. In combination with the noise effects of other cumulative projects in the RSA, as the SR 184 widening (K-14) in Near Northeast Bakersfield/Edison, High Desert Corridor (LA-4) in Palmdale, Northwest 138 Corridor Improvement Plan (LA-5) in northern Lancaster, BNSF Improvement Project (K-8) north of Keene, and the potential double-tracking of the UPRR in Palmdale, future noise levels are expected to increase along roadways and railways as increased traffic and an increased number and length of freight trains are anticipated in the region. Traffic volumes from cumulative roadway and development projects, in combination with traffic related to the Bakersfield to Palmdale Project Section, would increase noise levels adjacent to transportation corridors in urban/nonrural areas.

The Bakersfield to Palmdale Project Section includes project-level mitigation aimed at reducing operational noise effects, as discussed in Section 3.4, Noise and Vibration. Although these measures would reduce noise effects of the HSR project through the use of sound walls and other techniques, the project section, in combination with cumulative projects, would still have the

potential to result in effects of substantial intensity for noise at sensitive receivers. Portions of the HSR alignment that extend through predominantly vacant land and rural agricultural lands where fewer sensitive receivers would be affected than portions that traverse urban areas due to a lesser presence of sensitive receivers severely affected (i.e., receivers where effects are not fully mitigated). However, those sensitive receivers that are present in rural areas would experience the same types of noise effects as sensitive receivers in urban areas. Therefore, the cumulative noise effect would remain a long-term effect that affects noise-sensitive receptors in both urban and rural areas. Given that the HSR project would produce very few operational noise impacts that would not be sufficiently reduced through mitigation, based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in a cumulative impact.

Under the cumulative condition, the number of sensitive receptors for which significance thresholds for noise may be exceeded would vary depending on which B-P Build Alternative is selected. Alternative 5 would affect the greatest number of sensitive receptors, followed by Alternatives 1 and 3. Alternative 2 and the Preferred Alternative would result in the lowest number of sensitive receptors being adversely affected. Overall, based on the NEPA analysis, each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in permanent impacts. However, given the limited nature of the severe impacts, operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would not result in an adverse effect.

Some planned development and transportation projects could have the potential to increase vibration levels in the RSA, such as through the use of heavy trucks and machinery during operations, should such activities occur at the same time and in the same or nearby locations. However, operational vibration associated with trains passing under the Bakersfield to Palmdale Project Section are not expected to contribute greatly to cumulative effects from vibration due to the occasional nature of such effects. Therefore, based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), when combined with cumulative projects, would not result in an impact relating to vibration. None of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), when combined with cumulative projects, would result in adverse noise and vibration cumulative effects. Therefore, this resource topic is not discussed further.

Socioeconomics and Communities

The Bakersfield to Palmdale Project Section, combined with other cumulative transportation projects, has the potential to result in both beneficial and adverse effects to communities. The project section would bring social benefits to the region by improving access to jobs and community amenities, reducing travel times, and reducing traffic congestion during operation. The HSR project would likely stimulate redevelopment efforts in areas near the stations, which could strengthen community cohesion. Other cumulative projects, particularly transportation projects, may have similar beneficial effects on the same communities affected by the Bakersfield to Palmdale Project Section. However, none of those transportation projects is anticipated to stimulate redevelopment efforts and improve community cohesion like the Bakersfield to Palmdale Project Section.

Despite these benefits, the Bakersfield to Palmdale Project Section and other cumulative transportation projects involve the construction of linear transportation facilities, which could also disrupt established patterns of interaction among community residents, isolate one part of a community from another, or disrupt residents' access to community facilities and services. One such cumulative transportation project—the High Desert Corridor (LA-4 and P-3)—could disrupt community cohesion in the vicinity of Palmdale by introducing a new physical barrier that could affect community interaction. These potential effects are most likely to occur in areas where these projects deviate from the alignments of existing highways and railroads. Increases in noise or traffic associated with these projects could also affect interactions between community members in the HSR project vicinity. Similarly, substantial changes in visual quality or aesthetics could result in a perceived change to community character or the quality of life experienced in affected neighborhoods.

Most of the effects on community character and cohesion resulting from operation of cumulative development and transportation projects could be mitigated by incorporation of mitigation measures similar to those identified for the Bakersfield to Palmdale Project Section. However, some remaining effects related to noise and traffic could affect community cohesion. When the potential effects of the project section are considered together with those of the cumulative projects, based on the NEPA analysis, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in long-term impacts of moderate intensity related to community character and cohesion. Also, based on the NEPA analysis, when the potential effects of the Bakersfield to Palmdale Project Section are considered together with those of the cumulative projects, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in long-term beneficial effects relating to social benefits to the region by improving access to jobs and community amenities, reducing travel times, and reducing traffic congestion during operation. These cumulative effects would result in beneficial effects on community character and cohesion that would outweigh the adverse effects given their substantial intensity and wide distribution.

Economic Impacts

Operation and maintenance of the Bakersfield to Palmdale Project Section in conjunction with other planned projects would result in increases in employment and employment-related spending as well as tax revenues in the RSA. Increased connectivity to other metropolitan areas would help increase the economic health and vitality of the region, and under the cumulative scenario, the new homes, businesses, and infrastructure proposed for the RSA would benefit from the Bakersfield to Palmdale Project Section. New jobs would be created by the operation and maintenance of the HSR project as well as increased spending induced by the project. Most of the economic effects related to business and job displacements are anticipated to be temporary. Any permanent job losses are expected to be offset by the new direct and indirect job creation resulting from the Bakersfield to Palmdale Project Section. Therefore, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in permanent beneficial effects related to economic effects. The cumulative effects from new jobs and increased spending that would result from operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have a beneficial effect on all communities in close proximity to the project footprint (including low-income and/or minority populations as well as nonlow-income and/or nonminority populations).

In addition, nearby rail projects may have positive effects on property values. Research on the effects of HSR projects in particular yielded mixed findings and no real consensus, but the Bakersfield to Palmdale Project Section's contribution to these effects on property values is expected to be very small. It is assumed that development at station planning areas would encourage more infill growth rather than sprawl, which is a beneficial effect to local economies. Therefore, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in permanent beneficial effects related to property values. The cumulative effects from development at station planning areas from operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have a beneficial effect on local economies (including low-income and/or minority populations as well as nonlow-income and/or nonminority populations). Therefore, this resource topic is not discussed further.

5.6.3 Bakersfield Station—Fresno to Bakersfield Locally Generated Alternative from the Intersection of 34th Street and L Street to Oswell Street

As described in Section 2.3.3, this EIR/EIS incorporates by reference the results of analysis included in the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority 2019a) and *Fresno to Bakersfield Section Final Supplemental EIR* (Authority 2018b) for the F-B LGA and the results of technical studies related to the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street in Bakersfield. The following is a summary discussion of information for the Bakersfield Station—F-B LGA analysis.

5.6.3.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

Transportation

Construction activities would result in additional traffic as a result of temporary road and lane modifications, which would impact all communities in both urban and rural areas, including minority and/or low-income populations. All communities in the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street in Bakersfield, including low-income and/or minority populations, would experience adverse traffic effects during construction. However, the CTP and other design features would reduce traffic effects associated with the F Street Station area. No adverse construction effects to low-income or minority communities would occur. Therefore, this resource topic is not discussed further.

Air Quality

Construction emissions would exceed the threshold established by the San Joaquin Valley Air Pollution Control District. However, project construction emissions would not cause state or federal ambient air quality standards to be exceeded locally and would not exceed applicable thresholds for health risks and exposure to toxic air contaminants. Therefore, construction of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would not cause local air quality impacts to any population in the study area, including minority and/or low-income communities. No adverse construction effects to low-income or minority communities would occur. Therefore, this resource topic is not discussed further.

Noise and Vibration

Noise and vibration construction activities would temporarily exceed noise standards, resulting in impacts to sensitive receptors, including minority and/or low-income populations. These effects would be temporary during construction and would be reduced with implementation of mitigation measures. Based on the low intensity of the remaining impacts, construction of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would not result in adverse effects. Therefore, this resource topic is not discussed further.

Electromagnetic Interference and Electromagnetic Fields

There would be no adverse EMF/ EMI construction impacts on communities because construction equipment would generate low EMF and EMI levels at or near existing background levels (see Section 3.5, Electromagnetic Fields and Electromagnetic Interference, of the Fresno to Bakersfield Section Final Supplemental EIS [Authority and FRA 2019]). Therefore, this resource topic is not discussed further.

Geology and Soils

Section 3.9.6.3 addresses the effects of seismicity and associated hazards on the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street. These effects are summarized in the operation impact analysis in Section 5.6.4.2.

Public Utilities and Energy

Construction of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street could result in planned temporary interruption of utility services, accidental disruption of services, increased water use, an increase in waste generation, and an increase in energy consumption. These effects could be adverse, but best management practices would be implemented to ensure interruptions are planned and of short duration, and are preceded by public notifications to minimize effects to the community as a whole. Best management practices would be implemented uniformly throughout this portion of the F-B LGA alignment and would affect all communities, including low-income and/or minority populations. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.

Hazardous Materials and Wastes

Construction activities would be similar along the portion of the F-B LGA alignment from the intersection of 34th Street and L Street to Oswell Street and would involve the temporary transport, use, storage, and disposal of hazardous materials and wastes associated with construction. There is the potential for disturbance of contaminants at potentially explosive chemical sites that are within the construction footprint. Where feasible, potentially explosive chemical sites would be avoided during project construction. However, in instances where potentially explosive chemical sites cannot be avoided, they would be managed in accordance with applicable federal, state, and local regulations. This portion of the F-B LGA alignment in Bakersfield is at high risk for disturbing existing hazardous waste sites. Low-income and/or minority populations are adjacent to this portion of the F-B LGA alignment. Adherence to federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials. Although the effects of an accidental release could affect a low-income or minority community if it were to occur in or adjacent to such a community, remediation of hazardous waste sites in accordance with federal, state, and local regulations would be applied equally throughout the Bakersfield to Palmdale Project Section and prior to initiation of project construction. This would reduce the potential for such accidents to a very low level in all communities along the HSR alignment.

Schools are particularly sensitive locations for the accidental release of hazardous materials due to the potential impacts on children's health and safety. Schools within 0.25 mile of the construction footprint are distributed among low-income and/or minority populations as well as among nonminority and/or nonlow-income populations. Therefore, any effects experienced by minority and/or low-income populations would be the same as those experienced by the rest of the population. Additionally, implementation of mitigation measures would result in avoidance of the potential hazards at schools, because the use of extremely hazardous substances in quantities exceeding state thresholds within 0.25 mile of a school would be forbidden. In addition to mitigation measures, the Authority is implementing project design features to further reduce potential effects during construction. Therefore, no population, including low-income and/or minority communities, would experience adverse effects from hazardous materials. As such, this resource topic is not discussed further.

Safety and Security

Construction and Access

The general public would not have access to construction areas along the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street. During construction, the roads would have to be temporarily closed and traffic would have to be detoured onto other roads. At these locations, construction could result in increased response times for law enforcement, fire, and emergency services personnel. Emergency evacuation times could also increase.

The project would include development of a detailed CTP that would require coordination with local jurisdictions on emergency vehicle access. The plan would also include a traffic control plan that establishes procedures for temporary road closures, including access to residences and businesses during construction, lane closure, signage and flagpersons, temporary detour provisions, alternative bus and delivery routes, emergency vehicle access, pedestrian access, and alternative access locations. Construction of road crossings would be staggered so that the next adjacent road to the north and south (or east and west) of a road temporarily closed for construction would remain open to accommodate detoured traffic. Consequently, construction activities and access effects for this portion of the Bakersfield Station—F-B LGA would not result in adverse effects. As such, this resource topic is not discussed further.

Wildfire

The F-B LGA alignment from the intersection of 34th Street and L Street to Oswell Street is in an urbanized portion of Bakersfield and not in a high/moderate wildland fire area. Therefore, the risk of fire caused by this portion of the F-B LGA would be nominal.

Valley Fever

Construction activities have the potential to generate exposure to spores from the fungus *Coccidioides* that cause Valley Fever via inhalation of fugitive dust and soil. Valley Fever tends to infect people with jobs requiring digging in soil that contains the fungus. This typically occurs in soils that have not been disturbed or occupied by existing urban uses. The portion of the F-B LGA alignment from the intersection of 34th Street and L Street to Oswell Street is in an urbanized portion of Bakersfield where exposure to Valley Fever due to soil disturbance would most likely not occur. However, implementation of IAMFs, including dust control during construction and incorporation of best management practices to minimize exposure to those at risk from construction activities disturbing naturally occurring *Coccidioides* spores, would further reduce the potential effect related to Valley Fever for all affected areas. Therefore, this portion of the Bakersfield Station—F-B LGA would not result in adverse effects related to increased risk of Valley Fever during construction. As such, this resource topic is not discussed further.

Socioeconomics and Communities

Community Cohesion

Additional demand for services due to the purchase of materials and equipment necessary for construction and construction workers, temporary use of properties and changes in access for project construction, and temporary effects to dust and noise would affect the general population, including minority and/or low-income populations. Furthermore, property acquisition and displacement of homes and businesses would result in permanent changes to communities, including low-income and/or minority populations. Although all communities (not just low-income and/or minority populations) in the vicinity of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would experience adverse effects relating to noise, traffic, and other conflicts due to construction, access restrictions to important community facilities and institutions (e.g., the Bakersfield Department of Motor Vehicles office, the Kern County Veterans Service Department, Iglesia de Dios Pentecostes La Hermosa, the Bakersfield Homeless Shelter, and the Mercado Latino Tianguis) that are used primarily by low-income and/or minority populations would create an inconvenience to patrons in Bakersfield.

Implementation of the CTP and the associated traffic control plan would ensure temporary road closures would be staggered so that the next adjacent road to the north and south (or east and west) of a road temporarily closed for construction would remain open to accommodate detoured traffic and provide continued access to businesses and community facilities and institutions in the vicinity of this portion of the F-B LGA for all communities, including low-income and/or minority populations. With avoidance and minimization measures and mitigation measures proposed for transportation, noise and vibration, hazardous materials and wastes, and visual effects, construction activity effects on socioeconomics and communities would be minimized. Through design features and mitigation measures, effects to important community facilities serving low-income and/or minority populations would be greatly reduced. Therefore, the construction of the Bakersfield Station—F-B LGA would not result in adverse effects related to community cohesion during construction. Accordingly, this resource topic is not discussed further.

Temporary Construction Employment Resulting in the Need for Additional Community Facilities (Housing, Schools, and Services)

Construction would require a large number of employees, but is not expected to have any negative effects related to temporary population increases such as overcrowding, housing shortages, or inadequate services, and there is not a projected need for increased housing and services that could disrupt existing community cohesion. Unemployment in the region remains relatively high (14.3 percent in the region and 11.8 to 17.4 percent in the local communities) (U.S. Census Bureau 2013), so project-related construction jobs are expected to be filled by residents in the region who have the necessary skills. Because most of the jobs would be filled by area residents, no additional housing or services would be required, therefore avoiding the strain of an influx of new workers to communities in the area that would disrupt existing community cohesion.

Displacements and Relocations

Displacements and Relocations

Although impacts associated with property acquisitions and displacements are analyzed as operational impacts in the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and *Final Supplemental EIR* (Authority 2018b) for the LGA, for the purposes of this analysis, these impacts are analyzed as construction-period impacts.

During operation, property acquisition and displacement of homes and businesses would result in adverse effects on communities, including low-income and/or minority populations. In total, the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would displace an estimated 36 residential units. The majority of these residential displacements would occur within areas that contain minority and/or low-income populations. The displacement of residents and businesses in these communities could lead to the isolation, exclusion, or separation of minority or low-income individuals within a given community or from the broader community.

In addition, this portion of the F-B LGA would displace or directly affect seven community facilities. These facilities include the Bakersfield Homeless Center, Golden Empire Gleaners, and the Mercado Latino Tianguis, which are used primarily by low-income and/or minority populations. Although all of these community facilities would be relocated to ensure similar facilities would support low-income and/or minority populations, the displacements still represent an adverse effect. Effects to community facilities would be distributed throughout all population types, including low-income and/or minority populations. Additionally, Mitigation Measures SO-MM#1 and SO-MM#3, from the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and *Final Supplemental EIR* (Authority 2018b) would be implemented to ensure appropriate mitigation for displaced residences and impacts to community facilities; however, mitigation measures would not eliminate all effects where business and residential displacements would occur.

As mentioned in Section 3.2, Transportation, important community facility access effects due to construction would also occur. These community facilities are primarily in low-income and/or minority population areas and would temporarily affect residents in Bakersfield. Through design features and mitigation measures, effects would affect all populations, including low-income and/or minority communities.

Economic and Other Effects

Construction activities associated within this portion of the F-B LGA would result in additional revenues collected from related property and sales tax and temporary improvement in the employment rate for construction workers and workers in support service industries. These additional revenues and access to employment would benefit the communities within the F-B LGA study area from the intersection of 34th Street and L Street to Oswell Street in Bakersfield, including low-income and/or minority populations. As such, this resource topic is not discussed further.

Agricultural Land

The portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street is in an urban portion of Bakersfield. Therefore, this portion of the Bakersfield Station—F-B LGA would not result in adverse effects on minority and/or low-income populations related to temporary effects to agricultural land during construction. Accordingly, this resource topic is not discussed further.

Parks, Recreation, and Open Space

Construction activities would result in temporary closures of public parks, access restrictions, noise, dust, and visual effects at parks and school district play areas near construction areas, including in communities with minority and/or low-income populations. The greatest effects would be experienced at the Kern River Parkway, Weill Park, and the Metropolitan Recreation Area in Bakersfield. At the Kern River Parkway, which consists of an asphalt bike path on top of an

earthen levee, there would be a temporary bike and footpath detour; Weill Park, which consists of open grass areas and trees, would be closed during construction; users of the Metropolitan Recreation Area, which consists of ball fields, a recreational center, a picnic area, and other facilities, would experience temporary noise and dust effects during construction. Effects on parks and school district play areas would be distributed along the entire portion of the F-B LGA alignment from the intersection of 34th Street and L Street to Oswell Street and would be experienced by all park visitors, including nonminority and/or nonlow-income populations as well as minority and/or low-income populations. However, the greatest effects to parks and play areas would occur in urban areas, including Bakersfield, with minority and/or low-income populations. The application of mitigation measures to address noise and vibration and visual disturbances would eliminate the adverse effect.

Construction activities that result in increases in noise and vibration, dust, and visual disturbances would be reduced through mitigation measures designed to reduce adverse effects to parks, recreation, and open space. After the implementation of mitigation measures, all community members, including minority and/or low-income populations, would continue to have access to parks and recreation areas during construction, and their use would not be considerably impaired by construction activities. As a result, this resource topic is not discussed further.

Aesthetics and Visual Quality

Construction activities would reduce scenic vistas and landscaping and would introduce light and glare. This would impact all communities in urban and rural areas, including minority and/or low-income populations. All populations in the station area would experience adverse visual resource effects as a result of the project construction. The effects of construction would be consistent in all community types, including low-income and/or minority communities. Mitigation measures designed to reduce the visual disruption from construction activities by preserving vegetation and using temporary fencing and walls to screen views would apply to construction areas in all communities, including low-income and/or minority populations. Therefore, this portion of the Bakersfield Station—F-B LGA would not result in adverse effects on minority and/or low-income populations related to effects to visual resources from construction. As such, this resource topic is not discussed further.

Cumulative Effects

Construction activities would result in adverse cumulative effects along the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street, including impacts related to noise and vibration, community division and/or disruption, and visual resources. The cumulative effects would impact all communities near construction areas, including minority and/or low-income populations.

Mitigation measures in the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and *Final Supplemental EIR* (Authority 2018b) for the LGA would reduce the noise and vibration, community, and visual effects by requiring consultation with local government agencies to design and plan construction activities to minimize disruption from concurrently scheduled construction effects. Given the reduced severity of those effects after implementation of mitigation measures, this portion of the Bakersfield Station—F-B LGA would not result in adverse cumulative effects on minority and/or low-income populations from construction. Therefore, this resource topic is not discussed further.

5.6.3.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

Transportation

During operation, the project would provide benefits to the regional transportation system from reducing vehicle trips on freeways by providing another mode of transportation for intercity passenger trips. All communities, including minority and/or low-income populations, would benefit from the reduction in roadway congestion and an increase in transportation options. Operation of the project would result in localized effects such as local road closures and intersection effects.

Local roads that serve the proposed station site would have increased traffic as people redirect their travel routes. The adverse effects to roadways, intersections, and access would impact all communities near the project, including minority and/or low-income populations. Effects on the local circulation system would occur in congested areas from the extension of the duration of peak periods of congestion and permanent road closures. After weighing of the substantial off-setting transportation benefits of the project, this portion of the Bakersfield Station—F-B LGA would not result in adverse effects and this resource topic is not discussed further.

