3.18 Regional Growth

Regional Growth

Regional growth effects from transportation projects include potential increases in jobs and population, and the impacts on land use related to such increases. Growth inducement may be direct or indirect, with impacts that may be adverse or beneficial as determined by the analysis.

This section describes the regulatory setting and affected environment for the evaluation of regional growth effects for the California High-Speed Rail (HSR) Bakersfield to Palmdale Project Section (B-P). It discusses the potential growth-inducing effects of construction and operation of the proposed HSR project improvements within the Bakersfield to Palmdale Project Section, which includes the B-P Build Alternatives, the César E. Chávez National Monument Design Option (CCNM Design Option), the Refined CCNM Design Option, the portion of the Fresno to Bakersfield Locally Generated Alternative (F-B LGA) alignment from the intersection of 34th Street and L Street to Oswell Street, the Bakersfield and Palmdale stations, and maintenance facilities. Maintenance facilities include the light maintenance facility (LMF), maintenance of way facility (MOWF), and maintenance of infrastructure siding facilities (MOIS). The analysis evaluates projected regional population and employment growth trends to determine how construction and operation[1] of the proposed improvements within the Bakersfield to Palmdale Project Section could influence those trends, either directly or indirectly. CEQA thresholds related to regional growth effects are addressed in Section 3.12, Socioeconomics and Communities, and Section 3.13, Station Planning, Land Use, and Development.

Summary of Results

In the two-county region, or resource study area (RSA) comprising Kern and Los Angeles Counties, employment and population growth attributable to construction and operation of the HSR project in the Bakersfield to Palmdale Project Section, including the B-P Build Alternatives, the CCNM Design Option, the Refined CCNM Design Option, the portion of the F-B LGA alignment from the intersection of 34th Street and L Street to Oswell Street, the stations, and the maintenance facilities, would be limited compared to the overall level of growth that would occur under the No Project Alternative. The number of short-term construction-related jobs would vary by B-P Build Alternative, ranging from an estimated 33,100 to 34,800 direct, indirect, and induced jobs during the peak construction year, 16,900 to 17,800 of which would be direct jobs in the construction sector. These jobs would comprise approximately 0.7 percent of the total projected jobs in the RSA and 11.1 percent of the total projected construction jobs in the RSA. The two design options (CCNM and Refined CCNM) would add 400 and 4,500 direct, indirect, and induced short-term construction-related jobs, respectively. Also, 200 to 2,300 of these jobs would be direct jobs in the construction sector. This increase in short-term employment is not anticipated to attract a large number of workers to the RSA. Specialty skilled construction workers may come from outside of the RSA, but would work for only short periods during the construction period.

The number of long-term jobs associated population growth and land use consumption from operation of the HSR project in the Bakersfield to Palmdale Project Section, would be the same under any of the B-P Build Alternatives or design options because the alternatives are similar in length, include the same number of stations and maintenance facilities, and provide the same increased accessibility to the rest of the state. The HSR project in the Bakersfield to Palmdale Project Section would result in up to 12,300 long-term jobs in the RSA from operation and maintenance activities and improved accessibility of the region. This employment increase would be approximately 0.2 percent above the 2040 projections. Based on existing city, county, and regional planning documents, there is adequate land development capacity to accommodate planned growth by 2040 as well as HSR-induced growth in the RSA. Therefore, the proposed

[1] Operations include ongoing, routine, and occasional activities associated with the delivery of HSR and related services (e.g., operating HSR transit services and maintaining associated equipment and facilities of the HSR system).

improvements within the Bakersfield to Palmdale Project Section would not induce substantial unplanned employment or population growth or land use consumption.

Operation of the HSR system has the potential to induce additional population growth in exurban communities as a result of providing easier access to lower cost of housing in these communities relative to those in the major employment centers of Los Angeles (Authority 2017b). Based on analysis of the tradeoffs between lower housing costs and higher transportation costs afforded by exurban communities with proposed HSR stations, some households may relocate to these areas. Therefore, any such increases in population in these exurban cities would not be growth stimulated by local economic expansion, but rather a redistribution of existing residents in the RSA. Furthermore, it is anticipated that housing constructed in these communities to accommodate such population growth would be consistent with the adopted land use plans, policies, and regulations of local governments.

3.18.1 Introduction

Construction and operation of the proposed improvements within the Bakersfield to Palmdale Project Section has the potential to result in direct and indirect regional growth effects. Direct growth effects include any jobs directly resulting from construction or operation of the HSR system. Indirect growth effects include employment and associated population growth related to both project spending in the area during construction and operation and increased accessibility and associated economic vitality provided by the HSR system. Indirect effects also include alterations in land use patterns that could occur as a result of employment and population growth associated with the HSR project in the Bakersfield to Palmdale Project Section. Removal of existing obstacles to growth would also be considered indirect growth effects.

The Regional Growth analysis follows Section 3.18, Regional Growth, of the *Project Level Environmental Methodology Guidelines, Version 5.09* (Authority 2017a). Appendix 3.18-A, Regional Growth Methodology Memorandum, provides a detailed description of the methodology used to perform the analysis of direct, indirect, and induced construction and operation employment effects from HSR project spending within the Bakersfield to Palmdale Project Section. Appendix 3.18-B, The Economic Recession of December 2007 to June 2009: Effects and Recovery, provides an analysis of the effects that the economic recession had on income and employment in the RSA to determine the level of recovery.

Population and employment growth are closely linked to economic activity and land use regulations, which are addressed in the following sections of this EIR/EIS:

- Section 3.12, Socioeconomics, Communities, and Environmental Justice, includes a discussion of economic impacts within the Bakersfield to Palmdale Project Section on cities and counties
- Section 3.13, Station Planning, Land Use, and Development, includes a discussion of how growth is addressed in local land use regulations

Short-term employment associated with construction of the proposed improvements within the Bakersfield to Palmdale Project Section is linked to construction spending. Construction spending estimates are included in Section 6.2, Capital Costs.

The *Final Statewide Program Environmental Impact Report/Environmental Impact Statement* (EIR/EIS) (California High-Speed Rail Authority [Authority] and Federal Railroad Administration [FRA] 2005) concluded that the HSR system would result in a small amount of induced population and employment growth statewide.

In 2012, HSR prepared the Economic Impact Analysis Report, which provides updated information on the longer-term economic impacts of HSR. The *California High-Speed Rail Project Economic Impact Analysis Report* (Authority 2012) explains:

> *In California, HSR has the potential to help create a new economic geography. In the past, the Los Angeles and San Francisco Bay metropolitan areas have acted as prominent but generally separate economic engines. However, adding HSR to*

> *the state's transportation network will create new opportunities for collaboration and innovation that are currently more difficult to achieve…High-speed rail will increase productivity and specialization by giving businesses access to larger labor markets. Larger labor pools lead to better matching of skills, which means that firms are better able to find workers with the right qualifications.*

According to the *California High-Speed Rail and the Central Valley Economy Report* (Parsons Brinckerhoff 2015), construction of the HSR system would directly employ thousands of Californians, with many of these jobs being created in the Central Valley. After the HSR system is fully operational, it would directly employ about 1,500 people full time to operate and maintain the HSR system. Additionally, when the system extends from the San Francisco Bay Area to the Los Angeles basin, the Central Valley would be linked to the state's major metropolitan economies with fast, frequent, and reliable HSR service. Over time, enhanced connectivity and improved access to the more prosperous economic mega-regions would change the economic dynamics of the Central Valley and could hasten the diversification of its economy.

3.18.2 Laws, Regulations, and Orders

This section identifies the federal, state, regional, and local laws, regulations, orders, or plans germane to regional growth in the geographic area affected by the project. General National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements for assessment and disclosure of environmental impacts are described in Section 3.1, Introduction. The following NEPA and CEQA requirements are specifically applicable to the evaluation of regional growth for this project section.

3.18.2.1 Federal

NEPA Requirements to Analyze Growth

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act of 1969 (as amended), require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine both direct and indirect consequences that may occur in areas beyond the immediate influence of an action alternative at some time in the future. Positive and negative growth (i.e., change) is a potential consequence of the proposed improvements within the Bakersfield to Palmdale Project Section. Direct growth effects are those caused by any B-P Build Alternative or design options, occurring at the same time and place (40 Code of Federal Regulations 1508.08). Direct growth effects include any permanent jobs directly associated with the proposed improvements within the Bakersfield to Palmdale Project Section as well as any displacement of housing related to the construction and operation of the proposed rail facilities. Indirect growth effects are considered to be reasonably foreseeable effects caused by the proposed improvements within the Bakersfield to Palmdale Project Section, typically occurring later in time or farther in distance from the project (40 Code of Federal Regulations 1502.15[b] and 1508[b]). These include positive or negative growth in population numbers or patterns, positive or negative growth in local or regional economic vitality, and associated alterations in land use patterns that could occur with implementation of the HSR project. "Removal of existing obstacles to growth" would also be considered indirect growth effects, and would include the extension of public services and utilities to a previously undeveloped area where the provision of such services could cause a foreseeable increase in population or economic growth.

Federal Railroad Administration Procedures for Considering Environmental Impacts (64 Federal Register 28545)

FRA's *Procedures for Considering Environmental Impacts* states, "The EIS should identify any significant changes likely to occur in the natural environment and in the developed environment. The EIS should also discuss the consideration given to design quality, art, and architecture in project planning and development as required by U.S. Department of Transportation Order 5610.4." Section 16(n)(16) of these procedures states that an EIS should consider possible impacts on the socioeconomic environment (such as the number and kind of available jobs, the

potential for community disruption or cohesion, the possibility of demographic shifts, impacts on local government services and revenues, the need for and availability of relocation housing, and impacts on commerce, including existing business districts, metropolitan areas, and the immediate area of the alternative). Section 3.12, Socioeconomics and Communities, of this Draft EIR/EIS covers in detail the federal policies relating to the socioeconomic environment. The discussion of regional growth is closely related.

3.18.2.2 State

CEQA Requirements to Analyze Growth

CEQA Guidelines (Cal. Code Regs., tit. 14, §§ 15000–15387) Section 15126.2(d) requires an EIR to evaluate the potential growth-inducing impacts of a proposed project. An EIR must discuss the ways in which the project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. A project that removes an obstacle to growth, for example, would have an indirect growth-inducing effect, whereas a project that would construct new housing would have a direct growth-inducing effect. The CEQA Guidelines emphasize that "it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."

Sustainable Communities and Climate Protection Act of 2008 (California Senate Bill 375)

The Sustainable Communities and Climate Protection Act of 2008 requires California's 18 metropolitan planning organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) as part of their regional transportation plans (RTP). The purpose of the SCS or APS is to reduce greenhouse gas (GHG) emissions from automobiles and light trucks in each region to meet emissions targets set by the California Air Resources Board.

The Kern Council of Governments (COG) and Southern California Association of Governments (SCAG) are the two MPOs that govern the RSA for regional growth. Emission targets for the Kern COG are a 5 percent reduction per capita reduction in GHG emissions from passenger vehicles and light-duty trucks by 2020 and a 10 percent per capita reduction by 2035, compared to 2005. Emission targets for SCAG are to reduce these emissions by 8 percent per capita by 2020 and 13 percent per capita by 2035 compared to 2005. Each of these MPOs has adopted an RTP/SCS that sets forth plans to achieve these targets. On June 19, 2014, the Kern COG adopted the *Final 2014 Regional Transportation Plan/Sustainable Communities Strategy* (Kern COG 2014), and on April 7, 2016, SCAG adopted the *2016-2040 RTP/SCS: A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life* (SCAG 2016). For more information about each of these MPOs and the RTP/SCS that applies to each region, refer to Appendix 2-H, Detailed Plan Consistency Analysis.

