

3.18 Regional Growth

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

- Footnotes were added to Section 3.18.2.1, Federal, regarding the Federal Railroad Administration’s (FRA) Environmental Procedures and the updated Council on Environmental Quality (CEQ) regulations issued after release of the Draft EIR/EIS.
- Where appropriate, the verb “would,” when used specifically to describe impact avoidance and minimization features (IAMFs) or mitigation measures, as well as their directly related activities, was changed to “will,” indicating their integration into project design.

3.18.1 Introduction

This section describes the impacts on regional growth from implementation of the San Jose to Central Valley Wye Project Extent (project extent or project) and whether the changes resulting from project construction and operations would be substantial. *Regional growth* refers to the potential for planned and unplanned growth in the region, as well as the potential for growth-inducing impacts of the project alternatives. Such growth is measured in terms of increases in population; employment; and the related development of land providing housing, commercial and industrial buildings and facilities, and community services supporting both residents and businesses.

The *San Jose to Merced Project Section Community Impact Assessment* (Authority 2019a) provides additional technical details on regional growth, such as employment and demographic information. The following appendices, in Volume 2 of this Final EIR/EIS provide information related to regional growth:

- Appendix 2-J, Regional and Local Plans and Policies, provides a list by resource of all applicable regional and local plans and policies.
- Appendix 3.18-A, RIMS II Modeling Details, provides information on the Regional Input-Output Modeling System (RIMS) modeling and the results of the model to estimate construction and operation employment.
- Appendix 6-A, PEPD Record Set Capital Cost Estimate Report, provides capital cost estimates for the project alternatives developed by the California High-Speed Rail Authority (Authority).
- Appendix 6-B, Operations and Maintenance Cost Memorandum, provides total construction costs for the project alternatives using standard capital cost categories adopted by the Authority.

Regional growth impacts, including the potential growth-inducing impacts of the project alternatives, are important because they are connected to a wide range of societal and environmental processes. The following seven resource sections and chapters provide additional information related to regional growth:

Overview of Impacts on Regional Growth

- Construction of all four project alternatives would generate direct, indirect, and induced employment. Construction-related employment estimates range from 31,510 job-years generated under Alternative 4 to 44,850 job-years under Alternative 3. Peak-year direct construction employment in 2024 would represent nearly 22 percent of the three-county region’s projected construction jobs.
 - Local businesses would benefit from project-related spending and construction workers’ spending.
 - Project operation would generate 600 direct jobs and another 510 indirect or induced jobs annually under all project alternatives.
 - The population and employment gains associated with operation and increased accessibility would represent small additions to the expected growth in the entire three-county region—less than 2 percent above the projected 2040 population and employment.
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- Section 3.3, Air Quality and Greenhouse Gases, evaluates the net effect of the project on air quality and GHG conditions as a result of permanent operations.
- Section 3.12, Socioeconomics and Communities, evaluates changes to demographics, property, economic factors, and affected communities and neighborhoods as a result of the project.
- Section 3.13, Station Planning, Land Use, and Development, evaluates how growth is addressed in local land use regulations and local measures that would encourage increased development density and transit- oriented development around stations.
- Section 3.14, Agricultural Farmland, evaluates impacts on agricultural lands including the loss of agricultural land from land acquisitions.
- Section 3.19, Cumulative Impacts, evaluates the contributions of the project to cumulative impacts on resource areas, including growth.
- Chapter 5, Environmental Justice, evaluates impacts of the project on minority populations and low-income populations, including economic factors.
- Chapter 6, Project Costs and Operations, presents cost estimates for construction, operation, and maintenance of the project.¹

3.18.2 Laws, Regulations, and Orders

This section presents federal and state laws and regulations, orders, and plans related to regional growth affected by the project. The Authority would implement the high-speed rail (HSR) system, including this project, in compliance with all federal and state regulations. Regional and local plans and policies relevant to regional growth considered in the preparation of this analysis are provided in Volume 2, Appendix 2-J.

3.18.2.1 Federal

NEPA Requirements to Analyze Growth

The CEQ regulations, which implement the National Environmental Policy Act of 1969, as amended (NEPA)^{2,3}, require evaluation of the reasonably foreseeable environmental impacts of all proposed federal activities and programs. This provision includes a requirement to examine both direct and indirect impacts that may occur in areas beyond the immediate influence of an action alternative and at some time in the future. Positive and negative growth (i.e., change) is a potential impact of the project alternatives.

Direct growth effects are those that would be caused by any project alternative, occurring at the same time and place (40 Code of Federal Regulations [C.F.R.] § 1508.08). Direct growth effects include any jobs directly associated with the project alternatives, as well as any displacement of housing or commercial or industrial businesses related to the construction and operation of the proposed HSR rail facilities. Indirect growth effects are considered to be reasonably foreseeable effects caused by the project alternatives, typically occurring later in time or farther in distance

¹ The analysis in the Final EIR/EIS was conducted using 2018\$ and costs associated with the PEPD in the Draft EIR/EIS, which was published in April 2020. Capital costs in Chapter 6 and Appendix 6-A were updated in the Final EIR/EIS to reflect design changes in the PEPD and to reflect 2021 dollars. The analysis in this section uses the 2018\$ and costs from the Draft EIR/EIS. Although the costs in the Final EIR/EIS are different than in the Draft EIR/EIS, the differences overall are minor and the analysis in this section is still a reasonable representative of the effects of the project, although the effects would be expected to be slightly higher given the increase in costs reflected in the estimate in Chapter 6.

² The Council on Environmental Quality issued new regulations on July 14, 2020, effective September 14, 2020, updating the NEPA implementing procedures at 40 C.F.R. Parts 1500-1508. However, this project initiated NEPA before the effective date and is not subject to the new regulations, relying on the 1978 regulations as they existed prior to September 14, 2020. All subsequent citations to Council on Environmental Quality regulations in this environmental document refer to the 1978 regulations, pursuant to 40 C.F.R. 1506.13 (2020) and the preamble at 85 Fed. Reg. 43340.

³ While this EIR/EIS was being prepared, FRA adopted new NEPA compliance regulations (23 C.F.R. 771). Those regulations only apply to actions initiated after November 28, 2018. See 23 C.F.R. 771.109(a)(4). Because this EIR/EIS was initiated prior to that date, it remains subject to FRA's Environmental Procedures rather than the Part 771 regulations.

from the project (40 C.F.R. §§1502.15[b], 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 project. Removal of existing obstacles to growth would also be considered indirect growth effects. “Removal of obstacles to growth” 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 and/or economic growth.

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

FRA’s *Procedures for Considering Environmental Impacts* states that “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.”

These FRA Procedures for Considering Environmental Impacts Section 16(n)(16) state 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 of this Final 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

California Environmental Quality Act (CEQA) Guidelines 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 a 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 impact, whereas a project that would construct new housing would have a direct growth-inducing impact. 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 (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 within each region to meet emissions targets set by the California Air Resources Board (CARB). The emissions targets for the San Francisco Bay Area MPO (Metropolitan Transportation Commission [MTC]/Association of Bay Area Governments [ABAG]) is a 7 percent per-capita reduction by 2020 and a 15 percent per-capita reduction by 2035. The emissions targets for the San Benito County MPO (AMBAG 2020) is a 0 percent increase from 2005 per-capita GHG emissions and a 5 percent reduction by 2035 from 2005 per-capita GHG emissions. The emissions targets for the Merced County MPO (Merced County Association of Governments [MCAG]) are a 5 percent reduction by 2020 and a 10 percent reduction by 2035. The *Santa Clara County General Plan* has not yet been updated to address HSR, but the Santa Clara County Board of Supervisors received and considered a report reviewing the project alternatives in relation to the adopted general plan policies at the board meeting of September 12, 2017 (County of Santa Clara 2017a). Refer to Section 3.18.2.3, Regional and Local, for further discussion of this report.

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

- i. Identify the general location of uses, residential densities, and building intensities within the region.
- ii. Identify areas within 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 RTP, taking into account net migration into the region, population growth, household formation, and employment growth.
- iii. Identify areas within the region sufficient to house an 8-year projection of the regional housing need 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 RTP to comply with Section 176 of the federal Clean Air Act (42 United States Code § 7506).

The RTP adopted by each of the MPOs (MTC/ABAG, Association of Monterey Bay Area Governments [AMBAG], and MCAG) identifies the region's transportation needs, 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 is intended to require 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, to meet the assigned emissions reduction targets, the 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 would be encouraged by the requirement that the SCS or APS both reduce GHG emissions (which are linked to vehicle miles traveled) and plan to accommodate regional housing needs (which are expected to continue to increase).

Pursuant to Senate Bill 375, the MPOs are expected to work with city and county authorities responsible for adopting general plans to guide community development, including adopting housing elements. The regional housing needs allocation is statutorily linked 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 housing. The housing need includes specific allotments for very low and low-income housing.

Preparation of the SCS is mandated by law. The ability of each SCS to meet the emissions-reduction target for the vicinity of the project must be reviewed and approved by the CARB. 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 RTP and therefore would be less likely to be implemented. The MTC/ABAG, AMBAG, and MCAG prepared and adopted their own SCSs that have been reviewed and approved by the CARB.

MTC/ABAG adopted its SCS, known as *Plan Bay Area*, in July 2013 (ABAG and MTC 2013). Subsequently, the MTC/ABAG prepared an updated SCS known as *Plan Bay Area 2040*, which was adopted on July 26, 2017 (ABAG and MTC 2017). AMBAG adopted its SCS in June 2014 and subsequently worked with CARB on the second SCS, which was adopted on June 13, 2018 (AMBAG 2018). MCAG adopted its first SCS in September 2014, which was amended in May

2016 (MCAG 2016). The MCAG Governing Board adopted the updated 2018 RTP and SCS on August 16, 2018 (MCAG 2018).

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) (OPR 2015). This report updates the 1978 *Urban Strategy for California* (OPR 1978), the last EGPR prepared and adopted. Assembly Bill 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 the following additional state actions needed to support infill development, including specific transportation actions:

- 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

Regional and local policies that are applicable to regional growth included *Plan Bay Area* (ABAG and MTC 2013), the *2035 Metropolitan Transportation Plan/Sustainable Communities Strategy* (AMBAG 2014), the *San Joaquin Valley Blueprint Planning Process Summary Report* (San Joaquin Valley Regional Policy Council 2010), and the *2014–2040 Regional Transportation Plan and Sustainable Communities Strategy for Merced County* (MCAG 2016). In addition to these regional and local policies, the Santa Clara County Board of Supervisors received and considered a County Department of Planning and Development report (County of Santa Clara 2017a) reviewing the project alternatives in relation to the adopted general plan policies at its board meeting of September 12, 2017. Volume 2, Appendix 2-J, lists the regional and local plans and describes the policies adopted by the cities and counties in the resource study area (RSA) that were identified and considered in the preparation of this analysis.

Based on a constraints analysis prepared by Santa Clara County (County of Santa Clara 2017b), the Santa Clara County administration recommended that the County Board of Supervisors provide the following feedback to the Authority:

- Select the Downtown Gilroy Station as the preferred Gilroy Station alternative.
- Pursue design options and alignment alternatives that avoid alignment of the rail through central San Martin.