Air Quality

With mitigation, no adverse operation effects to low-income or minority populations would occur. Therefore, this resource topic is not discussed further.

Noise and Vibration

Operation-phase noise effects on sensitive noise uses are shown on Figure 5-A-10. During operation, noise and vibration would exceed noise standards and affect sensitive receivers along the project corridor due to an increase in ambient noise levels and excessive vibration for building occupants. The increase in noise and vibration would impact all communities near the project, including minority and/or low-income populations in the denser urban areas of Bakersfield. Mitigation measures would reduce project noise impacts. However, some mitigation measures may not be feasible or practical at all locations, and some adverse noise effects would remain.

Electromagnetic Interference and Electromagnetic Fields

There would be no adverse EMF/EMI operation impacts on communities because operation EMF/EMI levels to which members of the general public, schools, hospitals, businesses, colleges, and residences would be exposed would be below industry-standard limits (see Section 3.5 of the *Fresno to Bakersfield Section Final Supplemental EIS* [Authority and FRA 2019]) and *Final Supplemental EIR* (Authority 2018b). Because no adverse EMF/EMI impacts would occur during project operation, no minority and/or low-income populations would be adversely impacted. Therefore, this resource topic is not discussed further.

Geology and Soils

Although operation of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would not cause or exacerbate seismic activity or associated hazards, earthquakes could produce hazards to the HSR system, including moderate to high seismic ground motions, and risks from secondary seismic hazards associated with large seismically induced ground motions. For a more detailed description of effects related to geology, soils, and seismicity, refer to Section 3.9.6.3. The F-B LGA from the intersection of 34th Street and L Street to Oswell Street would avoid or minimize impacts from seismicity during operation through the implementation of GEO-IAMF#7, which addresses seismically induced ground shaking through evaluation and design methods, GEO-IAMF#8, which includes the installation of a network of instruments to provide ground motion data for use with the HSR instrumentation and controls system to temporarily shut down the HSR operations in the event of an earthquake, GEO-IAMF#10, which provides further design considerations for seismic ground shaking and surface fault rupture, and GEO-IAMF#2, which describes the incorporation of slope monitoring by a Registered Engineering Geologist into the operation and maintenance procedures to address localized slope instabilities. Additionally, the Authority will implement Technical Memorandums and design standards as discussed in Section 3.9.6.3. As a result, the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would not result in any adverse effects related to operational effects from seismicity. Therefore, this resource topic is not discussed further.

Public Utilities and Energy

There would be no adverse public utilities and energy effects associated with project operation because HSR facilities associated with the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would not permanently disrupt existing utility infrastructure or the services on which the utility providers' customers rely. Pursuant to environmental

commitments defining durations of disruption, the project would not result in prolonged disruption of service and would not result in the loss of or reduced access to public utility lines or pipes, nor would it require or result in new water, wastewater treatment, solid waste disposal, or energy facilities or expansion of existing facilities. Additionally, the F-B LGA right-of-way would be fenced and secured after construction, including after the relocation or in-place protection of any utilities within or through the right-of-way. Therefore, this portion of the F-B LGA would not result in adverse effects related to public utilities and energy on low-income and/or minority communities during operation. No communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Hazardous Materials and Wastes

Operation of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would involve transporting, using, and disposing of minor amounts of hazardous materials and wastes for routine maintenance. The potential for accidental spills or releases would affect all communities near the project, including minority and/or low-income populations.

Long-term use and storage of hazardous materials (such as those from the routine use and disposal of hazardous materials and wastes for HSR system operation and maintenance at an MOWF) would be governed by regulations that prescribe the proper use and disposal of such materials. Adherence to federal, state, and local regulations would minimize the risk of a spill or accidental release of hazardous materials. The Authority is implementing project design features to further ensure potential effects during operation of the project are not adverse. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As a result, this resource topic is not discussed further.

Safety and Security

The F-B LGA alignment from the intersection of 34th Street and L Street to Oswell Street is in an urbanized portion of Bakersfield and not in a high/moderate wildland fire area. Therefore, the risk of fire caused by this portion of the F-B LGA would be nominal. Additionally, operation of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would provide a safety benefit because the system would use contemporary safety and signaling systems and would be fully grade-separated to prevent conflicts with vehicles, pedestrians, and bicyclists. This effect would benefit all communities in the region, including minority and/or low-income populations.

Nevertheless, project operation could impact the health and safety of populations near the right-of-way due to the possibility of train accidents. Emergency response times by law enforcement, fire, and emergency services personnel could be impacted as a result of road closures or the need to access elevated HSR track portions in the case of an accident.

This portion of the F-B LGA would minimize safety and security risks by incorporating project design features that would contain train sets within the operational corridor if a derailment were to occur, procedures to protect passenger and employee health, safety features to facilitate safe evacuations on elevated tracks, and coordination with emergency responders to incorporate roadway modifications that maintain existing traffic patterns and fulfill response route needs. Therefore, this portion of the F-B LGA would not result in adverse effects related to long-term, operation-phase safety and security. No communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.

Socioeconomics and Communities

Community Cohesion

Project operation could impact community cohesion through disruption of established patterns of interactions among community residents; disruption of residents' access to community facilities and services, and/or creation of environmental effects on communities or neighborhoods, such as increases in noise or traffic that could alter community character. Effects would be distributed throughout all population types; however, mitigation measures would not eliminate all effects

where business and residential displacements would occur. Where displacement does not occur, urban and rural communities in Bakersfield would still experience elevated effects due to traffic, noise, and visual effects. Effects to community cohesion from project operation would result in adverse effects on minority and/or low-income populations. Although impacts associated with property acquisitions and displacements are analyzed as operational impacts in the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and *Final Supplemental EIR* (Authority 2018b), for the purposes of this analysis, these impacts are analyzed as construction period impacts.

The portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would primarily follow existing and long-established highway and railroad corridors that already traverse the study area and divide existing neighborhoods. This portion of the F-B LGA primarily traverses areas zoned for industrial or commercial uses that further divide communities on either side of the highways and/or railroad tracks. Therefore, the effect to community division associated with this portion of the F-B LGA would be minimal.

Displacements and Relocations

The *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and *Fresno to Bakersfield Section Final Supplemental EIR* (Authority 2018b) for the F-B LGA addresses displacements and relocations during operation. These displacements are incorporated by reference into the construction impact analysis in Section 5.7.5.1.

Permanent Disruption to Community Facilities from Operation

According to the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and the *Final Supplemental EIR* (Authority 2018b) for the F-B LGA, the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would displace and directly affect several community facilities. These facilities include the Bakersfield Homeless Center, Golden Empire Gleaners, and the Mercado Latino, which are used primarily by low-income and/or minority populations. This portion of the F-B LGA would also displace or directly affect Kern County veteran affairs, parks, and recreation facilities. Mitigation Measures SO-MM#1 and SO-MM#3, of the *Fresno to Bakersfield Section Final Supplemental EIR/EIS* (Authority and FRA, 2019) and *Final Supplemental EIR* (Authority 2018b) would be implemented to ensure appropriate mitigation for displaced residences and impacts to community facilities. However, mitigation measures would not completely reduce the impacts in locations where many residential and community facility displacements would occur. The displacements and the residual community impacts during operation of this portion of the F-B LGA would adversely affect minority and/or low-income populations in Bakersfield.

Parks, Recreation, and Open Space

Operation of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would result in the permanent acquisition of parklands at Kern River Parkway (0.66 acre) and Weill Park (0.099 acre). Mitigation for these acquisitions includes requirements for the Authority to work with the affected jurisdictions to provide appropriate compensation for permanently acquired parklands. This portion of the F-B LGA is not anticipated to result in a greatly diminished capacity to use park resources or greatly reduce the recreational value of that resource, and replacement acreage would be provided for the acquired parkland.

This portion of the F-B LGA would also affect the character of the Kern River Parkway, Weill Park, Metropolitan Recreation Area and Uplands of the Kern River Parkway due to increases in noise, visual disturbance, and facility use. However, these facilities are within an existing rail transport corridor; therefore, operational noise effects would have minimal intensity. Although this portion of the F-B LGA would alter views for users from within these parks, it would not degrade the visual quality of the surrounding area. The project would not pass within 100 feet of any school district play areas or recreational facilities; therefore, no lands would be acquired from schools and no adverse effects would occur on school district play areas or recreational facilities.

Visual effects and increase in noise and vibration at parks would be minimized through the implementation of mitigation measures and IAMFs. Mitigation would reduce the effects of potential degradation from increased facility use.

After consideration of mitigation measures, this portion of the F-B LGA would not result in adverse effects related to long-term operation-phase effects to parks. Therefore, this resource topic is not discussed further.

Aesthetics and Visual Quality

Project features would result in permanent changes to areas adjacent to or in viewing range of the proposed project. These visual changes would occur with the introduction of new features, including both elevated and non-elevated HSR guideways, guideway support columns, and other HSR infrastructure, as well as visual intrusion and potential blocking of views from the use of sound barriers where required. Project operation would introduce new sources of light. The changes in visual quality would impact all communities in rural and urban areas near the project, including minority and/or low-income populations. Elevated structures and sound barriers would be built in an urban area within this portion of the F-B LGA that contain low-income or minority populations in East Bakersfield. Mitigation measures would alleviate aesthetic and visual resource effects, but would not achieve a complete reduction in effects. Given the relatively minor intensity of the remaining impacts, no adverse effects would occur. Therefore, this resource topic is not discussed further.

Cumulative Effects

Operation of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would result in cumulative noise and vibration, community division and/or disruption, and visual effects along the entire F-B LGA project vicinity.

Mitigation measures in the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and *Final Supplemental EIR* (Authority 2018b) for the F-B LGA would reduce, but not completely eliminate, the noise and vibration, community, and visual effects by consulting with local government agencies to design and plan construction activities to minimize disruption from concurrently scheduled construction effects. The mitigation measures would reduce the adverse effects within urban areas.

5.6.4 Palmdale Station

5.6.4.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

Transportation

Construction of the Palmdale Station would result in construction impacts related to transportation similar to the effects discussed under the B-P Build Alternatives. Construction activities would result in additional short-term traffic congestion, as a result of temporary lane closures or modifications, within the vicinity of the Palmdale Station. The temporary effect on transportation that would result from construction of the Palmdale Station would have the greatest effects within census tracts with substantial minority and/or low-income populations. However, temporary road closures and detours would not create operational hazards, inconsistent uses, or safety risks, and would not materially affect traffic circulation because detour routes would be made available. Access to some areas would be disrupted and detoured for short periods.

The construction management plan described in SOCIO-IAMF#1, Construction Management Plan, would also apply to the Palmdale Station. TR-IAMF#1, Protection of Public Roadways During Construction, through TR-IAMF#5, Maintenance of Bicycle Access, and TR-IAMF#7, Construction Truck Routes, through TR-IAMF#11, Maintenance of Transit Access, would also be implemented to avoid and minimize effects to access and circulation for all transportation modes during the construction period.

Incorporation of these IAMFs would reduce the intensity of the temporary transportation effects; however, based on the NEPA analysis, an impact would occur. The remaining circulation impacts to emergency responders, pedestrians, bicyclists, and transit and automobile users during the construction period would be relatively limited. As such, construction of the Palmdale Station subsection would not result in adverse effects. No communities, including low-income and/or minority populations, would experience adverse effects. Therefore, this resource topic is not discussed further.

Air Quality

Similar to effects discussed under the B-P Build Alternatives, air pollution emissions and health risks associated with construction of the Palmdale Station would be temporary and of minimal intensity. Air quality effects would most adversely affect the populations closest to the construction sites. The areas closest to the HSR alignment are home to substantial low-income and/or minority populations. Similar to the B-P Build Alternatives, AQ-IAMF#1, Fugitive Dust Emissions, and AQ-IAMF#2, Selection of Coatings, would be implemented to minimize temporary air quality impacts.

Direct emissions from construction of the Palmdale Station, within the Antelope Valley Air Quality Management District, would exceed the GC applicability thresholds for particulate matter and nitrogen oxide emissions pursuant to the Clean Air Act. This would have the potential to cause regional air quality effects with substantial intensity. Implementation of on-site mitigation (i.e., AQ-MM#1: Offset Project Construction Emissions Through an SJVAPCD Voluntary Emission Reduction Agreement [VERA]) would reduce the intensity of effects, because emissions would be offset and would be below the GC applicability thresholds. Nevertheless, based on the NEPA analysis, an impact would occur. Based on the regional nature of these emissions impacts and the fact that the emissions can be reduced below the GC applicability thresholds, construction of the Palmdale Station subsection would not result in adverse effects.

Similar to the B-P Build Alternatives, construction and demolition activities related to the Palmdale Station could result in impacts at nearby sensitive receptors (e.g., schools, residences, and healthcare facilities), including receptors in areas with low-income and/or minority populations. During construction, sensitive receptors near the construction footprint of the Palmdale Station would be subject to an incremental increase in cancer risk associated with emissions from construction equipment. The construction activities would occur near the sensitive receptors for short periods of time, and air dispersion modeling and health risk assessments indicate that concentration levels and health risks would be below applicable thresholds within the Antelope Valley Air Quality Management District. For information on air dispersion modeling and health risk assessments, refer to Section 3.3 Air Quality. As a result, the localized air quality effects resulting from construction activities near sensitive receptors would be of minimal intensity. Nevertheless, based on the NEPA analysis, because construction of the Palmdale Station subsection would result in an incremental increase in cancer risk, an impact would occur. Air dispersion modeling and health risk assessments indicate that concentration levels and health risks would be below applicable thresholds. As such, construction of the Palmdale Station would not result in adverse effects. No communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.

Noise and Vibration

Similar to effects discussed under the B-P Build Alternatives, the transportation of materials and workers to construction sites would result in increased noise levels in the vicinity of the Palmdale Station. The areas closest to the HSR alignment are home to substantial low-income and/or minority populations. Similar to the B-P Build Alternatives, NV-IAMF#1, Noise and Vibration, would be implemented to minimize temporary noise impacts. The projected construction traffic volume would be minimal when compared to existing traffic volumes on affected local streets and therefore would not result in an audible change in noise. Therefore, potential noise effects from short-term construction-related worker commutes and equipment transport would be of minimal intensity. Thus, based on the NEPA analysis, there would be no effect.

General noise effects from station construction and the associated drilling, bulldozing, pile driving, and blasting are projected to exceed the FRA's criteria for daytime construction noise. If nighttime construction is required, construction noise effects are expected to exceed the local jurisdictions' nighttime noise standards. As noted above, implementation of NV-IAMF#1, Noise and Vibration, would minimize potential impacts related to noise and vibration during construction. The implementation of Mitigation Measure N&V-MM#1, Construction Noise Mitigation Measures, would reduce the potential short-term noise effects; however, based on the NEPA analysis, an impact would occur. Based on the temporary nature of the noise impacts during construction and the effectiveness of the mitigation measure in reducing those impacts, the Palmdale Station would not result in adverse effects under NEPA. As such, this resource topic is not discussed further.

Vibration effects from station construction would be similar to those under the B-P Build Alternatives. Implementation of NV-IAMF#1, Noise and Vibration, would minimize potential impacts related to vibration during construction. Mitigation Measure N&V-MM#2 would also be required to reduce the intensity of potential vibration effects. Although implementation of Mitigation Measure N&V-MM#2 would reduce the vibration impacts, an impact would occur based on the NEPA analysis. These impacts would affect minority and/or low-income populations. Given the minor intensity of the remaining vibration impacts and the localized nature of those impacts, construction of the Palmdale Station subsection would not result in adverse effects. Therefore, this resource topic is not discussed further.

Residences and schools within a distance of 119 feet from the Palmdale Station construction boundary would be exposed to temporary noise levels greater than the detailed FRA construction noise criteria. However, the implementation of Mitigation Measure N&V-MM#1 would reduce the intensity of potential noise effects. Nevertheless, based on the NEPA analysis, an impact would occur. Given the minor intensity of the remaining noise impacts and the localized nature of those impacts, construction of the Palmdale Station subsection would not result in adverse effects. Therefore, this resource topic is not discussed further.

With the implementation of Mitigation Measures N&V-MM#1 and N&V-MM#2, described in further detail in Section 3.4.7, the project's temporary noise and vibration effects on nearby properties from construction activities would be reduced by reducing the intensity of such noise and vibration effects and by limiting or avoiding certain noisy activities during nighttime hours. Based on the NEPA analysis, an impact would occur. Given the minor intensity of the remaining noise impacts and the localized nature of those impacts, construction of the Palmdale Station subsection would not result in adverse effects. Therefore, this resource topic is not discussed further.

Electromagnetic Interference and Electromagnetic Fields

Similar to the B-P Build Alternatives, construction equipment used to construct the Palmdale Station subsection would generate low levels of EMFs through electric motors and radio and mobile phone use. For a more detailed description of EMI/EMF effects, refer to Section 3.5.6.3 of this EIR/EIS. The EMF contribution of Palmdale Station construction would result in EMI levels in the RSA that would be at or near existing levels, which are unlikely to cause EMI with nearby land uses or hazards to workers. Implementation of EMI/EMF-IAMF#1, Controlling Electromagnetic Fields/Electromagnetic Interference, would avoid or minimize effects related to EMI during construction. Mitigation Measure EMI/EMF-MM#1, which would reduce construction-related EMI/EMF impacts, would also apply if sensitive equipment is identified. With implementation of EMI/EMF-IAMF#1 and EMI/EMF-MM#1, and compliance with Federal Communications Commission regulations, based on the NEPA analysis, construction of the Palmdale Station subsection would have an impact. However, given the relatively minor intensity of the remaining EMI/EMF impacts, the Palmdale Station would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Geology and Soils

Section 3.9.6.3 addresses the effects of seismicity and associated hazards on the Palmdale Station. These effects are summarized in the operation impact analysis below in Section 5.6.5.2.

Public Utilities and Energy

Construction of the Palmdale Station would also require the temporary interruption of utility services. Implementation of PU&E-IAMF#1 and PU&E-IAMF#2 would minimize potential utility disruptions. Utility interruptions would be short in duration and be noticeable to utility users. With regard to temporary interruption to utility services, based on the NEPA analysis, an impact would occur. Given the temporary and highly localized nature of potential utility disruptions, construction of the Palmdale Station subsection would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Construction of the Palmdale Station could also result in the accidental disruption of utility services. While PU&E-IAMF#2 reduces the likelihood of accidental utility interruption. Based on the NEPA analysis, the effects of accidental utility interruptions would be an impact. Given the temporary and highly localized nature of potential utility disruptions, construction of the Palmdale Station subsection would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Hazardous Materials and Wastes

Similar to the B-P Build Alternatives, construction of the Palmdale Station would result in increased hazardous materials use and waste generation, including asbestos-containing materials and lead-based paint. For a more detailed description of hazardous materials and wastes effects, refer to Section 3.10.6.3. Implementation of HMW-IAMF#1 through HMW-IAMF#8 would assist in minimizing effects arising from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The potential for accidental spills and releases would be reduced to a minimal intensity with implementation of regulatory requirements and these IAMFs. Mitigation Measure HMW-MM#1 (Limit Use of Extremely Hazardous Materials near Schools During Construction) would also apply. Although implementation of HMW-MM#1 would reduce most of the impacts, based on the NEPA analysis, an impact would still occur. Given the relatively minor intensity of the remaining impacts, the Palmdale Station subsection would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects from hazardous materials. As such, this resource topic is not discussed further.

Temporary hazardous materials and waste activities within 0.25 mile of schools could occur during the construction period. The project would comply with all applicable federal, state, and local regulations and would implement HMW-IAMF#1 through HMW-IAMF#8, minimizing the intensity of potential effects. Mitigation Measure HMW-MM#1 would reduce the potential release of hazardous materials through limiting the use of extremely hazardous materials near schools during construction, thereby reducing potential effects to a minimal intensity. However, based on the NEPA analysis, an impact would occur. Given the relatively minor intensity of the remaining impacts, the Palmdale Station subsection would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects from hazardous materials. As such, this resource topic is not discussed further.

Safety and Security

Accidents

Similar to the B-P Build Alternatives, there is a potential for accidents at construction sites and accidents associated with construction-related detours during construction of the Palmdale Station that could result in accidental injuries and deaths of workers or the general public. For a more detailed description of safety and security effects, refer to Section 3.11.6.3. With implementation of S&S-IAMF#2, Safety and Security Management Plan, the potential for

construction site accidents is expected to be of minimal intensity; however, based on the NEPA analysis, an impact would still occur. Given the relatively minor intensity of the remaining impacts, the Palmdale Station would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects related to accidents at construction sites and accidents associated with construction-related detours. As such, this resource topic is not discussed further.