Pursuant to California Government Code 65080(b)(2)(B), the SCS or APS shall:

(i) Identify general location of uses, residential densities, and building intensities in the region

(ii) Identify areas in the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period of the regional transportation plan, taking into account net migration into the region, population growth, household formation, and employment growth

(iii) Identify areas in the region sufficient to house an eight-year projection of the regional housing needs for the region pursuant to section 65584

(iv) Identify a transportation network to service the transportation needs of the region

(v) Gather and consider the best practically available scientific information regarding resource areas and farmland in the region, as defined in subdivisions (a) and (b) of section 65080.01

(vi) Consider the state housing goals specified in sections 65580 and 65581

(vii) Set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the

greenhouse gas emissions from automobiles and light trucks to achieve, if feasible, the GHG emission reduction targets approved by the state board

(viii) Allow the regional transportation plan to comply with Section 176 of the federal Clean Air Act (42 U.S.C. § 7506)

The RTPs adopted by the Kern COG and SCAG identify the transportation needs for the regions, including specific projects to meet those needs, and establishes the basis for distributing federal, state, and local funding to implement those projects. Senate Bill 375 requires the MPOs to direct transportation funding toward investments that would reduce GHG emissions and away from investments that would not.

Senate Bill 375 grants no new land use powers to the MPOs. However, in order to meet the assigned emissions reduction targets, each SCS or APS is expected to call for more-compact development patterns that can be served by transit and other modes of transportation. These development patterns are encouraged by the requirement that the SCS or the APS both reduce GHG emissions (linked to vehicle miles travelled) and accommodate regional housing needs (expected to continue to increase). Pursuant to SB 375, MPOs are expected to work with city and county authorities responsible for adopting general plans to guide community development, including the adoption of the housing elements described below.

The regional housing needs allocation is linked statutorily to the housing element that must be adopted by each city and county as part of its general plan. The housing element must provide opportunities for the housing need assigned to the city or county to be filled through new construction or rehabilitation of existing housing. The housing need includes specific allotments for very low and low-income housing.

Preparation of the SCS is mandated by law and the ability of each SCS to meet the emissions reduction target for the planning area must be reviewed and approved by the California Air Resources Board. If implementation of the SCS would not meet the target, then the MPO must adopt an APS that would. However, the APS is not a required component of the regional transportation plan and, therefore, is less likely to be implemented.

2015 State Environmental Goals and Policies

In November 2015, the State of California published A Strategy for California @ 50 Million, the Governor's Environmental Goals and Policy Report (EGPR) (California Office of Planning and Research 2015). This report updates the 1978 Urban Strategy for California (California Office of Planning and Research 1978), the last EGPR prepared and adopted. Assembly Bill (AB) 2070 (1970) directed the Governor's Office of Planning and Research to prepare and maintain an EGPR. The goals and objectives focus on land use, population growth and distribution, conservation of natural resources, and air and water quality. The 2015 EGPR broadens the scope of the goals and objectives to the state as a whole, not just to urban areas.

Achieving sustainable growth in California with 50 million residents requires a clear plan of action and sustained effort. The 2015 EGPR outlines five important goals:

- Increase the share of renewable energy in the state's energy mix to at least 50 percent by 2030.
- Reduce petroleum use by up to 50 percent by 2030.
- Increase the energy efficiency of existing buildings by 50 percent by 2030.
- Reduce emissions of short-lived climate pollutants.
- Steward natural resources, including forests, working lands, and wetlands, to ensure that they store carbon, are resilient, and enhance other environmental benefits.

To achieve these long-term goals, California must implement effective growth management strategies that would require integrated actions that promote multiple benefits. The State Planning Priorities identify infill development in previously developed areas as the top priority for new

development. To meet this priority, the EGPR includes additional state actions needed to support infill development, including specific transportation actions, which include the following:

- Develop a priority order for state transportation investment that includes investments in public transportation and other modes that are alternatives to single-occupant vehicles.

Enhance support for infill development and transit-oriented development in communities along the HSR corridor. In particular, the state will prioritize investment in infill development and transit-oriented development in these communities and fund projects that promote HSR system ties to, and support for, local public transportation systems.

3.18.2.3 Regional and Local

The HSR project is an undertaking of the Authority in its capacity as a state agency and representative of a federal agency. Therefore, the HSR project is not subject to regional or local plans or policies. Council on Environmental Quality and Authority regulations, however, require the discussion of any inconsistency or conflict of a proposed action with regional or local plans and laws. Where inconsistencies or conflicts exist, the Council on Environmental Quality and Authority require a description of the extent of reconciliation and the reason for proceeding if full reconciliation is not feasible (40 Code of Federal Regulations Part 1506.2[d] and 64 Fed. Reg. 28545, 14[n][15]). The CEQA Guidelines also require that an EIR discuss the inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans (CEQA Guidelines § 15125[d]). Any inconsistency with such plans is not considered an environmental impact. Regional and local plans covering the RSA establish the extent, intensity, and pattern of future land uses in their planning areas, thereby providing the context for land use development used to evaluate the incremental growth-inducing effect of the project. These regional and local plans and policies, therefore, were considered in the preparation of this analysis. Section 3.18.2.4, Regional and Local Policy Analysis, and Appendix 2-H, Detailed Plan Consistency Analysis summarize the HSR project within the Bakersfield to Palmdale Project Section's consistency with regional and local plans and policies.

3.18.2.4 Regional and Local Policy Analysis

Regional and local plans and policies related to regional growth are generally consistent with the proposed improvements within the Bakersfield to Palmdale Project Section.

Table 3.18-1 provides a summary of the project's consistency with the regional and local jurisdictions' planning documents relevant to the Bakersfield to Palmdale Project Section. Please refer to Appendix 2-H, Detailed Plan Consistency Analysis, for a detailed listing and analysis of consistency with specific policies in these documents.

The general plans for Kern and Los Angeles Counties, the area plan for the Antelope Valley, and general plans for the Cities of Bakersfield, Tehachapi, Lancaster, and Palmdale support transit-oriented design and "smart growth" development patterns that concentrate higher density, mixed-use development at transportation stations (Kern County 2009; Los Angeles County 2015a, 2015b; City of Bakersfield and Kern County 2016; City of Tehachapi 2012; City of Lancaster 2009; City of Palmdale 1993). Implementation of the HSR project in the Bakersfield to Palmdale Project Section is consistent with these plans, as it would provide regional transportation stations that connect to local multimodal transportation systems. The stations would provide centers where local jurisdictions could promote mixed-use, transit-oriented development, as described in their general plans. It would also support economic development by strengthening regional transportation connections.

Table 3.18-1 Summary of Project Consistency with Regional and Local Plans and Policies

Plan	Segments	Alternatives	Consistency
Kern COG 2014 Regional Transportation Plan/Sustainable Community Strategy (Kern COG 2014)	City of Bakersfield, City of Tehachapi, Unincorporated Kern County	All B-P Build Alternatives, Bakersfield Station, the CCNM Design Option, and the Refined CCNM Design Option	Consistent
SCAG 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (SCAG 2016)	City of Lancaster, City of Palmdale, Unincorporated Los Angeles County	All B-P Build Alternatives and the Palmdale Station	Consistent
Kern County General Plan. Land Use, Conservation, and Open Space Element (2009a) and Circulation Element (2009b)	Unincorporated Kern County	All B-P Build Alternatives, the CCNM Design Option, and the Refined CCNM Design Option	Consistent
Metropolitan Bakersfield General Plan (2016): Land Use Element, Circulation Element, Conservation Element, and Open Space Element	City of Bakersfield	All B-P Build Alternatives and the Bakersfield Station	Consistent
Metropolitan Bakersfield General Plan (Unincorporated Planning Area) Land Use Element, Circulation Element, Conservation Element, and Open Space Element (Kern County 2007)	Unincorporated Kern County/Community of Edison	All B-P Build Alternatives	Consistent
Tehachapi General Plan (2012): Town Form Element, Mobility Element, Public Realm Element, and Natural Resources Element	City of Tehachapi	All B-P Build Alternatives	Consistent
Los Angeles County General Plan 2035 (2015a): Land Use Element, Mobility Element, Conservation and Natural Resources Element, and Parks and Recreation Element	Unincorporated Los Angeles County	All B-P Build Alternatives	Consistent
Antelope Valley Areawide General Plan (Los Angeles County 2015b): Land Use Element, Mobility Element, and Conservation and Open Space Element	Unincorporated Los Angeles County	All B-P Build Alternatives	Consistent
City of Lancaster General Plan 2030 (2009): Plan for the Natural Environment, Plan for Physical Mobility, and Plan for Physical Development	City of Lancaster	All B-P Build Alternatives	Consistent
City of Palmdale General Plan (1993: Circulation Element; Land Use Element; Environmental Resources Element; Community Design Element; and Parks, Recreation, and Trails Element	City of Palmdale	All B-P Build Alternatives and the Palmdale Station	Consistent

Sources: Kern COG, 2014; SCAG, 2016; Kern County, 2009a, 2009b, 2016; City of Tehachapi, 2012; Los Angeles County, 2015a, 2015b; City of Lancaster, 2009; City of Palmdale, 1993
Kern COG = Kern Council of Governments
SCAG = Southern California Association of Governments

The strategies of the Authority's station-area planning process aim to site and design HSR stations to maximize potential benefits associated with transit-oriented design by selecting sites that have the potential to promote higher density, mixed-use, pedestrian-accessible development around the station. Transit accessibility and proximity to transit corridors are also important considerations (Authority 2011). The Authority is also working directly with the Cities of Bakersfield and Palmdale to develop station area plans that incorporate urban design, multi-modal transportation, and economic development strategies that optimize future growth in the station areas (City of Bakersfield 2018, Authority 2017a). This coordination allows these cities to provide input so that the Authority can incorporate the cities' planning goals into these station plans prior to construction of the proposed improvements within the Bakersfield to Palmdale Project Section. The Authority's station planning strategies, therefore, are consistent with the goals and policies of the cities of Bakersfield and Palmdale, which call for transit-oriented design in the future development of these cities.

Additionally, construction and operation of the proposed improvements within the Bakersfield to Palmdale Project Section is consistent with the Kern COG and SCAG RTP/SCS policies to reduce GHG emissions from automobiles and light trucks (Section 3.18.2.2). Although the RTP/SCS planning in each county currently includes mechanisms for reaching these targets, HSR would add an additional incentive for transit-oriented development. The anticipated increase in these types of communities would increase the likelihood of success in reducing reliance on passenger vehicles and meeting the regions' GHG emissions reduction targets. Therefore, the HSR project within the Bakersfield to Palmdale Project Section is consistent with the regional GHG reduction goals (Authority 2013).

3.18.3 Methods for Evaluating Impacts

This section describes the RSA and methodology used to evaluate potential HSR impacts on regional growth.

3.18.3.1 Definition of Resource Study Area

The RSA for regional growth encompasses the two-county region of Kern and Los Angeles Counties to capture potential employment and population growth induced directly or indirectly by the project (Figure 3.18-1). The RSA includes the incorporated Cities of Bakersfield, Tehachapi, Lancaster, and Palmdale, and the unincorporated communities of Edison, Keene, and Rosamond.