- Pursue design options and alignment alternatives that avoid or minimize conflicts as identified in Santa Clara County's constraints analysis and the *Santa Clara Valley Habitat Plan* (County of Santa Clara et al. 2012) as identified in the memo from the Habitat Agency Executive Director.

The Board of Supervisors directed Santa Clara County Administration to amend those three recommendations to the Authority to undertake the following actions:

- Pursue design options and alignment alternatives that avoid alignment of the rail through rural unincorporated, agricultural land in Gilroy and Morgan Hill.
- Pursue design options and alignment alternatives that avoid alignment of the rail through central San Martin.
- Pursue design options and alignment alternatives that avoid the construction of a viaduct north of Coyote Valley.
- Pursue design options and alignment alternatives that avoid or minimize conflicts as identified in Santa Clara County's constraints analysis and the *Santa Clara Valley Habitat Plan* (County of Santa Clara et al. 2012) as identified in the memorandum from the habitat agency executive director.

The Board of Supervisors further directed the Santa Clara County Administration to convey these recommendations to the Authority with a request to consider such information in all decisions made, to solicit input and feedback on proposed actions or decisions from all potentially affected stakeholders, including residents, and to incorporate their input as appropriate (Santa Clara County 2017b). These recommendations are noted here. They are not codified as policy or specified in the *Santa Clara County General Plan* and are not discussed in Volume 2, Appendix 2-J. Because the general plan had not yet been updated at the time the analysis was conducted, the Authority reviewed these recommendations for consistency of the project alternatives with the input of affected stakeholders in the community.

3.18.3 Consistency with Plans and Laws

As indicated in Section 3.1.6.3, Consistency with Plans and Laws, CEQA and CEQ regulations require a discussion of inconsistencies or conflicts between a proposed undertaking and federal, state, regional, or local plans and laws. Accordingly, this Final EIR/EIS describes the inconsistency of the project alternatives with federal, state, regional, and local plans and laws to provide planning context. Federal and state laws and implementing regulations, as listed in Section 3.18.2.1, Federal, and Section 3.18.2.2, State, pertain to regional growth.

The Authority, as the lead agency proposing to construct and operate the HSR system, is required to comply with all federal and state laws and regulations and to secure all applicable federal and state permits prior to initiating construction on the selected alternative. Therefore, there would be no inconsistencies between the project alternatives and these federal and state laws and regulations.

The Authority is a state agency and therefore is not required to comply with local land use and zoning regulations; however, it has endeavored to design and construct the project so that it is consistent with land use and zoning regulations. For example, the project would require construction contractors to coordinate with local jurisdictions before and during construction to maintain emergency vehicle access. The Authority reviewed the local and regional plans, policies, and ordinances listed in Volume 2, Appendix 2-J, and determined the project alternatives would be consistent with all local government plans, policies, and ordinances reviewed.

3.18.4 Methods for Evaluating Impacts

The following sections define the RSA and the methods used to analyze regional growth impacts. As summarized in Section 3.18.1, Introduction, four other resource sections and two chapters in this EIR/EIS, as well as Appendix 3.18-A, RIMS II Modeling Details, and the *San Jose to Merced*

Project Section Community Impact Assessment (Authority 2019a) provide information related to regional growth.

3.18.4.1 Definition of Resource Study Area

RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. The RSA for regional growth is defined as the multicounty region encompassing any county touched by some part of the project (alignment, stations, or facilities). The RSA for direct and indirect regional growth impacts encompasses Santa Clara, San Benito, and Merced Counties. This RSA captures most of the potential employment and population growth and growth-related land consumption that the project would induce.

3.18.4.2 Impact Avoidance and Minimization Features

IAMFs are project features that are considered to be part of the project and are included as applicable in each of the alternatives for purposes of the environmental impact analysis. The full text of the IAMFs that are applicable to the project is provided in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features; however, there are no IAMFs applicable to the discussion of regional growth.

3.18.4.3 Methods for Impact Analysis

This section describes the sources and methods used to analyze potential impacts on regional growth from implementing the project. The impact analysis focuses the discussion of most environmental impacts by geographic area (at a regional level) rather than by project alternative. This is because all four alternatives would have similar stations, maintenance facilities, and track lengths.

The support for additional workers in the region is an important consideration because a potential influx of workers could increase the demand for housing and public services and require new or altered government and public facilities. Direct, indirect, and induced employment is associated with the construction of the project improvements, and with the operation and maintenance of new tracks, rolling stock and facilities. *Direct employment* refers to the jobs primarily involved in the construction sector and the transportation sector. *Indirect employment* refers to the jobs created in existing businesses in the region (e.g., material and equipment suppliers) that supply goods and services to project construction, operations, or maintenance. *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.

The method presented in this section analyzes the potential increase in population that would result from jobs supported during the construction (short-term) and operational (long-term) phases of the project; potential increases in jobs and population in the RSA resulting from improved transportation accessibility provided by the HSR system; and the potential effects of these increases. Land consumption demands and patterns related to growth are also considered, as is the potential for induced population growth in exurban areas. Historic and projected population, employment, and housing data have been assembled from the U.S. Census Bureau; the California Department of Finance, Demographic Research Unit; the California Employment Development Department (CEDD), Labor Market Information Division; and the California Department of Transportation (Caltrans) Office of State Planning, Economic Analysis Branch.

The methodology presented in this section applies to both NEPA and CEQA. The analysis focuses on employment and associated population growth resulting from construction and operations of the project alternatives. CEQA requires attention to the environmental effects of that growth. CEQA also requires significance determinations for potential growth-inducing impacts on population and housing *if* the project would directly or indirectly induce either of the following:

- Substantial *unplanned* population growth in the region
- Substantial numbers of *existing* people or housing being displaced, necessitating the construction of replacement housing elsewhere

These CEQA thresholds regarding regional growth effects are addressed in Sections 3.12, Socioeconomics and Communities, and Section 3.13, Station Planning, Land Use, and Development. Section 3.12 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. Accordingly, Section 3.18.8, Impacts Summary, provides a summary of NEPA impacts but does not include a summary of CEQA impacts.

Construction Impacts

The assessment of construction-related impacts focuses on construction employment impacts, the demand for construction workers, and the forecast availability of construction workers. The analysis also evaluates the likelihood that construction workers and their families would move to the region for employment opportunities, thus potentially resulting in population impacts. The impact analysis focuses on the regional impacts of the project; where meaningful, construction impacts are assessed separately for each project alternative. The following key steps summarize the analytical process:

- Estimate the construction costs for each project alternative**—The Authority used the capital cost estimates for the project to identify the overall construction costs anticipated to affect construction-related employment. The Authority relied on detailed capital cost estimates for the project improvements—that is, track modifications (e.g., tracks, track structures, site work); stations; and maintenance facilities. These capital costs estimates were developed for the project alternatives by the Authority in the *San Jose to Merced Project Section: PEPD Record Set Capital Cost Estimate Report* (Appendix 6-A in Volume 2 of this Final EIR/EIS). Capital costs used in the construction-related employment analysis exclude costs for HSR trains, right-of-way acquisition, land, final design, finance charges, and program implementation, as they either would not measurably affect employment in the RSA or are systemwide costs. Additional information related to the project construction costs and their application in the analysis is provided in Volume 2, Appendix 3.18-A, RIMS II Modeling Details.
- Estimate the location and pace of project construction spending**—The Authority estimated the anticipated portion of the total construction budget that would be expended within the RSA and allocated construction costs to the region. The rate of expenditure was estimated through the multiyear construction period. At the time the analysis was conducted, the construction period for the project was anticipated as 2022 to 2028, with the peak construction year in 2024
- Estimate the number of jobs created by construction**—The Authority used the construction cost estimates and spending allocations by construction year to estimate the total and peak year direct, indirect, and induced employment impacts by project alternative. These construction-related employment estimates were calculated using the Bureau of Economic Analysis RIMS II (Volume 2, Appendix 3.18-A).
- Compare construction-related jobs to the expected supply of appropriate workers**—The calculated construction-related employment demand was compared to the forecasted peak-year construction work force in the three-county RSA and 90-minute commute area to assess whether the demand for skilled construction workers could be supplied by the three-county construction sector, including construction workers residing in the commute area, or whether the project could attract construction workers and their households to the region for employment opportunities.

What is RIMS II?

The Regional Input-Output Modeling System (RIMS II) is a regional economic model developed by the Bureau of Economic Analysis to objectively assess the potential impacts of economic development projects. The model produces multipliers that are used in economic impact studies to estimate the total impact of a project on a region. The intent is to capture the additional rounds of spending that occur when an initial change in economic activity occurs. Impacts can be expressed in terms of output (sales), value added (gross domestic product), earnings, or employment.

Operations Impacts

The regional growth assessment for the HSR operations phase modeled direct, indirect, and induced employment impacts, as well as overall systemwide employment growth spurred by increased connectivity and accessibility, particularly between the Bay Area and the Los Angeles Basin. The Authority examined whether the forecast employment growth associated with the project would result in regional employment impacts compared to projected employment growth for the region without the project. The analytical process to estimate the growth inducement (employment and population) during project operations required extensive use of modeling tools and data. The following key steps summarize the process:

- **Define the analysis contexts**—The future baseline conditions of the No Project Alternative and the economic modeling process were used to forecast the incremental changes associated with the HSR system. For direct, indirect, and induced employment and population growth related to local operation in the project extent, the focus study region was the RSA. The potential additional employment and population growth related to improved connectivity and accessibility of the entire Phase I HSR system was also allocated to the region (Authority 2017a).
- **Estimate RSA employment growth impacts related to local operation of the San Jose to Central Valley Wye Project Extent**—The Authority modeled long-term direct, indirect, and induced employment from local operation of the HSR guideway, stations and facilities using projections of operations and maintenance (O&M) costs (Volume 2, Appendix 6-B, Operations and Maintenance Cost Memorandum) and RIMS II multipliers for the RSA (Volume 2, Appendix 3.18-A).
- **Estimate RSA employment growth impacts related to connectivity and accessibility changes during operation of the Phase I HSR system**—Operations of the Phase I HSR system would improve travel times and convenience between homes and job centers and induce employment growth in places where it would not occur under the No Project Alternative (Authority 2017a). The accessibility-related employment growth projections were included as potential effects of project operations. The Authority reallocated systemwide and county-level projections of accessibility-based employment growth to the RSA and the project, using centerline route miles by county and by project section as the basis of allocation. The estimated total employment in the RSA with the project was compared to employment projected for 2040 without the project to determine if employment impacts would occur.
- **Estimate RSA population growth related to employment changes during operation of the Phase I HSR system**—Applying locally prevalent household formation rates and sizes, the Authority estimated the amount of population growth that would be expected in the RSA based on the number of jobs added from the direct, indirect, and induced economic activity derived from project operations. In addition, the analysis includes the population growth estimated by the Authority to result from the improved accessibility provided by the Phase I HSR system (Authority 2017a). The analysis then determined if the estimated project-induced population from operations-related and accessibility-based employment and the demand for housing would result in an impact on planned population and housing growth in the RSA.
- **Compare RSA employment and population growth projections related to Phase I HSR to the No Project Alternative**—Each county and city government general plan sets out goals and policies to accommodate anticipated employment and population growth for the coming decades. These county and city general plans are inputs to each of the MPOs (MTC/ABAG, AMBAG, and MCAG), which produce longer-range regional growth projections for RTPs for the RSA, and to the state agencies producing comprehensive mid- and long-range employment and demographic forecasts for California: the California Department of Finance, Demographic Research Unit; the CEDD, Labor Market Information Division; and the Caltrans Office of State Planning, Economic Analysis Branch. The RSA projected employment was compared to population growth resulting from Phase I HSR operations and accessibility improvements to anticipated RSA growth under the No Project Alternative.