Valley Fever

Similar to the B-P Build Alternatives, there is a potential for employees to become infected with Valley Fever during ground-disturbing activities. Construction Safety and Health Plans (S&S-IAMF#2) would be implemented during construction that would include measures to reduce the likelihood of Valley Fever fungal infection during construction; however, based on the NEPA analysis, an impact would still occur. Given the relatively minor intensity of the remaining impacts, the Palmdale Station would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Construction and Access

Periodic and temporary road closures/detours in the area surrounding the Palmdale Station may be required during construction, which could result in increased response times for emergency responders. Emergency responders within the RSA would be notified in advance of any road closures that could potentially disrupt access or result in delays in emergency response times, and appropriate detour routes with advance signage to notify emergency providers of road closure would be provided. Implementation of the above measures would reduce impacts to a minimal intensity; however, based on the NEPA analysis, an impact would occur. Given the relatively minor intensity of the remaining impacts, the Palmdale Station would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Crime

Criminal activity around the construction site would be typical of the types of crimes that occur at other heavy construction sites, such as theft of equipment and materials, or vandalism after work hours. Construction contractors would institute security measures common to construction sites, including securing equipment and materials in fenced and locked storage areas, as well as the use of security personnel after working hours. Security lighting would be required to be focused on the site, minimizing light spillage onto neighboring properties. These security measures would reduce potential effects of criminal activity. Based on the NEPA analysis, an impact would occur. Given the relatively minor intensity of the remaining impacts, the Palmdale Station would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Wildfire

The Palmdale Station is in an urbanized portion of Palmdale and not in a high fire hazard severity zone. Therefore, the risk of fire caused by the construction of the Palmdale Station would be nominal. As such, this resource topic is not discussed further.

Socioeconomics and Communities

Community Cohesion

Temporary Disruption of Community Cohesion and Division of Existing Communities

The construction of Palmdale Station would result in many of the same temporary effects on community cohesion as discussed for the B-P Build Alternatives. In the case of the station construction, the additional infrastructure requirements would require a longer construction period than a section of any of the B-P Build Alternatives.

Construction (e.g., grading, excavation, constructing the HSR railbed, and laying the trackway) would be accomplished over a 6-year period. Activities related to building the Palmdale Station would include receiving and moving equipment and materials, clearing and exposing soils,

introducing lights for nighttime work, storing construction materials, and generally visually changing the project landscape. As much as possible, construction would take place within the right-of-way acquired for the Palmdale Station.

Construction effects would include temporary increases in noise and dust, visual changes, and traffic congestion related to road closures or detours. Potential noise effects during construction on residential properties would be greater during any required nighttime construction; overall construction noise effects on both residential and commercial properties are expected to be minor.

Implementation of NV-IAMF#1, Noise and Vibration, AQ-IAMF#1, Fugitive Dust Emissions, and AQ-IAMF#2, Selection of Coatings, would minimize the Palmdale Station's temporary impacts related to noise and air quality. The Palmdale Station's temporary impacts related to community circulation would be minimized through compliance with SOCIO-IAMF#1, Construction Management Plan.

Implementation of the IAMFs described above would minimize the potential for construction to temporarily disrupt community cohesion or to divide existing communities; however, some temporary effects related to air quality, noise, and access to park facilities would remain. Because these effects would represent a short-term social change within affected communities along the HSR project alignment, the remaining effects would be of moderate intensity. Short-term (temporary) impacts would occur. However, these effects would not be adverse.

Permanent Disruption of Community Cohesion and Division of Existing Communities

Similar to the B-P Build Alternatives, construction of the Palmdale Station could potentially divide or disrupt communities adjacent to the alignment by displacing residents, businesses, and important community facilities (refer to Section 3.12.6.2 for a description of the residential, business, and community facility displacements associated with construction of the Palmdale Station).

As described in Section 3.12.6.2, an adequate supply of replacement properties is available in the replacement area in which to relocate the displaced residents and most of the displaced businesses. Replacement housing is comparable in value. Comparison of cost is a good measure of the suitability of replacement housing because it is a function of important attributes, such as size, quality, and neighborhood amenities. In Los Angeles County, there is inadequate available business space to relocate the businesses that could be displaced by the HSR project. If necessary, additional vacant land in the vicinity of Lancaster and Palmdale that is properly zoned for commercial and industrial use could be improved at some future date to accommodate those displaced businesses that are unable to relocate within existing commercial or industrial business space.

The HSR project's permanent effects related to displacements and relocations would be minimized through SOCIO-IAMF#2, Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act, and SOCIO-IAMF#3, Relocation Mitigation Plan. Although all residents and businesses displaced by the HSR project would receive relocation assistance under the Uniform Act, some may not be relocated near their current locations.

Because the Palmdale Station would be adjacent to existing transportation corridors, construction would not bisect or isolate established communities, nor would it change the existing community character. Effects to pedestrian and vehicular circulation are not considered a barrier to interaction because the Palmdale Station would be primarily adjacent to existing transportation corridors.

Some roads would be realigned or grade-separated from the HSR tracks to maintain north-south and east-west connections in the community; others would be permanently closed on either side of the HSR tracks. Construction of the Palmdale Station would replace each of the existing at-grade crossings in Palmdale with new grade-separated crossings. These new grade separations would enhance mobility in Palmdale by eliminating traffic delays for motorists who are currently forced to wait for passing trains.

Any newly constructed or reconstructed roadways, including new grade separations, would provide Americans with Disabilities Act-compliant sidewalks. Where existing roads cross the proposed HSR alignment, the HSR project would replace all transportation improvements, including bike lanes, trails, sidewalks, and transportation facilities, to match the existing conditions. The new sidewalks and bikeways would enhance connectivity and improve community cohesion in the Palmdale area.

Implementation of the IAMFs described above would minimize the potential for construction to permanently disrupt community cohesion or divide existing communities; however, construction of the Palmdale Station would relocate a substantial number of businesses in Palmdale. The Palmdale Station would also enhance connectivity and improve community cohesion in Palmdale by constructing new grade separations in that community, which is currently divided by an existing railroad line, and would provide substantial regional mobility improvements by providing a high-speed transit connection to other major urban areas in California.

As further discussed in Section 3.12.6.3, although construction of the Palmdale Station would relocate a substantial number of businesses in Palmdale, those relocations would be permanent and of moderate intensity because they would not relocate key businesses. Based on the NEPA analysis, construction of the Palmdale Station would result in a permanent impact on community cohesion, relating to displacement and relocations of businesses. Connectivity improvements would be implemented to improve community cohesion. The beneficial effects from connectivity improvements would be permanent and of substantial intensity. Construction of the Palmdale Station would result in a permanent beneficial effect of substantial intensity. Because the intensity of the permanent beneficial effect would be greater than the intensity of the permanent impact, the Palmdale Station's permanent effects on community cohesion would be beneficial under NEPA. No mitigation would be required.

The population living within the Palmdale Station subsection includes substantial minority and/or low-income populations; therefore, the permanent beneficial effect (relating to connectivity improvements) would be experienced by minority and/or low-income populations. As such, this resource topic is not discussed further.

Temporary Construction Employment Resulting in the Need for Additional Community Facilities (Housing, Schools, and Services)

The potential for the job creation related to construction of the Palmdale Station site to require the construction of new community facilities is considered in the discussion of construction impacts for the B-P Build Alternatives (Section 5.6.2.1), under the heading Temporary Construction Employment Resulting in the Need for Additional Community Facilities. As discussed in that section, the temporary effects resulting from the construction of the HSR project (including the Palmdale Station) would result in a noticeable economic change within the two-county region; however, they would not affect the overall quality of life in the region. Based on the NEPA analysis, a temporary, beneficial effect would occur. No mitigation would be required. Because the population living within the Palmdale Station subsection includes substantial minority and/or low-income populations, these temporary beneficial effects would be experienced by minority and/or low-income populations. As such, this resource topic is not discussed further.

Displacements and Relocations

Palmdale Station construction would displace approximately 312 residential units, which correlates with approximately 1,108 displaced residents.

As discussed in Section 3.12.6.2, the existing supply of vacant residential units in the City of Palmdale, where residential displacements would occur, would be greater than necessary to house the relocated residents. Although the Palmdale Station would displace considerable numbers of existing housing units and relocate people in Palmdale, adequate replacement housing appears to be available in the area.

Implementation of SOCIO-IAMF#2, Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act, and SOCIO-IAMF#3, Relocation Mitigation Plan, would reduce the intensity of these permanent displacement and relocation effects.

Similar to the B-P Build Alternatives, implementation of SOCIO-IAMF#2, Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act, and SOCIO-IAMF#3, Relocation Mitigation Plan, would reduce the intensity of these permanent displacement and relocation effects by minimizing the potential for construction of the Palmdale Station to relocate residents outside their existing community; however, construction of the Palmdale Station would still relocate a substantial number of residents in Palmdale. Therefore, based on the NEPA analysis, a permanent impact would occur. Given the substantial intensity of the remaining effects, construction of the Palmdale Station subsection would result in adverse effects under NEPA. Mitigation should be considered. Because the population living within the Palmdale Station subsection includes substantial minority and/or low-income populations, these adverse effects would be experienced by minority and/or low-income populations.

As discussed in Section 3.12.6.4, the Palmdale Station would displace approximately 175 businesses, which correlates with approximately 1,886 displaced employees.

Implementation of SOCIO-IAMF#2, Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act, and SOCIO-IAMF#3, Relocation Mitigation Plan, would minimize adverse effects relating to the displacements and relocations of local businesses during construction.

A general assessment was conducted to determine the availability of suitable commercial and industrial business properties within the replacement area. Business displacements in the Palmdale Station area were determined using the same methods associated with the B-P Build Alternatives.

As described in Section 3.12.6.4, there would be more displaced businesses than there are currently available business spaces. There is a deficit of suitable available properties for retail and food services, professional services, and industrial business classes. The gap analysis assumes that the same business spaces would be available to accommodate the relocation of businesses displaced from the Palmdale Station area as were available for the B-P Build Alternatives. This would place additional pressure on the limited number of available properties for businesses.

As described above under the B-P Build Alternatives, an analysis of vacant land that is properly zoned for commercial and industrial use was completed in the vicinity of Lancaster and Palmdale. Similar to the business replacement analysis, vacant land parcels were identified by ZIP code. Unimproved properties are available in the vicinity of the potential business displacements. These vacant land parcels could be improved at some future date to accommodate those displaced businesses that are unable to relocate within existing commercial or industrial business space. It should be noted that upon improvement, those vacant parcels might be able to accommodate several businesses. In addition to the vacant commercial/industrial land, there is a large amount of vacant land in the cities of Lancaster and Palmdale zoned for commercial and industrial uses. While this land is not currently for sale or lease, it may become available for sale or lease at a later date.

Implementation of the IAMFs described above would minimize the potential for construction of the Palmdale Station to relocate businesses outside their existing community; however, the Palmdale Station would still relocate a substantial number of businesses in Palmdale. Therefore, based on the NEPA analysis, construction of the Palmdale Station would result in a permanent impact. Given the substantial intensity of the remaining effects, construction of the Palmdale Station subsection would result in adverse effects under NEPA. Because the population living within the Palmdale Station subsection includes substantial minority and/or low-income populations, these adverse effects would be experienced by minority and/or low-income populations.

The Palmdale Station would require the displacement of one existing community facility in Palmdale. R. Rex Parris High School would be displaced under this alternative. R. Rex Parris High School is an alternative education setting and does not have specified school attendance boundaries, Therefore, although R. Rex Parris High School is not within an area with low-income or minority populations, low-income and/or minority populations could potentially attend the

school. Similar to the B-P Build Alternatives, implementation of SOCIO-IAMF#2, Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act, and SOCIO-IAMF#3, Relocation Mitigation Plan, would minimize adverse effects relating to construction of the Palmdale Station and the resulting displacements and relocations of community facilities.

Although construction of the Palmdale Station would result in a noticeable localized social change, it would not result in a long-term social change in Palmdale because R. Rex Parris High School would continue to operate elsewhere in the community. Therefore, based on the NEPA analysis, a permanent impact relating to the displacement and relocation of R. Rex Parris High School would occur. Construction of the Palmdale Station subsection would not result in adverse effects under NEPA related to the displacement of community facilities.

Economic and Other Effects

Similar to the B-P Build Alternatives, the construction of the Palmdale Station could result in beneficial sales tax gains in Lancaster and Palmdale, including communities where low-income and/or minority populations live.

The Palmdale Station is anticipated to result in a beneficial effect on regional employment because it would create new jobs in Kern and Los Angeles Counties. While it would be highly speculative to estimate the percentage of this employment that would be filled by low-income and/or minority populations, the Authority has programs in place to ensure that some of the employment benefits would be realized by those populations.

The Palmdale Station would result in a short-term beneficial effect relating to regional employment within the two-county region during the construction period. The B-P Build Alternatives would result in a beneficial effect. These beneficial effects would be experienced by all populations living within the two-county region, including populations living within RSA communities, low-income and/or minority populations, and nonlow-income and/or nonminority populations. As such, this resource topic is not discussed further.

Aesthetics and Visual Quality

Similar to effects discussed under the B-P Build Alternatives, construction activities would reduce scenic vistas and landscaping and introduce light and glare. Implementation of Mitigation Measures AVQ-MM#1 and AVQ-MM#2, described in further detail in Section 3.16.7, would reduce the project’s temporary aesthetic effects by reducing visual disruption and light disturbance during construction. Based on the NEPA analysis, construction of the Palmdale Station would result in a temporary impact (relating to aesthetics and visual quality). Given the temporary and highly localized nature of the remaining impacts, construction of the Palmdale Station subsection would not result in adverse effects. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. Accordingly, this resource topic is not discussed further.

Cumulative Effects

The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station and the maintenance facilities, including the MOWF and/or the MOWF. Therefore, the conclusions in Section 5.6.2.1 regarding the potential for the B-P Build Alternatives to result in cumulative effects during construction also apply to the Palmdale Station. Refer to that section for additional information.

5.6.4.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

Transportation

Similar to the B-P Build Alternatives, the Palmdale Station (as part of the HSR system) would provide benefits to the regional transportation system by reducing vehicle trips on freeways by providing another mode of transportation for intercity passenger trips. All communities, including minority and/or low-income populations, would benefit from the regional reduction in roadway congestion and increase in transportation options. Operation of the Palmdale Station would result

in permanent beneficial effects. Because the population living within the Palmdale Station subsection is (in a majority of census tracts) substantial for both minority and/or low-income populations, this permanent impact would be experienced predominantly by minority and/or low-income populations.

Operation of the Palmdale Station would have effects on transit, bicyclists, and pedestrians. Transit routes would be altered only slightly, and the Palmdale Transportation Center and Metrolink station would be relocated north at the proposed HSR station. The HSR project is expected to add approximately 18 new peak-hour transit users at the Palmdale Station, which can be served by transit services. Pedestrian crossings in the station area would be closed and replaced with new overcrossings. Existing and proposed bicycle facilities are expected to meet the projected demand. Implementation of TR-IAMF#12, Pedestrian and Bicycle Safety, and TR-IAMF#13, Bicycle Facilities, would avoid performance or safety effects to bicycle and pedestrian facilities. Nevertheless, the Palmdale Station would result in a permanent impact, based on the NEPA analysis, with regard to alternative transportation modes (i.e., transit, bicycles, and pedestrians). Given the reduced intensity of the impact and its highly localized context, this would not result in an adverse effect. Therefore, no communities, including low-income and/or minority populations, would experience adverse effects. As such, this resource topic is not discussed further.

Air Quality

At the regional level, operation of the HSR system (including the Palmdale Station) would result in lower pollutant emissions, resulting in a net benefit to regional air quality. This effect would benefit all communities in the region, including low-income and/or minority populations. Operation of the Palmdale Station would result in permanent beneficial effects. Because this beneficial effect would be regional, it would affect all populations within the EJ RSA, including low-income and/or minority populations, and nonlow-income and/or nonminority populations. Accordingly, this resource topic is not discussed further.

Noise and Vibration

Similar to the B-P Build Alternatives, noise and vibration would exceed noise standards and affect sensitive receivers along the project corridor during operation due to an increase in ambient noise levels and excessive vibration for building occupants. The increase in noise and vibration would affect all communities near the project, including minority and/or low-income populations. Implementation of Mitigation Measures N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6, as detailed in Section 3.4.7, would reduce the project's permanent effects by addressing vehicle noise specifications and special track work at crossovers, and requiring that noise analysis be conducted.

Noise effects are not anticipated from operations at the Palmdale Station. However, in order to provide room for the HSR parking lots at the Palmdale Station, Fifth Street E would be relocated to the west, closer to the residential neighborhood to the west of Fifth Street E, between Avenue Q and Palmdale Boulevard. Additionally, a row of buildings that currently provide some shielding from the noise on Fifth Street E for the residences behind them would be removed to accommodate the relocated road. Finally, with the HSR project in place, the traffic volume on Fifth Street E is projected to grow, which would also increase the noise levels experienced by the residences to the west of the Palmdale Station. These changes together would result in an increase in noise for the residential neighborhood to the west of the Palmdale Station. Noise effects are projected at the following residential locations adjacent to the proposed Palmdale Station:

- **E Avenue P 8 to E Avenue R**—Severe noise effects are projected in this area at 193 residences on the west side of the tracks. These permanent effects would be due to the proximity of the receivers to the relocated roadway, the increased traffic on the roadway due to the Palmdale Station, and the removal of the row of residential buildings between the residences and the existing roadway. Implementation of Mitigation Measure N&V-MM#3, which includes the construction of sound barriers to reduce long-term operational noise effects, would reduce the intensity of effects; however, based on the NEPA analysis, an

impact would occur. Given the substantial intensity of the remaining impacts and the number of affected receptors, this would result in an adverse effect.

The long-term operation of the traction power substation would be similar to the long-term operation of the Bakersfield to Palmdale Project Section. Noise-sensitive land uses, including schools within 250 feet of the boundary, would potentially be affected. Potential noise effects from long-term operations of the proposed traction power substation would be of substantial intensity. However, the implementation of Mitigation Measure N&V-MM#7 (Maintenance-of-Way Facility, and Traction Power Substation) includes noise barriers to reduce long-term operational noise effects. Based on the NEPA analysis, a permanent impact would occur. Given the substantial intensity of the remaining impacts and the number of affected receptors, this would result in an adverse effect.

Electromagnetic Interference and Electromagnetic Fields

Measurements of EMFs along representative portions of the HSR alignment for the Bakersfield to Palmdale Project Section indicate that background levels for both magnetic and electric fields are well below accepted thresholds applied for the California HSR System relative to human health and interference with other equipment and systems. The following list summarizes the EMI/EMF effects that would occur as a result of operation of the B-P Build Alternatives:

- The EMF effects from station platforms, on trains, and in the heavy maintenance facilities on people within or near the HSR right-of-way would be below the Institute of Electrical and Electronics Engineers Standard C95.6 maximum permissible exposure limit of 9,040 milligauss for public exposure to EMFs because, even within the mainline right-of-way, these levels would not be reached. The thresholds for human exposure to EMF would not be exceeded within the RSA. Therefore, based on the NEPA analysis, EMF effects to the nearby general public would be of no effect. No communities, including low-income and/or minority populations, would be adversely affected.
- At a certain level of exposure, EMFs may interfere with implanted medical devices such as pacemakers. EMF levels above the allowable health limits for implanted medical devices would occur only inside traction power facilities and emergency generator rooms, which are unmanned and inaccessible to the general public. The Electromagnetic Compatibility Program Plan cited in EMI/EMF-IAMF#1 precludes HSR employees with implanted medical devices from entering these facilities. Therefore, effects on members of the public and employees with implanted medical devices would be of no effect based on the NEPA analysis. No communities, including low-income and/or minority populations, would be adversely affected.
- Facilities such as underground pipelines and cables and metal fencing would be exposed to EMFs, which could result in corrosion to underground pipelines and cables lacking adequate grounding systems. However, as a standard engineering practice, appropriate grounding systems and/or installation of insulating joints or couplings would be included in the HSR project design to prevent corrosion of underground infrastructure. EMI/EMF-IAMF#1, Controlling Electromagnetic Fields/Electromagnetic Interference, would reduce EMF exposure, and the intensity of the effect would be reduced. Nevertheless, based on the NEPA analysis, an impact would occur. Given the relatively minor intensity of the remaining impacts, this would not result in an adverse effect. No communities, including low-income and/or minority populations, would be adversely affected.
- EMF exposure from HSR system operations could cause nuisance shocks to people and animals touching ungrounded metal fences and aboveground metal irrigation systems adjacent to the HSR right-of-way. Grounding of fences and irrigation systems would be a standard design requirement for the HSR project, which would reduce the potential for nuisance shocks. EMI/EMF-IAMF#1, Controlling Electromagnetic Fields/Electromagnetic Interference, would reduce EMF exposure, and the exposure and associated potential for nuisance shocks at ungrounded metal structures would be reduced. Based on the NEPA analysis, an impact would occur. Given the relatively minor intensity of the remaining impacts,

this would not result in an adverse effect. No communities, including low-income and/or minority populations, would be adversely affected.