3.18.3.2 Methodology for Evaluating Impacts

This section summarizes the methods used to estimate regional growth effects in the RSA and evaluate whether or not the proposed improvements within the Bakersfield to Palmdale Project Section, would cause regional growth substantially beyond what is already projected for the RSA. Sources of regional growth include (1) the initial, short-term construction phase, (2) the long-term operations and maintenance phase on an ongoing, annual basis, and (3) the economic growth effects associated with changes in accessibility.

This section discusses the environmental impacts by geographic area (at the county and city level) rather than by B-P Build Alternative or design option because there is little difference in impacts of the proposed improvements within the Bakersfield to Palmdale Project Section under the various alternatives and design options, and because most sources publish economic data for areas that are within distinct geographical and political boundaries. Although some economic data sources provide information (such as total employment and the unemployment rate) for cities and communities, most describe the correlation between various economic sectors only at the county level. County-level information includes data for the unincorporated parts of the county as well as for the cities. The U.S. Census Bureau does not provide population and employment statistics for the community of Edison; therefore, this section does not include evaluation of this community except in the context of the county as a whole.

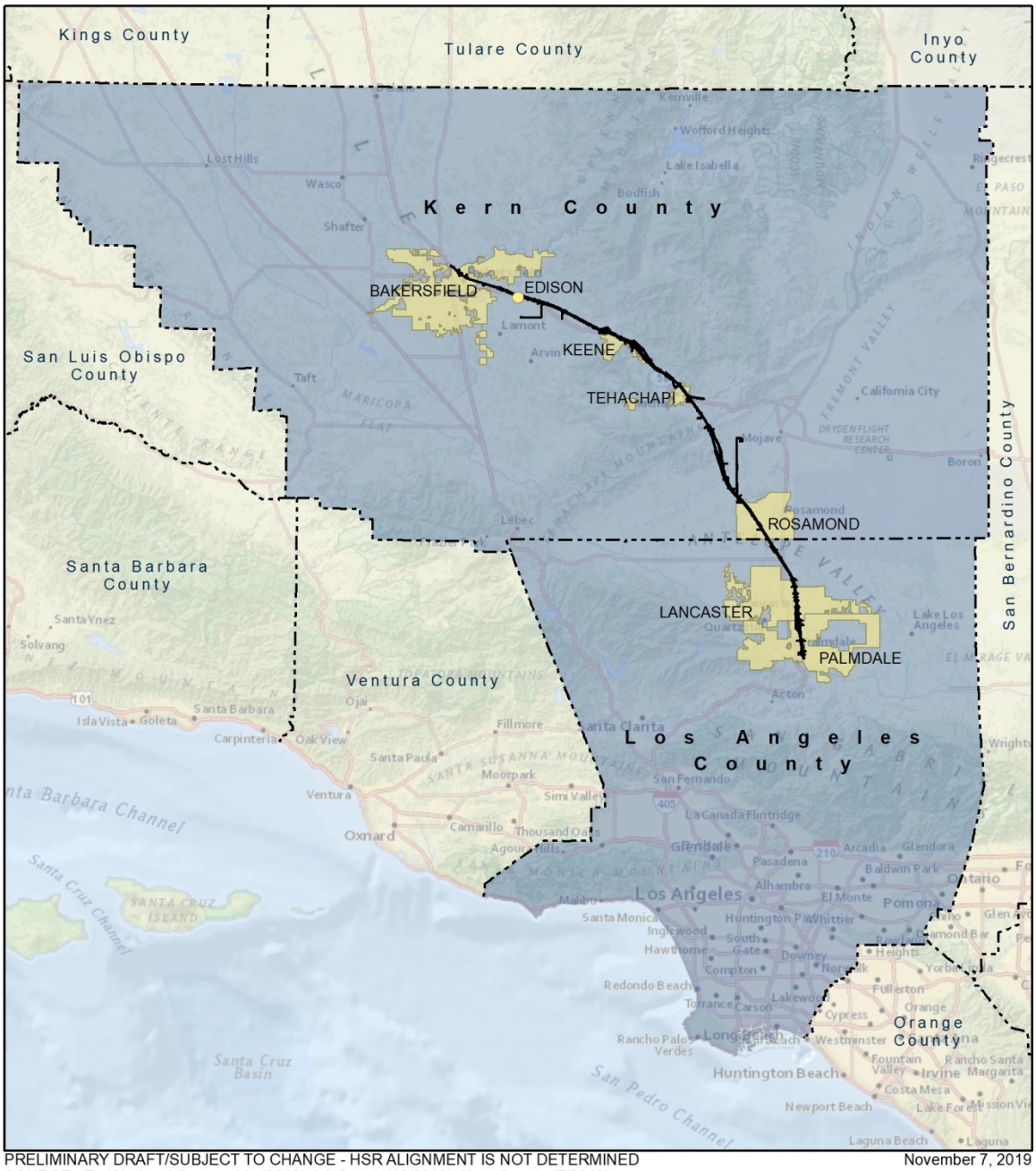

Figure 3.18-1 Resource Study Area

The methodology presented in this section applies to both NEPA and CEQA. The analysis focuses on employment and associated population growth from construction and operation of the proposed improvements within the Bakersfield to Palmdale Project Section. CEQA, however, does not require significance determinations specifically for potential growth-inducing impacts, but rather the environmental effects of that growth. CEQA thresholds regarding regional growth effects are addressed in Section 3.12, Socioeconomics and Communities, and Section 3.13, Station Planning, Land Use, and Development. That section also summarizes the regional growth impacts evaluated in this section to provide a comprehensive analysis for determining significance under CEQA for potential socioeconomic and community impacts. No additional CEQA thresholds of significance exist related to the potential regional growth impacts of the proposed improvements within the Bakersfield to Palmdale Project Section. Therefore, this section includes a summary of NEPA impacts (Section 3.18.7) but does not include a summary of CEQA impacts.

Construction Impacts

Project construction would result in short-term direct, indirect, and induced jobs during each year of the construction period as a result of construction spending in the RSA. A general overview of the construction schedule is available in Chapter 2, Table 2-24, Construction Schedule, of Section 2.9, Construction Plan and Phased Implementation Strategy. At the time this analysis was prepared, the construction period was estimated to commence in March 2018 and end in June 2025, with peak construction activity occurring in 2021. Although the specific dates have changed, this estimate is representative of the expected 8-year duration of construction activities. The analysis estimates the number of short-term jobs that would be created based on construction cost estimates from Chapter 6, Project Costs and Operations. This analysis uses the Regional Input-Output Modeling System (RIMS) II multipliers from the U.S. Department of Commerce, Bureau of Economic Analysis to estimate the local employment effect in terms of direct, indirect, and induced jobs. The RIMS II modeling procedure, assumptions, and results are described in detail in Appendix 3.18-A, Regional Growth Methodology Memorandum, of this EIR/EIS.

Direct, Indirect, and Induced Jobs

Construction spending for the proposed improvements within the Bakersfield to Palmdale Project Section would result in short-term, direct construction jobs and additional indirect and induced jobs. *Direct employment* refers to the jobs created to construct the project and primarily involves employment in the construction sector. *Indirect employment* refers to the jobs created in existing businesses in the region (e.g., material and equipment suppliers) that provide goods and services to project construction. *Induced employment* refers to jobs created in new or existing businesses (e.g., retail stores, gas stations, banks, restaurants, service companies) that supply goods and services to workers and their families.

Project construction costs vary by B-P Build Alternative and the two design options due to differences in factors such as difficulty of construction, cost of materials needed, and amount of earthmoving required. As such, the analysis provides construction jobs estimates for each B-P Build Alternative, the CCNM Design Option, and the Refined CCNM Design Option. This analysis does not evaluate growth effects of specific maintenance facility locations because there are no cost differences between locations other than the cost of the land, which is not factored into estimates of construction job creation.

To evaluate the extent to which construction-related employment opportunities could result in relocation of workers to the RSA, the analysis considers the state of the regional economy and the projected number of construction workers in the RSA in its analysis of how many jobs would likely be filled by local residents versus new residents who could potentially move to the RSA for job opportunities. Specifically, the analysis compares the short-term construction job estimates to the forecast construction sector employment in the RSA to determine if the demand for construction workers is likely to be met by the RSA construction sector workforce.

For a detailed description of the methodology, assumptions, and calculations used to estimate employment effects, please refer to Appendix 3.18-A, Regional Growth Methodology Memorandum.

Operations Impacts

Operation and maintenance of the HSR project within the Bakersfield to Palmdale Project Section would result in direct, indirect, and induced long-term jobs and associated population increases in the RSA. Long-term jobs include direct jobs operating and maintaining the project, indirect and induced jobs supporting new operations and workers, and additional jobs related to economic growth effects associated with improved connectivity of the region to the rest of the state. Given long-term growth effects are related to operation of the proposed improvements within the Bakersfield to Palmdale Project Section, and the B-P Build Alternatives are similar in length and include the same number of stations and maintenance facilities (regardless of whether the CCNM Design Option or Refined CCNM Design Option are chosen), employment effects are regional in nature and do not vary by B-P Build Alternative. The methodology for estimating growth effects for each of these components is summarized below.

Operations-Related Employment Impacts

Direct, Indirect, and Induced Jobs from High-Speed Rail Project Spending

Operation of the HSR project in the Bakersfield to Palmdale Project Section would result in the creation of direct, long-term jobs for HSR staff who operate and maintain the system as well as indirect and induced long-term jobs for additional employees at businesses supported by local expenditures by the HSR project and their staff and families. The May 2019 *Revised High-Speed Rail Operating and Maintenance Staffing Projections for Use in EIR/EIS Project-Level Analysis* memorandum provides forecasts for the number of direct jobs that the HSR system would create by 2040 (Authority 2019a). Based on these forecasts, the analysis estimates the number of direct jobs the project would create in the RSA. The analysis then uses the direct jobs estimate and RIMS II multipliers to estimate the number of indirect and induced jobs that would be created by HSR project spending. For a detailed description of the methodology, assumptions, and calculations used to estimate employment effects, refer to Appendix 3.18-A, Regional Growth Methodology Memorandum, of this EIR/EIS.

Induced Jobs associated with Increased Accessibility

The HSR system, including the Bakersfield to Palmdale Project Section, would also create jobs because of the economic growth effects related to improved long-term mobility, labor market access, and other physical changes due to project operation. The Authority estimated induced employment associated with these economic effects for the year 2040 in the *Project Level Environmental Methodology Guidelines, Version 5.09* (Authority 2017a). The document provided a statewide employment forecast of 102,000 additional permanent jobs above the baseline 2040 employment forecast for the state of California. The analysis allocated the number of jobs gained in each county based on each affected county's relative gain in accessibility. The resulting percentages of employment gains in Kern and Los Angeles Counties are 17.3 and 4.8 percent, respectively. Based on the statewide employment gains and projected distribution to each county, the anticipated increase in jobs associated with improved access is 17,646 jobs in Kern County and 4,896 jobs in Los Angeles County by 2040. The Bakersfield to Palmdale Project Section represents 58 percent of the HSR alignment in Kern County and 17 percent of the HSR alignment in Los Angeles County when accounting for the other HSR project sections in each of these counties. These percentages were applied to the countywide employment estimates to calculate employment associated with HSR-related improvements in the Bakersfield to Palmdale Project Section. The results of this analysis indicate that increased accessibility within the Bakersfield to Palmdale Project Section would result in approximately 10,235 jobs in Kern County and 832 jobs in Los Angeles County by 2040.