- **Assess RSA population growth impacts related to Phase I HSR’s potential to induce additional population growth in exurban counties**—In analyzing the potential population growth associated with direct, indirect, and induced employment growth, the Authority considered whether the HSR system could result in a redistribution of population unrelated to economic growth, such as households electing to relocate from more expensive to less expensive housing markets while still having access to current job centers (Authority 2018a).
- **Estimate RSA land consumption impacts related to potential population and employment growth**—The Authority estimated the extent to which the additional population and employment related to the Phase I HSR system operations and improved accessibility would alter the amount of land consumed for new development compared to existing urbanized areas and projections under the No Project Alternative.

3.18.5 Affected Environment

This section describes recent historic trends, existing and projected employment and unemployment rates, population, and housing in the RSA. This information provides the context for the environmental analysis and evaluation of impacts, which is described in Section 3.18.6, Environmental Consequences.

3.18.5.1 Overview

The RSA is economically diverse, but its population and economic activity are highly concentrated in the northern end of Santa Clara County. In contrast, Merced and San Benito Counties are largely rural and agricultural. Table 3.18-1 shows some key indicators of the three counties compared to each other, the RSA overall, and the state of California.

Table 3.18-1 RSA and County Characteristics, 2015

Indicator	Santa Clara County	San Benito County	Merced County	RSA Region	State of California
Population	1,903,974	56,445	269,280	2,229,699	38,907,642
Population per square mile	1,476	41	139	483	250
Income per capita	\$79,302	\$43,630	\$33,852	\$72,913	\$53,224
Households below poverty line ¹	8.8%	9.9%	22.8%	10.3%	14.5%
Population with B.A. or higher ¹	47.9%	19.0%	13.1%	43.6%	31.4%
Unemployment rate	4.2%	7.6%	11.4%	5.0%	6.2%
% Farm jobs	0.4%	11.1%	18.2%	1.7%	2.6%
% Manufacturing jobs	15.4%	13.6%	12.8%	15.2%	7.8%
% Professional services and information jobs	28.0%	7.4%	5.2%	26.2%	18.1%
Total jobs	1,033,110	15,990	77,520	1,126,620	16,474,000

Sources: CDOF 2016; CEDD 2016a; Caltrans 2016; U.S. Census Bureau 2015a, 2015b

¹ The Households below poverty line and Population with B.A. or higher ratios are based on American Community Survey 2011-2015 5-Year Estimates; all other estimates are for 2015.

B.A. = bachelor of arts degree

RSA = resource study area

Caltrans = California Department of Transportation

Santa Clara County is home to Silicon Valley firms, a highly educated workforce, and substantial venture capital investment in entrepreneurial activities. These activities are largely concentrated in the northern and central areas of the county, and the southern end is characterized by lower density development, including housing for the Silicon Valley workforce, and agricultural activity. The percentage of manufacturing jobs for Santa Clara County is greater than that of the other

counties in the RSA. Santa Clara County has among the highest per-capita income levels in California and a low unemployment rate.

San Benito County has the lowest population density of the three counties. The comparatively low density reflects San Benito County's substantial areas of agricultural and open space uses. The comparatively low residential development densities also reflect the constraints on the housing market and the timing of development imposed by the capacity limitations of the county's infrastructure. Two major highways connecting San Benito County to Monterey County and to the Bay Area: State Route (SR) 25 and SR 156. These highways operate near capacity during peak hours. San Benito County has been part of the Silicon Valley commute shed⁴ for the past few decades, but development restrictions reflecting the infrastructure capacity constraints for the county have limited its growth in recent years (County of San Benito 2016). Per capita income levels are well below those in Santa Clara County and below the statewide average, while unemployment rates are higher than the state average.

Merced County has an agricultural economy, with a much higher concentration of farm jobs than the other RSA counties and the state overall. Jobs in the professional services and information industries represent a very small proportion of overall employment in the county. Education-related jobs have increased in recent years, as Merced County is home to the newest University of California campus, UC Merced, which opened in 2005. Per-capita income in Merced County is well below the statewide average and less than half the per-capita income in Santa Clara County. In the RSA, unemployment is also highest in Merced County, and well above the statewide average.

3.18.5.2 Employment and Unemployment

Employment

Table 3.18-2 shows information on regional employment by industry using CEDD data for 2000 and 2015 (CEDD 2016a). These data show that employment in the RSA is heavily concentrated in Santa Clara County, which has more than 90 percent of the RSA's total jobs. Santa Clara County is the center of Silicon Valley, known as the origin and headquarters of many technology and internet firms such as Apple, Google, and Facebook. Employment in Santa Clara County is highly concentrated in the professional services industries, while San Benito and Merced Counties have much higher concentrations of agricultural jobs. Unemployment has generally been very low in Santa Clara County over the past several decades. Between 1990 and 2015, Santa Clara County's annual average civilian unemployment rates were below the California state unemployment rates for all years except 2002–2004, when the bursting of the “dot-com” bubble exacerbated the local impacts of the national recession of the early 2000s (CEDD 2016a).

In comparison and over the same 25-year period, unemployment rates have been higher than the California average for San Benito County and much higher for Merced County, where the volatility of the agricultural economy and seasonal fluctuations in farming and food processing operations contribute to periodic high unemployment.

Between 2000 and 2015, total employment decreased by 0.7 percent in Santa Clara County, but increased by about 8 percent in San Benito County and more than 20 percent in Merced County. The decrease in total employment in Santa Clara County between 2000 and 2015 was due to substantial declines in the construction, manufacturing, and wholesale/retail trade industries. However, Santa Clara County gained jobs in the information, finance, educational/health, and arts/entertainment/recreation industries. The modest overall net job loss in Santa Clara County over the 15 years can also be explained by the county's extraordinary employment conditions in 2000—just before the end of the “dot-com” boom. That boom affected not only technology jobs, but also the local jobs supporting those workers (BAC et al. 2002).

The other two counties in the RSA have very different economies than Santa Clara County, and both realized job growth overall and in selected sectors. San Benito County gained jobs in retail

⁴ Commute shed is defined as the area that workers might or are known to commute to for employment, assuming maximum travel time or distances (Greenbelt Alliance 2019).

trade, professional/scientific, and educational/health industries. Merced County gained jobs in agriculture, wholesale/retail trade, transportation/warehousing/utilities, educational/health, and public administration industries, in part because of the opening of the UC Merced campus in 2005. The manufacturing, professional/scientific, and educational/health industries employ the most workers in the RSA. The CEDD projections indicate that these same industries are anticipated to continue to account for most jobs in the region going forward. Other employment sectors with strong growth include information and arts/entertainment/recreation industries (CEDD 2016a).

Table 3.18-2 also shows projected employment by industry for Santa Clara, San Benito, and Merced Counties for 2024, the projected peak year for project construction activities (CEDD 2016a; Caltrans 2015). All three counties are projected to experience continued employment growth overall, with about 141,800 net new jobs projected for the region between 2015 and 2024. The greatest shares of growth by sector are projected for professional services (about 59,300 new jobs); information (about 20,300 new jobs); educational, health and social services (about 18,800 new jobs); and manufacturing (about 17,600 new jobs).

Table 3.18-3 shows the projected 2040 total employment in Santa Clara, San Benito, and Merced Counties and in the region. The region's job growth, projected at about 265,100 net new jobs between 2015 and 2040, is anticipated to be concentrated in Santa Clara County, in keeping with the region's current spatial distribution of jobs. Employment in San Benito County will grow at the highest average annual rate of the three counties, adding about 4,000 new jobs. Santa Clara County is projected to have a slightly lower rate of employment growth, but it will add approximately 241,300 net new jobs. Merced County is projected to experience the slowest annual average job growth of the three counties over the next 25 years, adding about 16,200 projected new jobs. The region overall is expected to experience an annual average job growth rate that is slightly lower than the statewide average over the next 25 years (CEDD 2016a; Caltrans 2015).

Table 3.18-2 Regional Employment by Industry (2000, 2015, 2020, and 2024)

Industry	Santa Clara County				San Benito County				Merced County				RSA			
	2000	2015	Projected		2000	2015	Projected		2000	2015	Projected		2000	2015	Projected	
			2020	2024			2020	2024			2020	2024			2020	2024
Agriculture, forestry, fishing, and hunting	5,000	3,600	3,700	3,700	1,900	1,800	1,700	1,800	11,600	14,100	14,000	14,100	18,500	19,500	19,400	19,600
Construction, mining, and logging	48,500	42,300	35,000	33,300	1,400	1,100	1,200	1,300	2,100	1,900	2,400	2,400	52,000	45,300	38,600	37,000
Manufacturing	248,600	159,400	174,800	175,600	2,500	2,200	2,800	2,800	10,500	9,900	10,600	10,700	261,600	171,500	188,300	189,100
Wholesale trade	42,400	36,000	40,900	41,800	500	400	400	400	1,400	1,700	2,000	2,000	44,300	38,100	43,200	44,300
Retail trade	91,400	84,900	87,500	89,000	2,100	2,600	2,700	2,800	7,000	8,000	8,200	8,400	100,500	95,500	98,400	100,300
Transportation and warehousing, utilities	17,500	15,000	15,900	16,200	300	500	500	500	1,700	2,300	2,800	3,000	19,500	17,800	19,100	19,800
Information	43,200	74,700	88,700	94,700	100	100	100	200	700	300	500	500	44,000	75,100	89,300	95,400
Finance, insurance, real estate, and rental leasing	33,900	35,000	36,300	37,100	400	400	400	400	1,700	1,600	1,600	1,600	36,000	37,000	38,300	39,100
Professional, scientific, management, administrative, waste management services	228,400	214,900	254,000	273,200	500	1,100	1,200	1,200	3,900	3,700	4,300	4,500	232,800	219,700	259,500	279,000
Educational, health, social services	86,900	155,400	164,300	172,800	800	1,400	1,400	1,500	5,600	9,400	9,900	10,700	93,300	166,200	175,600	185,000
Arts, entertainment, recreation, accommodation, food services	71,500	94,500	99,800	100,100	1,400	1,300	1,400	1,500	4,500	5,400	5,700	5,900	77,400	101,200	107,000	107,400
Other services (except public administration)	26,700	26,700	31,500	33,500	300	400	500	500	1,500	1,400	1,600	1,800	28,500	28,500	33,600	35,800
Public administration	95,900	89,900	94,800	94,900	2,800	2,900	3,000	3,000	12,200	17,700	18,000	18,100	110,900	110,500	115,800	116,100
TOTAL	1,039,900	1,032,300	1,127,100	1,166,000	15,000	16,200	17,200	17,900	64,300	77,500	81,700	83,900	1,119,200	1,125,900	1,226,000	1,267,700

Sources: CEDD 2016a; Caltrans 2015

All numbers have been rounded to the nearest 100 for employment.