- EMFs related to operation of the HSR system could interfere with Wi-Fi at nearby schools. The use of dedicated frequency blocks and compliance with the EMI/EMF standards cited in EMI/EMF-IAMF#1, Controlling Electromagnetic Fields/Electromagnetic Interference, would reduce EMF exposure, which would reduce the intensity of potential EMI/EMF effects on schools. Based on the NEPA analysis, an impact would occur. Given the relatively minor intensity of the remaining impacts, this would not result in an adverse effect. No communities, including low-income and/or minority populations, would be adversely affected.

Overall, based on the NEPA analysis, operation of the Palmdale Station would result in permanent impacts (relating to EMI/EMF effects); however, given the relatively minor intensity of the remaining impacts, this would not result in an adverse effect. Therefore, no communities, including low-income and/or minority populations, would be adversely affected. As such, this resource topic is not discussed further.

Geology and Soils

Although operation of the portion of the Palmdale Station would not cause or exacerbate seismic activity or associated hazards, earthquakes could produce hazards to the HSR system including moderate to high seismic ground motions, and risks from secondary seismic hazards associated with large seismically induced ground motions. For a more detailed description of effects related to geology soils, and seismicity, refer to Section 3.9.6.3. Operation of the Palmdale Station would avoid or minimize impacts from seismicity during operation through the implementation of GEO-IAMF#7, which addresses seismically induced ground shaking through the evaluation and design methods, GEO-IAMF#8, which includes the installation of a network of instruments to provide ground motion data for use with the HSR instrumentation and controls system to temporarily shut down the HSR operations in the event of an earthquake, GEO-IAMF#10, which provides further design considerations for seismic ground shaking and surface fault rupture, and GEO-IAMF#2, which describes the incorporation of slope monitoring by a Registered Engineering Geologist into the operation and maintenance procedures to address localized slope instabilities. Additionally, the Authority will implement Technical Memoranda and design standards as discussed in Section 3.9.6.3. Based on the NEPA analysis, an impact would occur. Given the reduced intensity of those impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would be adversely affected. As such, this resource topic is not discussed further.

Safety and Security

Operation of the Palmdale Station would have the same impacts as the B-P Build Alternatives. The Palmdale Station is in an urbanized portion of Palmdale and not in a high fire hazard severity zone. Therefore, the risk of fire caused by the operation of the Palmdale Station would be nominal. Although emergency responses may be more frequent due to additional people at the station, the additional emergency responses can be achieved. The Authority would compensate emergency service providers for increased services required due to the HSR project. Based on the NEPA analysis, an impact would occur. Given the reduced intensity of those impacts, there would be no adverse effects. Therefore, no communities, including low-income and/or minority populations, would be adversely affected. Accordingly, this resource topic is not discussed further.

Socioeconomics and Communities

Community Cohesion

Permanent Disruption to Community Cohesion or Division of Existing Communities from Project Operation

Operation of the Palmdale Station would result in many of the same permanent adverse effects on community cohesion as the B-P Build Alternatives. Operation of the B-P Build Alternatives could permanently disrupt established patterns of interaction among community residents. Other

permanent environmental effects on communities or neighborhoods—such as substantial increases in noise or traffic—could have adverse consequences on community members’ interactions in the project vicinity. Similarly, substantial permanent changes in visual quality or aesthetics could result in a perceived change to community character or the quality of life experienced in affected neighborhoods.

The HSR project’s permanent effects on aesthetics and visual quality would be minimized through compliance with AVQ-IAMF#1, Aesthetic Options, and AVQ-IAMF#2, Aesthetic Review Process.

Operation of the Palmdale Station (as part of the HSR system) would also result in regional social benefits by improving access to jobs and community amenities, reducing travel times, reducing traffic congestion, and providing new employment opportunities.

All three of the affected road crossings in the Palmdale Station area (Avenue P/Rancho Vista Boulevard, Sierra Highway, and Palmdale Boulevard) are currently at-grade with the existing Union Pacific Railroad tracks. Each of these at-grade crossings would be replaced with new, grade-separated crossings. These new grade separations would enhance mobility in Palmdale by eliminating traffic delays for motorists who are currently forced to wait for passing trains.

Any newly constructed or reconstructed roadways, including new grade separations, would provide Americans with Disabilities Act-compliant sidewalks. Where existing roads cross the proposed HSR alignment, the HSR project would replace all transportation improvements, including bike lanes, trails, sidewalks, and transportation facilities, to match the existing conditions. The new sidewalks and bikeways would enhance connectivity and improve community cohesion in Palmdale.

Implementation of the IAMFs described above would minimize the potential for operation of the Palmdale Station to permanently affect community character; however, some of the effects related to aesthetics and visual quality would remain.

Implementation of Mitigation Measures N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6 would reduce the project’s long-term noise and vibration impacts on nearby properties. Implementation of Mitigation Measures AVQ-MM#3, AVQ-MM#4, AVQ-MM#5, AVQ-MM#6, AVQ-MM#7, AVQ-MM#8, and AVQ-MM#9 would reduce the project’s permanent aesthetic impacts on surrounding properties.

Because operation of the Palmdale Station could permanently affect the community character and quality of life in Palmdale, the remaining effects would be of substantial intensity. Operation of the Palmdale Station would result in impacts under NEPA. Given the severity of the remaining impacts, this would represent an adverse effect.

Permanent Disruption to Community Facilities from Operation

Operation of the Palmdale Station would be inconsistent with some of the land uses near the station, including community facilities. Implementation of IAMFs would minimize the potential for operation of the Palmdale Station to permanently disrupt community facilities; however, the Palmdale Station would still result in noticeable localized social change, but would not affect the overall quality of life in the affected communities. Therefore, the Palmdale Station would result in a permanent impact based on the NEPA analysis. Given the severity of the remaining impacts, this would represent an adverse effect.

Economic and Other Effects

As discussed under Permanent Employment Resulting in the Need for Additional Community Facilities, the operation of the Palmdale Station would create job opportunities in the surrounding communities, region, and state. The operation of the HSR system would create jobs directly, through operation and maintenance needs, and indirectly, through the growth projected to occur as a result of HSR operation. Employment growth from HSR project operation is expected to be a net benefit for the region, as it would provide jobs in the City of Palmdale, which is composed of communities with unemployment rates that exceed the state average. This is an economic benefit that would reduce the likelihood of physical deterioration of communities surrounding the

Palmdale Station. Based on the NEPA analysis, operation of the Palmdale Station would result in a permanent beneficial effect. This beneficial effect would be experienced within communities throughout the EJ RSA, including minority and/or low-income populations and nonminority and/or nonlow-income populations. As a result, this resource topic is not discussed further.

Aesthetics and Visual Quality

As discussed further in Section 3.16, Aesthetics and Visual Quality, under Impact AVQ #5, the KVP for the Palmdale Station is KVP 28. The Palmdale Station would be between E Avenue Q to the north and Palmdale Boulevard to the south and would be constructed as part of the Palmdale to Burbank Project Section.

KVP 28 is on E Avenue Q 3 near its intersection with Fifth Street E, looking northeast. This KVP is representative of the transportation spine in Palmdale where vacant lots are adjacent to a mix of low- to medium-density residential uses backed by light industrial uses (mostly automobile-related) along Sixth Street E and the Union Pacific Railroad tracks. Dominant elements visible from KVP 28 are residential uses in the foreground with industrial uses (large gray building), additional vacant lots, transmission lines, and the Union Pacific Railroad tracks in the middle ground. No distant terrain is visible to form a background from this location. Existing visual quality is low.

As described more fully in Section 3.16, Aesthetics and Visual Quality, based on the preliminary design information, the Palmdale Station would be the principal project feature visible in the background and would include train platforms, surface parking areas, a transit plaza, and pedestrian overheads. Train platforms would be constructed along either side of the proposed rail alignment, beginning approximately 200 feet south of E Avenue Q. The southbound platform would be west of the southbound tracks, and the northbound platform would be east of the northbound tracks. Each platform would be approximately 1,410 feet long. In addition, a 700-foot Metrolink platform would be constructed east of the HSR platform and north-south along the Metrolink railway. While the Palmdale Station would introduce large-scale structures to the view, these structures would be visually consistent with nearby commercial uses. Regardless of the station's exact appearance, it would be designed to have a distinctive and potentially iconic architectural form that would create a beneficial change in visual character when viewed from adjacent locations. By introducing a building with distinctive architecture, the station would greatly enhance the area's vividness as compared to existing industrial development.

The primary viewers near KVP 28, residential neighbors, would have high awareness of the visual environment, whereas commercial viewers would have low awareness because of a focus on work activities. Both types of viewers would have high exposure because of the prominence of structures at the Palmdale Station. The new Palmdale Station and associated facilities would enhance cultural order and visual unity as viewed from KVP 28, thereby improving visual quality. In addition, the HSR station would be expected to have beneficial indirect effects on visual quality by increasing the potential for new development and redevelopment in nearby areas, similar to what would occur for the Bakersfield Station alternatives. This would likely influence development patterns near the station and could result in new project and urban design improvements that would upgrade the visual character and quality of these areas over time. Visual quality at KVP 28 would improve from low to moderate. The indirect benefits would be similar to those anticipated to occur around the Bakersfield Station, with beneficial effects on visual quality extending to new development in the area. While the Palmdale Station would create additional nighttime light and glare, the change in lighting would be minimal relative to existing sources at the station site. Therefore, based on the NEPA analysis, operation of the Palmdale Station would result in a beneficial effect (relating to aesthetics and visual quality). Because the population living within the Palmdale Station subsection is (in a majority of census tracts) substantial for both minority and/or low-income populations, the permanent beneficial effect would be experienced predominantly by minority and/or low-income populations. As such, this resource topic is not discussed further.

Cumulative Effects

The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station and the maintenance facilities, including the MOWF and/or the MOWF. Therefore, the conclusions in Section 5.6.2.2 regarding the potential for the B-P Build Alternatives to result in cumulative effects during operation also apply to the Palmdale Station. Refer to that section for additional information. The Palmdale Station, when combined with the cumulative projects, would not result in any adverse cumulative effects. As such, this resource topic is not discussed further.

5.6.5 Lancaster North B Maintenance-of-Way Facility

5.6.5.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

The traffic effects associated with construction of the Lancaster North B MOWF are considered in Section 5.6.3 as part of the B-P Build Alternatives. The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station and the maintenance facilities. Therefore, the conclusions in Section 5.6.3.1 regarding the potential for the B-P Build Alternatives to result in traffic effects and cumulative effects during construction also apply to the Lancaster North B MOWF. Refer to that section for additional information on traffic and cumulative effects from construction of the Lancaster North B MOWF.

Based on the NEPA analysis, construction of the Lancaster North B MOWF would result in an impact from temporary construction-phase air quality, noise and vibration, public utilities and energy, hazardous materials and wastes, and safety and security effects. Based on the NEPA analysis, construction of the Lancaster North B MOWF would also result in an impact from temporary and permanent construction-phase effects on aesthetics and visual quality, and a beneficial effect, based on the NEPA analysis, from short-term increases in regional employment within the two-county region during the construction period. Overall, as discussed in Section 5.6.3.1, construction of the Lancaster North B MOWF would result in similar construction-phase noise and vibration, EMI/EMF, public utilities and energy, hazardous materials and wastes, safety and security, and the regional economic effects as the B-P Build Alternatives. The Lancaster North B MOWF would be in an undeveloped area more than 2 miles from the nearest low-income and/or minority populations. All construction-phase impacts from the Lancaster North B MOWF would be experienced within a sparsely populated, rural area where nonminority and nonlow-income populations reside. Therefore, construction of the Lancaster B MOWF would not result in adverse effects on minority and/or low-income populations. As such, construction impacts related to the Lancaster North B MOWF are not discussed further.

5.6.5.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station and the maintenance facilities, including the MOWF. Therefore, the conclusions in Section 5.6.3.2 regarding the potential for the B-P Build Alternatives to result in cumulative effects during operation also apply to the Lancaster North B MOWF. Refer to that section for additional information on cumulative effects from operation of the Lancaster North B MOWF.

Activities involving hazardous materials or wastes at the maintenance facilities during operation would be required to follow manufacturers' instructions; handle and dispose of materials in compliance with existing federal, state, and local regulations; and implement HMW-IAMF#6, Transport of Materials, HMW-IAMF#7, Permit Conditions, and HMW-IAMF#8, Environmental Management Systems, so that the transport, use, and disposal of these materials during maintenance activities would greatly minimize the potential for a release into the environment. After implementation of IAMFs, based on the NEPA analysis, no effect would occur. Operation of the Lancaster North B MOWF would result in the same adverse effects related to safety and

security as those described in Section 5.6.3 for the B-P Build Alternatives. As described in that section, based on the NEPA analysis, no effect would occur.

Operation of the Lancaster North B MOWF, based on the NEPA analysis, would result in an impact from permanent operation-phase transportation, air quality, EMI/EMF, public utilities and energy, hazardous materials and wastes, community cohesion, and aesthetics and visual quality effects. Operation of the Lancaster North B MOWF would also result in a beneficial effect pursuant to NEPA from long-term increases in regional employment within the two-county region during operation. Overall, operation of the Lancaster North B MOWF would result in similar operation-phase air quality, noise and vibration, safety and security, and regional economic effects as the B-P Build Alternatives, as discussed in Section 5.6.3.2. The Lancaster North B MOWF would be in an undeveloped area more than 2 miles from the nearest low-income and/or minority populations. All operation-phase impacts from the Lancaster North B MOWF would be experienced within a sparsely populated, rural area where nonminority and/or nonlow-income populations reside. Therefore, operation of the Lancaster B MOWF would not result in adverse effects on minority and/or low-income populations. As such, operation impacts related to the Lancaster North B MOWF are not discussed further.

5.6.6 Avenue M Light Maintenance Facility/Maintenance-of-Way Facility

5.6.6.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

The traffic effects associated with construction of the Avenue M LMF/MOWF are considered in Section 5.6.3 as part of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station and the maintenance facilities, including the MOWF. Therefore, the conclusions in Section 5.6.3.1 regarding the potential for the B-P Build Alternatives to result in traffic effects and cumulative effects during construction also apply to the Lancaster North B MOWF. Refer to that section for additional information on traffic and cumulative effects from construction of the Lancaster North B MOWF.

Construction of the Avenue M LMF/MOWF, based on the NEPA analysis, would result in an impact from temporary construction-phase air quality, noise and vibration, public utilities and energy, hazardous materials and wastes, and safety and security effects. Construction of the Avenue M LMF/MOWF, based on the NEPA analysis, would also result in an impact from temporary and permanent construction-phase effects on aesthetics and visual quality, and a beneficial effect, based on the NEPA analysis, from short-term increases in regional employment within the two-county region during the construction period. Overall, construction of the Avenue M LMF/MOWF would result in similar construction-phase air quality, noise and vibration, public utilities and energy, hazardous materials and wastes, safety and security, and regional economic effects as the B-P Build Alternatives, as discussed in Section 5.6.3.1. The Avenue M LMF/MOWF would be in an area surrounded by vacant and industrial uses. All construction-phase impacts from the Avenue M LMF/MOWF would be experienced within a sparsely populated, rural area where nonminority and nonlow-income populations reside. Therefore, construction of the Avenue M LMF/MOWF would not result in adverse effects on minority and/or low-income populations related to construction-phase effects on air quality, noise and vibration, public utilities and energy, hazardous materials and wastes, safety and security, aesthetics and visual quality, and the regional economy. As such, construction impacts related to the Avenue M LMF/MOWF are not discussed further.

Displacements and Relocations

The displacement effects associated with construction of the Avenue M LMF/MOWF are considered in Section 5.6.2 as part of the B-P Build Alternatives. Construction of the Avenue M LMF/MOWF would result in the displacement of businesses and motels that provide *de facto* affordable housing for low-income populations. However, as noted in Section 5.6.2, a sufficient number of alternative sites are available (for the retail, professional services, and industrial

sectors) within the two-county region. As with the B-P Build Alternatives, compliance with the Uniform Act, SOCIO-IAMF#2, would address any effects related to property acquisitions by providing relocation assistance to all residents and businesses displaced by the Avenue M LMF/MOWF.

With the implementation of SOCIO-IAMF#2, it is expected that most displaced business would relocate within relatively close proximity (e.g., within the same community or city) to their current locations. Therefore, it is expected that displaced workers (including those living within low-income and/or minority populations) would in most cases maintain their jobs, as it is expected that they would relocate with their businesses that would be relocating.

Construction of the Avenue M LMF/MOWF would result in a permanent impact, based on the NEPA analysis. The Avenue M LMF/MOWF is in an area that is sparsely populated and that is predominantly nonminority and nonlow-income. However, because several of the motels that would be displaced in this area provide *de facto* affordable housing for low-income populations, these impacts would be experienced by nonminority and nonlow-income populations that live permanently within the area, as well as low-income populations that reside at the motels that would be relocated. Therefore, construction of the Avenue M LMF/MOWF would not result in adverse effects on minority and/or low-income populations related to displacements and relocations. As such, this resource topic is not discussed further.

5.6.6.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station and the maintenance facilities, including the MOWF. Therefore, the conclusions in Section 5.6.3.2 regarding the potential for the B-P Build Alternatives to result in cumulative effects during operation also apply to the Avenue M LMF/MOWF. Refer to that section for additional information on cumulative effects from operation of the Avenue M LMF/MOWF.

Activities involving hazardous materials or wastes at the maintenance facilities during operation would be required to follow manufacturers' instructions; handle and dispose of materials in compliance with existing federal, state, and local regulations; and implement HMW-IAMF#6, Transport of Materials, HMW-IAMF#7, Permit Conditions, and HMW-IAMF#8, Environmental Management Systems, so that the transport, use, and disposal of these materials during maintenance activities would greatly minimize the potential for a release into the environment. After implementation of IAMFs, no effect would occur, based on the NEPA analysis. Operation of the Avenue M LMF/MOWF would result in the same adverse effects related to safety and security as those described in Section 5.6.3 for the B-P Build Alternatives. As described in that section, no effect would occur, based on the NEPA analysis.

Operation of the Avenue M LMF/MOWF, based on the NEPA analysis, would result in an impact from permanent operation-phase transportation, air quality, noise and vibration, EMI/EMF, public utilities and energy, hazardous materials and wastes, community cohesion, and aesthetics and visual quality effects. Operation of the Avenue M LMF/MOWF would also result in a beneficial effect pursuant to NEPA from long-term increases in regional employment within the two-county region during operation. Overall, operation of the Avenue M LMF/MOWF would result in similar operation-phase air quality, noise and vibration, safety and security, and regional economic effects as the B-P Build Alternatives, as discussed in Section 5.6.3.2. The Avenue M LMF/MOWF would be in an area surrounded by vacant and industrial uses. All operation-phase impacts from the Avenue M LMF/MOWF would be experienced within a sparsely populated, rural area where nonminority and nonlow-income populations reside. Therefore, operation of the Avenue M LMF/MOWF would not result in adverse effects on minority and/or low-income populations. As such, this resource topic is not discussed further.

5.6.7 Electric Power Utility Improvements

5.6.7.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

The EJ effects associated with construction of the electric power utility improvements are considered above as part of the B-P Build Alternatives.

5.6.7.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

The EJ effects associated with operation of the electric power utility improvements are considered above as part of the B-P Build Alternatives.

5.7 Summary of Effects

This section describes the effects of the Bakersfield to Palmdale Project Section on low-income and/or minority populations that are adverse.

As discussed in Section 5.4 and shown on Figures 5-A-2 and 5-A-3, the majority of the census block groups within the EJ RSA have substantial low-income and/or minority populations. The majority of census block groups in the EJ RSA in Lancaster and Palmdale have substantial minority and/or low-income populations.

5.7.1 Bakersfield to Palmdale Project Section Build Alternatives

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would generally result in similar types of effects with similar magnitudes on low-income and/or minority populations. However, because the displacement and relocation effects vary somewhat by alternative, those are discussed separately. Table 5-11 and Table 5-12 show the degree of impacts to which each affected resource varies by B-P Build Alternative.

5.7.1.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

Table 5-11 provides a comparison of impacts for each resource topic for the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) during the construction phase, based on the analysis and conclusions provided in Chapter 3 of this EIR/EIS. (Refer to Section 5.1, Introduction, for a list of the specific sections in Chapter 3 that were consulted.)