Total Employment Effects by 2040

Total operational employment effects by 2040 include direct, indirect, and induced jobs from operational expenditures of the HSR project within the Bakersfield to Palmdale Project Section, as well as induced jobs associated with increased accessibility of the region. The methodology

calculates this total by summing the results from the analyses discussed above. The analysis compares employment growth projections for the RSA under the No Project Alternative for the year 2040 to projected employment growth by 2040 with operation of the HSR project within the Bakersfield to Palmdale Project Section. This comparison allows for evaluation of the magnitude of the growth in terms of the percentage increase above anticipated growth to determine whether the induced growth in Kern and Los Angeles Counties would be substantial, and evaluates whether the existing workforce is likely to fill new jobs or if new residents would move into the RSA to fill these jobs.

Operations-Related Population Impacts

Induced Population Growth

The analysis takes a conservative approach when evaluating the population growth from operation of the proposed improvements within the Bakersfield to Palmdale Project Section by using a constant population-to-employment ratio to generate population estimates based on the previously calculated employment estimates. The resulting population estimates represent a reasonable worst-case scenario of the potential population effects because these estimates conservatively assume that every new job would draw new residents into the RSA. However, local residents would likely fill many of the new jobs, which would reduce the number of jobs filled by new residents and the resulting population effects. The population-to-employment ratio is 2.19 people for every job in the RSA, based on the weighted average of 2015 employment data from the California Employment Development Department (EDD) and 2015 population data from the California Department of Finance (EDD 2016a, 2016b, 2016c; California Department of Finance 2016).

The analysis compares population growth projected to occur in the RSA by 2040 with and without the proposed improvements within the Bakersfield to Palmdale Project Section. The current population projections for Kern and Los Angeles Counties published by the regional transportation planning agencies represent projected future conditions under the No Project Alternative. The Kern COG provides population projections for Kern County in its 2014 RTP/SCS and SCAG provides this data for Los Angeles County in its 2016–2040 RTP/SCS (Kern COG 2014, SCAG 2016). The analysis compares these 2040 population and employment projections with implementation of the proposed improvements within the Bakersfield to Palmdale Project Section to describe the magnitude of the growth in terms of the percentage increase above anticipated growth and to determine whether the induced growth in Kern and Los Angeles Counties would be substantial.

Potential to Induce Additional Population Growth in Exurban Communities

Operation of the HSR system, including within the Bakersfield to Palmdale Project Section, has the potential to induce additional population growth in exurban communities as a result of access to lower cost of housing in these communities relative to those in the major employment centers of Los Angeles. The analysis evaluates the tradeoffs between lower housing costs and higher transportation costs afforded by exurban communities with proposed HSR stations to determine whether or not households would likely relocate to exurban communities. Estimating the number, magnitude, or distribution of households that may decide to relocate from metropolitan areas to exurban communities would be speculative due to the complexity of the various factors that affect these decisions. As such, this analysis includes a qualitative discussion of this growth.

Land Use Consumption

The methodology uses the projections of long-term/permanent employment and population associated with operation of the proposed improvements within the Bakersfield to Palmdale Project Section to evaluate the effects of induced growth on land use consumption. For this analysis, the methodology evaluates the potential increase in population by 2040, and then evaluates the capacity for the RSA to accommodate this increase. The methodology estimates the population and employment growth that could fit in the urban growth boundaries based on approved densities delineated by each city and county as noted in the applicable RTP/SCS and in their current general plans, including the Counties of Kern and Los Angeles, and the Cities of Bakersfield, Tehachapi, Lancaster, and Palmdale.

3.18.4 Affected Environment

This section describes recent historic trends, existing and projected employment and unemployment, population, and housing based on information available for the RSA. This section also provides this data for Kern and Los Angeles Counties individually, because the population and employment dynamics are very different for each of these counties. Kern County's total population is small relative to that of Los Angeles County (881,000 versus 10,151,000 in 2015). Additionally, Kern County's economy is dominated by the agricultural and oil industries, whereas Los Angeles County's economy includes the Los Angeles metropolitan area and is highly diverse.

Employment in the RSA was affected for several years following the economic recession of December 2007 to June 2009. Appendix 3.18-B, The Economic Recession of December 2007 to June 2009: Effects and Recovery, provides an analysis of the effects on income and employment in the RSA to determine the level of recovery.

3.18.4.1 Employment and Unemployment

Table 3.18-2 provides California EDD data on regional employment by industry for Kern and Los Angeles Counties and the two-county RSA, including both historical data and projections of future employment. Total industry employment counts the number of jobs by the place of work. Between 2000 and 2015, total employment by industry increased by 219,500 jobs (5 percent) in the RSA. This total increase is composed of an increase of 73,100 jobs (29.9 percent) in Kern County and 146,400 jobs (3.5 percent) in Los Angeles County. The EDD projects that between 2015 and 2022, employment will increase by approximately 293,100 jobs (6.4 percent), composed of an additional 30,600 jobs (9.6 percent) in Kern County and 146,400 jobs (3.5 percent) in Los Angeles County (EDD 2015, 2016a).

Although the number of jobs in all employment sectors increased in Kern County between 2000 and 2015, employment declined in 6 of 13 industry sectors in Los Angeles County (Table 3.18-2). The largest decline occurred in the manufacturing sector, with a reduction of 254,400 jobs (41.4 percent) over this period. The EDD projects that this trend will continue through 2022, with an additional reduction of 45,600 jobs (12.6 percent) in Los Angeles County. The projections indicate that these losses, however, will offset gains in other industries, resulting in a net increase in jobs.

In 2015, the largest employment sector in Los Angeles County and the second largest in Kern County was the "educational services, and health care and social assistance" sector (Table 3.18-2). Between 2015 and 2022, EDD projects that this sector will add the most jobs in Los Angeles County and the second most jobs in Kern County. Other employment sectors with strong growth include the "professional, scientific, and management, administrative, and waste management services" and "arts, entertainment, recreation, accommodation, and food services" sectors. Currently, the largest sector in Kern County is the "agriculture, forestry, fishing and hunting, and mining" sector, which the EDD projects will support additional jobs in 2022, remaining the largest sector in Kern County.

Table 3.18-3 shows the projected 2040 total employment in Kern and Los Angeles Counties and the two-county RSA.

Table 3.18-2 Kern and Los Angeles Counties and Regional Employment by Industry 2000–2022[1]

Industry	Kern County			Los Angeles County			Two-county RSA		
	2000	2015	Projected 2022	2000	2015	Projected 2022	2000	2015	Projected 2022
Agriculture, forestry, fishing and hunting, and mining	56,500	71,000	75,300	11,100	8,900	10,400	67,600	79,900	85,700
Construction	11,600	17,000	19,100	131,800	126,100	142,000	143,400	143,100	161,100
Manufacturing	10,800	14,200	16,400	615,200	360,800	315,200	626,000	375,000	331,600
Wholesale trade	5,700	9,300	9,900	217,700	227,000	237,300	223,400	236,300	247,200
Retail trade	23,400	31,600	31,300	392,500	420,500	455,900	415,900	452,100	487,200
Transportation and warehousing, and utilities	8,400	10,100	12,000	174,800	170,400	170,400	183,200	180,500	182,400
Information	2,500	2,700	2,900	244,300	202,700	211,700	246,800	205,400	214,600
Finance and insurance, and real estate and rental and leasing	7,600	8,500	10,100	223,400	214,200	226,200	231,000	222,700	236,300
Professional, scientific, and management, and administrative and waste management services	22,300	25,500	33,300	590,700	600,300	675,900	613,000	625,800	709,200
Educational services, and health care and social assistance[2]	44,600	62,400	68,500	760,100	1,021,800	1,150,400	804,700	1,084,200	1,218,900
Arts, entertainment, and recreation, and accommodation and food services	16,500	25,200	26,500	345,000	488,100	495,900	361,500	513,300	522,400
Other services, except public administration	6,700	7,600	8,300	140,200	151,700	157,900	146,900	159,300	166,200
Public administration	27,800	32,400	34,500[3]	286,100	286,800	292,600	313,900	319,200	327,100
Total employed civilian population 16 years and over	**244,400**	**317,500**	**348,100**	**4,132,900**	**4,279,300**	**4,541,800**	**4,377,300**	**4,596,800**	**4,889,900**

Sources: California Employment Development Department, 2015, 2016a

[1] This data set represents the total employed civilian population over the age of 16 by industry. Any person with more than one occupation is classified into their primary occupation and counted only once. This data does not include self-employed workers, unpaid family workers, and private household employees; therefore, these numbers are lower than total employment figures.

[2] Government jobs that were related to education were included in educational services. All other government jobs were assigned to the public administration sector.

Table 3.18-3 Regional Long-Range Employment Projections, 2015 and 2040

Area	Employment		Change from 2015 to 2040	Annual Average Growth Rate
	2015	2040		
Kern County	353,600[1]	466,000[2]	31.8%	1.3%
Los Angeles County	4,674,800[1]	5,226,000[3]	11.8%	0.5%
Two-County RSA	5,028,400	5,692,000	13.2%	0.5%
State of California	17,798,600[1]	20,802,000[4]	16.9%	0.7%

Sources: [1] *California Employment Development Department, 2016b*
[2] *Kern Council of Governments, 2015*
[3] *Southern California Association of Governments, 2016*
[4] *California Department of Transportation, 2013*

Employment characteristics vary between Kern and Los Angeles Counties (Table 3.18-4). Kern County has a large agricultural industry, comprising 22.4 percent of the jobs in 2015 based on annual average employment (EDD 2016a). This industry is susceptible to seasonal fluctuations, which has the potential to result in higher annual average unemployment rates in the county. Los Angeles County, however, has a diverse economy comprising a large variety of industries, and is less reliant on the agricultural industry. As a result, Los Angeles County is less susceptible to unemployment affects related to seasonal employment. Kern County has experienced higher average annual unemployment rates than the state, at 10.2 percent in 2015, 4.0 percentage points above the state's unemployment rate of 6.2 percent. Average annual unemployment rates in Los Angeles County have remained within 0.7 percentage points of those experienced in the state in 2010, 2014, and 2015. In 2014, all jurisdictions in the RSA for this analysis had unemployment rates that were higher than those experienced in the state, including Kern and Los Angeles Counties, and the Cities of Bakersfield, Tehachapi, Lancaster, and Palmdale.