RSA = regional study area

Table 3.18-3 Regional Long-Range Employment Projections (2015, 2020, 2024, and 2040)

Geographic Area	Employment in 2015	2020			2024			2040		
		Employment in 2020	Change 2015–2020	Ann. Avg. Growth Rate 2015–2020	Employment in 2024	Change 2020–2024	Ann. Avg. Growth Rate 2020–2024	Employment in 2040	Change 2015–2040	Ann. Avg. Growth Rate 2015–2040
Santa Clara County	1,032,200	1,127,100	9.2%	1.8%	1,166,000	3.5%	0.9%	1,273,500	23.4%	0.8%
San Benito County	16,200	17,200	6.0%	1.2%	17,900	4.1%	1.0%	20,200	24.6%	0.9%
Merced County	77,500	81,700	5.5%	1.1%	83,900	2.7%	0.7%	93,700	20.8%	0.8%
RSA	1,125,900	1,226,000	8.9%	1.7%	1,267,700	3.4%	0.8%	1,387,400	23.2%	0.8%
California	16,474,800	17,588,100	6.8%	1.3%	18,228,500	3.6%	0.9%	20,895,900	26.8%	1.0%

Sources: CEDD 2016a; Caltrans 2015

All numbers have been rounded to the nearest 100 for employment.

Ann. Avg. = annual average

RSA = regional study area

Unemployment

The recession that began in 2007 had a substantial impact on employment and unemployment in the RSA, as it did throughout the state and nation. Table 3.18-4 shows annual civilian labor force and unemployment rates for the cities and counties in 2000, 2010, and 2015. As indicated, the unemployment rate in most locations more than doubled from the peak of the “dot-com” boom in 2000 to the lingering shadow of the Great Recession in 2010, but it improved substantially between 2010 and 2015, indicating a general economic recovery. The RSA, which is economically dominated by Santa Clara County and its robust, technology-driven employment, has consistently had lower unemployment than the state average. Variation in historical and recent unemployment rates exists within the RSA because of differing local conditions.

Table 3.18-4 Labor Force Characteristics by County and City/Community in the RSA (2000, 2010, and 2015)

Geographic Area	2000	2010	2015
Santa Clara County			
Civilian labor force	941,500	926,500	1,018,400
Percent unemployment rate	3.1	10.4	4.2
City of Santa Clara			
Civilian labor force	57,472	61,300	66,900
Percent unemployment rate	3.4	9.4	3.7
City of San Jose			
Civilian labor force	456,442	496,900	543,500
Percent unemployment rate	4.3	11.6	4.6
City of Morgan Hill			
Civilian labor force	17,192	19,800	22,500
Percent unemployment rate	5.2	11.4	4.6
San Martin Census-Designated Place			
Civilian labor force	2,138	3,500	3,900
Percent unemployment rate	9.6	18.0	5.9
City of Gilroy			
Civilian labor force	20,404	25,000	27,200
Percent unemployment rate	5.6	13.4	5.5
San Benito County			
Civilian labor force	27,500	27,900	29,800
Percent unemployment rate	6.0	15.1	7.6
City of Hollister			
Civilian labor force	16,331	17,400	18,700
Percent unemployment rate	7.4	15.3	7.7
Merced County			
Civilian labor force	90,400	113,600	115,100
Percent unemployment rate	9.6	18.0	11.4

Geographic Area	2000	2010	2015
City of Los Banos			
Civilian labor force	10,745	15,800	15,800
Percent unemployment rate	13.5	18.3	11.6
RSA			
Civilian labor force	1,059,400	1,068,000	1,163,300
Percent unemployment rate	3.7	11.3	5.0
California			
Civilian labor force	16,867,800	18,336,300	18,981,800
Percent unemployment rate	4.9	12.2	6.2

Sources: CEDD 2016a, 2016b; U.S. Census Bureau 2000a, 2000b, 2003

Unemployment rates in San Benito and Merced Counties, both with proportionally higher percentages of their employed residents working in agriculture and related industries than the California average, have been higher than the state average in each of the years shown in the table. Moreover, unemployment in the three counties and the region increased in 2010 as a result of the ongoing nationwide economic recession at that time. Unemployment rates have been exacerbated by the continued weakness in construction and state budget cuts; however, unemployment rates between 2010 and 2015 decreased in all counties, cities, and census-designated places in the RSA with economic recovery from the recession.

3.18.5.3 Population

Table 3.18-5 shows the population in 2000 and 2015 and growth rates for the counties in the RSA. The three counties vary greatly in terms of population size, with the Santa Clara County population being approximately 34 times the size of the San Benito County population despite the counties being of similar physical size. Santa Clara County is the most urbanized and most populous of the three counties, containing more than 85 percent of the region's population. San Benito and Merced Counties comprise primarily agricultural land, with small towns separated by large open-space and agricultural areas, and low population concentrations. The demographics of the RSA population are discussed in additional detail in Section 3.12.5.1, Population and Households.

Table 3.18-5 Population Growth (2000 and 2015)

Geographic Area	Population in 2000	Population in 2015	Change 2000–2015	Annual Average Growth Rate 2000–2015
Santa Clara County	1,682,585	1,903,974	13.2%	0.8%
San Benito County	53,234	56,445	6.0%	0.4%
Merced County	210,554	269,280	27.9%	1.7%
RSA	1,946,373	2,229,699	14.6%	0.9%
California	33,871,648	38,907,642	14.9%	0.9%

Source: CDOF 2016
RSA = regional study area

Of the three counties, Merced County had the highest annual average population growth rate, 1.7 percent, between 2000 and 2015. San Benito County, the smallest county in the RSA, had the lowest annual average growth rate at 0.39 percent. Overall, the RSA population grew at a pace comparable to California, the RSA adding 283,300 persons between 2000 and 2015 (California Department of Finance [CDOF] 2016).

Table 3.18-6 shows the RSA county population for 2015 and projections for 2040 (CDOF 2014, 2016). These estimates anticipate that all three counties will grow at a higher average annual rate than the state of California. Over the next 25 years, population is projected to increase in Santa Clara, San Benito, and Merced Counties by about 23 percent, about 47 percent, and about 45 percent, respectively. The economic growth analysis presented in the *San Francisco Bay Area to Central Valley High-Speed Train Final Program EIR/EIS* (Authority and FRA 2008) found that the overflow of people from urban coastal areas seeking affordable housing within commuting range of major metropolitan areas, such as Santa Clara County, contributes to the high growth projections for areas such as San Benito and Merced Counties.

Table 3.18-6 Population Projections (2015 and 2040)

Geographic Area	Population in 2015	Population in 2040	Change 2015–2040	Annual Average Growth Rate 2015–2040
Santa Clara County	1,903,974	2,331,887	22.5%	0.8%
San Benito County	56,445	82,969	47.0%	1.6%
Merced County	269,280	389,934	44.8%	1.5%
RSA	2,229,699	2,804,790	25.8%	0.9%
California	38,907,642	47,233,240	21.4%	0.8%

Sources: CDOF 2014, 2016
 RSA = regional study area

3.18.5.4 Housing Demand

Table 3.18-7 shows the number of housing units and the projected housing units in the RSA for 2015 and 2040. Santa Clara County is projected to grow more slowly than either San Benito County or Merced County. However, the absolute number of new housing units added in Santa Clara County is projected to be much greater, with a net increase in housing from 2015 to 2040 more than five times the combined sum of the other two counties in the RSA.

The predominant housing type across the RSA is single-family homes, comprising about 518,050 single-family attached and detached units and mobile homes, or about 68 percent, of the 765,550 total dwelling units in the RSA on January 1, 2017 (CDOF 2017). From April 1, 2010, to January 1, 2017, however, most new residential construction in Santa Clara County, about 77 percent, was in new multifamily dwellings, and only about 23 percent was new single-family units. Most new residential construction in Merced County during the same period was single-family dwelling units, with about 25 percent being multifamily units. About 17 percent of San Benito County housing built from 2010 to 2017 consisted of multifamily units. Overall, about 73 percent of all new residential units built in the RSA during the nearly 7-year period were multifamily housing. (CDOF 2017).

Household sizes differ throughout the RSA, with an average 2015 household size ranging from 3.01 persons in Santa Clara County to 3.32 persons in Merced County (CDOF 2015). Single-family development typically consumes land at higher rates per dwelling unit than more compact multifamily dwelling types. Section 3.12.5.3, Property Displacement and Relocations, provides more information on housing characteristics in the region.

Table 3.18-7 Housing Units and Vacancy Rates (2015 and 2040)

Geographic Area	Existing Housing Units in 2015	Projected Housing Units in 2040 ¹	Change 2015–2040	Annual Average Growth Rate 2015–2040
Santa Clara County	652,007	840,200	28.9%	1.0%
Percent vacancy rate	4.5	3.5	(22.4%)	(1.0%)
San Benito County	18,262	26,500	45.1%	1.5%
Percent vacancy rate	4.9	3.4	(31.0%)	(1.5%)
Merced County	84,407	123,300	46.1%	1.5%
Percent vacancy rate	6.2	4.3	(31.5%)	(1.5%)
RSA	754,676	990,000	31.2%	1.1%
Percent vacancy rate	4.7	3.6	(23.8%)	(1.1%)
California	13,914,716	17,240,100	23.9%	0.9%
Percent vacancy rate	7.5	6.0	(19.3%)	(0.9%)

Sources: CDOF 2014, 2015, 2016

¹ Housing unit projections for 2040 are based on projected 2040 total population by county (CDOF 2014), minus the trend line extrapolation of 2010–2030 group quarters population by county (CDOF 2015) to 2040, divided by the trend line extrapolation of 2010–2030 average persons per household by county (CDOF 2015) to 2040, to account for anticipated continuing decreases in overall rates of persons per household. The estimated number of vacant housing units by county in 2015 (CDOF 2016) have been added to the calculated projections of households (occupied housing units) in 2040, to estimate 2040 total housing units.

RSA = resource study area

Based on population projections, housing needs for the next 25 years will increase by 31.2 percent in the region, with the highest proportionate increase in Merced County at 46.1 percent and the highest absolute increase in Santa Clara County at about 188,200 new units. In 2015, approximately 35,200 housing units were vacant in the region, which represents about 4.7 percent of the available housing stock (CDOF 2016). The RSA's housing vacancy rate was lower than the state's overall rate and is expected to remain lower than the state average in the future.

Housing demand indicators generally reflect the economic circumstances throughout the RSA. For example, median housing list prices in Santa Clara County were estimated by Zillow to be roughly \$700 per square foot at the end of the third quarter of 2018, while in neighboring San Benito County, the median list price was estimated at just \$315 per square foot, and about \$170 per square foot in Merced County (Zillow 2019). These differences in housing prices echo other differences in income levels and employment sectors among local residents and indicate that demand for housing is much greater in Santa Clara County largely because of its impressive employment base. In addition to income differences and demand based on employment, RSA housing prices are also driven up by constraints on housing and land supply, including high development costs, limited infrastructure capacity, and land use development policies or practices that affect growth.