Table 5-11 Comparison of Bakersfield to Palmdale Project Section Build Alternative Impacts (including the CCNM Design Option and the Refined CCNM Design Option) During Construction

Resources	Impacts during Construction			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Transportation				
Transportation	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in similar access and circulation disruptions throughout the construction period.			
Air Quality				
Air Quality	<p>All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in similar exceedances of the General Conformity rule applicability thresholds for NO_x and particulate matter emissions within the San Joaquin Valley Air Pollution Control District, the Eastern Kern Air Pollution Control District, and the Antelope Valley Air Quality Management District.</p> <p>All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in similar exceedances of the General Conformity rule applicability standards for VOCs within the San Joaquin Valley Air Pollution Control District.</p>			
Noise and Vibration				
Noise and Vibration	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would cause similar temporary construction noise and vibration impacts to communities, including minority and/or low-income populations.			
Electromagnetic Interference and Electromagnetic Fields				
Electromagnetic Interference and Electromagnetic Fields	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar minor effects to communities, including minority and/or low-income populations, from electromagnetic interference and electromagnetic fields.			
Geology and Soils				
Seismicity	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar minor effects related to the seismicity during construction to communities, including those with minority and/or low-income populations.			
Public Utilities and Energy				
Public Utilities and Energy	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar temporary effects to communities, including minority and/or low-income populations, in close proximity to the project footprint from the temporary interruption of utility services and potential accidental disruption of utility services.			
Hazardous Materials and Wastes				
Hazardous Materials and Wastes	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar temporary effects to communities from increased hazardous materials use and waste generation during construction, including temporary hazardous materials and waste activities within 0.25 mile of schools.			

Resources	Impacts during Construction			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Safety and Security				
Safety and Security	During construction of all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), there is a similar potential for accidents at construction sites and construction-related detours, infection of employees with Valley Fever during ground-disturbing activities, increased response times for emergency responders, and criminal activity around HSR construction sites.			
Socioeconomics and Communities				
Community Cohesion				
Temporary Disruption of Community Cohesion	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have a similar effect on communities, including minority and/or low-income populations, from temporary increases in noise and dust, visual changes, traffic congestion related to road closures or detours, and the modification of access to community facilities during construction.			
Permanent Disruption of Community Cohesion ¹	Least impacts to community cohesion from residential displacements. Least impacts to community cohesion from business displacements. Least impacts to community cohesion from community facility displacements.	Least impacts to community cohesion from residential displacements. Least impacts to community cohesion from business displacements. Least impacts to community cohesion from community facility displacements.	Two additional residential displacements compared to Alternatives 1 and 2. Least impacts to community cohesion from business displacements. Least impacts to community cohesion from community facility displacements.	Greatest impacts to community cohesion from residential displacements. Greatest impacts to community cohesion from business displacements. Greatest impacts to community cohesion from community facility displacements.
Permanent Community Division	None of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would physically divide a community with substantial minority and/or low-income populations.			
Temporary Construction Employment	The temporary effects from construction are similar for all of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option), and would result in a noticeable economic change and have a short-term beneficial effect to communities.			
Displacements and Relocations				
Residential Displacements	243 units 712 residents 74% of residential displacements are in areas with substantial low-income populations 23% of residential displacements are in areas with substantial minority populations.	243 units 712 residents 74% of residential displacements are in areas with substantial low-income populations. 23% of residential displacements are in areas with substantial minority populations.	244 units 715 residents 74% of residential displacements are in areas with substantial low-income populations. 23% of residential displacements are in areas with substantial minority populations.	338 units 990 residents 83% of residential displacements are in areas with substantial low-income populations. 58% of residential displacements are in areas with substantial minority populations.
Sufficient Replacement Housing (Yes/No)	Yes	Yes	Yes	Yes

Resources	Impacts during Construction			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Residential Displacements of Affordable Housing in Lancaster ²	1 affordable housing development 96 low-income residents	1 affordable housing development 96 low-income residents	1 affordable housing development 96 low-income residents	2 affordable housing developments 132 low-income residents
Displaced Facilities of Concern for Low-Income Populations in Lancaster ³	9 facilities	9 facilities	9 facilities	12 facilities
Facilities Serving the Homeless Population (Displaced Facilities of Concern)	None	None	None	1 homeless service center
Business and Employee Displacements	231 businesses 1,679 employees 28% of business displacements are in areas with substantial low-income populations 14% of business displacements are in areas with substantial minority populations.	231 businesses 1,679 employees 28% of business displacements are in areas with substantial low-income populations 14% of business displacements are in areas with substantial minority populations.	231 businesses 1,679 employees 28% of business displacements are in areas with substantial low-income populations 14% of business displacements are in areas with substantial minority populations.	285 businesses 2,163 employees 40% of business displacements are in areas with substantial low-income populations 30% of business displacements are in areas with substantial minority populations.
Sufficient Replacement Business Properties (Yes/No)	Yes	Yes	Yes	Yes
Community Facility Displacements ⁴	4 facilities	4 facilities	4 facilities	4 facilities
Economic and Other Effects				
Temporary construction employment (estimated number of annual job years)	154,900 job years	154,600 job years	162,000 job years	154,300 job years

Resources	Impacts during Construction			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Agricultural Land				
Agricultural Land	The farmland conversion differs by B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option) in three 12- to 14-mile locations, but the effect these agricultural effects may have on minority and/or low-income populations would not differ by B-P Build Alternative.			
Parks, Recreation, and Open Space				
Parks, Recreation, and Open Space	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar temporary effects to communities, including minority and/or low-income populations, in close proximity to the project footprint from temporary effects to parks, recreation, or open space during construction.			
Aesthetics and Visual Quality				
Temporary Changes to Visual Quality	All B-P Build Alternatives (including the CCNM Design Option and Refined CCNM Design Option) would have similar temporary effects to communities (with respect to changes to visual quality), including minority and/or low-income populations, in close proximity to the project footprint related to new sources of light, glare, and dust during construction.			
Permanent Changes to Visual Quality	9 key viewpoints (8 with the CCNM Design Option and 5 with the Refined CCNM Design Option)	10 key viewpoints (9 with the CCNM Design Option and 6 with the Refined CCNM Design Option)	9 key viewpoints (8 with the CCNM Design Option and 5 with the Refined CCNM Design Option)	9 key viewpoints (8 with the CCNM Design Option and 5 with the Refined CCNM Design Option)
Permanent Changes to Visual Quality in Areas with Substantial Minority and/or Low-Income Populations	1 key viewpoint	2 key viewpoints	1 key viewpoint	1 key viewpoint
Cumulative Effects				
Noise and Vibration	All B-P Build Alternatives (including the CCNM Design Option and Refined CCNM Design Option) would cause similar temporary construction noise and vibration impacts to areas with substantial minority and/or low-income populations, and would have similar cumulative construction noise and vibration effects.			
Socioeconomics and Communities	Less impacts to community cohesion of overall minority and/or low-income population from residential, business, employee, and community facility displacements compared to Alternative 5 but greater impacts compared to Alternative 3.	Less impacts to community cohesion of overall minority and/or low-income population from residential, business, employee, and community facility displacements compared to Alternative 5 but greater impacts compared to Alternative 3.	Least impacts to community cohesion of overall minority and/or low-income population from residential, business, employee, and community facility displacements.	Greatest impacts to community cohesion of overall minority and/or low-income population from residential, business, employee, and community facility displacements.

Resources	Impacts during Construction			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Agricultural Land	All B-P Build Alternatives (including the CCNM Design Option and Refined CCNM Design Option) would cause similar impacts to agricultural land; the cumulative effect these agricultural effects may have on low-income and/or minority populations would not differ by B-P Build Alternative.			

¹ Refer to residential, business, and community facility displacements in this table.

² Numbers provided for residential displacements of affordable housing in Lancaster do not include *de facto* affordable housing.

³ Numbers provided for displaced facilities of concern for low-income populations in Lancaster include affordable housing, *de facto* affordable housing, and a homeless service center.

⁴ Numbers provided for community facility displacements include the homeless shelter.

Authority = California High-Speed Rail Authority

NO_x = oxides of nitrogen

B-P = Bakersfield to Palmdale Project Section

VOCs = volatile organic compounds

CCNM = César E. Chávez National Monument

As shown in Table 5-11, the degree of impact to each affected resource varies by B-P Build Alternative. For some resource areas, one or more of the B-P Build Alternatives would result in similar impacts. However, based on the NEPA analysis, the overall determination of impacts for each resource is very similar for all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option).

5.7.1.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

Table 5-12 provides a comparison of impacts for each resource topic for the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) during the operation phase, based on the analysis and conclusions provided in Chapter 3. (Refer to Section 5.1, Introduction, for a list of the specific sections in Chapter 3 that were consulted.)

Table 5-12 Comparison of Bakersfield to Palmdale Project Section Build Alternative Impacts (including the CCNM Design Option and the Refined CCNM Design Option) during Operation

Resources	Impacts during Operation			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Transportation				
Transportation	Operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar effects on bicycle and pedestrian facilities, and would slightly alter transit routes in Lancaster. In addition, operation of the B-P Build Alternatives would provide similar benefits to the regional transportation system by providing another mode of transportation for intercity passenger trips.			
Air Quality				
Air Quality	Operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in similar increases in emissions in areas along the HSR alignment. At the regional level, operation of the HSR system would result in lower pollutant emissions.			
Noise and Vibration				
Noise and Vibration	After implementation of the reasonable and feasible noise barriers, none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would disproportionately result in severe impacts on sensitive noise receptors in areas with minority and/or low-income populations during operations.			

Resources	Impacts during Operation			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Electromagnetic Interference and Electromagnetic Fields				
Electromagnetic Interference and Electromagnetic Fields	Operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar effects to communities, including minority and/or low-income populations, from electromagnetic interference and electromagnetic fields.			
Geology and Soils				
Seismicity	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar minor effects related to the seismicity during operation to communities, including those with minority and/or low-income populations.			
Public Utilities and Energy				
Public Utilities and Energy	Each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar effects to communities, including minority and/or low-income populations, from effects to public utilities and energy.			
Safety and Security				
Safety and Security	The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar effects to communities, including minority and/or low-income populations, from effects related to safety and security, including train-related collisions; motor vehicle passenger, pedestrian, and bicyclist safety; seismic and fire hazards; increased response times for emergency responders; increased demand for emergency response; criminal and terrorist activity; risk of accidents; and dam safety and flooding risks.			
Socioeconomics and Communities				
Community Cohesion				
Permanent Disruption of Community Cohesion	Operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have a similar effect on community cohesion in areas with substantial minority and/or low-income populations from improved access to jobs and community amenities, increases in noise and vibration, and changes in visual character and views.			
Permanent Operation Employment (estimated number of total jobs created)	Operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a projected 12,300 direct, indirect, and induced jobs at businesses supported by local expenditures by the HSR project and its staff.			
Permanent Disruption to Community Facilities				
Permanent Disruption to Community Facilities	23 community facilities affected	23 community facilities affected	23 community facilities affected	29 community facilities affected
Economic and Other Considerations				
Effects to Agricultural Operations	Operation of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in the same effects to minority and/or nonminority populations related to impacts to agricultural operations (i.e., changes in access, remnant parcels).			
Parks, Recreation, and Open Space				
Parks, Recreation, and Open Space	Operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would permanently impact 21 recreational resources from changes in visual character and views and increases in noise and vibration.			

Resources	Impacts during Operation			
	Alternative 1	Alternative 2/ Preferred Alternative	Alternative 3	Alternative 5
Aesthetics and Visual Quality				
Aesthetics and Visual Quality	Operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar minor effects to aesthetics and visual quality from visual changes associated with lighting, passing trains, glare, and overall design of HSR structures.			
Cumulative Effects				
Noise and Vibration	Greater number of cumulatively and adversely affected sensitive receptors	Least number of cumulatively and adversely affected sensitive receptors	Greater number of cumulatively and adversely affected sensitive receptors	Greatest number of cumulatively and adversely affected sensitive receptors
Socioeconomics and Communities	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would cause similar impacts to community cohesion; the cumulative effect these effects may have on low-income and/or minority populations would be similar for all B-P Build Alternatives.			
Economic Impacts	All B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have similar effects on communities, including minority and/or low-income populations, through increases in employment, employment-related spending, and tax revenues; the cumulative effect from operation of all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would be similar.			

B-P = Bakersfield to Palmdale Project Section
 CCNM = César E. Chávez National Monument
 EJ = environmental justice
 HSR = high-speed rail

As shown in Table 5-12, the degree of impact to each affected resource varies by B-P Build Alternative. However, the overall determination of impacts based on the NEPA analysis is very similar for all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option).

5.7.2 Bakersfield Station—Fresno to Bakersfield Locally Generated Alternative from the Intersection of 34th Street and L Street to Oswell Street

As described in Section 2.3.3 of this document, this EIR/EIS incorporates by reference the results of analysis included in the *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and *Fresno to Bakersfield Section Final Supplemental EIR* for the F-B LGA (Authority 2018b) for the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street and the results of technical studies related to this portion of the F-B LGA. The following is a summary discussion of information for the Bakersfield Station—F-B LGA analysis.

5.7.2.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

Construction-phase impacts from the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street that would adversely affect minority and/or low-income populations include:

- Displacement of residential units and residents from property acquisitions
- Displacement of businesses and employees from property acquisitions
- Displacement of community facilities from property acquisitions

5.7.2.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

Operation-phase impacts from the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street that would adversely affect minority and/or low-income populations include:

- Permanent increases in noise levels
- Permanent effects to community cohesion from permanent increases in noise and visual effects

5.7.3 Palmdale Station

5.7.3.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

Table 5-13 provides a summary of the impacts for each resources topic for the Palmdale Station site during construction.

Table 5-13 Summary of Palmdale Station Impacts during Construction

Resources	Impacts during Construction
Transportation	
Transportation	The temporary effect on transportation that would result from construction of the Palmdale Station would have the greatest effects within census tracts with substantial minority and/or low-income populations.
Air Quality	
Air Quality	Construction of the Palmdale Station would result in exceedances of the General Conformity rule applicability thresholds for NO _x and particulate matter emissions within the Antelope Valley Air Quality Management District.
Noise and Vibration	
Noise and Vibration	Construction of the Palmdale Station would cause temporary construction noise and vibration impacts to communities surrounding the station, including minority and/or low-income populations.
Electromagnetic Interference and Electromagnetic Fields	
Electromagnetic Interference and Electromagnetic Fields	No communities, including low-income and/or minority populations, would experience adverse effects from electromagnetic interference and electromagnetic fields from the construction of the Palmdale Station.
Geology and Soils	
Seismicity	Construction of the Palmdale Station would have similar minor effects related to seismicity to communities, including those with minority and/or low-income populations.
Public Utilities and Energy	
Public Utilities and Energy	Construction of the Palmdale Station would have temporary effects to communities, including minority and/or low-income populations, in close proximity to the station site from the temporary interruption of utility services and potential accidental disruption of utility services.
Hazardous Materials and Wastes	
Hazardous Materials and Wastes	Construction of the Palmdale Station would have similar temporary effects as the B-P Build Alternatives on communities from increased hazardous materials use and waste generation during construction, including temporary hazardous materials and waste activities within 0.25 mile of schools.

Resources	Impacts during Construction
Safety and Security	
Safety and Security	During construction of the Palmdale Station, there is a similar potential as the B-P Build Alternatives for accidents at construction sites and construction-related detours, infection of employees with Valley Fever during ground-disturbing activities, increased response times for emergency responders, and criminal activity around HSR construction sites.
Socioeconomics and Communities	
Community Cohesion	
Temporary Disruption of Community Cohesion	Construction of the Palmdale Station would have effects on the surrounding communities, including the minority and/or low-income populations comprising the majority of the population living within the Palmdale Station subsection, from temporary increases in noise and dust, visual changes, traffic congestion related to road closures or detours, and the modification of access to community facilities during construction.
Permanent Disruption of Community Cohesion	The construction of the Palmdale Station site would have impacts to community cohesion from residential displacements, business displacements, and community facility displacements that would occur within areas with substantial minority and/or low-income populations.
Permanent Community Division	Construction of the Palmdale Station could potentially divide and disrupt a community with substantial minority and/or low-income populations.
Temporary Construction Employment	The temporary effects from the construction of the Palmdale Station would result in a noticeable economic change and would have a short-term beneficial effect to communities.
Displacements and Relocations	
Residential Displacements	Construction of the Palmdale Station would displace approximately 312 residential units, which correlates with approximately 1,108 displaced residents. All residential displacements in the Palmdale Station area would be in areas with substantial low-income minority populations.
Sufficient Replacement Housing (Yes/No)	Yes
Facilities Serving the Homeless Population (Displaced Facilities of Concern)	There would be no facilities serving the homeless population displaced as a result of the construction of the Palmdale Station.
Business and Employee Displacements	Construction of the Palmdale Station would displace approximately 175 businesses, which correlates with approximately 1,886 displaced employees. A total of 100% of business displacements are in areas with both substantial low-income and/or minority populations.
Sufficient Replacement Business Properties (Yes/No)	No
Community Facility Displacements	The construction of the Palmdale Station would require the displacement of one existing community facility in Palmdale, R. Rex Parris High School.

Resources	Impacts during Construction
Economic and Other Effects	
Temporary construction employment	The Palmdale Station is anticipated to result in a beneficial effect on regional employment because it would create new jobs in Kern and Los Angeles Counties.
Aesthetics and Visual Quality	
Temporary Changes to Visual Quality	The construction of the Palmdale Station would have similar temporary effects as the B-P Build Alternative on communities (with respect to changes to visual quality), including minority and/or low-income populations, in close proximity to the station site related to new sources of light, glare, and dust during construction.
Cumulative Effects	
Cumulative Effects	The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station. Therefore, the conclusions regarding the potential for the B-P Build Alternatives to result in cumulative effects during operation also apply to the Palmdale Station. Refer to that section for additional information.

B-P = Bakersfield to Palmdale Project Section

HSR = high-speed rail

NO_x = oxides of nitrogen

Construction-phase impacts from the Palmdale Station that would adversely affect minority and/or low-income populations include:

- Displacement of residential units and residents from property acquisitions
- Displacement of businesses and employees from property acquisitions
- Displacement of a community facility from property acquisition

5.7.3.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

Table 5-14 provides a summary of the impacts for each resource topic for the Palmdale Station site during operation.

Table 5-14 Summary of Palmdale Station Impacts during Operation

Resources	Impacts during Operation
Transportation	
Transportation	Operation of the Palmdale Station (as part of the HSR system) would provide benefits to the regional transportation system by providing another mode of transportation for intercity passenger trips.
Air Quality	
Air Quality	Operation of the Palmdale Station (as part of the HSR system) would result in similar lower pollutant emissions, resulting in a net benefit to regional air quality.
Noise and Vibration	
Noise and Vibration	Similar to the B-P Build Alternatives, noise and vibration would exceed noise standards and affect sensitive receivers along the project corridor during operation, affecting all communities near the project, including minority and/or low-income populations.

Resources	Impacts during Operation
Electromagnetic Interference and Electromagnetic Fields	
Electromagnetic Interference and Electromagnetic Fields	Operation of the Palmdale Station would have similar effects to communities, including minority and/or low-income populations, from electromagnetic interference and electromagnetic fields.
Geology and Soils	
Seismicity	Operation of the Palmdale Station would have similar minor effects related to seismicity to communities, including those with minority and/or low-income populations.
Safety and Security	
Safety and Security	The Palmdale Station would have the same effects to communities as the B-P Build Alternatives, including those with minority and/or low-income populations. Although emergency responses may be more frequent due to additional people at the station, the additional emergency responses can be achieved.
Socioeconomics and Communities	
Community Cohesion	
Permanent Disruption of Community Cohesion	Operation of the Palmdale Station would have a similar effect on community cohesion in areas with substantial minority and/or low-income populations from improved access to jobs and community amenities, increases in noise and vibration, and changes in visual character and views.
Permanent Disruption to Community Facilities	
Permanent Disruption to Community Facilities	Operation of the Palmdale Station would be inconsistent with some of the land uses near the station, including community facilities. Because the population living within the Palmdale Station subsection is (in a majority of census tracts) substantial for both minority and/or low-income populations, this permanent impact would be experienced predominantly by minority and/or low-income populations.
Economic and Other Considerations	
Permanent Operation Employment	The operation of the Palmdale Station would create job opportunities in the surrounding communities, region, and state.
Aesthetics and Visual Quality	
Aesthetics and Visual Quality	Operation of the Palmdale Station would have similar minor effects as the B-P Build Alternatives to aesthetics and visual quality from visual changes associated with lighting, passing trains, glare, and overall design of HSR structures.
Cumulative Effects	
Cumulative Effects	The analysis of cumulative effects under the B-P Build Alternatives includes an analysis of the Palmdale Station. Therefore, the conclusions regarding the potential for the B-P Build Alternatives to result in cumulative effects during operation also apply to the Palmdale Station. Refer to that section for additional information.