Table 3.18-4 Labor Force Characteristics

Location	Indicator	2010	2014	2015
Kern County	**Civilian Labor Force**	**371,500**	**394,800**	**393,800**
	Percentage Unemployment Rate	**15.7**	**10.4**	**10.2**
City of Bakersfield	Civilian Labor Force	166,000	180,600	180,200
	Percent Unemployment Rate	14.1	9.3	9.1
Community of Keene	Civilian Labor Force	200	200	200
	Percent Unemployment Rate	14.4	14.8	14.8
City of Tehachapi	Civilian Labor Force	4,200	4,100	4,000
	Percent Unemployment Rate	12.2	7.9	7.8
Community of Rosamond	Civilian Labor Force	7,600	9,300	9,300
	Percent Unemployment Rate	11.5	8.7	8.5
Los Angeles County	**Civilian Labor Force**	**4,917,400**	**5,025,900**	**5,011,700**
	Percentage Unemployment Rate	**12.5**	**8.2**	**6.7**
City of Lancaster	Civilian Labor Force	63,200	64,100	63,800
	Percent Unemployment Rate	13.9	9.2	7.5
City of Palmdale	Civilian Labor Force	64,200	64,900	64,300
	Percent Unemployment Rate	16.4	11.0	9.0

Location	Indicator	2010	2014	2015
Two-County RSA	Civilian Labor Force	5,288,900	5,420,700	5,405,500
	Percentage Unemployment Rate	12.7	8.4	6.9
State of California	Civilian Labor Force	18,336,300	18,827,900	18,981,800
	Percentage Unemployment Rate	12.2	7.5	6.2

Source: California Employment Development Department, 2016c

The economic recession of December 2007 to June 2009 greatly affected unemployment rates in Kern and Los Angeles Counties in the years that followed (Appendix 3.18-B). An update to the analysis of recession effects was performed in February 2019 and found that employment rates returned to levels below the 2007 pre-recession levels by 2017. Unemployment rates in Kern County peaked at 15.0 percent in 2011 and dropped to 9.4 percent in 2017, which is below the pre-recession rate of 10.0 percent in 2007. Similarly, unemployment rates in Los Angeles County peaked at 12.4 percent in 2010 and dropped to 6.0 percent by 2017, which is below the pre-recession rate of 6.3 percent in 2007. This indicates that the economies in both counties have been improving since the recession, and have recovered from the impact on unemployment rates (U.S. Census Bureau 2005, 2006, 2007, 2008, 2009, 2010a, 2011, 2012, 2013, 2014a, 2015, 2016, 2017).

3.18.4.2 Population

Table 3.18-5 shows the population in 2000 and 2015 for the state; RSA; Kern and Los Angeles Counties; and the Cities of Bakersfield, Tehachapi, Lancaster, and Palmdale. Population estimates are not available for the unincorporated communities of Keene and Rosamond. According to the incorporated boundaries published for the 2000 and 2010 decennial censuses, the Cities of Bakersfield, Tehachapi, Lancaster, and Palmdale expanded their incorporated areas by 29.2, 0.4, 0.4, and 1.1 square miles (25.5, 4.0, 0.4, and 1.1 percent), respectively. As a result, population data between 2000 and 2010 for these cities reflect changes within the cities' jurisdictional boundaries (e.g., births, deaths, and relocations) as well as changes related to the incorporation of newly annexed areas (e.g., existing residents in areas annexed by these cities). Increases in population are, therefore, higher than those related purely to births, deaths, and relocations (U.S. Census Bureau 2000, 2010b). The annual average increases in population in the incorporated cities range from 0.7 to 3.5 percent, with a portion of these increases being a result of expansions of the cities' incorporated boundaries. The population in the unincorporated areas of Kern and Los Angeles Counties increased at annual average rates of 2.2 and 0.5 percent per year, respectively.

Table 3.18-6 shows the population estimates for 2015 and projections for 2040 for the state; RSA; Kern and Los Angeles Counties; and Cities of Bakersfield, Tehachapi, Lancaster, and Palmdale. Population projections were not available for the communities of Keene and Rosamond. The projected growth through 2040, however, could vary based on a variety of factors, including spillover from Southern California, water availability, employment opportunities, housing costs, interest rates, air quality regulations, and land availability (Kern COG 2015).

These projections indicate that the populations of Kern County and the Cities of Bakersfield and Tehachapi are expected to increase at average annual growth rates of 2.4, 3.7, and 2.3 percent, respectively. The average annual population growth rates for Los Angeles County and the cities of Lancaster and Palmdale are expected to be lower at 0.5, 1.3, and 1.1 percent, respectively. Over this 25-year period, population is projected to increase in Kern County by 60.5 percent, while the state's population is expected to increase by 17.6 percent. The City of Bakersfield is projected to have a 92.4 percent increase in its population over the same period.

Table 3.18-5 Population Increase in the Resource Study Area, 2000–2015

Area	Population in 2000	Population in 2015	Change from 2000 to 2015	Annual Average Increase
Kern County	**658,902**	**880,664**	**33.7%**	**2.2%**
City of Bakersfield	245,674	373,938	52.2%	3.5%
City of Tehachapi	11,617	12,856	10.7%	0.7%
Unincorporated[1]	263,430	309,240	17.4%	1.2%
Los Angeles County	**9,477,651**	**10,150,617**	**7.1%**	**0.5%**
City of Lancaster	118,005	157,658	33.6%	2.2%
City of Palmdale	115,884	158,591	36.9%	2.5%
Unincorporated	980,459	1,055,309	7.6%	0.5%
Two-county RSA	**10,136,553**	**11,031,281**	**8.8%**	**0.6%**
State of California	**33,721,583**	**38,915,880**	**15.4%**	**1.0%**

Source: California Department of Finance, 2016
[1] The communities of Edison, Keene, and Rosamond are unincorporated and are therefore accounted for in the unincorporated population.
RSA = resource study area

Table 3.18-6 Population Projections in the Resource Study Area, 2015–2040

Area	Population in 2015[1]	Population in 2040	Change from 2015 to 2040	Annual Average Increase
Kern County	**880,664**	**1,413,000[2]**	**60.4%**	**2.4%**
City of Bakersfield	373,938	719,500[3]	92.4%	3.7%
City of Tehachapi	12,856	20,100[3]	56.3%	2.3%
Los Angeles County	**10,150,617**	**11,514,000[4]**	**13.4%**	**0.5%**
City of Lancaster	157,658	209,900[4]	33.1%	1.3%
City of Palmdale	158,591	201,500[4]	27.1%	1.1%
Two-county RSA	**11,031,281**	**12,927,000[2,4]**	**17.2%**	**0.7%**
State of California	**38,915,880**	**45,747,645[5]**	**17.6%**	**0.7%**

Sources: [1] *California Department of Finance, 2016;*
[2] *Kern Council of Governments, 2015;*
[3] *Kern Council of Governments, 2014;*
[4] *Southern California Association of Governments, 2016;*
[5] *California Department of Transportation, 2013*
The Kern Council of Governments does not provide population projections for the communities of Keene and Rosamond.
RSA = resource study area

3.18.4.3 Housing Demand

Table 3.18-7 shows the number of existing and projected housing units in Kern and Los Angeles Counties, the RSA, and the state for the years 2015 and 2040. Based on average data from 2010 to 2014, the predominant housing type in Kern and Los Angeles Counties is the single-family detached home, representing 71 percent of homes in Kern County and 49.7 percent of homes in Los Angeles County (U.S. Census Bureau 2014d).[2] The average household size for occupied housing units is 3.20 persons per household in Kern County and 3.02 persons per household in Los Angeles County (U.S. Census Bureau 2014b). The percentage of units that are vacant is 10.4 in Kern County and 6.3 in Los Angeles County (U.S. Census Bureau 2014d). Section 3.12, Socioeconomics and Communities, provides more information on existing housing characteristics in the RSA. Based on the projections in Table 3.18-7, housing needs are projected to increase by 57.5 percent in Kern County and 14.6 percent in Los Angeles County between 2015 and 2040 (California Department of Finance 2016, Kern COG 2015).

Table 3.18-7 Existing and Projected Housing Units

Location	2015[1]	2040	Change	Annual Average Growth Rate
Kern County	292,774	461,000[2]	57.5%	2.3%
Los Angeles County	3,487,434	3,997,000[3]	14.6%	0.6%
Two-county RSA	3,780,208	4,458,000[3]	17.9%	0.7%
State of California	13,914,716	17,436,000[3]	25.3%	1.0%

Sources: [1] *California Department of Finance 2016*
[2] *Kern Council of Governments, 2015*
[3]The 2040 housing estimates are based on population projections in Table 3.18-6, divided by the average number of residents per housing unit in each jurisdiction, using the methodology described in Section 3.18.3.2, Methodology for Impact Analysis.
RSA = resource study area

3.18.5 Environmental Consequences

3.18.5.1 Overview

This section discusses the potential impacts on regional growth that could result from implementing the No Project Alternative and the HSR project. It is organized according to topic: construction impacts, common long-term regional growth impacts, operations-related employment, induced population growth, and land use consumption.

Construction of the proposed improvements within the Bakersfield to Palmdale Project Section under any of the B-P Build Alternatives or design option could affect regional growth through the purchasing of materials and the contracting of labor that would result in increased employment in the construction industry as well as industries that support construction activity and its workers. These impacts would be temporary, occurring during the expected construction period for the proposed improvements within the Bakersfield to Palmdale Project Section, estimated to be nearly 8 years. The demand for construction workers from the proposed improvements within the Bakersfield to Palmdale Project Section would increase the RSA's expected construction employment above the No Project Alternative estimate for the construction peak year. This demand, however, would not be anticipated to result in the relocation of construction workers to the RSA because the available construction work force residing in Kern and Los Angeles Counties is considered sufficient.

The Authority has been working with local organizations to increase training and improve opportunities for local workers who would like to do construction work, through programs like the

[2] The U.S. Census Bureau evaluates the number of housing units by type, including single-family detached homes, single-family attached homes, multi-family homes, mobile homes, and boats, RVs, vans, etc.

Central Valley Infrastructure Employment Project. Contract requirements that a substantial share of the construction expenditures go to small businesses would also increase opportunities for local workers. The emphasis on providing job training to local workers and the requirements to use small business should provide employment opportunities for construction workers in the RSA. Also, the strong propensity of construction workers to endure long commutes to typically short-term job sites rather than relocate their households, combined with the large labor force of construction workers in the RSA, suggest that it is unlikely that many construction workers would compete for traditional owner-occupied or rental units in the RSA to seek employment opportunities that would be created by the HSR project alone. Additionally, construction workers with highly specialized skills may need to relocate temporarily to the RSA, but are not expected to permanently relocate to the area. It is also unlikely that many construction workers would relocate their families to communities in the RSA.

Operation of the HSR project in the Bakersfield to Palmdale Project Section would create additional employment and business opportunities in Kern and Los Angeles Counties compared to the No Project Alternative. The projections of HSR-induced employment indicate that project operation would increase the number of jobs by 0.2 percent in the two-county RSA over the number of jobs anticipated in 2040 under the No Project Alternative (Table 3.18-11). According to the reasonable worst-case projections developed for this analysis, operation of the HSR project within the Bakersfield to Palmdale Project Section would increase the projected population by about 0.2 percent beyond that anticipated under the No Project Alternative by 2040 in the RSA (Table 3.18-12). Under current city and county general plans in the RSA, communities in the region have adequate land development capacity to accommodate planned growth by 2040 and HSR-induced growth in their current spheres of influence, as described in the "Land Use Consumption" discussion below.

The required electrical interconnections and network upgrades (EINU) that are part of the proposed improvements within the Bakersfield to Palmdale Project Section would occur in Kern and Los Angeles Counties, in the service areas for both Pacific Gas and Electric and Southern California Edison (SCE). Regional growth, however, is largely stimulated by increased employment opportunities, which would not likely happen with either the construction or operation of the EINUs. Pacific Gas and Electric and SCE typically hire specialized contractors to perform construction work around their respective service territories. As such, it is unlikely workers residing in Kern County who would benefit from these EINU-specialized construction jobs. Given that SCE is headquartered in Rosemead, some of these specialized workers may reside in Los Angeles County and regularly perform work for SCE. Given these positions already exist they would not result in new jobs in the RSA. Construction work would be temporary and specialized construction workers generally travel to perform location-specific work, returning to their place of residence at project completion. Therefore, any potential employment effects would likely not result in induced population effects. Moreover, the utility maintenance workers would be based at existing Pacific Gas and Electric and SCE service centers.