3.18.6 Environmental Consequences

3.18.6.1 Overview

This section discusses the anticipated impacts on regional growth that could result from the No Project Alternative and the project alternatives. The discussion of construction impacts considers common regional growth impacts and several issues pertaining to construction-related employment. The discussion of operations impacts considers common regional growth impacts, operations-related employment, employment growth due to improved accessibility, the potential to induce additional population growth in exurban counties, and land use consumption. Details of

anticipated regional growth under the No Project Alternative are presented in Section 3.18.5, Affected Environment.

Construction Impacts

Construction of the project could affect regional growth through the purchasing of materials and contracting of labor that would result in increasing employment in both the construction industry and in industries that support construction activities and workers. These impacts would be temporary, occurring during the projected 7-year construction period (2022–2028). The project's demand for construction workers would increase the RSA's expected construction employment above the No Project Alternative estimate for the 2024 peak year. This demand, however, is not anticipated to result in the relocation of construction workers to the RSA because the available and accessible construction work force is sufficient to meet demand. The midpoint of the project extent is near the intersection of San Felipe Road and SR 152 near Gilroy. Assuming typical interregional PM peak-hour commuting speeds and a maximum one-way commute time of 90 minutes, construction workers at project locations near that midpoint might commute from an adjacent Northern California area extending across portions of nine counties: Alameda, Fresno, Merced, Monterey, San Benito, San Mateo, Santa Clara, Santa Cruz, and Stanislaus (see Attachment 1 to Appendix 3.18-A in Volume 2).

At the time of this analysis, the expected peak year of construction employment for the project is 2024, or the third year of an anticipated 7-year construction period. 2020 was the expected peak year for construction of the Central Valley Wye Project Extent, which would attract construction workers from a commute shed that would overlap parts of the commute shed estimated for the San Jose to Central Valley Wye Project Extent. At the time of this analysis, 2022 is the expected peak year for construction of the San Francisco to San Jose Project Section (the second year of that project's anticipated 5-year [2021–2025] construction period), and that project section would attract construction workers from a commute shed that would substantially overlap with the commute shed for the San Jose to Central Valley Wye Project Extent.

The peak construction periods for both the Central Valley Wye Project Extent and the San Francisco to San Jose Project Section would be earlier than for the San Jose to Central Valley Wye Project Extent, which also would not overlap with the peak year of construction demand for the Merced to Fresno Project Section (2016—the second year of that project section's 5-year construction period). Construction workers trained on earlier project sections could transfer to the San Jose to Central Valley Wye Project Extent, as they would have direct experience working on the HSR system.

The Authority has been working with various California organizations to increase training and improve opportunities for workers who would like to do construction work, through programs such as the Central Valley Infrastructure Employment Project. Contract requirements that a substantial share of the construction expenditures go to small businesses would also increase opportunities for workers in the RSA. The emphasis on providing job training and the requirements to use small businesses should provide employment opportunities for construction workers in the region. Also, the propensity of construction workers to tolerate long commutes to typically short-term job sites rather than relocating their households, combined with the large labor force of construction workers within a reasonable commute shed beyond the RSA (typically from the urban Bay Area), suggest that it is unlikely that many construction workers would compete for traditional owner-occupied or rental housing units in the region to seek employment opportunities that would be created by the project alone. It is also unlikely that many construction workers from outside the RSA would relocate their families to communities in the RSA because of the high cost of housing in the RSA and because the disruption to their family and social networks may not be considered worthwhile for a construction job that is likely to last just a few years.

Operations Impacts

Project operations could affect regional growth through the hiring of workers and purchasing of materials and labor to maintain tracks and systems along the project extent as well as to operate and maintain HSR stations and maintenance facilities. These effects would be ongoing

throughout project operations. The employment associated with project operations represents a small addition to the growth anticipated under the No Project Alternative.

The HSR system would also lead to increased population and employment as a result of improved accessibility throughout the state and the enhanced attractiveness of station areas for development and investment. The Authority estimates that approximately 25,000 of these accessibility-generated jobs would be located in the three counties of the RSA by 2040 (Authority 2017a). This level of growth would not represent an impact on this region, which is projected to have nearly 1.4 million jobs by 2040.

Some exurban communities would experience population growth in response to the improved accessibility offered by the HSR system. For example, households residing in the expensive housing markets in the Bay Area may move to other counties with less expensive housing while still being able to access their employment centers by relying on HSR service. Estimating specific numbers of such households and their related impacts on specific locations would be highly speculative, because individuals and families make location decisions for many different reasons. Consequently, the analysis of exurban growth is more qualitative than quantitative. While such exurban growth can be reasonably expected as a result of HSR, it is not anticipated to represent a major shift in growth otherwise anticipated.

As employment and population growth occur throughout the RSA, new development would consume currently undeveloped or underutilized land. The level of growth related to HSR operations in the RSA would be marginal compared to growth projected under the No Project Alternative; accordingly, the amount and pattern of land consumption associated with the HSR project are also expected to make only a marginal difference.

3.18.6.2 No Project Alternative

This section describes the conditions expected to be present in the RSA assuming the HSR project is not built and operated, and thus the No Project Alternative represents the baseline condition against which the impacts of the project can be compared. As discussed below, the RSA is already the location of a large population and economy, both of which are projected to grow substantially even under the No Project Alternative.

Projected population growth in the RSA under the No Project Alternative is shown in Table 3.18-6 above. The land use plans of Santa Clara, San Benito, and Merced Counties encourage infill and higher-density development in urban areas and concentration of uses around transit corridors and stations to accommodate future population growth and provide more modal choices for residents and workers. These policies are being implemented in the region regardless of whether the HSR project is built. Under the No Project Alternative, San Jose and Gilroy would not have HSR stations and thus may have more difficulty encouraging higher-density development closer to downtown areas without the demand for growth downtown near stations created by HSR riders, and fewer transportation choices would be available.

To some extent, the SCSs adopted by the MPOs as part of their most recent RTPs encourage both more-compact development and greater investment in local transit modes as a means of reducing GHG emissions. An APS adopted by an MPO would encourage compact development. In either case, the fact that the SCS/APS would address reductions in GHG emissions would encourage cities and counties to consider its provisions during planning and zoning deliberations to comply with the CEQA requirement to mitigate, to the extent feasible, the impacts of planning and zoning decisions on GHG emissions. *Plan Bay Area* (ABAG and MTC 2013) and the *San Joaquin Valley Blueprint* (San Joaquin Valley Regional Policy Council 2010), which are voluntary, not mandatory, are also expected to encourage compact development, but the extent of any increase in compact development is difficult to quantify unless the city or county chooses to adopt *Plan Bay Area* or *San Joaquin Valley Blueprint* policies as part of its general plan.

Construction of planned residential, commercial, and industrial development and transportation projects identified in Volume 2, Appendix 3.19-A, Nontransportation Plans and Projects, and Appendix 3.19-B, Transportation Plans and Projects, would generate short-term construction employment in the region.

3.18.6.3 Project Impacts

Construction and operations of the project would result in both temporary and permanent impacts on regional growth. The construction of the HSR system, however, is consistent with the long-term land use plans and discussions of regional growth (Volume 2, Appendix 2-J, Regional and Local Plans and Policies). The following sections discuss construction impacts and operations impacts.

Construction Impacts

Common Regional Growth Impacts

The start of project construction would be preceded by acquisition of right-of-way for HSR track modifications, stations, and maintenance facilities. Some parcels, including buildings and other facilities or improvements, would be purchased outright. In other cases, narrow strips of land along the edges of large parcels, such as agricultural properties, would be leased for construction easements or purchased for permanent use. The land acquired for the right-of-way would change to public transportation use and would no longer generate property tax revenues for local governments. The purchase of property and relocation of residences and businesses would disrupt both residential and commercial or industrial property and business owners along the project extent. The economic impacts of these property acquisitions are discussed in Section 3.12.6.5, Economic Impacts, in the Socioeconomics and Communities section.

For most land uses adjacent to or intersected by the project, the total amount of land that would need to be purchased or converted from current use is a small proportion of all land of that type in the region.⁵ Regional growth associated with project implementation could result in conversion of Important Farmland to nonagricultural uses (Section 3.14.6.2, Important Farmland and Williamson Act Contract Lands). The economic impact of such agricultural conversions is also discussed in Section 3.12.6.5, Economic Impacts. Table 3.18-8 shows that the total amount of Important Farmland anticipated to be affected by the project, whether temporarily or permanently, represents a small percentage of the total supply of Important Farmland in the RSA.

Table 3.18-8 Acres of Important Farmland Affected by Project Alternatives

Important Farmland Affected	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Temporary construction easement (acres)	617.6	658.6	671.9	460.9
Permanent conversion (acres)	1,035.5	1,181.3	1,192.5	1,032.6
Severance (acres)	162.9	244.3	252.8	147.0
Total affected acres	1,816.0	2,084.2	2,117.2	1,640.5
Total supply of important farmland in RSA (acres)	682,287	682,287	682,287	682,287
Percent of total supply affected	0.27%	0.31%	0.31%	0.24%

Source: California Department of Conservation, 2015a, 2015b, 2015c.
 RSA = resource study area

⁵ Temporary and permanent property acquisitions and displacement and relocations of land uses are discussed in Section 3.12.6.4, Property Displacement and Relocations.

The overall qualitative impact of farmland converted to nonagricultural uses cannot be precisely quantified with regard to levels of agricultural production. With regard to regional growth inducement, the conversion of agricultural land because of project construction and operation would not contribute to incremental population and housing growth potentials, given the following factors:

- Much of the agricultural land that would be converted is in rural areas where demand for residential development is low.
- Remnant parcels, with their expected size and the limit of one dwelling per parcel in most agricultural use zones, have limited potential to support new homes.
- Any subdivision development would typically require a general plan amendment and rezoning to allow higher residential densities—policy changes not reasonably foreseeable in areas that typically lack sewer, water, and other infrastructure to support higher residential development density.

Construction-Related Employment

During project construction, workers would be required for construction activities. In addition, workers would be required in industries supporting the project supply chain (e.g., equipment rentals) and industries supporting the workers' spending on everyday goods and services (e.g., food, vehicle fuel). Some workers would be individuals who are already fully trained, while others could require training. Finally, some workers may commute from outside the RSA. The construction schedules of different HSR project sections could help meet the demand for workers for the project and adjacent HSR projects.

Direct, Indirect, and Induced Employment

The number of jobs directly generated by a construction project typically relates to the size and budget of that project. Projects also generate *indirect* impacts in the surrounding economy as local businesses provide goods and services to support the project, and they have *induced* impacts as project workers spend portions of their wages on goods and services for themselves and their households.

Total construction costs for the project alternatives were developed using standard capital cost categories adopted by the Authority (Volume 2, Appendix 6-B, Operations and Maintenance Cost Memorandum). Estimates of local construction expenditures—that is, the anticipated portion of the total construction budget that would be expended for goods, labor, and services in the RSA—and the related direct, indirect, and induced employment impacts have been made by application of RIMS II modeling. The RIMS II modeling procedure, assumptions, and results supporting this analysis are described in Volume 2, Appendix 3.18-A.