B-P = Bakersfield to Palmdale Project Section
 EJ = environmental justice
 HSR = high-speed rail

Operation-phase impacts from the Palmdale Station that would adversely affect minority and/or low-income populations include:

- Permanent increases in noise levels
- Permanent disruption to community cohesion from increases in noise levels, traffic, and changes in visual quality
- Permanent disruption to community facilities

5.7.4 Lancaster North B Maintenance-of-Way Facility

5.7.4.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

As described in Section 5.6.7.1, the Lancaster North B MOWF would be in an undeveloped area more than 2 miles from the nearest minority and/or low-income populations. All construction-phase impacts from the Lancaster North B MOWF would be experienced within a sparsely populated, rural area where nonminority and nonlow-income populations reside. Therefore, construction of the Lancaster B MOWF would not result in adverse effects on minority and/or low-income populations.

5.7.4.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

As described in Section 5.6.7.2, the Lancaster North B MOWF would be in an undeveloped area more than 2 miles from the nearest minority and/or low-income populations. All operation-phase impacts from the Lancaster North B MOWF would be experienced within a sparsely populated, rural area where nonminority and nonlow-income populations reside. Therefore, operation of the Lancaster B MOWF would not result in adverse effects on minority and/or low-income populations.

5.7.5 Avenue M Light Maintenance Facility/Maintenance-of-Way Facility

5.7.5.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

As described in Section 5.6.6, the Avenue M LMF/MOWF would be in an area surrounded by vacant and industrial uses. All construction-phase impacts from the Avenue M LMF/MOWF would be experienced within a sparsely populated, rural area where nonminority and nonlow-income populations reside. Therefore, construction of the Avenue M LMF/MOWF would not result in adverse effects on minority and/or low-income populations related to construction-phase effects on air quality, noise and vibration, public utilities and energy, hazardous materials and wastes, safety and security, aesthetics and visual quality, and the regional economy.

However, as discussed under Impact EJ #1 in Section 5.6.6.1, construction of the Avenue M LMF/MOWF would result in the displacement of businesses and motels that provide *de facto* affordable housing for low-income populations. Implementation of mitigation measures and IAMFs would reduce the adverse displacement and relocation effects related to construction of the Avenue M LMF/MOWF on low-income and/or minority populations. Therefore, construction of the Avenue M LMF/MOWF would not result in adverse effects on these populations related to displacements and relocations.

5.7.5.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

As described in Section 5.6.6.2, the Avenue M LMF/MOWF would be in an area surrounded by vacant and industrial uses. All operation-phase impacts from the Avenue M LMF/MOWF would be experienced within a sparsely populated, rural area where nonminority and/or nonlow-income

populations reside. Therefore, operation of the Avenue M LMF/MOWF would not result in adverse effects on minority and/or low-income populations.

5.7.6 Electric Power Utility Improvements

5.7.6.1 Construction

Impact EJ #1: Environmental Justice Effects Analysis of Project Construction

The EJ effects associated with construction of the electric power utility improvements are considered above as part of the B-P Build Alternatives.

5.7.6.2 Operations

Impact EJ #2: Environmental Justice Effects Analysis of Project Operation

The EJ effects associated with operation of the electric power utility improvements are considered above as part of the B-P Build Alternatives.

5.8 Measures to Minimize Harm

5.8.1 Avoidance

The Authority has pledged to integrate programmatic IAMFs consistent with the (1) 2005 *Final Program Environmental Impact Report/Environmental Impact Statement for the Proposed California High-Speed Train System*, (2) the 2008 Bay Area to Central Valley Program EIR/EIS, and (3) the 2012 Partially Revised Final Program EIR into the HSR project. The Authority would implement these features during project design and construction, as relevant to the HSR project section, to avoid or to reduce effects.

IAMFs are incorporated into the project design and construction that would avoid or minimize the environmental or community effects.

While no specific IAMFs have been identified for EJ, applicable IAMFs include the following IAMFs incorporated as part of the project design, which would reduce EJ effects.

AQ-IAMF#1: Fugitive Dust Emissions

During construction, the Contractor shall employ the following measures to minimize and control fugitive dust emissions. The Contractor shall prepare a fugitive dust control plan for each distinct construction segment. At a minimum, the plan shall describe how each measure would be employed and would identify an individual responsible for ensuring implementation. At a minimum, the plan shall address the following components unless alternative measures are approved by the applicable air quality management district.

- Cover all vehicle loads transported on public roads to limit visible dust emissions, and maintain at least 6 inches of freeboard space from the top of the container or truck bed.
- Clean all trucks and equipment before exiting the construction site using an appropriate cleaning station that does not allow runoff to leave the site or mud to be carried on tires off the site.
- Water exposed surfaces and unpaved roads at a minimum three times daily with adequate volume to result in wetting of the top 1 inch of soil but avoiding overland flow. Rain events may result in adequate wetting of top 1 inch of soil thereby alleviating the need to manually apply water.
- Limit vehicle travel speed on unpaved roads to 15 miles per hour.
- Suspend any dust-generating activities when average wind speed exceeds 25 miles per hour.
- Stabilize all disturbed areas, including storage piles that are not being used on a daily basis for construction purposes, by using water, a chemical stabilizer/suppressant, hydro mulch or by covering with a tarp or other suitable cover or vegetative ground cover, to control fugitive

dust emissions effectively. In areas adjacent to organic farms, the Authority would use non-chemical means of dust suppression.

- Stabilize all on-site unpaved roads and off-site unpaved access roads, using water or a chemical stabilizer/suppressant, to effectively control fugitive dust emissions. In areas adjacent to organic farms, the Authority would use non-chemical means of dust suppression.
- Carry out watering or presoaking for all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities.
- For buildings up to six stories in height, wet all exterior surfaces of buildings during demolition.
- Limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at a minimum of once daily, using a vacuum-type sweeper.
- After the addition of materials to or the removal of materials from surface or outdoor storage piles, apply sufficient water or a chemical stabilizer/suppressant.

AQ-IAMF#2: Selection of Coatings

During construction, the Contractor shall use:

- Low-volatile organic compound paint that contains less than 10 percent of volatile organic compound contents (VOC, 10%).
- Super-compliant or Clean Air paint that has a lower Volatile Organic Compound content than that required by San Joaquin Valley Unified Air Pollution Control District Rule 4601, Eastern Kern Air Pollution Control District 410, and Antelope Valley Air Quality Management District Rule 1113, when available. If not available, the Contractor shall document the lack of availability, recommend alternative measure(s) to comply with Rule 4601, 410, and 1113 or disclose absence of measure(s) for full compliance and obtain concurrence from the Authority.

AVQ-IAMF#1: Aesthetic Options

Prior to construction the Contractor shall document, through issue of a technical memorandum, how the Authority's aesthetic guidelines have been employed to minimize visual impacts. The Authority seeks to balance providing a consistent, project-wide aesthetic with the local context for the numerous high-speed rail non-station structures across the state. Examples of aesthetic options would be provided to local jurisdictions that can be applied to non-standard structures in the high-speed rail system. Refer to Aesthetic Guidelines for Non-Station Structures, 2011.

AVQ-IAMF#2: Aesthetic Review Process

Prior to construction, the Contractor shall document that the Authority's aesthetic review process has been followed to guide the development of non-station area structures. Documentation shall be through issuance of a technical memorandum to the Authority. The Authority would identify key non-station structures recommended for aesthetic treatment, consult with local jurisdictions on how best to involve the community in the process, solicit input from local jurisdictions on their aesthetic preferences, and evaluate aesthetic preferences for potential cost, schedule, and operational impacts. The Authority would also evaluate compatibility with project-wide aesthetic goals, include recommended aesthetic approaches in the construction procurement documents, and work with the contractor and local jurisdictions to review designs and local aesthetic preferences and incorporate them into final design and construction. Refer to Aesthetic Review Process for Non-Station Structures, 2014.

GEO-IAMF#2: Slope Monitoring

During Operation and Maintenance, the Authority shall incorporate slope monitoring by a Registered Engineering Geologist into the Operation and Maintenance procedures. The procedures shall be implemented at sites identified in the Construction Management Plan where a potential for long-term instability exists from gravity or seismic loading including, but not limited

to, at-grade sections where slope failure could result in loss of track support, or where slope failure could result in additional earth loading to foundations supporting elevated structures.

GEO-IAMF#7: Evaluate and Design for Large Seismic Ground Shaking

Prior to Construction, the Contractor shall document through preparation of a technical memorandum how all HSR components were evaluated and designed for large seismic ground shaking. Prior to final design, the Contractor would conduct additional seismic studies to establish up-to-date estimation of levels of ground motion. The most current California Department of Transportation (Caltrans) seismic design criteria at the time of design would be used in the design of any structures supported in or on the ground. These design procedures and features would reduce to the greatest practical extent for potential movements, shear forces, and displacements that would result from inertial response of the structure. In critical locations, pendulum base isolators may be used to reduce the levels of inertial forces. New composite materials may also be used to enhance seismic performance.

GEO-IAMF#8: Suspension of Operations During an Earthquake

Prior to Operation and Maintenance activities, the Contractor shall document in a technical memorandum how suspension of operations during or after an earthquake was addressed in project design. The final design would incorporate motion-sensing instruments to provide ground motion data and a control system to shut down HSR operations temporarily during or after a potentially damaging earthquake. Monitoring equipment would be installed at select locations where high ground motions could occur. The system would then be inspected for damage due to ground motion and/or ground deformation, and then returned to service when appropriate.

GEO-IAMF#10: Geology and Soils

Prior to Construction, the Contractor shall document through issuance of a technical memorandum how the following guidelines and standards have been incorporated into facility design and construction:

- 2015 American Association of State Highway and Transportation Officials Load and Resistance Factor Bridge Design Specifications and the 2015 American Association of State Highway and Transportation Officials Guide Specifications for Load and Resistance Factor Seismic Bridge Design, or their most recent versions. These documents provide guidance for characterization of soils, as well as methods to be used in the design of bridge foundations and structures, retaining walls, and buried structures. These design specifications would provide minimum specifications for evaluating the seismic response of the soil and structures.
- Federal Highway Administration Circulars and Reference Manuals: These documents provide detailed guidance on the characterization of geotechnical conditions at sites, methods for performing foundation design, and recommendations on foundation construction. These guidance documents include methods for designing retaining walls used for retained cuts and retained fills, foundations for elevated structures, and at-grade segments. Some of the documents include guidance on methods of mitigating geologic hazards that are encountered during design.
- American Railway Engineering and Maintenance-of-Way Association Manual: These guidelines deal with rail systems. Although they cover many of the same general topics as American Association of State Highway and Transportation Officials, they are more focused on best practices for rail systems. The manual includes principles, data, specifications, plans, and economics pertaining to the engineering, design, and construction of railways.
- California Building Code: The code is based on the 2015 International Building Code. This code contains general building design and construction requirements relating to fire and life safety, structural safety, and access compliance.
- International Building Code and American Society of Civil Engineers-7: These codes and standards provide minimum design loads for buildings and other structures. They would be used for the design of the maintenance facilities and stations. Sections in International

Building Code and American Society of Civil Engineers-7 provide minimum requirements for geotechnical investigations, levels of earthquake ground shaking, minimum standards for structural design, and inspection and testing requirements.

- Caltrans Design Standards: Caltrans has specific minimum design and construction standards for all aspects of transportation system design, ranging from geotechnical explorations to construction practices. These amendments provide specific guidance for the design of deep foundations that are used to support elevated structures, for design of mechanically stabilized earth walls used for retained fills, and for design of various types of cantilever (e.g., soldier pile, secant pile, and tangent pile) and tie-back walls used for retained cuts.
- Caltrans Construction Manuals: Caltrans has a number of manuals including Field Guide to Construction Dewatering, Caltrans Construction Site BMPs Manual and Construction Site BMP Field Manual and Troubleshooting Guide. These provide guidance and best management practices for dewatering options and management, erosion control and soil stabilization, non-storm water management, and waste management at construction sites.
- ASTM: ASTM has developed standards and guidelines for all types of material testing, from soil compaction testing to concrete-strength testing. The ASTM standards also include minimum performance requirements for materials.

TR-IAMF#12: Pedestrian and Bicycle Safety

Prior to construction, the Contractor shall provide a technical memorandum describing how pedestrian and bicycle accessibility would be provided and supported across the HSR corridor, to and from stations and on station property. Priority of safety for pedestrians and bicycles and vulnerable populations over motor vehicle access would be done in a way to encourage maximum potential access from non-motorized modes. Local access programs, such as Safe Routes to Schools, shall be maintained or enhanced. Access to community facilities for vulnerable populations shall be maintained or enhanced.

NV-IAMF#1: Noise and Vibration

Prior to Construction, the Contractor shall prepare and submit to the Authority a noise and vibration technical memorandum documenting how Federal Transit Administration and FRA guidelines for minimizing construction noise and vibration impacts would be employed when work is being conducted within 1,000 feet of sensitive receptors. Typical construction practices contained in Federal Transit Administration and FRA guidelines for minimizing construction noise and vibration impacts include the following.

- Construct noise barriers, such as temporary walls or piles on excavated material, between noisy activities and noise sensitive resources.
- Route truck traffic away from residential streets, when possible.
- Construct walled enclosures around especially noisy activities or around clusters or noise equipment.
- Combine noisy operations so that they occur in the same period.
- Phase demolition, earthmoving, and ground impacting operations so as not to occur in the same time period.
- Avoid impact pile driving where possible in vibration sensitive areas.

PK-IAMF#1: Parks, Recreation, and Open Space

Prior to Construction, the Contractor shall prepare and submit to the Authority a technical memorandum that identifies project design features to be implemented to minimize impacts on parks, recreation, and open space. Typical design measures to avoid or to minimize impacts to parks and recreation may include:

- Provide safe and attractive access for present travel modes (e.g., motorists, bicyclists, pedestrians—as applicable) to existing park and recreation facilities.
- Design guideway, system, and station features in such a way to enhance the surrounding local communities. Provide easy crossings of the guideway that allow for community use under the guideway or at station areas.

SOCIO-IAMF#1: Construction Management Plan

Prior to Construction, the Contractor shall prepare a Construction Management Plan providing measures that minimize impacts on low-income households and minority populations. The plan shall be submitted to the Authority for review and approval. The plan would include actions pertaining to communications, visual protection, air quality, safety controls, noise controls, and traffic controls to minimize impacts on low-income households and minority populations. The plan would verify that property access is maintained for local businesses, residences, and emergency services. This plan would include maintaining customer and vendor access to local businesses throughout construction by using signs to instruct customers about access to businesses during construction. In addition, the plan would include efforts to consult with local transit providers to minimize impacts on local and regional bus routes in affected communities.

SOCIO-IAMF#2: Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act

The Authority must comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended (Uniform Act). The provisions of the Uniform Act, a federally mandated program, would apply to all acquisitions of real property or displacements of persons resulting from this federally assisted project. It was created to provide for fair and equitable treatment of all affected persons. Additionally, the Fifth Amendment of the U.S. Constitution provides that private property may not be taken for a public use without payment of “just compensation.”

The Uniform Act requires that the owning agency provide notification to all affected property owners of the agency’s intent to acquire an interest in their property. This notification includes a written offer letter of just compensation. A right-of-way specialist is assigned to each property owner to assist him or her through the acquisition process. The Uniform Act also provides benefits to displaced individuals to assist them financially and with advisory services related to relocating their residence or business operation. Benefits are available to both owner occupants and tenants of either residential or business properties.

The Uniform Act requires provision of relocation benefits to all eligible persons regardless of race, color, religion, sex, or national origin. Benefits to which eligible owners or tenants may be entitled are determined on an individual basis and explained in detail by an assigned right-of-way specialist.

The California Relocation Assistance Act essentially mirrors the Uniform Act and also provides for consistent and fair treatment of property owners. However, because the project would receive federal funding, the Uniform Act takes precedence. Owners of private property have federal and state constitutional guarantees that their property would not be acquired or damaged for public use unless owners first receive just compensation. Just compensation is measured by the “fair market value,” where the property value is considered to be the highest price that would be negotiated on the date of valuation. The value must be agreed upon by a seller who is willing, not obliged to sell, but under no particular or urgent necessity and by a buyer who is ready, willing, and able to buy but under no particular necessity. Both the owner and the buyer must deal with the other with the full knowledge of all the uses and purposes for which the property is reasonably adaptable and available (Code of Civil Procedure Section 1263.320a).

More detailed information about how the Authority plans to comply with the Uniform Act and the California Relocation Assistance Act is provided in the following three detailed relocation assistance documents modeled after Caltrans versions:

- *Your Rights and Benefits as a Displacee under the Uniform Relocation Assistance Program (Residential)*

- *Your Rights and Benefits as a Displacee under the Uniform Relocation Assistance Program (Mobile Home)*
- *Your Rights and Benefits as a Displaced Business, Farm, or Nonprofit Organization under the Uniform Relocation Assistance Program*

SOCIO-IAMF#3: Relocation Mitigation Plan

Before any acquisitions occur, the Authority would develop a relocation mitigation plan, in consultation with affected cities and counties and property owners. In addition to establishing a program to minimize the economic disruption related to relocation, the relocation mitigation plan would be written in a style that also enables it to be used as a public information document.

The relocation mitigation plan would be designed to meet the following objectives:

- Provide affected property and business owners and tenants a high level of individualized assistance in situations when acquisition is necessary and the property owner desires to relocate the existing land use.
- Coordinate relocation activities with other agencies acquiring property resulting in displacements in the study area to provide for all displaced persons and businesses to receive fair and consistent relocation benefits.
- Make a best effort to minimize the permanent closure of businesses and non-profit agencies as a result of property acquisition.
- Within the limits established by law and regulation, minimize the economic disruption caused to property owners by relocation.
- In individual situations, where warranted, consider the cost of obtaining the entitlement permits necessary to relocate to a suitable location and take those costs into account when establishing the fair market value of the property.
- Provide those business owners who require complex permitting with regulatory compliance assistance.

The relocation mitigation plan would include the following components:

- A description of the appraisal, acquisition, and relocation process as well as a description of the activities of the appraisal and relocation specialists.
- A means of assigning appraisal and relocation staff to affected property owners, tenants, or other residents on an individual basis.
- Individualized assistance to affected property owners, tenants, or other residents in applying for funding, including research to summarize loans, grants, and federal aid available, and research areas for relocation.
- Creation of an ombudsman's position to act as a single point of contact for property owners, residents, and tenants with questions about the relocation process. The ombudsman would also act to address concerns about the relocation process as it applies to the individual situations of property owners, tenants, and other residents.

TR-IAMF#2: Construction Transportation Plan

The design-build contractor shall prepare a detailed CTP for the purpose of minimizing the impact of construction and construction traffic on adjoining and nearby roadways in close consultation with the local jurisdiction having authority over the site. The Authority must review and approve the CTP before the Contractor commences any construction activities. This plan would address, in detail, the activities to be carried out in each construction phase, with the requirement of maintaining traffic flow during peak travel periods. Such activities include, but are not limited to, the routing and scheduling of materials deliveries, materials staging and storage areas, construction employee arrival and departure schedules, employee parking locations, and temporary road closures, if any. The CTP would provide traffic controls pursuant to the *California*

Manual on Uniform Traffic Control Devices sections on temporary traffic controls (Caltrans 2012) and would include a traffic control plan that includes, at a minimum, the following elements:

- Temporary signage to alert drivers and pedestrians to the construction zone.
- Flag persons or other methods of traffic control.
- Traffic speed limitations in the construction zone.
- Temporary road closures and provisions for alternative access during the closure.
- Detour provisions for temporary road closures—alternating one-way traffic would be considered as an alternative to temporary closures where practicable and where it would result in better traffic flow than would a detour.
- Identified routes for construction traffic.
- Provisions for safe pedestrian and bicycle passage or convenient detour.
- Provisions to minimize access disruption to residents, businesses, customers, delivery vehicles, and buses to the extent practicable—where road closures are required during construction, limit it to the hours that are least disruptive to access for the adjacent land uses.
- Provisions for farm equipment access.
- Provisions for 24-hour access by emergency vehicles.
- Safe vehicular and pedestrian access to local businesses and residences during construction. The plan would provide for scheduled transit access where construction would otherwise impede such access. Where an existing bus stop is within the work zone, the design-builder would provide a temporary bus stop at a safe and convenient location away from where construction is occurring, in close coordination with the transit operator. Adequate measures would be taken to separate students and parents walking to and from the temporary bus stop from the construction zone.
- Advance notification to the local school district of construction activities and rigorously maintained traffic control at all school bus loading zones to provide for the safety of schoolchildren. Review existing or planned Safe Routes to Schools with school districts and emergency responders to incorporate roadway modifications that maintain existing traffic patterns and fulfill response route and access needs during project construction and HSR operations.
- Identification and assessment of the potential safety risks of project construction to children, especially in areas where the project is located near homes, schools, day care centers, and parks.
- Promotion of child safety within and near the project area. For example, crossing guards could be provided in areas where construction activities are located near schools, day care centers, and parks.