3.18.5.2 No Project Alternative

This section describes short-term and long-term employment and population growth and resulting land use consumption anticipated to occur in the RSA under the No Project Alternative. Section 2.4.1, No Project Alternative—Existing and Planned Improvements, describes the No Project Alternative.

Construction Impacts

Construction of planned residential, commercial, and industrial development and transportation projects would generate short-term construction employment in the RSA. The EDD projects the RSA will support 4,889,900 total jobs with 161,100 of those jobs in the construction industry by 2022 (Table 3.18-2). Planned development and transportation projects would contribute to and support many of these projected jobs. Therefore, the potential increase in construction employment from short-term jobs associated with planned development and transportation projects would not be substantial enough to attract workers to the RSA because the existing

construction workforce would likely fill the majority of these jobs. For a list of planned and pending development and transportation projects, refer to Appendix 3.19-A, Cumulative Project List.

Operations Impacts

Operations-Related Employment

Under the No Project Alternative, forecast RSA employment would increase by approximately 31.8 and 11.8 percent, respectively, between 2015 and 2040 (Table 3.18-3).

Kern County is in the San Joaquin Valley, where the agricultural industry defines the economic base. The energy and natural resource sector, which includes oil and gas extraction as well as wind and solar energy production, also supports the county's economy (Milken Institute 2015). Although these industries play a decisive role in the county's economy, lower land and labor costs in the valley compared to those of other regions have attracted other businesses to the region as well, with growth occurring in all major industries from 2000 to 2015 (Table 3.18-2). The Kern COG projects this trend will continue, contributing an additional 112,400 jobs by 2040 under the No Project Alternative, which amounts to 31.8 percent growth in the number of jobs between 2015 and 2040 (Table 3.18-3).

Despite growth in the number of jobs in Kern County between 2000 and 2015, unemployment rates in the county have remained high (Table 3.18-4). In response to persistent unemployment the San Joaquin Valley, including Kern County, local governments are making a concerted effort to help create jobs, including programs such as the California Partnership for the San Joaquin Valley, a public-private partnership focused on improving the region's economic vitality and quality of life. Therefore, although factors that attract jobs to the area have been growing, efforts remain underway to continue to create employment opportunities.

The existing economy and employment outlook in Los Angeles County is substantially different from Kern County. A broad mix of industries supports the county's economy and the county's unemployment rates track relatively close to those experienced by the state. Between 2000 and 2015, the number of jobs in the county increased by 146,400, with declines in six and increases in seven of the major industries (Table 3.18-2). As seen in Table 3.18-4, unemployment rates have been declining since 2010, also indicating growing employment opportunities in the county. SCAG projects this trend will continue, with an additional 551,200 jobs projected by 2040 under the No Project Alternative, amounting to 11.8 percent growth in the number of jobs between 2015 and 2040 (Table 3.18-3).

Operations-Related Population

Under the No Project Alternative, forecasts project that populations would increase in Kern and Los Angeles Counties by 60.5 and 13.4 percent, respectively, between 2015 and 2040 (Table 3.18-6). The Cities of Bakersfield, Tehachapi, Lancaster and Palmdale are projected to grow by 92.4, 56.4, 33.1 and 27.1 percent, respectively, over the same period.

Overall, California's population is expected to increase by 17.6 percent between 2015 and 2040 (Table 3.18-6). Projections indicate that much of this population growth could be accommodated in the metropolitan coastal areas or in Southern California's Inland Empire (Authority and FRA 2014). However, the opportunities for growth and development in the metropolitan coastal areas and Inland Empire are limited. Despite economic pressure to grow, the combination of rising costs for land and housing and local opposition to increased development in these areas is likely to push a substantial number of people to seek homes and employment elsewhere. The San Joaquin Valley, including Kern County, is a likely outlet for this population pressure, regardless of whether or not the HSR project is constructed (Teitz et al. 2005). This population increase is attributed to local population growth, immigration, and overflow from urban coastal areas where people are seeking affordable housing within commuting range of major metropolitan areas (Congressional Research Service 2005).

Land Use Consumption

The land use elements of the Bakersfield, Tehachapi, Lancaster, and Palmdale general plans encourage infill and higher-density development in urban areas and concentration of uses around transit corridors to provide more modal choices for residents and workers. These cities are implementing related policies and developing population centers in defined areas of their jurisdictions regardless of whether the HSR project in the Bakersfield to Palmdale Project Section is constructed. Under the No Project Alternative, new housing and commercial development that would occur under these plans and policies would accommodate the projected population and employment growth.

Under the No Project Alternative, the 2014 RTP/SCS adopted by the Kern COG and 2016 RTP/SCS adopted by SCAG are expected to encourage both compact development and greater investment in local transit modes as a means of reducing GHG emissions. These plans include provisions aimed at reducing GHG emissions and are considered by cities and counties during planning and zoning deliberations in order to comply with the CEQA requirement to mitigate the impacts of planning and zoning decisions on GHG emissions.

3.18.5.3 Bakersfield to Palmdale Project Build Alternatives

Construction Impacts

Common Regional Growth Impacts

Construction of the proposed improvements within the Bakersfield to Palmdale Project Section would result in new near-term construction-related employment, which has the potential to result in a temporary influx of people living in the RSA. The total short-term construction-related employment and associated population effects would vary depending on the B-P Build Alternative or design option that is selected.

Construction-Related Employment

This analysis evaluates short-term construction-related employment effects for each of the B-P Build Alternatives and design options for each year of the approximate 8-year construction period. This analysis includes effects from construction within the entire Bakersfield to Palmdale Project Section, including the Bakersfield and Palmdale stations, alignment alternatives and design options between the stations, and maintenance facilities (LMF, MOWF, and MOIS facilities). The results of this analysis are presented in annual job years, which is equivalent to one person fully employed for 1 year.

The number of construction jobs that would be created over the 8-year construction period would vary depending on the alternative that is selected and the associated construction costs. Project expenditures for the Bakersfield to Palmdale Project Section would result in the creation of an estimated 78,800 to 82,800 direct and 75,500 to 79,200 indirect and induced annual job years, for a total of 154,300 to 162,000 annual job years in the RSA, depending on the B-P Build Alternative that is selected (Table 3.18-8). During the peak period of construction, the Bakersfield to Palmdale Project Section would support an estimated 16,900 to 17,800 direct and 16,200 to 17,000 indirect and induced jobs, for a total of 33,100 to 34,800 jobs.

Alternative 3 would create the greatest number of jobs during the construction period, at 162,000 annual job years in the RSA when considering direct, indirect, and induced jobs. Alternatives 1 and 2 would follow, resulting in the creation of 154,900 and 154,600 annual job years, respectively. Alternative 5 would result in the smallest number of jobs, as it would create 154,300 annual job years.

Table 3.18-8 Employment Effects from B-P Build Alternatives during Construction (in annual job years)[1]

Employment	2018	2019	2020	2021	2022	2023	2024	2025	Total
Alternative 1									
Direct	4,300	8,700	13,900	17,000	15,900	11,400	6,300	1,700	79,200
Indirect and Induced	4,100	8,300	13,300	16,300	15,200	10,900	6,000	1,600	75,700
Total	**8,400**	**17,000**	**27,200**	**33,300**	**31,300**	**22,300**	**12,300**	**3,300**	**154,900**
Alternative 2									
Direct	4,300	8,700	13,900	17,000	15,800	11,300	6,300	1,700	79,000
Indirect and Induced	4,100	8,300	13,300	16,200	15,200	10,900	6,000	1,600	75,600
Total	**8,400**	**17,000**	**27,200**	**33,200**	**31,000**	**22,200**	**12,300**	**3,300**	**154,600**
Alternative 3									
Direct	4,500	9,100	14,500	17,800	16,600	11,900	6,600	1,800	82,800
Indirect and Induced	4,300	8,700	13,900	17,000	15,900	11,400	6,300	1,700	79,200
Total	**8,800**	**17,800**	**28,400**	**34,800**	**32,500**	**23,300**	**12,900**	**3,500**	**162,000**
Alternative 5									
Direct	4,300	8,700	13,800	16,900	15,800	11,300	6,300	1,700	78,800
Indirect and Induced	4,100	8,300	13,300	16,200	15,200	10,800	6,000	1,600	75,500
Total	**8,400**	**17,000**	**27,100**	**33,100**	**31,000**	**22,100**	**12,300**	**3,300**	**154,300**

Source: Appendix 3.18-A, Regional Growth Methodology Memorandum.

[1] This data includes the portion of the Fresno to Bakersfield Locally Generated Alternative alignment from the intersection of 34th Street and L Street to Oswell Street, the Bakersfield and Palmdale stations, and the maintenance facilities.

The construction jobs from the two design options (CCNM Design Option and Refined CCNM Design Option) are shown in Table 3.18-9. These jobs would only be generated when construction occurs for the alignments associated with the design options which are in the Keene area, therefore these jobs have not been spread over the entire construction period. The jobs for the design options would be in addition to the jobs generated by the alternatives.

Table 3.18-9 Employment Effects from Design Options (in annual job years)

Employment	Total
CCNM Design Option	
Direct	200
Indirect and Induced	200
Total	**400**
Refined CCNM Design Option	
Direct	2,300
Indirect and Induced	2,200
Total	**4,500**

Source: Appendix 3.18-A, Regional Growth Methodology Memorandum

Based on EDD projections, under the No Project Alternative, the RSA would support 4,889,900 total jobs with 161,100 of those jobs in the construction industry by 2022, which is 1 year after the projected 2021 peak of the construction period for the Bakersfield to Palmdale Project Section (Table 3.18-2). Given that projected employment in the RSA under the No Project Alternative is not expected to vary drastically over 1 year, EDD projections for 2022 are a good representation of the baseline employment conditions at the 2021 peak of construction. Based on these projections, the up to 34,800 total jobs during the peak year of construction for the B-P Build Alternatives would account for an additional 0.7 percent of the total jobs in the RSA. This increase in jobs would not be substantial in the context of the RSA's overall economy. However, the up to 17,800 direct jobs in the construction industry during the peak year of construction would account for an additional 11.1 percent of the total 2021 construction jobs in the RSA. This would be an impact in the context of the RSA's construction-industry economy if these direct jobs were to be filled by workers that relocate to the RSA from outside the region.

To increase both the number and ability of local workers and firms to compete for available HSR construction jobs, the Authority has been implementing a variety of programs. Through a cooperative partnership with skilled craft unions, the Authority is promoting and helping to develop education, pre-apprenticeship, and apprenticeship training programs. These activities in economically disadvantaged communities focus on helping lower-income persons, persons receiving public assistance, single parents, persons with no high school or General Education Development diploma, and/or those who suffer from chronic unemployment compete for available jobs. Community organizations have implemented similar programs to get workers trained, retrained, and certified for upcoming construction work. Through the Community Benefits Agreement, the Authority requires each prime contractor of an awarded construction package to commit 30 percent of all construction dollars to hiring small businesses, including separate goals for the hiring of disadvantaged and disabled veterans businesses.[3] Moreover, many construction workers residing in the RSA may already have obtained HSR construction experience by working on one of the first several construction packages awarded by the Authority beginning in 2013.