Table 3.18-9 shows the range of capital, construction, and local construction cost estimates for the four project alternatives. Alternative 4 would have the lowest capital and local construction costs. Alternative 3 would have the highest capital and local construction costs. Local construction costs spent within the RSA⁶ would range from \$4.56 billion to \$7.21 billion. The table also shows the anticipated annual construction expenditures during the 2022–2028 construction period, including the peak year of construction spending in 2024.

⁶ For the purposes of this analysis, local construction costs are assumed to be those spent within the RSA (Santa Clara, San Benito, and Merced Counties).

Table 3.18-9 Project Costs by Alternative (2018\$ in millions)

Cost ¹	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Capital costs	\$23,008	\$20,813	\$23,309	\$16,479
Total construction costs	\$17,614	\$15,080	\$18,094	\$12,713
Local construction costs	\$7,222	\$6,183	\$7,419	\$5,212
Local construction costs during 2022	\$1,010	\$861	\$981	\$750
Local construction costs during 2023	\$1,501	\$1,262	\$1,554	\$1,036
Local construction costs during 2024 (peak year)	\$1,928	\$1,613	\$1,999	\$1,279
Local construction costs during 2025	\$1,429	\$1,183	\$1,472	\$1,039
Local construction costs during 2026	\$635	\$545	\$645	\$461
Local construction costs during 2027	\$556	\$580	\$598	\$527
Local construction costs during 2028	\$163	\$139	\$169	\$119

Sources: Authority 2017b, 2018a, 2018b; Volume 2, Appendix 6-A, PEPP Record Set Capital Cost Estimate Report

¹ All costs rounded to the nearest million.

Table 3.18-10 through Table 3.18-13 show the calculated impacts of local construction costs for the project in total and annualized job-years during the expected 7-year construction period, using RIMS-II modeling for direct, indirect, and induced employment associated with the construction of project improvements. *Direct employment* refers to the jobs primarily involved in the construction sector. *Indirect employment* refers to the jobs created in existing businesses in the region (e.g., material and equipment suppliers) that supply 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.

Table 3.18-10 Alternative 1 Construction Employment Impacts

Construction Year	Direct Employment (annual job-years) ¹	Indirect and Induced Employment (annual job-years) ¹	Total New Employment (annual job-years) ¹
2022	4,040	2,070	6,110
2023	6,000	3,070	9,070
2024 (peak year)	7,710	3,940	11,650
2025	5,720	2,920	8,640
2026	2,540	1,300	3,840
2027	2,220	1,140	3,360
2028	650	330	980
Total	28,880	14,780	43,660

Sources: Authority 2017b; USBEA 2018

¹ All numbers have been rounded to the nearest 10.

Table 3.18-11 Alternative 2 Construction Employment Impacts

Construction Year	Direct Employment (annual job-years) ¹	Indirect and Induced Employment (annual job-years) ¹	Total New Employment (annual job-years) ¹
2022	3,440	1,760	5,200
2023	5,050	2,580	7,630
2024 (peak year)	6,450	3,300	9,750
2025	4,730	2,420	7,150
2026	2,180	1,120	3,290
2027	2,320	1,190	3,510
2028	550	280	840
Total	24,730	12,650	37,380

Sources: Authority 2017b; USBEA 2018

¹ All numbers have been rounded to the nearest 10.**Table 3.18-12 Alternative 3 Construction Employment Impacts**

Construction Year	Direct Employment (annual job-years) ¹	Indirect and Induced Employment (annual job-years) ¹	Total New Employment (annual job-years) ¹
2022	3,920	2,010	5,930
2023	6,210	3,180	9,390
2024 (peak year)	7,990	4,090	12,080
2025	5,890	3,010	8,900
2026	2,580	1,320	3,900
2027	2,390	1,220	3,610
2028	680	350	1,020
Total	29,670	15,180	44,850

Sources: Authority 2017b; USBEA 2018

¹ All numbers have been rounded to the nearest 10.**Table 3.18-13 Alternative 4 Construction Employment Impacts**

Construction Year	Direct Employment (annual job-years) ¹	Indirect and Induced Employment (annual job-years) ¹	Total New Employment (annual job-years) ¹
2022	3,000	1,530	4,530
2023	4,140	2,120	6,260
2024 (peak year)	5,110	2,620	7,730
2025	4,160	2,130	6,280
2026	1,840	940	2,790
2027	2,110	1,080	3,190

Construction Year	Direct Employment (annual job-years) ¹	Indirect and Induced Employment (annual job-years) ¹	Total New Employment (annual job-years) ¹
2028	480	240	720
Total	20,840	10,670	31,510

Sources: Authority 2017b; USBEA 2018

¹All numbers have been rounded to the nearest 10.

Because job creation corresponds to the local spending on the project, Alternative 3 would result in the highest level of employment, generating almost 45,000 total job-years, followed by Alternative 1 with more than 43,500 job-years. Alternative 4 would result in the smallest increase in employment, generating approximately 31,500 total job-years.

Each of the four alternatives would increase local and regional employment beyond what would be experienced under the No Project Alternative, with the impact varying among the four project alternatives. The combined total employment (direct, indirect, and induced jobs) for construction activity associated with the project improvements ranges from about 7,700 to about 12,100 jobs in the peak year of 2024 depending on alternative (Table 3.18-14).

If added to the projected total employment in the RSA for 2024 under the No Project Alternative (1,267,700 from Table 3.18-3), these peak construction-period jobs would add from about 0.6 percent (Alternative 4) to about 1.0 percent (Alternative 3) to the total projected employment in the region.

The combined *direct* employment for construction for project improvements is projected to be between 5,110 and 7,990 jobs in the peak year depending on alternative. If added to the projected construction employment in the RSA for 2024 under the No Project Alternative (37,000 from Table 3.18-2), these peak year direct construction jobs would add 14 to 22 percent to the total projected construction industry employment in the region. This would be an impact in the context of the construction-industry economy of the RSA if the support for construction labor created by the project were to be filled by workers that relocate to the RSA from outside the region.

Table 3.18-14 Project Total One-Time Economic Impact of Construction in the RSA

Alternative/Sector	Employment (Job Years) ¹
Alternative 1	
Direct impact	28,880
Indirect/induced impact	14,780
Total impact	43,660
<i>2024 peak year direct jobs</i>	7,710
<i>2024 peak year direct, indirect and induced jobs</i>	11,650
Alternative 2	
Direct impact	24,730
Indirect/induced impact	12,650
Total impact	37,380
<i>2024 peak year direct jobs</i>	6,450
<i>2024 peak year direct, indirect and induced jobs</i>	9,750

Alternative/Sector	Employment (Job Years) ¹
Alternative 3	
Direct impact	29,670
Indirect/induced impact	15,180
Total impact	44,850
<i>2024 peak year direct jobs</i>	7,990
<i>2024 peak year direct, indirect and induced jobs</i>	12,080
Alternative 4	
Direct impact	20,840
Indirect/induced impact	10,670
Total impact	31,510
<i>2024 peak year direct jobs</i>	5,110
<i>2024 peak year direct, indirect and induced jobs</i>	7,730

Sources: Authority 2017b, 2017c, 2018b; USBEA 2018

¹All numbers have been rounded to the nearest 10.

Workforce Development and Small Business Contracting

To increase both the number and ability of California workers and firms to compete for available project construction jobs, the Authority and others have 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 those who suffer from chronic unemployment to compete for available jobs. Community organizations have implemented similar programs to get workers trained, retrained, and certified for upcoming construction work opportunities. 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 (Authority 2019b). Moreover, many construction workers residing in the RSA may already have obtained HSR construction experience by working on earlier construction packages awarded by the Authority beginning in 2013.

Expanded Construction Workforce Available Beyond the RSA

The emphasis on job training for local workers and contract requirements to use small businesses should provide employment opportunities for construction workers in the region. However, substantially increasing the RSA's local supply of qualified construction workers to meet project demand would require an extensive and successful job-training program. Even if this program achieves a high rate of success, it is possible that some construction workers would be residents of counties outside the RSA. Whether such workers 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. The likelihood of household relocation by construction workers is related not only to the locations and durations of construction employment opportunities, but also to the skills and occupations of the workers. A small number of highly skilled workers could come to the region for short periods but would likely stay in area motels, mobile homes, recreational vehicles, or short-term rental units.

The U.S. Census Bureau's American Community Survey data show that more California workers are commuting long distances rather than relocating to be near jobs. California's extreme commuters, those workers regularly commuting 90 minutes or more one way, increased by

40.3 percent from 2010 to 2015, when the number of such workers surpassed 600,000 (Henderson 2017). American Community Survey data also show that construction and mining workers had the longest average journey-to-work times among major occupational groups, averaging about 33 minutes or 25 percent longer than the average commuter. Construction workers living in major metropolitan areas had even longer average commute times, about 36 minutes, indicating a propensity for long commutes to work on projects in urban areas like the RSA (Kopf 2016).

Assuming typical interregional PM peak commuting speeds and a maximum one-way commute time of 90 minutes, construction workers employed to work at project locations such as those near the midpoint of the project's route, near Gilroy, might commute from major cities as far away as San Jose, Oakland, and Salinas, and from the adjacent Northern California area extending across portions of nine counties, well beyond the RSA.⁷ Residents of that commute shed with primary employment in the construction industry were estimated at about 76,150 workers in 2017 (U.S. Census Bureau 2019a).

In 2024, the projected peak year of project construction, there would be approximately 37,020 construction jobs in RSA (Caltrans 2016). The roughly 5,110 to 7,990 construction workers required for the project in the peak year of 2024 therefore represent 14 to 22 percent of the 2024 construction labor force that is forecast to be working in the RSA as estimated by Caltrans without the project.

Given the upheaval it would cause to their social networks and institutions, it is unlikely that many construction workers from outside the RSA would relocate their families to communities in the immediate RSA to pursue local HSR construction jobs, because nearly all of this project's construction activity is anticipated to be completed within the 7-year period, from 2022 to 2028 (Authority 2018b). 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, resulting in a continuing need to alter their commute patterns.

Case studies of other 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). A limited number of contractors having both highly specialized skills and the expectation of sustained work contracts at a fixed location might need to relocate temporarily to the region during the construction period, but many construction workers who may be residents of the larger metropolitan region that extends beyond the RSA would drive or carpool to active project construction sites and return home at the end of the day.⁸ No construction worker camps would be established in the project footprint.

⁷ Nine counties have land area within a drive-time boundary centered at the intersection of San Felipe Road and SR 152 near Gilroy and extending to the distance a vehicle could travel on roadways in 90 minutes at typical interregional PM peak commuting speeds: Alameda, Fresno, Merced, Monterey, San Benito, San Mateo, Santa Clara, Santa Cruz, and Stanislaus Counties (see Attachment 1 to Appendix 3.18-A). The geographic centers of four of these counties (San Benito, San Mateo, Santa Clara, and Santa Cruz Counties) are well within the San Felipe Road and the SR 152 intersection-centered 90-minute drive-time, and the geographic centers of two counties (Alameda and Merced Counties) are less than 1 mile beyond the estimated 90-minute drive-time limit.