CTPs would consider and account for the potential for overlapping construction projects.

TR-IAMF#4: Maintenance of Pedestrian Access

The Contractor shall prepare specific construction management plans to address maintenance of pedestrian access during the construction period. Actions that limit pedestrian access would include, but not be limited to, sidewalk closures, bridge closures, crosswalk closures or pedestrian rerouting at intersections, placement of construction-related material within pedestrian pathways or sidewalks, and other actions that may affect the mobility or safety of pedestrians during the construction period. If sidewalks are maintained along the construction site frontage, provide covered walkways and fencing. The plan objective shall be to maintain pedestrian access where feasible (i.e., meeting design, safety, Americans with Disabilities Act requirements). This measure shall be addressed in the CTP.

TR-IAMF#5: Maintenance of Bicycle Access

The Contractor shall prepare specific construction management plans to address maintenance of bicycle access during the construction period. Actions that limit bicycle access would include, but not be limited to, bike lane closures or narrowing, closure or narrowing of streets that are designated bike routes, bridge closures, placement of construction-related materials within designated bike lanes or along bike routes, and other actions that may affect the mobility or safety of bicyclists during the construction period. Maintain bicycle access where feasible (i.e., meeting design, safety, Americans with Disabilities Act requirements). This measure shall be addressed in the CTP.

TR-IAMF#6: Restriction on Construction Hours

The Contractor shall limit construction material deliveries between 7:00 a.m. and 9:00 a.m. and between 4:00 p.m. and 6:00 p.m. on weekdays to minimize impacts to traffic on roadways. The contractor shall limit the number of construction employees arriving or departing the site between the hours of 7:00 a.m. and 8:30 a.m. and 4:30 p.m. and 6:00 p.m. Areas where these restrictions would be implemented would be determined as part of the CTP. Based on Authority review of the CTP, the restricted hours may be altered due to local travel patterns.

TR-IAMF#7: Construction Truck Routes

The Contractor shall deliver all construction-related equipment and materials on the appropriate truck routes and shall prohibit heavy-construction vehicles from using alternative routes to get to the site. Truck routes would be established away from schools, day care centers, and residences, or along routes with the least impact if the Authority determines those areas are unavoidable. This measure shall be addressed in the CTP.

TR-IAMF#8: Construction during Special Events

The Contractor shall provide a mechanism to prevent roadway construction activities from reducing roadway capacity during major athletic events or other special events that substantially (10 percent or more) increase traffic on roadways affected by project construction. Mechanisms include the presence of police officers directing traffic, special-event parking, use of within-the-curb parking, or shoulder lanes for through-traffic and traffic cones. This measure shall be addressed in the CTP.

TR-IAMF#11: Maintenance of Transit Access

The Contractor shall prepare specific construction management plans to address maintenance of transit access during the construction period. Actions that limit transit access would include, but not be limited to, roadway lane closures or narrowing, closure or narrowing of streets that are designated transit routes, bus stop closures, bridge closures, placement of construction-related materials within designated transit lanes, bus stop or layover zones or along transit routes, and other actions that may affect the mobility or safety of bus transit during the construction period. Maintain transit access where feasible (i.e., meeting design, safety, Americans with Disabilities Act requirements). This measure shall be addressed in the CTP.

TR-IAMF#12: Pedestrian and Bicycle Safety

Prior to construction, the Contractor shall provide a technical memorandum describing how pedestrian and bicycle accessibility would be provided and supported across the HSR corridor, to and from stations and on station property. Priority of safety for pedestrians and bicycles and vulnerable populations over motor vehicle access would be done in a way to encourage maximum potential access from non-motorized modes. Local access programs, such as Safe Routes to Schools, shall be maintained or enhanced. Access to community facilities for vulnerable populations shall be maintained or enhanced.

These measures are described in Chapter 2 under Section 2.4.2.1, High-Speed Rail Project Impact Avoidance and Minimization Features.

5.8.2 Mitigation

Impacts related to EJ could be reduced with implementation of the following mitigation measures. It is assumed that the mitigation measures outlined below would be equally applied to populations that are low-income, minority, or otherwise. No suggestions for additional mitigation measures related to EJ were received during the Draft EIR/EIS public review period.

- SO-MM#1: Implement measures to reduce effects associated with the division of residential neighborhoods
- SO-MM#2: Implement measures to reduce effects associated with the division of communities
- SO-MM#3: Implement measures to reduce effects associated with the relocation of important facilities
- SO-MM#4: Provide access modifications to affected farmlands
- AQ-MM#1: Offset Project Construction Emissions Through an SJVAPCD Voluntary Emission Reduction Agreement (VERA)
- AQ-MM#2: Purchase Offsets and Offsite Emission Mitigation for Emissions Associated with Hauling Ballast Material in Certain Air Districts
- AQ-MM#3: Reduce the Potential Impact of Toxics
- N&V-MM#1: Construction Noise Mitigation Measures
- N&V-MM#2: Construction and Vibration Mitigation Measures
- N&V-MM#3: Implement Proposed HSR Project Noise Mitigation Guidelines
- N&V-MM#4: Vehicle Noise Specifications
- N&V-MM#5: Special Track Work at Crossovers and Turnouts
- N&V-MM#6: Additional Noise Analysis Following Final Design
- PR-MM#1: Temporary Restricted Access to Park Facilities During Construction
- AVQ-MM#1: Minimize Visual Disruption from Construction Activities
- AVQ-MM#2: Minimize Light Disturbance During Construction
- AVQ-MM#3: Incorporate Design Criteria for Elevated Guideways and Station Elements That Can Adapt to Local Context
- AVQ-MM#4: Integrate Elevated Guideways Into Affected Cities, Parks, Trails, and Urban Core Designs
- AVQ-MM#5: Screen At-Grade and Elevated Guideways Adjacent to Residential Areas
- AVQ-MM#6: Replant Unused Portions of Land Acquired for HSR
- AVQ-MM#7: Provide Off-Site Landscape Screening Where Appropriate
- AVQ-MM#8: Plant Landscape Treatments Along HSR Overcrossings, Embankments, and Retained Fill Elements
- AVQ-MM#9: Provide Sound Barrier Treatments
- CUM-SO-MM#1: Coordination with Cumulative Construction Project Sponsors

The above mitigation measures for air quality are found in Section 3.3, Air Quality; for noise and vibration, in Section 3.4, Noise and Vibration; for socioeconomic and community effects, in Section 3.12, Socioeconomics and Communities; for parks and recreation, in Section 3.15, Parks, Recreation, and Open Space; and for aesthetics visual resources, in Section 3.16, Aesthetics and Visual Quality; and for cumulative impacts, in Section 3.19, Cumulative Impacts.

The *Fresno to Bakersfield Section Final Supplemental EIS* (Authority and FRA 2019) and the *Final Supplemental EIR* (Authority 2018) identified mitigation measures that are applicable to the entire length of the F-B LGA from just north of Poplar Avenue to Oswell Street. Not all measures identified in the *Final Supplemental EIS* (Authority and FRA 2019) and *Final Supplemental EIR* (Authority 2018) are applicable to the portion of the F-B LGA from 34th Street and L Street to Oswell Street. The following mitigation measure related to EJ is applicable to the portion of the F-B LGA from 34th Street and L Street to Oswell Street.

- **F-B LGA SO-MM#6:** The Authority will continue to conduct substantial EJ outreach activities in adversely affected neighborhoods to obtain resident feedback on potential impacts and suggestions for mitigation measures. Input from these communities will be used to refine the alternatives during ongoing design efforts. In addition, to offset any disproportionate effects, the Authority will develop special recruitment, training, and job set-aside programs so that minority and/or low-income populations are able to benefit from the jobs created by the project. This type of outreach is common for large infrastructure projects with long construction periods and has been found to be effective.

5.8.3 Environmental Justice Community Engagement

The Authority developed and is implementing a continuous community engagement program to support the development of alternatives for study during the environmental process.

Since publication of the Draft EIR/EIS, the Authority hosted targeted Virtual Community Listening Sessions for the affected minority and/or low-income populations in the Northeast Bakersfield/Edison, Lancaster, and Palmdale areas. The purpose of these meetings was to solicit community-based ideas for additional mitigation measures or community benefits that could be adopted by the Authority to benefit EJ communities in Kern and Los Angeles Counties directly impacted by the implementation of the project.

The Authority will continue to consider community input received during the Virtual Community Listening Sessions and other future public meetings in determining whether changing circumstances or new information could result in additional practicable measures, if any, to reduce effects within the Bakersfield to Palmdale HSR Project Section.

5.9 California High-Speed Rail Authority's Environmental Justice Determination

In response to the information shared by affected communities and consistent with its EJ policy, between the publication of the Draft EIR/EIS and this Final EIR/EIS the Authority conducted outreach and listening sessions with environmental justice communities along the corridor in 2020 and 2021, additional analyses to refine its disproportionately high and adverse effect findings after consideration of input from EJ communities and after application of IAMFs, mitigation measures, and project benefits (e.g., community-inclusive design, sound walls, grade separations). In preparing the Draft EIR/EIS, the Authority had used conservative assumptions regarding disproportionately high and adverse effects. These assumptions did not include all available mitigation measures or IAMFs, assumed substantial EJ communities in areas which were later determined not to have substantial EJ communities, and assumed adverse impacts were disproportionate, in the absence of available information. In arriving at its final determinations regarding disproportionately high and adverse effects, discussed below, the Authority revised its findings where no evidence of disproportionately high and adverse effects was identified during the refinement period between the Draft and Final EIR/EIS. Consistent with CEQ and USDOT guidance, the Authority considered the totality of circumstances and additional information identified between the Draft EIR/EIS and Final EIR/EIS to refine its disproportionately high and adverse effects findings and determination. The Authority also conducted its analysis and findings in accordance with the mandatory direction of the new USDOT Order 5610.2B to include offsetting project benefits in determining whether the project would have disproportionately high and adverse effects. In this Final EIR/EIS, the Authority refined the disproportionately high and adverse effects to identify the specific locations that will be impacted. This location specificity was not in the Draft EIR/EIS.

Table 5-15 provides a summary of disproportionately high and adverse effects on low-income and/or minority populations by resource topic for each B-P Build Alternative (including the CCNM Design Option and the Refined CCNM Design Option). These findings have been revised since publication of the Draft EIR/EIS to reflect input received from impacted environmental justice communities during listening sessions conducted by the Authority in December 2020 and January 2021 and have been revised to reflect findings after application of mitigation measures or offsets and to reconcile inconsistencies. As shown in Table 5-11 in Section 5.7.1.1 and Table 5-12 in Section 5.7.1.2, the degree and location of impacts to each affected resource vary by B-P Build Alternative. However, based on the NEPA analysis, the overall determination of impacts and the determination of disproportionately high and adverse effects on minority and/or low-income populations for each resource is the same for all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). Accordingly, the summary of disproportionately high and adverse effects on minority and/or low-income populations provided in Table 5-15 applies to all B-P Build Alternatives.

Table 5-15 Summary of Environmental Justice Determinations

Resources	Disproportionately High and Adverse EJ Effects				
	B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Bakersfield Station— F-B LGA (from the intersection of 34th Street and L Street to Oswell Street)	Palmdale Station Site	Lancaster B North MOWF	Avenue M LMF/MOWF
Transportation	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Air Quality	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Noise	No (construction), Yes (operation impacts on low-income populations in portions of Northeast Bakersfield, Edison, and Lancaster ¹)	No (construction), Yes (operation)	No (construction), Yes (operation impacts on low-income and/or minority populations in portions of Palmdale)	No (construction and operation)	No (construction and operation)
Electromagnetic Interference and Electromagnetic Fields	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Geology and Soils	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Public Utilities and Energy	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Hazardous Materials and Wastes	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Safety and Security	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)

Resources	Disproportionately High and Adverse EJ Effects				
	B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option)	Bakersfield Station— F-B LGA (from the intersection of 34th Street and L Street to Oswell Street)	Palmdale Station Site	Lancaster B North MOWF	Avenue M LMF/MOWF
Community Cohesion	No (construction), Yes (operation impacts on low-income and/or minority populations in portions of Edison ¹)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Displacements and Relocation (Business and Residential)	Yes (construction impacts on low-income and/or minority populations in portions of Lancaster ¹), No (operation)	No (construction), Yes (operation) ²	Yes (construction impacts on low-income and/or minority populations in portions of Palmdale), No (operation)	No (construction and operation)	No (construction and operation)
Economic and Other Effects	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Agricultural Land	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Parks and Recreation and Open Space	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Aesthetics and Visual Quality ³	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)
Cumulative Effects	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)	No (construction and operation)

¹ Refer to the discussion below for a list of the specific block groups that these disproportionately high and adverse effects would impact.

² Displacement impacts during operation are discussed in the *California High-Speed Train Project EIR/EIS: Fresno to Bakersfield Section*, California High-Speed Rail Authority, 2014b; and the *Fresno to Bakersfield Section Final Supplemental EIS* (California High-Speed Rail Authority and Federal Railroad Administration 2019). B-P = Bakersfield to Palmdale Project Section

³ Aesthetic and visual quality effects were considered under the community cohesion analysis.

CCNM = César E. Chávez National Monument

EJ = environmental justice

F-B LGA = Fresno to Bakersfield (Locally Generated Alternative) portion from the intersection of 34th Street and L Street to Oswell Street

As described in Section 5.6.3, operation of the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would result in adverse community cohesion effects related to the disruption of established patterns of interactions among community residents; disruption of residents' access to community facilities and services, and/or creation of environmental effects on communities or neighborhoods, such as increases in noise or traffic that could alter community character. Mitigation measures would not eliminate all effects where business and residential displacements would occur. However, effects would be distributed throughout all population types. Therefore, these effects would not be disproportionately high or adverse for minority and/or low-income populations.

As described in Section 5.6.4, operation of the Palmdale Station site would result in adverse community cohesion effects related to the permanent disruption of community cohesion from

increases in noise levels, traffic, and changes in visual quality. Implementation of Mitigation Measures would reduce the project's long-term noise and vibration impacts on nearby properties and the project's permanent aesthetic impacts on surrounding properties. Additionally, the project would replace current at-grade crossings with new, grade-separated crossings. These new grade separations would enhance mobility in Palmdale by eliminating traffic delays for motorists who are currently forced to wait for passing trains. Considering these offsetting benefits, adverse effects would not be disproportionately high or adverse for minority and/or low-income populations.

Additionally as described in Section 5.6, construction of the Palmdale Station site would result in adverse community cohesion effects. However, the implementation of IAMFs would minimize the potential for construction to temporarily disrupt community cohesion or to divide existing communities. Additionally, temporary effects related to air quality, noise, and access to park facilities would be short-term within affected communities along the HSR project alignment. Therefore, these effects would not be disproportionately high or adverse for minority and/or low-income populations.

As shown on Figures 5-A-2 and 5-A-3, the EJ RSA contains areas with substantial low-income and/or minority populations. The locations of minority and/or low-income populations within the EJ RSA and the reference community are provided in Section 5.4, Affected Environment.

The Authority has been conducting targeted outreach activities for minority and/or low-income residents and businesses for the Bakersfield to Palmdale Project Section since 2012. A list of key environmental stakeholder outreach meetings and events is contained in Table 5-C-1 in Appendix 5-C. Generally, members of minority and/or low-income populations have provided input about the F-B LGA as described in Section 5.5.2, Issues and Concerns, above.

As described above, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in disproportionately high and adverse effects on minority and/or low-income populations related to displacement and relocation (portions of Lancaster) during construction, noise (portions of Northeast Bakersfield, Edison, and Lancaster), and community cohesion (portions of Edison) during operation. These disproportionately high and adverse effects on minority and/or low-income populations would remain after mitigation measures were implemented to the extent practicable.

5.9.1 Community Cohesion

The B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) could result in adverse effects related to aesthetic and visual effects on residential uses and/or schools in the community of Edison. Implementation of Mitigation Measures AVQ-MM#3, AVQ-MM#4, AVQ-MM#5, AVQ-MM#6, AVQ-MM#7, AVQ-MM#8, and AVQ-MM#9 would reduce the project's permanent aesthetic effects on surrounding properties, however, some of the effects would remain, specifically in the community of Edison where the visual quality at KVP 3 (School Street) and KVP 4 (Jacober Avenue, looking south) would be affected. Because minority and/or low-income populations would primarily bear these effects, the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would potentially result in disproportionately high and adverse effects on minority and/or low-income populations related to community cohesion in this portion of Edison due to these aesthetic/visual quality effects. This finding would apply to the portion of Block Group 4 of Census Tract 10 in Kern County with visual quality effects at these KVPs. Note that the U.S. Census Bureau provides a tool that can be used to identify the census tract number, block number, and block group number that applies to a particular address. This tool, the Census Geocoder, is available to the public at the following web address: <https://geocoding.geo.census.gov/geocoder/geographies/address?form>.

Connectivity improvements (such as new grade separations in the community of Edison, which is currently divided by existing railroad lines) under all B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would be implemented at existing railroad crossings to improve community cohesion. However, these improvements may not counteract the effects on visual quality.

The Authority has not identified any additional practicable mitigation measures or alternatives to further reduce or eliminate significant disproportionately high and adverse community cohesion effects on minority and/or low-income populations.

5.9.2 Noise

Each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would have severe impacts at sensitive noise receptors in areas with minority and/or low-income populations during operations. Sensitive noise receptor impacts following implementation of noise barriers by B-P Build Alternative in low-income and/or minority populations are shown on Table 5-10.

Among the noise receptors that would continue to experience severe effects during operation after implementation of the reasonable and feasible noise barriers, 25.3 percent (74 out of 292 under Alternative 1), 25.4 percent (74 out of 291 under Alternative 2), 25.5 percent (74 out of 290 under Alternative 3), and 30.1 percent (93 out of 309 under Alternative 5) of the receptors are in areas where substantial low-income populations exist (after low population density areas are removed from consideration). Therefore, considering the low-income population share in the reference communities (22.9 percent for Kern County and 17.8 percent for Los Angeles County), each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in disproportionately high and adverse noise impacts on low-income populations.

Between 8.9 percent (26 out of 292 under Alternatives 1 and 2), 9.0 percent (26 out of 291 under Alternative 3), and 15.5 percent (48 out of 309 under Alternative 5) of the receptors are in areas where substantial minority populations exist (after low population density areas are removed from consideration). Given these low percentages in comparison to the share of minority populations in the reference communities (62.1 percent for Kern County and 72.5 percent for Los Angeles County), none of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in disproportionately high and adverse noise impacts on minority populations.

Implementation of Mitigation Measure N&V-MM#3 would reduce project noise effects, but moderate and severe noise effects from HSR project operations would remain after mitigation. As described in Section 3.4, Noise and Vibration, to mitigate operational noise impacts at sensitive receivers, sound barriers were evaluated for feasibility and reasonableness. Of the 19 sound barriers evaluated, all sound barriers were determined to be feasible (a minimum noise level reduction of 5 A-weighted decibels) at the maximum height of 14 feet, whereas only 15 of the 19 sound barriers were determined to be reasonable and cost-effective. The remaining 4 sound barriers were determined not to be cost-effective. However, if sound barriers are not implemented, secondary abatement measures, including property insulation and window and door replacement, could be provided to reduce noise exposure consistent with N&V-MM#3, which would help to reduce potential noise impacts but may not completely eliminate the adverse noise impact. Certain older structures, constructed with low-quality building materials, may still experience noise impacts, even with upgraded insulation. Therefore, even with upgraded insulation and replaced windows and doors, adverse noise impacts could remain. No additional practicable mitigation measures are available to reduce this impact.