The emphasis on job training for local workers and contract requirements to use small businesses should provide employment opportunities for construction workers in the RSA. However, substantially increasing the RSA's local supply of qualified construction workers to meet HSR project demand would require an extensive and successful job-training program. Even with great success, it is possible that some construction workers would be residents of counties outside the RSA. Whether these workers from outside the RSA would affect the population and housing demand inside the RSA depends on whether the construction workers would be likely to relocate their households, temporarily or permanently, to the RSA to be nearer their work at the construction site.

Skilled construction trade workers and heavy/specialized equipment operators are in high demand and may undertake work assignments at different construction sites from month to month, week to week, or even day to day, and experience frequent changes of residential proximity to their worksites, resulting in a continuing need to alter their commute patterns. A limited number of contractors having both highly specialized skills and the expectation of sustained work contracts at a fixed location, such as earth-boring machine operators and their support personnel, might need to relocate temporarily to the RSA during the construction period. Case studies of actual large-scale infrastructure projects such as the Electric Power Research Institute's report on the socioeconomic impacts of power plants have shown that construction workers may commute weekly rather than daily, use mobile homes or recreational vehicles, or seek short-term rental units or hotel/motel accommodations as needed to facilitate temporary commute access to the construction sites (Electric Power Research Institute 1982).

It is unlikely that many construction workers would relocate their families to communities in the RSA only in pursuit of local HSR construction jobs, because nearly all of the construction activity

[3] See www.hsr.ca.gov/Programs/Construction/community_benefits_agreement.html.

for the proposed improvements within the Bakersfield to Palmdale Project Section is anticipated to be completed within the nearly 8-year construction period. As such, construction workers who reside outside the RSA would likely drive or carpool to active project construction sites and return home at the end of the day, and would not compete for traditional owner-occupied or rental units in the RSA. A small number of specialized workers could come to the RSA for short periods, but would likely stay in area motels or short-term rental units. No construction worker camps would be established in the project footprint. Therefore, construction of the proposed improvements within the Bakersfield to Palmdale Project Section would not result in a substantial number of workers relocating to the RSA from outside the region.

Operations Impacts

Common Regional Growth Impacts

Long-term operation and maintenance of the HSR system, including within the Bakersfield to Palmdale Project Section, would result in direct, indirect, and induced employment from project expenditures; induced employment due to economic effects related to increased accessibility of the region; increased population related to the increase in employment; and additional induced population related to the lower cost of housing in exurban communities relative to those in the major employment centers of Los Angeles. Direct, indirect, and induced employment effects associated with operating and maintaining the HSR project within the Bakersfield to Palmdale Project Section relate directly to the operational cost, which is similar under all alternatives. Similarly, induced employment effects associated with increased accessibility provided by the HSR system would be the same for all alternatives. Therefore, employment effects associated with operation are the same for all B-P Build Alternatives, regardless of whether or not the CCNM Design Option or Refined CCNM Design Option are implemented. Increased population and associated land use consumption related to operation of the HSR project within the Bakersfield to Palmdale Project Section is a direct effect of increased employment in the RSA, and is therefore the same for all B-P Build Alternatives (regardless of design option) as well.

Operations-Related Employment Impacts

This analysis evaluates long-term operations-related employment effects of the proposed improvements within the Bakersfield to Palmdale Project Section, including direct, long-term jobs for HSR staff that operate and maintain the system, indirect and induced long-term jobs for additional employees at businesses supported by local expenditures by the HSR project and their staff and families, and additional induced jobs associated with increased accessibility of the region. The estimates for the number of direct, indirect, and induced jobs from HSR project expenditures are based on employment forecasts in the May 2019 *Revised High-Speed Rail Operating and Maintenance Staffing Projections for Use in EIR/EIS Project-Level Analysis* memorandum (Authority 2019a) and RIMS II analysis, as detailed in Appendix 3.18-A, *Regional Growth Methodology Memorandum*. The estimates for the number of additional induced jobs associated with increased accessibility of the region were obtained from the *Project Level Environmental Methodology Guidelines, Version 5.09* (Authority 2017a). For detailed discussion of the methodology used for this analysis, refer to Section 3.18.3.2, Methodology for Impact Analysis.

Direct, Indirect, and Induced Jobs from High-Speed Rail Project Spending

Operational expenditures for the HSR project in the Bakersfield to Palmdale Project Section would result in a projected 500 new jobs in the RSA by 2040 (Table 3.18-10). Of these jobs, 200 would be direct, long-term jobs for HSR staff that operate and maintain the proposed improvements within the Bakersfield to Palmdale Project Section, including staff operating and maintaining the trains, stations, and maintenance facilities. These jobs include station managers, ticket agents, security personnel, maintenance crews, and cleaning crews. Expenditures by the HSR project and by their staff and families would result in an additional 300 indirect and induced jobs at existing and new businesses in the RSA that provide goods and services to the HSR project (e.g., utility providers, equipment suppliers, security companies) and to HSR staff and families (e.g., retail stores, gas stations, banks, restaurants, service companies).

Table 3.18-10 Direct, Indirect, and Induced Jobs by 2040[1]

County	Direct	Indirect and Induced	Total
Two-County RSA	200	300	500

Source: Appendix 3.18-A, Regional Growth Methodology Memorandum
[1] This data includes the portion of the Fresno to Bakersfield Locally Generated Alternative alignment from the intersection of 34th Street and L Street to Oswell Street.
RSA = resource study area

Induced Jobs associated with Increased Accessibility

Operation of the proposed improvements within the Bakersfield to Palmdale Project Section would also create induced jobs associated with increased accessibility of the region. Operation of the HSR system would substantially increase the connection between Kern County and the rest of the state. As a result of this increase in accessibility, approximately 17,600 jobs would be generated in the county, 10,200 of which would be attributable to the Bakersfield to Palmdale Project Section (Authority 2017b). Los Angeles County already has substantial existing connections to the rest of the state and would not experience a large increase in accessibility. As a result, the employment gain from increased accessibility in Los Angeles County would be much smaller than Kern County, representing an estimated 4,900 jobs, 800 of which would be attributable to the Bakersfield to Palmdale Project Section. The total effect in the two-county RSA would be an increase of 11,000 jobs associated with operation of the HSR project within the Bakersfield to Palmdale Project Section.

This employment projection is based on increased accessibility of each county and does not account for the dynamic economic structure of metropolitan areas of Los Angeles County, which may experience higher employment benefits related to increased connectivity than other areas (Authority 2017b). As a result, Los Angeles County may have additional job growth beyond that considered in this projection. Therefore, this analysis considers the potential growth effect that would occur if the total employment effect associated with increased accessibility were double that projected for Los Angeles County, evaluating the effect of 1,600 new jobs in Los Angeles County and 11,800 new jobs in the RSA.

Total Employment Effects by 2040

Total employment effects by 2040 include direct, indirect, and induced jobs from operational expenditures for the proposed improvements within the Bakersfield to Palmdale Project Section, as well as induced jobs associated with increased accessibility of the region. The total projected employment effect by 2040 would be an increase of up to 12,300 jobs in the RSA (Table 3.18-11). This total includes the direct jobs to operate and maintain the proposed improvements within the Bakersfield to Palmdale Project Section (200 jobs), indirect and induced jobs to support the HSR project and their staff and their families (300 jobs), and additional jobs created because of the improved connectivity of the region to the rest of the state (11,800 jobs).

Table 3.18-11 Projected and Induced Employment Growth

Area	2015 Estimate	2040 Projections Baseline	HSR Direct, Indirect, and Induced Growth	HSR Increased Accessibility Growth	Total HSR Induced Growth	Total 2040 HSR Projections	Growth[1]
Two-county RSA	5,028,400	5,692,000	500	11,800	12,300	5,704,300	0.22%

Sources: California Employment Development Department, 2016a; Kern Council of Governments, 2015; Southern California Association of Governments, 2016; California High-Speed Rail Authority, 2017b; Appendix 3.18-A, Regional Growth Methodology Memorandum
[1] "Growth" shows the total additional growth attributable to the proposed improvements within the Bakersfield to Palmdale Project Section as a percentage of the "2040 Projections Baseline."
HSR = high-speed rail
RSA = resource study area

Employment effects from operation of the HSR project within the Bakersfield to Palmdale Project Section would occur across many industrial sectors, and therefore comparing these effects on total employment projected under the No Project Alternative is appropriate. Based on the 2040 employment projection of 5,692,000 jobs in the RSA under the No Project Alternative, the total increase of up to 12,300 jobs would be 0.2 percent above the 2040 employment projection for the RSA. This growth would not be substantially beyond growth currently projected by the Kern COG and SCAG for these two counties in the absence of the HSR project.

These employment effects would occur gradually, as HSR ridership increases and as businesses expand or open in the RSA. Initial long-term direct jobs created by the HSR project within the Bakersfield to Palmdale Project Section would be in operation and maintenance of the system. Operation of the proposed improvements within the Bakersfield to Palmdale Project Section would also induce other jobs over time as businesses begin to grow or relocate to the RSA to take advantage of increased economic activity and regional connectivity. Because the increase in jobs would be small relative to the projected 2040 workforce in the RSA and these new jobs would be created gradually, the existing workforce would fill the majority of these jobs. Given that operation of the proposed improvements within the Bakersfield to Palmdale Project Section would result in new jobs in the RSA, and there is an existing workforce to fill these jobs, this increase in jobs would be a beneficial effect on the communities in the RSA.

Potential environmental effects associated with employment growth include the resulting population growth and effects of accommodating this growth. As local residents would fill many of these jobs, population growth resulting from this employment growth would be limited. The following section provides a full discussion of induced population growth and associated regional growth effects, including assessment of these effects under NEPA and CEQA.

Operations-Related Population Impacts

The analysis conservatively evaluates population growth from operation of the proposed improvements within the Bakersfield to Palmdale Project Section by assuming that every new job would draw new residents into the RSA, and uses a population-to-employment ratio of 2.19 people for every job in the RSA. In practice, local residents would likely fill many of the new jobs, which would reduce the number of jobs filled by new residents and the resulting population effects. For detailed discussion of the methodology used for this analysis, refer to Section 3.18.3.2, Methodology for Impact Analysis.

Induced Population Growth

The proposed improvements within the Bakersfield to Palmdale Project Section would contribute an increase above the projected population growth for the RSA if new residents move to the RSA to fill jobs associated with the HSR project, including direct, indirect, and induced jobs from expenditures related to operation and induced jobs associated with increased accessibility of the region. Based on the projected increase of up to 12,300 jobs and population-to-employment ratio of 2.19 people for every job in the RSA, operation of the HSR project within the Bakersfield to Palmdale Project Section could increase the population in the RSA by up to 27,000 people (Table 3.18-12). This population growth estimates represents a worst-case scenario because it assumes that every new job would draw new residents into the RSA. Using these conservative estimates, operation of the HSR project within the Bakersfield to Palmdale Project Section would induce population growth by 0.2 percent beyond the 2040 projection of 12.9 million people in the RSA. This contribution to population growth would be a small incremental effect compared to the growth currently projected under the No Project Alternative.