⁸ The Project Alternatives would require more than 15 miles of tunnel between Gilroy and Merced, which would likely involve the use of tunnel-boring machines. EIRs for other proposed large infrastructure projects in California that would use tunnel-boring technology, such as the Lake Elsinore Advanced Pumped Storage Project, also note the possibility of relocating tunnel-boring machine operators and support staff to the vicinity, in contrast with most other project construction workers (Nevada Hydro 2017). General descriptions of tunnel-boring occupations mention the considerable time sometimes required by tunnel workers to travel through shafts or tunnels to reach the boring location, in addition to the standard journey-to-work commute time from those workers' permanent or temporary places of residence.

Employment Issues Resulting from Overlapping HSR Project Section Construction Schedules

The project is just one of several HSR project sections expected to be built within a relatively short timeframe and near one another. The RSA for the project includes Santa Clara and Merced Counties, which are also part of the RSAs for the San Francisco to San Jose and Merced to Fresno Project Sections, respectively. This section explores how those RSA overlaps and phasing considerations may affect worker availability and related impacts. The HSR project section construction periods, start and end dates, and peak construction years discussed here are those anticipated when the analysis was conducted, and are subject to revision.

The construction period for the San Francisco to San Jose Project Section (2021–2025) is anticipated to overlap the construction period for the project (2022–2028). However, the peak construction year for the San Francisco to San Jose Project Section is anticipated to be 2022,⁹ while 2024 is anticipated to be the peak year for the San Jose to Central Valley Wye Project Extent. Peak demands for workers by the two projects are not anticipated to conflict, and some construction workers could work on both project sections, depending on timing and skills. Construction workers experienced on one of these project sections would provide a valuable labor resource for the other, and the estimated daily commute sheds for the different project sections would overlap. Approximately 55,300 (or 55 percent) of the 100,400 employed residents who were primarily employed as construction workers in 2017 and living within the 90-minute commute shed for the San Francisco to San Jose Project Section were also within the commute shed for this project (U.S. Census Bureau 2019a, 2019b) (see also Attachment 1 to Volume 2, Appendix 3.18-A, RIMS II Modeling Details).¹⁰

The construction period for the Central Valley Wye Project Extent is also anticipated to partially overlap the construction period for this project. The peak construction year for the Central Valley Wye Project Extent is not anticipated to occur at the same time as the peak year for this project. Again, peak demands for workers by the two projects are not anticipated to conflict, and some construction workers could work on both project sections. The estimated daily commute sheds for this project and the Central Valley Wye only marginally overlap. Approximately 5,630 (or about 10 percent) of the 54,900 employed residents who were primarily employed as construction workers in 2017 and living within the 90-minute commute shed for the Central Valley Wye Project Extent were also within the commute shed for San Jose to Central Valley Wye Project Extent (U.S. Census Bureau 2019a, 2019c) (see also Attachment 1 to Volume 2, Appendix 3.18-A, RIMS II Modeling Details).¹¹

Operations Impacts

Common Regional Growth Impacts

Operations impacts that could affect regional growth relate directly to operating cost estimates, number of workers employed to operate and maintain the project, and related indirect or induced employment in the region.

Operations of all four alternatives would result in similar direct and indirect or induced impacts on employment and population increases, and in similar overall consumption of land associated with regional growth. The operating costs would be nearly the same for each of the four alternatives

⁹ The 2022 peak construction year estimate is for San Francisco to San Jose Project Section Alternatives A and B, excluding any consideration of the Scott–Alma “overlap” portion of the alignment.

¹⁰ Seven counties have land area within a drive-time boundary centered at the City of Belmont, near El Camino Real and Marine View Avenue and extending to the distance a vehicle could travel on roadways in 90 minutes at typical interregional PM peak commuting speeds (see Attachment 1 to Appendix 3.18-A in Volume 2): Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Santa Cruz Counties. The geographic centers of three of these counties (Alameda, San Francisco, and San Mateo) are within the Belmont-centered 90-minute drive-time boundary.

¹¹ Eleven counties have land area within a drive-time boundary centered at the intersection of SR 152 and SR 233 near Chowchilla and extending to the distance a vehicle could travel in 90 minutes at typical interregional PM peak commuting speeds (see Attachment 1 to Appendix 3.18-A in Volume 2): Fresno, Kings, Madera, Mariposa, Merced, San Benito, San Joaquin, Santa Clara, Stanislaus, Tulare, and Tuolumne Counties. The geographic centers of seven of these counties (Fresno, Kings, Madera, Mariposa, Merced, San Joaquin, and Stanislaus) are within the SR 152 and SR 233 intersection-centered 90-minute drive time.

because all include the same number of stations, similar maintenance facilities, and nearly the same track lengths. Other economic impacts from project operations are discussed in Section 3.12.6.5, Economic Impacts, in the Socioeconomics and Communities section, including changes in tax revenues to local governments. Under all alternatives, the employment and population growth and the related consumption of land are projected to be not only comparable but also of limited impact relative to the No Project Alternative.

Operations-Related Employment

Table 3.18-15 shows the estimated total annual employment associated with project operations. This analysis does not distinguish among the four alternatives because operations-related employment would be very similar under each of them. Details regarding these calculations are provided in Volume 2, Appendix 3.18-A, RIMS II Modeling Details.

Table 3.18-15 Project Annual Employment Impacts during Operations and Maintenance

Impact	Employment ¹
Direct jobs	600
Indirect/induced jobs	510
Total	1,110

Sources: Authority 2017a; USBEA 2018; CEDD 2017a

¹ Calculated by application of RIMS II Multipliers for Industry Aggregation 33, Rail Transportation.

The direct O&M jobs would include train operations and dispatching, infrastructure and equipment maintenance, station and train cleaning, ticketing and other commercial activities, and administration. The indirect and induced jobs would include additional employment supporting, servicing, or supplying train operations, administration and dispatching, infrastructure and equipment maintenance, station and train cleaning, ticketing and other commercial activities, and other occupations such as security, operations of concessions, and provision of goods and services to riders entering and leaving the HSR system.

Because O&M employment impacts would occur in many industrial sectors, comparisons to total employment projected for the RSA under the No Project Alternative are appropriate. The total employment impact, both direct and indirect or induced, sums to roughly 1,110 jobs per year associated with project operations. This figure represents considerably less than 1 percent of the projected total employment in the RSA in 2040 (1,387,400 from Table 3.18-3) under the No Project Alternative. O&M employment would not be an adverse impact but rather a benefit to the local and regional economy, and it would not draw a substantial number of workers from outside the region. Table 3.18-16 shows the estimated growth of direct, indirect, and induced employment and population associated with project operations.

Table 3.18-16 Project Operations-Related Employed Residents and Population Growth

Impact	Employed Residents ¹	Population ²
Direct	600	1,320
Indirect/induced	510	1,120
Total	1,110	2,440

Sources: CEDD 2016a; CDOF 2016

¹ For purposes of EIR/EIS analysis, all Phase 1 O&M direct and indirect and induced workers projected for the project, and their households, are assumed to reside within the RSA.

² Calculated using 2015 ratios of employed residents (CEDD) to total population (CDOF), about 0.5 in aggregate for the RSA, applied to estimated 2040 direct and indirect and induced O&M employment.

CEDD = California Employment Development Department

CDOF = California Department of Finance

O&M = operations and maintenance

RSA = resource study area

Employment Growth Due to Improved Accessibility

A transportation project can also induce employment growth in a geographic area if it removes obstacles to employment growth (e.g., the establishment or expansion of an essential public service or the extension of a roadway to an area). Projects such as the HSR system can induce employment growth by providing an additional mode of fast and efficient transportation that facilitates travel between areas. CEQA requires attention to the environmental effects of that growth. CEQA thresholds regarding regional growth effects are addressed in Section 3.12, Socioeconomics and Communities. Section 3.12 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.

HSR service is expected to enhance access among cities in the region and between the Bay Area and the Los Angeles metropolitan region, resulting in “long-term dynamic economic effects such as enhanced labor market accessibility, increased business travel and transactions, direct transport cost savings, improved business and worker productivity, support of tourism and other important service sectors requiring patron accessibility, etc.,” compared to the No Project Alternative (Authority 2017a). The Authority conservatively estimates that the HSR system could support approximately 102,000 more jobs statewide than under the No Project Alternative through 2040 by improving connectivity between employment centers and residential areas. The analysis indicates that about 21,860 of these accessibility-based jobs would be located in the RSA and can be allocated to the project.¹²

Table 3.18-17 shows the impact that the project would have on employment growth in the RSA. The growth attributable to project operations and maintenance is small, an increase of about 0.1 percent to the expected 2040 conditions in the No Project Alternative. The employment gains associated with increased accessibility would represent a more substantial addition to the expected growth in the entire RSA—an increase of about 1.7 percent above the No Project Alternative—if all of the potential accessibility increase were realized by 2040.

¹² Accessibility increase allocations to region per Authority 2017b. About 80 percent of the accessibility increase for Santa Clara County and about 40 percent of the increase for Merced County are allocated to the project, based on the project’s proportional shares of about 65 and 79 total miles of proposed HSR route within Santa Clara and Merced Counties, respectively. All the accessibility increase for San Benito County is allocated to the project.

Table 3.18-17 Project Operations-Related Employment and Population Growth, Including Increased Accessibility Impacts

Region	Year 2015 Existing Conditions	No Project Alternative 2015–2040 Growth	No Project Alternative 2040 Baseline Forecasts	Phase I O&M Direct, Indirect, and Induced Growth ³	2040 HSR Increased Accessibility Potential ³	Total HSR-Induced Growth ³	Total 2040 Projections with HSR	Total HSR Growth Inducement
Employment^{1,2}								
RSA	1,125,900	261,500	1,387,400	1,110	21,860	22,960	1,410,300	1.7%
Population³								
RSA	2,229,700	575,100	2,804,800	2,440	44,900	47,330	2,852,100	1.7%

Sources: CEDD 2016a; CDOF 2016; Authority 2017a, 2017b.

CDOF = California Department of Finance

¹ Regional O&M direct employment is projected at about 600 by 2040, based on approximate route miles.

² Accessibility increase allocations to region per Authority 2017a. About 80 percent of the accessibility increase for Santa Clara County and about 40 percent of the accessibility increase for Merced County are allocated to the project, based on the project's proportional shares of about 65 and 79 total miles of proposed HSR route within Santa Clara and Merced Counties, respectively. All of the accessibility increase for San Benito County is allocated to the project.

³ Population calculated using 2015 ratios of employed residents (CEDD 2016a) to total population (CDOF 2016)—about 0.5 in aggregate for the RSA.

CEDD = California Employment Development Department

HSR = high-speed rail

O&M = operating and maintenance

RSA = resource study area

Induced Population Growth

A project may foster population growth in a geographic area 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). Projects such as the HSR system could induce population growth by providing an additional mode of fast and efficient transportation that facilitates travel between areas. CEQA also requires significance determinations for potential growth-inducing impacts on population and housing as noted previously.