Disproportionately high and adverse noise impacts on low-income populations would occur under Alternatives 1, 2, and 3 to identified sensitive receptors in the following census block groups:

- Block Group 3, Census Tract 10 (Unincorporated Kern County), Kern County
- Block Group 1, Census Tract 9005.04 (Lancaster), Los Angeles County
- Block Group 1, Census Tract 9007.01 (Lancaster), Los Angeles County
- Block Group 2, Census Tract 9007.04 (Lancaster), Los Angeles County
- Block Group 1, Census Tract 9008.04 (Lancaster), Los Angeles County
- Block Group 1, Census Tract 9008.06 (Lancaster), Los Angeles County

Disproportionately high and adverse noise impacts on low-income populations would occur under Alternative 5 in the following census block groups:

- Block Group 3, Census Tract 10 (Unincorporated Kern County), Kern County
- Block Group 1, Census Tract 9005.04 (Lancaster), Los Angeles County
- Block Group 1, Census Tract 9007.01 (Lancaster), Los Angeles County
- Block Group 4, Census Tract 9007.01 (Lancaster), Los Angeles County
- Block Group 2, Census Tract 9007.04 (Lancaster), Los Angeles County
- Block Group 1, Census Tract 9008.04 (Lancaster), Los Angeles County
- Block Group 1, Census Tract 9008.06 (Lancaster), Los Angeles County

5.9.3 Residential and Business Displacements and Relocation

Alternatives 1, 2, and 3 would displace approximately 243, 243, and 244 residential units (respectively), the majority of which are in Lancaster. Of the 196 residential displacements in Lancaster under Alternatives 1, 2, and 3, 179 (or approximately 91 percent) would occur in areas with substantial low-income populations and 44 (or approximately 22 percent) would occur in areas with substantial minority populations. Alternative 5 would displace approximately 338 residential units, the majority of which are in Lancaster. Of the 296 residential displacements in Lancaster under Alternative 5, 279 (or approximately 94 percent) would occur in areas with substantial low-income populations and 185 (or approximately 63 percent) would occur in areas with substantial minority populations. Therefore, because each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in a disproportionately higher percentage of residential displacements in areas of Lancaster with substantial low-income populations than low-income populations represent in the reference community of Los Angeles County (17.8 percent), each of the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option) would result in disproportionately high and adverse impacts on low-income populations in portions of Lancaster (refer to the census block groups noted below) that are directly displaced or relocated by the Project.

Under Alternative 5, (including the CCNM Design Option and the Refined CCNM Design Option), more than 50 percent of the residential displacements in Lancaster would occur in areas with substantial minority populations. Although the percentage of residential displacements in areas of Lancaster with substantial minority populations would not exceed the percentage that minority populations represent in the reference community of Los Angeles County (72.5 percent), a majority of the residential displacements in Lancaster would occur in areas with substantial minority populations. Therefore, Alternative 5 would result in disproportionately high and adverse impacts on minority populations in portions of Lancaster related to residential displacements.

The B-P Build Alternatives would result in the displacement of facilities of concern for low-income populations in Lancaster. Alternatives 1, 2, and 3 would displace eight older motels along Sierra Highway in Lancaster that appear to rent rooms on a weekly and/or monthly basis to low-income populations. All four of the B-P Build Alternatives would displace an affordable housing apartment complex in Lancaster reserved for residents age 55 and older. 96 of the units at this apartment complex are subject to long-term affordability covenants that expire in 2029. In addition to the displacements required under Alternatives 1, 2, and 3, Alternative 5 would displace residential units at an affordable housing complex subject to long-term affordability covenants that expire in 2060 (City of Lancaster 2014). Alternative 5 would also displace one additional motel along Sierra Highway and a homeless service resource center, an important community resource for homeless populations in the Antelope Valley. Rooms available for rent on a weekly or monthly basis may serve as *de facto* affordable housing for low-income populations who are unable to move into more permanent rental housing due to bad credit, gaps in work history, a lack of credible references, and/or insufficient financial resources to pay for a security deposit and the first month's rent. The residents of these motels are not eligible to receive relocation benefits under the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) unless they have been living in their current residence for 30 days or longer. Therefore, the displacement of these motels would impact low-income populations. Alternatives 1, 2, and 3 would also displace 231 businesses, the majority of which are located in Lancaster. Of the 188 business displacements in Lancaster under Alternatives 1, 2, and 3, 28 (or approximately 15 percent) would occur in areas with substantial minority populations and 64 (or approximately 34

percent) would occur in areas with substantial low-income populations. The locations of the residential and business displacements in Lancaster under Alternatives 1, 2, and 3 in relation to the census block groups with substantial low-income and/or minority population are shown in 5-A-11 and 5-A-12, in Appendix 5-A, Environmental Justice Figures, respectively. Alternative 5 would displace 285 businesses. Of the 248 business displacements in Lancaster under Alternative 5, 89 (or approximately 36 percent) would occur in areas with substantial minority populations and 119 (or approximately 48 percent) would occur in areas with substantial low-income populations. The locations of the residential and business displacements in Lancaster under Alternative 5 in relation to the census block groups with substantial low-income and/or minority population are shown in Figures 5-A-13 and 5-A-14, respectively. As shown in Figures 5-A-11, 5-A-12, 5-A-13, and 5-A-14, many of the business displacements occur in Lancaster's low-population density areas, but are adjacent to or within 1,000 feet of residential areas that include substantial low-income and/or minority populations. Therefore, it is likely that a high percentage of the businesses are owned by, employ, and/or provide goods and services to low-income and/or minority populations. For these reasons, it is reasonable to conclude that the majority of the business displacements in Lancaster would affect low-income and/or minority populations.

Disproportionately high and adverse impacts on minority populations related to residential and/or business displacements would occur in the following census block groups under the B-P Build Alternatives (refer to the notes below regarding which block groups include residential and/or business displacements):

- Block Group 2, Census Tract 9005.01 (Lancaster), Los Angeles County (business displacements only)
- Block Group 2, Census Tract 9006.02 (Lancaster), Los Angeles County (business displacements only)
- Block Group 2, Census Tract 9006.06 (Lancaster), Los Angeles County (business displacements only)
- Block Group 1, Census Tract 9007.01 (Lancaster), Los Angeles County (business displacements only)
- Block Group 4, Census Tract 9007.01 (Lancaster), Los Angeles County (business displacements only)
- Block Group 1, Census Tract 9008.04 (Lancaster), Los Angeles County (residential and business displacements)
- Block Group 2, Census Tract 9008.04 (Lancaster), Los Angeles County (business displacements)
- Block Group 1, Census Tract 9008.06 (Lancaster), Los Angeles County (residential and business displacements)

Disproportionately high and adverse impacts on low-income populations related to residential and/or business displacements would occur in the following census block groups with substantial low-income populations under the B-P Build Alternatives (refer to the notes below regarding which block groups include residential and/or business displacements):

- Block Group 2, Census Tract 9005.01 (Lancaster), Los Angeles County (business displacements only)
- Block Group 1, Census Tract 9005.04 (Lancaster), Los Angeles County (residential and business displacements)
- Block Group 2, Census Tract 9006.02 (Lancaster), Los Angeles County (business displacements only)
- Block Group 2, Census Tract 9006.06 (Lancaster), Los Angeles County (business displacements only)

- Block Group 1, Census Tract 9006.07 (Lancaster), Los Angeles County (business displacements only)
- Block Group 4, Census Tract 9007.01 (Lancaster), Los Angeles County (business displacements only)
- Block Group 2, Census Tract 9007.04 (Lancaster), Los Angeles County (residential and business displacements)
- Block Group 1, Census Tract 9007.01 (Lancaster), Los Angeles County (business displacements only)
- Block Group 1, Census Tract 9008.04 (Lancaster), Los Angeles County (business displacements only)
- Block Group 1, Census Tract 9008.06 (Lancaster), Los Angeles County (residential and business displacements)

It should be noted that the displacements of certain businesses may involve the displacement of de facto affordable housing. Further study is needed in order to ensure adequate protections are in place for the displacement of low-income residents and the provision of nearby affordable housing. As described in Section 3.12, Socioeconomics and Communities, compliance with the Uniform Act (SOCIO-IAMF#2) would address effects related to property acquisitions by providing relocation assistance to all residents and businesses displaced by the HSR project. With implementation of SOCIO-IAMF#2, it is expected that most displaced businesses would relocate within relatively close proximity (e.g., within the same or adjacent community or city) to their current locations. If, with implementation of SOCIO-IAMF#2, most displaced businesses are able to relocate within relatively close proximity to their current location, then this impact will not be disproportionately high and adverse on EJ populations. Alternatively, if, upon consultation of impacted neighborhoods, the relocation of the businesses would not be adverse to EJ communities, then this impact will not be disproportionately high and adverse on EJ populations. No additional practicable mitigation measures are available or known at this time to reduce this impact further.

5.9.4 Maintenance Facilities, Electric Power Utility Improvements, and Station Locations

Construction and operation of the Lancaster B MOWF and Avenue M LMF/MOWF would not result in disproportionately high and adverse effects on minority and/or low-income populations, and the EJ effects associated with operation of the electric power utility improvements are considered above as part of the B-P Build Alternatives, which determined disproportionately high and adverse effects on minority and/or low-income populations related to residential and business displacement and relocation (portions of Lancaster) during construction, on noise (portions of Northeast Bakersfield, Edison, and Lancaster) and community cohesion (portions of Edison) during operation.

5.9.4.1 Bakersfield from 34th and L Street to Oswell Street

With the implementation of Mitigation Measure F-B LGA SO-MM#6, disproportionately high and adverse effects to minority and/or low-income populations would be reduced by providing opportunities for these communities to provide feedback on potential impacts and suggestions for mitigation measures. Based on the feedback received, the Authority may revise these determinations to find that identified adverse or disproportionate effects are no longer adverse, after consideration of future community input on impacts, mitigation measures, or offsets. However, the Bakersfield Station F-B LGA would result in disproportionately high and adverse effects on minority and/or low-income populations related to noise and residential and business displacements and relocations during operation.

Approximately 63.3 percent of the residential displacements in the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street in Bakersfield would occur in areas with substantial low-income populations and approximately 63.3 percent would occur in areas

with substantial minority populations. Therefore, considering the reference community's low-income population share (22.9 percent) and minority population share (62.1 percent), the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would result in disproportionately high and adverse impacts on low-income and/or minority populations (refer to the census block groups noted below).

In the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street in Bakersfield, 100 percent of the business displacements would occur in areas with substantial low-income and/or minority populations. Therefore, the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would result in disproportionately high and adverse impacts on low-income and/or minority populations (refer to the census block groups noted below).

Disproportionately high and adverse impacts on minority and/or low-income populations related to residential and business displacements would occur in the following census block groups related to the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street in Bakersfield (refer to the notes below regarding which block groups include residential and/or business displacements):

- Block Group 2, Census Tract 6 (Bakersfield), Kern County (business displacements only)
- Block Group 3, Census Tract 6 (Bakersfield), Kern County (residential and business displacements)
- Block Group 4, Census Tract 6 (Bakersfield), Kern County (business displacements only)
- Block Group 2, Census Tract 12.02 (Bakersfield/Unincorporated Kern County), Kern County (business displacements only)
- Block Group 6, Census Tract 13 (Bakersfield), Kern County (business displacements only)
- Block Group 1, Census Tract 15 (Bakersfield), Kern County (business displacements only)
- Block Group 2, Census Tract 15 (Bakersfield), Kern County (residential and business displacements)
- Block Group 3, Census Tract 15 (Bakersfield/Unincorporated Kern County), Kern County (residential and business displacements)
- Block Group 1, Census Tract 16 (Bakersfield), Kern County (business displacements only)
- Block Group 2, Census Tract 16 (Bakersfield), Kern County (business displacements only)
- Block Group 2, Census Tract 23.01 (Bakersfield/Unincorporated Kern County), Kern County (residential and business displacements)
- Block Group 3, Census Tract 23.01 (Unincorporated Kern County), Kern County (residential and business displacements)

All of the residual severe long-term operational noise effects in the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street in Bakersfield would occur in areas with substantial low-income and/or minority populations. Therefore, the portion of the F-B LGA from the intersection of 34th Street and L Street to Oswell Street would result in disproportionately high and adverse impacts on low-income and/or minority populations (refer to the census block groups noted below).

- Block Group 1, Census Tract 6 (Bakersfield), Kern County
- Block Group 2, Census Tract 6 (Bakersfield), Kern County
- Block Group 3, Census Tract 6 (Bakersfield), Kern County
- Block Group 4, Census Tract 6 (Bakersfield), Kern County
- Block Group 4, Census Tract 7 (Bakersfield/Unincorporated Kern County), Kern County
- Block Group 5, Census Tract 7 (Bakersfield), Kern County
- Block Group 2, Census Tract 11.03 (Unincorporated Kern County), Kern County
- Block Group 3, Census Tract 11.03 (Unincorporated Kern County), Kern County

- Block Group 2, Census Tract 12.02 (Bakersfield/Unincorporated Kern County), Kern County
- Block Group 2, Census Tract 13 (Bakersfield), Kern County
- Block Group 4, Census Tract 13 (Bakersfield), Kern County
- Block Group 6, Census Tract 13 (Bakersfield), Kern County
- Block Group 1, Census Tract 15 (Bakersfield), Kern County
- Block Group 2, Census Tract 15 (Bakersfield), Kern County
- Block Group 3, Census Tract 15 (Bakersfield/Unincorporated Kern County), Kern County
- Block Group 1, Census Tract 16 (Bakersfield), Kern County
- Block Group 2, Census Tract 16 (Bakersfield), Kern County
- Block Group 1, Census Tract 17 (Bakersfield), Kern County
- Block Group 3, Census Tract 17 (Bakersfield), Kern County
- Block Group 2, Census Tract 23.01 (Bakersfield/Unincorporated Kern County), Kern County
- Block Group 3, Census Tract 23.01 (Unincorporated Kern County), Kern County
- Block Group 4, Census Tract 23.01 (Bakersfield/Unincorporated Kern County), Kern County
- Block Group 1, Census Tract 23.02 (Bakersfield/Unincorporated Kern County), Kern County

5.9.4.2 Palmdale Station

The Palmdale Station would result in disproportionately high and adverse effects on minority and/or low-income populations related to residential and business displacements and relocations during construction and to low-income populations related to noise during operation. Severe operational noise effects are projected from E Avenue P 8 to E Avenue R at 193 residences on the west side of the tracks. Because the population living within the Palmdale Station subsection is (in a majority of census tracts) substantial for minority and/or low-income populations, the permanent adverse effects related to operational noise would be experienced predominantly by minority and/or low-income populations. Census block group identification was not feasible at the time of this analysis. Exact locations of impacted sensitive receptors shall be determined upon completion of the pre-construction noise impacts analysis described in Section 3.4, Noise and Vibration.

Palmdale Station construction would displace approximately 312 residential units, which correlates with approximately 1,108 displaced residents. The construction of Palmdale Station would also displace approximately 175 businesses, which correlates with approximately 1,886 displaced employees. The population living within the Palmdale Station subsection includes substantial minority and/or low-income populations; therefore, this permanent impact would be predominantly experienced by minority and/or low-income populations. 100 percent of the residential displacements in the Palmdale Station area would occur in areas with substantial low-income populations. All of the residential displacements in the Palmdale Station area would also occur in areas with substantial minority populations. Approximately 88 percent of the business displacements in the Palmdale Station area would occur in areas with substantial low-income and/or minority populations. Therefore, considering the reference community's low-income population share (17.8 percent) and minority population share (72.5 percent), construction of the Palmdale Station site would result in disproportionately high and adverse impacts on low-income and/or minority populations. Disproportionately high and adverse impacts on minority and low-income populations related to residential and business displacements would occur in the following census block groups related to Palmdale Station site (refer to the notes below regarding which block groups include residential and/or business displacements):

- Block Group 1, Census Tract 9101.01 (Palmdale and Unincorporated Los Angeles County), Los Angeles County (residential and business displacements)
- Block Group 2, Census Tract 9102.01 (Palmdale and Unincorporated Los Angeles County), Los Angeles County (residential and business displacements)
- Block Group 1, Census Tract 9104.02 (Palmdale and Unincorporated Los Angeles County), Los Angeles County (residential and business displacements)
- Block Group 2, Census Tract 9104.02 (Palmdale and Unincorporated Los Angeles County), Los Angeles County (residential and business displacements)

- Block Group 1, Census Tract 9104.03 (Palmdale), Los Angeles County (residential and business displacements)
- Block Group 1, Census Tract 9105.01 (Palmdale and Unincorporated Los Angeles County), Los Angeles County (residential displacements only)
- Block Group 2, Census Tract 9105.04 (Palmdale), Los Angeles County (business displacements only)
- Block Group 1, Census Tract 9105.01 (Palmdale and Unincorporated Los Angeles County), Los Angeles County (business displacements only)
- Block Group 3, Census Tract 9105.04 (Palmdale), Los Angeles County (residential and business displacements)

5.9.5 Beneficial Effects

The HSR project would also result in beneficial effects to all populations, including low-income and/or minority populations. The HSR project would result in beneficial effects related to sales tax gains, regional employment, regional transportation, transportation safety, and regional air quality. The operation of the HSR project could also result in beneficial sales tax gains in all of the communities along the B-P Build Alternatives (including the CCNM Design Option and the Refined CCNM Design Option). However, those benefits would be particularly concentrated in the vicinity of the Bakersfield and Palmdale station sites and the maintenance facilities, which would be in or near areas where low-income and/or minority populations live. Construction of the HSR project would result in a beneficial effect on regional employment, and the Authority has programs (i.e., a Small and Disadvantaged Business Policy and a Targeted Worker Program) in place to ensure that low-income and/or minority populations would benefit from HSR construction. The B-P Build Alternatives (including the CCNM Design Option) would provide benefits to the regional transportation system by providing another mode of transportation for intercity passenger trips, thereby reducing vehicle trips on freeways. All communities, including minority and/or low-income populations, would benefit from the reduction in roadway congestion and increase in transportation options. At the regional level, operation of the HSR system would result in lower pollutant emissions, resulting in a net benefit to regional air quality. All communities would experience regional air quality benefits resulting from the reduction of vehicle trips, including low-income and/or minority populations. The HSR project would improve safety and security for motor vehicle passengers, pedestrians, and bicyclists through the replacement of at-grade crossings over existing railroad lines. In addition, the HSR system would use contemporary signaling and be fully grade-separated to prevent conflicts with vehicles, pedestrians, and bicyclists. This effect would benefit all communities in the region, including minority and/or low-income populations.

5.9.6 Determination

Taking all of these factors into account, the B-P Build Alternatives, the LGA, and the Palmdale Station would result in adverse effects that may be appreciably more severe or greater in magnitude on identified low-income and/or minority populations than the adverse effects experienced by nonlow-income and/or nonminority populations. These disproportionately high and adverse impacts would be limited to the census block groups identified above as having disproportionate effects.

As part of the EJ analysis and as discussed above, the Authority identified all practicable and reasonable mitigation measures for the B-P Build Alternatives to address potentially adverse impacts on low-income and/or minority populations. For example, the mitigation measures for noise have been more widely applied and the number and severity of those impacts has decreased. Since publication of the Draft EIR/EIS, the Authority has hosted targeted Virtual Community Listening Sessions with the affected minority and/or low-income populations in the Northeast Bakersfield/Edison, Lancaster, and Palmdale areas. The purpose of these meetings was to solicit community-based ideas for additional mitigation measures or community benefits that could be adopted by the Authority to benefit EJ communities in Kern and Los Angeles Counties directly impacted by the implementation of the project. Based on the community

meetings thus far, no additional mitigation measures have been identified that would reduce the remaining disproportionately high and adverse effects to EJ communities.

Other alternatives have been evaluated as described in Chapter 2, Alternatives, and the Authority, as NEPA lead agency, has determined none would have fewer adverse effects on EJ communities and satisfy the need for the project, and potentially would have other adverse effects to the natural and human environment. Section 2.3.12 of this Final EIR/EIS provides a detailed discussion of the alternatives considered, the alternatives withdrawn from further consideration, the reasons for their withdrawal, and the alternatives ultimately carried forward in the EIR/EIS analysis. Table 2-4 in Section 2.3.12 summarizes the previous and current alternatives and lists reasons for the withdrawal of alternatives. For example, alternatives that were eliminated from consideration generally had more tunnel miles, higher capital costs, more right-of-way impacts and displacements, and greater effects on cultural and Section 4(f) resources. Therefore, the Authority, as NEPA lead agency, has determined that no other alternatives to the B-P Build Alternatives are practicable that would have fewer adverse effects on protected populations while also satisfying the purpose of the HSR Project.

The Authority, as NEPA lead agency, also has determined that there is a substantial need, based on the overall public interest and a great public benefit as described in Section 1.2.4, Statewide and Regional Need for the High-Speed Rail System in the Bakersfield to Palmdale Project Section Vicinity, for an HSR system that connects the Los Angeles area to the San Francisco Bay Area (of which the connection with the Bakersfield to Palmdale Project Section is an indispensable part).

The approximately 80-mile-long Bakersfield to Palmdale Project Section is an essential component of the statewide HSR system. The Bakersfield to Palmdale Project Section would provide the cities of Bakersfield, Lancaster, and Palmdale, as well as other communities in the vicinity of the proposed HSR stations, with access to a new a transportation mode; contribute to increased mobility throughout California; and provide for constructing a maintenance-of-way facility, where the HSR trains would be inspected and light maintenance/repair activities would take place. The need for an HSR system exists statewide, with regional demand contributing to this need. As discussed in Section 1.2.4.1, Travel Demand and Capacity Constraints, the Bakersfield to Palmdale Project Section would contribute considerably to filling the statewide need for intercity transportation service that would connect it with the major population and economic centers and to other regions of the state.

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