Table 3.18-12 Regional Projected and Induced Population Growth

Area	2015 Estimate	2040 Projections Baseline	HSR Direct, Indirect, and Induced Growth	HSR Increased Accessibility Growth	Total HSR Induced Growth	Total 2040 HSR Projections	Growth[1]
Two-county RSA	11,035,500	12,927,100	1,100	25,900	27,000	12,954,100	0.21%

Sources: California Employment Development Department, 2016a; California Department of Finance, 2016; Kern Council of Governments, 2015; Southern California Association of Governments, 2016; California High-Speed Rail Authority, 2017b; Appendix 3.18-A, Regional Growth Methodology Memorandum

[1] "Growth" shows the total additional growth attributable to the proposed improvements within the Bakersfield to Palmdale Project Section as a percentage of the "2040 Projections Baseline."

HSR = high-speed rail RSA = resource study area

Potential to Induce Additional Population Growth in Exurban Communities

The proposed improvements within the Bakersfield to Palmdale Project Section could foster population growth, directly or indirectly, if it removes obstacles to population growth (e.g., the establishment or expansion of an essential public service or the extension of a roadway to an area). Operation of the HSR system could remove obstacles to growth from the perspective that it could facilitate travel between areas of California by providing an additional mode of transportation to those that already exist. The HSR system is designed for intercity travel, providing an alternative to the personal automobile and airplanes for rapid travel between the major urban centers of the state. It is not intended as a commuter rail service in the RSA because ticket prices would not be subsidized, a typical practice for commuter rail; nor would the HSR trains be frequent enough to serve as a standard regional commuter service. However, given the high cost of housing in and around the major employment centers of Los Angeles, this analysis considers the potential for residents in these areas to move to exurban communities in the RSA and use the HSR system to commute to their existing workplaces.

The Authority performed a study to evaluate the potential for the HSR system to result in a redistribution of the population that is unrelated to economic growth in the RSA and instead related to using HSR to commute from exurban communities to major metropolitan employment centers (Authority 2017b). The analysis considered existing commute patterns, the cost of housing, and the cost of commuting between these communities to evaluate the potential for people to choose to move to exurban communities and use HSR to commute to their workplaces. The analysis noted that under existing conditions, living in exurban communities and working in metropolitan employment centers requires workers to make 2- and 3-hour, one-way commutes to their place of employment. Despite these long commute times, recent data indicates that more than 30,000 people make the daily drive from their homes in Kern County to jobs in Los Angeles County. To evaluate potential savings from moving to exurban communities, the analysis considered the total cost of housing plus transportation in these communities relative to metropolitan central cities. The analysis determined that individuals who work at median or higher-paying jobs in the metropolitan central cities, but who choose to live in exurban communities, could reduce their household annual housing cost, pay somewhat higher transportation costs, and still reduce their total combined costs by about 5 percent or more. This savings could motivate individuals to move to exurban communities to purchase a home rather than rent, purchase a bigger home, and/or access more community amenities.

The HSR system would include stations in the exurban communities of Bakersfield and Palmdale, as well as the densely urbanized cities of Burbank, Los Angeles, the Gateway Cities/Orange County, and Anaheim. HSR train travel times from Bakersfield to the Los Angeles Basin would be less than 1 hour, considerably shorter than the 2- to 3-hour automobile commutes. Current HSR service revenue modeling assumes one-way fares of $56 and $33 (2015 dollars) from Bakersfield and Palmdale stations to Los Angeles, respectively (Authority 2017b). At these rates, annual commuting costs on HSR would vary from approximately $12,700 if commuting 4 days per week from Palmdale to almost $27,000 if commuting 5 days per week from Bakersfield. Given the

potential savings from moving to exurban communities, some individuals may find this an affordable means of daily travel, and a more palatable option than commuting 2 to 3 hours.

In conclusion, some individuals and their households may choose to relocate to exurban communities to purchase more affordable housing because of convenient access to potentially affordable HSR train commute services (Authority 2017b). Estimating the number, magnitude, and distribution of households that may make this decision would be speculative, because it involves many economic factors and individual preferences. Such households would likely relocate to these exurban communities over time, starting during construction, just prior to operation, or after HSR operations have been proven to be fast, reliable, and affordable. Local governments would take steps to accommodate this potential population growth and increased demand for housing by updating their general plan policies, transit plans, zoning, and building codes. The increases in population in these exurban cities would not be stimulated by local economic growth but rather would be a shift of some population growth from expensive metropolitan central cities to exurban communities.

Land Use Consumption

Operation of the HSR project within the Bakersfield to Palmdale Project Section would induce additional employment and population growth, resulting in indirect effects on housing demand and urban development. As shown in Table 3.18-12, operation of the project would increase population in the RSA by 0.2 percent, or 27,000 people, over the 2040 population forecasts. Based on existing city and county general plans, there is adequate land development capacity to accommodate this increase in population because it would be a small amount compared to the growth currently projected. However, this increase in population may increase the rate at which planned housing is developed.

Based on the projected population increase and the average number of residents per housing unit in the RSA, operation of the proposed improvements within the Bakersfield to Palmdale Project Section would result in the need for an additional 9,300 housing units in the RSA by 2040 (Table 3.18-13). Although the cities of Bakersfield and Palmdale could accommodate some housing in their downtown areas to meet the needs of population growth, additional housing would be required to accommodate the 2040 population projected under both the No Project and B-P Build Alternatives.

Table 3.18-13 Regional Projected and Induced Housing Growth

Area	2015 Estimate	2040 Projections Baseline	HSR Direct, Indirect, and Induced Growth	HSR Increased Accessibility Growth	Total HSR Induced Growth	Total 2040 HSR Projections	Growth[1]
Two-County RSA	3,780,200	4,458,000	400	8,900	9,300	4,467,300	0.21%

Sources: California Department of Finance, 2016; Kern Council of Governments, 2015; Southern California Association of Governments, 2016; California High-Speed Rail Authority, 2016; California High -Speed Rail Authority, 2017b; U.S. Census Bureau, 2014c; U.S. Census Bureau, 2014d; Appendix 3.18-A, Regional Growth Methodology Memorandum

[1] The "2040 No Project Growth" shows the total growth in percentage terms from 2015 to 2040 while the "HSR Project Growth Inducement" shows the total additional growth attributable to the proposed improvements within the Bakersfield to Palmdale Project Section as a percentage of the "2040 No Project Projections."

HSR = high-speed rail

RSA = resource study area

Cities and counties in California are required to prepare Housing Elements to meet the State Housing Element law, which requires jurisdictions to adequately plan for existing and projected housing needs. These Housing Elements are updated on a regular basis, generally for an 8-year period, a much shorter planning timeframe than the general plans addressed above. Under Senate Bill 375, the future housing needs to be addressed in the housing elements must reflect the RTP/SCS adopted in each county. As population increases, cities and counties would

approve development to meet the housing need in the area. Therefore, all jurisdictions in the RSA would be required to plan for and meet the housing need for the population as it increases.

Under current city and county general plans, communities in the RSA have adequate space to accommodate planned growth by 2040 (under the No Project Alternative) and HSR-induced growth in their current spheres of influence. The RTP/SCS plans and programs that apply to these areas encourage infill development, concentrating growth in urban areas, and provision of transit options and connections for regional residents and workers. According to the Kern COG's 2014 RTP/SCS, the combined general plans in the Kern County region designate sufficient land to absorb growth at twice the rate forecasted by 2035. The plan indicates that at current growth rates, a doubling of the population would not occur until after 2050 (Kern COG 2014). The plan qualifies that this projection assumes that sufficient water and urban services are available. Section 3.19, Cumulative Impacts, evaluates the availability of water and urban services for growth associated with operation of the proposed improvements within the Bakersfield to Palmdale Project Section in combination with other past, present, and reasonably foreseeable probable future actions or projects, and found that sufficient services would be available to support growth associated with these projects.

Similarly, the land use patterns prescribed in SCAG's 2016 RTP/SCS have the capacity to accommodate 3.8 million more residents and 1.5 million more households in the SCAG region by 2040 (SCAG 2016). This capacity is beyond what would be required to support the increase of 1.36 million residents in Los Angeles County between 2015 and 2040 when considering anticipated growth without the HSR project. As discussed above, operation of the HSR system would reduce the total amount of land required to accommodate both currently projected growth (under the No Project Alternative) and new regional population growth associated with the proposed improvements within the Bakersfield to Palmdale Project Section in Los Angeles County. Given that the incremental growth in the RSA associated with the HSR project in the Bakersfield to Palmdale Project Section is projected to account for a 0.2 percent increase in the population in 2040 (27,000 residents), there is adequate land development capacity to accommodate planned growth by 2040 as well as HSR-induced growth in the RSA.

3.18.6 Mitigation Measures

All construction and operations impacts on regional growth would be minimal. Therefore, no mitigation measures are required.

The Fresno to Bakersfield Section Final Supplemental EIR (Authority 2018) and the Final Supplemental EIS (Authority 2019b) did not identify significant regional growth impacts requiring mitigation measures; therefore, no regional growth-related mitigation measures apply to the portion of the F-B LGA from 34th Street and L Street to Oswell Street.

3.18.7 Impact Summary

3.18.7.1 Construction Impacts

Regional growth effects related to construction of the B-P Build Alternatives or design options, stations, and maintenance facilities, would vary slightly between the B-P Build Alternatives or design options, with construction of the alternative alignments resulting in an estimated 33,100 to 34,800 direct, indirect, and induced jobs during the peak construction year. These jobs would account for an additional 0.7 percent of the total jobs projected in the RSA at the peak of construction, which would not be substantial in the context of the RSA's overall economy. Of these jobs, 16,900 to 17,800 would be direct jobs in the construction sector, which would represent 11.1 percent of the projected construction jobs in the RSA at the peak of construction. The Authority has been implementing a variety of programs to help local residents gain skills to compete for available HSR jobs, as well as the Community Benefits Agreement, which requires contractors to commit 30 percent of all construction dollars to hiring small businesses. The emphasis on job training for local workers and contract requirements to use small businesses should provide employment opportunities for construction workers in the RSA. Additionally, because construction activities would be temporary, it is unlikely that construction workers from

outside the RSA that work on the project would relocate their families to communities in the RSA. Thus, the construction of the B-P Build Alternatives or design options would not induce substantial unplanned employment or population growth or land use consumption. Therefore, construction of the proposed improvements within the Bakersfield to Palmdale Project Section would not result in substantial regional growth effects.

3.18.7.2 Operations Impacts

Overall, employment growth from operation of the HSR project within the Bakersfield to Palmdale Project Section would have a net benefit in the RSA, as it would provide jobs in the regional economy. The proposed improvements within the Bakersfield to Palmdale Project Section would induce growth, but not substantially beyond existing population projections for the RSA. This additional growth would primarily occur in existing urbanized areas that have adequate land development capacity to accommodate the increment of population and employment growth related to the project. Some individuals and their households would likely choose to relocate to exurban communities where HSR stations are proposed or in nearby communities to purchase more affordable housing because of convenient access to potentially affordable HSR train commute services. Therefore, any such increases in population in these exurban cities would not be growth stimulated by local economic expansion, but rather a redistribution of existing residents in the state. Furthermore, it is anticipated that housing that constructed in these communities to accommodate such population growth would be consistent with the adopted land use plans, policies, and regulations of local governments. Therefore, the B-P Build Alternatives or design options would not induce substantial unplanned population growth or land use consumption.

3.18.8 CEQA Significance Conclusions

CEQA thresholds related to regional growth effects are addressed in Section 3.12, Socioeconomics and Communities, and Section 3.13, Station Planning, Land Use, and Development.