As described in the previous section on induced employment growth, HSR service is expected to enhance access among cities in the region and between the Bay Area and the Los Angeles metropolitan region compared to the No Project Alternative (Authority 2017a). The Authority conservatively estimates that the HSR system and the 102,000 jobs it would encourage through improved accessibility could support approximately 230,000 more residents statewide than under the No Project Alternative through 2040.¹³ The analysis indicated that roughly 44,900 individuals would be induced by this improved accessibility in the RSA.¹⁴

Table 3.18-17 shows the impact that the project is expected to have on population growth in the RSA. The growth attributable to project operations and maintenance is small, an increase of about 0.1 percent to the expected 2040 conditions in the No Project Alternative. The population growth associated with increased accessibility would represent a more substantial addition to the expected growth in the entire RSA—an increase of about 1.6 percent above the No Project Alternative—if all of the potential accessibility increase were realized by 2040.

Potential to Induce Additional Population Growth in Exurban Counties

The Authority also assessed the extent to which workers might use the HSR system to commute on a daily or frequent basis from suburban and exurban communities to their places of work in the metropolitan central cities, and whether the planned HSR system could result in a redistribution of population unrelated to economic growth in outlying areas (Authority 2018a). In particular, suburban and exurban counties could attract population because of the high housing costs in California's heavily urbanized areas. People could relocate from the San Francisco and San Jose metropolitan areas to less expensive outlying communities (Authority 2018a).

For workers moving and purchasing housing in suburban and exurban communities, but continuing to work in one of the metropolitan central cities, housing costs would decrease but transportation costs would likely increase (Authority 2018a). Living in suburban and exurban communities may currently require workers to make 2- and 3-hour, one-way commutes to their place of employment under existing traffic patterns. More than 5,000 individuals routinely commute from Merced County to jobs in Santa Clara County (Authority 2018a). To the extent that the HSR system can reduce overall transportation costs by reducing the time and expense associated with commuting to high-paying job centers, people may be encouraged to consider using the HSR system to access more affordable housing in suburban and exurban communities.

Phase 1 of the HSR system would include stations in the densely urbanized cities of San Francisco, Millbrae, and San Jose (Authority 2016). Additional stations would serve the suburban/exurban communities of Gilroy, Merced, Fresno, and Kings/Tulare (Authority 2019c). HSR travel time objectives from Central Valley communities and Bakersfield to the central cities of the Bay Area and Los Angeles metropolitan region, respectively, would be less than 1 hour, considerably shorter than the current 2- to 3-hour automobile commutes.

Individuals with median or higher-paying jobs in the metropolitan central cities but who live in a suburban or exurban community could reduce their household total average annual housing cost,

¹³ Residents estimated using a constant statewide employment-to-population ratio of 2.257, times 102,000 jobs (Authority 2017b).

¹⁴ About 80 percent of the accessibility increase for Santa Clara County and about 40 percent of the accessibility increase for Merced County are allocated to the project, based on the project's proportional shares of about 65 and 79 total miles of proposed HSR route within Santa Clara and Merced Counties, respectively. All 100 percent of the accessibility increase for San Benito County is allocated to the project.

pay somewhat higher transportation costs, and still reduce their total combined costs by about 5 percent or more (Authority 2018a). This savings could be used to purchase a home rather than rent, purchase a bigger home, and/or access more community amenities. Some of the savings could be used for more costly but faster transportation if the HSR train travel durations, frequencies, and connecting modes of transportation between home, HSR stations, and work destinations are convenient. Some households could afford the HSR train for commuting on a daily or less frequent basis.

Some individuals and their households may choose to relocate to suburban and exurban communities to purchase more affordable housing because of convenient access to potentially affordable HSR services. The number, magnitude, and distribution of households that may make this decision are difficult to estimate because these values involve many economic factors and individual preferences. Such households would likely relocate to these suburban and exurban communities over time during project construction, just prior to operations, 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 within these suburban and 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 suburban and exurban communities.

Land Use Consumption

It is important to understand the extent to which a project and its associated regional growth may entail increases in overall land consumption and major changes to urbanization patterns. The RSA contains approximately 263,500 acres of urbanized land area: 211,450 acres in Santa Clara County, 44,730 acres in Merced County, and 7,320 acres in San Benito County (U.S. Census Bureau 2018).

Table 3.18-17 shows that total population in the RSA is projected to grow by about 575,100 between 2015 and 2040 under the No Project Alternative, while employment is projected to grow by about 261,500 jobs. Table 3.18-17 also shows that the direct, indirect, induced, and accessibility-related impacts of project operations would add about 22,960 more jobs and approximately 47,330 more persons to the RSA by 2040 than otherwise projected under the No Project Alternative. Most of this increase in regional growth is attributed to the improved accessibility offered by the HSR system rather than to employment for or induced by the long-term O&M requirements of the HSR system. The overall increase of 2040 jobs in the RSA attributable to the project is about 1.7 percent above the total jobs expected under the No Project Alternative; the overall increase of 2040 population in the RSA attributable to the project is also about 1.7 percent.

For the RSA, these additional growth inducements for jobs and population between 2015 and 2040 would not impose substantial incremental demand on available land supply. Table 3.18-17 shows that the region's housing supply is expected to increase by roughly 31.2 percent or about 235,300 units between 2015 and 2040 under the No Project Alternative, while the population is anticipated to increase by 575,100 during the same period (Table 3.18-17). This equates to about 2.44 new people per new housing unit under the No Project Alternative. At this ratio, the 47,330 new RSA residents attributed to the HSR project would demand 19,366 housing units more than would otherwise be required under the No Project Alternative. Table 3.18-7 shows that 990,000 total housing units are expected in the RSA by 2040 under the No Project Alternative; the additional 19,366 attributed to HSR would represent an increase of 1.96 percent more total units in the region.

Recent housing production in the RSA (Section 3.18.5.4, Housing Demand) indicates that about 73 percent of new units have been built as multifamily units, and this trend is likely to continue given the value of developable land in the RSA. An average density of 25 units per acre would be typical of townhouse-style attached single-family homes or very low-density multifamily construction in the RSA. At this average density, the total demand for new housing in the No Project Alternative would consume about 9,412 acres of land, an amount equivalent to about 3.6

percent of the RSA's existing urbanized area. Adding the 19,366 new units associated with the project could increase land consumption by an additional 775 acres, or about 0.3 percent of the RSA's existing urbanized area

Similarly, the employment growth associated with the project would increase the total new jobs from 261,500 under the No Project Alternative to 284,420 with the HSR project. Like population growth, most of these added jobs are attributed to accessibility improvements from HSR service rather than workers directly or indirectly involved in HSR operations. The Authority does not know or project the precise blend of job types and industries likely to be added as a result of the accessibility improvements. However, assuming each job occupies 400 square feet of building space—a typical ratio for a blend of workplaces including office, retail, industrial, and lodging space—the amount of new workspace required would be 104.6 million square feet under the No Project Alternative and 113.8 million square feet under the project. Assuming an average floor-area ratio of 0.5,¹⁵ these workspaces would require 4,803 acres and 5,224 acres (about 1.82 and 1.98 percent of the RSA's existing urbanized area), respectively—a difference of about 421 acres, or less than 0.2 percent of the RSA's existing urbanized area.

This analysis suggests that demand attributed to the project may increase overall urbanized residential land by 775 acres and nonresidential land by 421 acres in the RSA, yielding a total increase of 1,196 acres, or 0.5 percent more total urbanized land, than under the No Project Alternative. This does not represent a material difference in the amount of total urban land required for development to accommodate regional growth. Moreover, the overall amount of land required to accommodate new population and employment growth associated with the project is likely overestimated because the analysis conservatively assumes that all new development would occur on previously vacant land. The RSA has 2,952,800 acres of total land area, of which about 263,500 acres is urbanized, the remaining 2,689,300 acres being undeveloped or developed at less than urban densities (U.S. Census Bureau 2010, 2018). The conversion of 1,196 acres of this non-urban space to accommodate future employment and population attributed to the project would therefore absorb less than 0.045 percent of the non-urban land in the RSA.

Much of the expected development in the RSA is likely to occur on sites already occupied by existing uses. Small-scale buildings and low-density land uses are frequently replaced with higher-density land use or development types, and even large projects such as former shopping malls are redeveloped at much higher densities. This market trend is further supported by recent state law prioritizing and incentivizing infill development in urban areas and near transit facilities,¹⁶ longstanding state law requiring jurisdictions to plan and zone land for their fair share of regional housing growth,¹⁷ and the focus of many RSA communities on changes to zoning and general plans to encourage intensification of development.

Ultimately, the location of the jobs, population, and households induced by the project would be determined by market forces and local land availability, infrastructure capacity, local government planning and zoning regulations, and other development policies, as well as by proximity to the HSR stations. Development resulting from induced growth would be consistent with these market realities and prevailing land use plans, codes, and policies. Virtually every jurisdiction that the project footprint crosses has identified economic development, compact and efficient land use patterns, and strong linkages between land use and transportation as primary goals for their future growth, and the advantages provided by the project should support the achievement of those local and regional goals.

¹⁵ Nonresidential development floor area ratios vary considerably within the RSA. A floor area ratio of 1.0 is typical of contemporary urban workplace development across in the urbanized Bay Area, while floor area ratios of around 0.25 are typical for some planning areas in San Benito and Merced Counties. This analysis assumes an average floor area ratio of 0.5 for approximating potential land use consumption within the RSA by future noncommercial development.

¹⁶ For example, Proposition 1 was passed by California voters in 2018 authorizing \$150 million for transit-oriented development and \$300 million for infill infrastructure as part of a statewide housing bond, and Senate Bill 35 (2017) created streamlined entitlement for infill projects meeting certain criteria.

¹⁷ California Housing Element Statutes: Government Code §§65580-65589.8 and §§65751-65761.

3.18.7 Mitigation Measures

Under all four alternatives, impacts related to regional growth would be small. Therefore, no mitigation measures would be required.

3.18.8 Impacts Summary

At the regional level, the project would not induce employment and population growth substantially beyond what is projected, and adverse impacts of this growth in the RSA are not anticipated. Spending on project construction would yield economic benefits to businesses in the RSA. Alternative 3 would support the highest demand for workers during the construction period. The project alternatives all have the same construction peak year, 2024, and would involve building the same number of stations, similar maintenance facilities, and nearly the same length of track. Table 3.18-18, at the end of this section, shows the project impacts by alternative.

Table 3.18-18 Summary of Regional Growth Impacts by Alternative

Impacts	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Construction				
2024 Peak year direct employment	7,710	6,450	7,990	5,110
2024 Direct employment as % of projected RSA construction jobs	20.8%	17.4%	21.6%	13.8%
2024 Peak year direct, indirect, and induced employment	11,650	9,750	12,080	7,730
2024 Total employment as % of projected RSA total jobs	0.9%	0.8%	1.0%	0.6%
Direct employment over 7 years of construction	28,880	24,730	29,670	20,840
Total employment (direct, indirect, induced over 7 years of construction)	43,660	37,380	44,850	31,510
Operations				
Employment Impacts				
2040 Direct employment	600 jobs			
2040 Direct employment as % of projected RSA total jobs	0.1%			
2040 Direct, indirect, and induced employment	1,110 jobs			
2040 Accessibility-based employment	21,860 jobs			
2040 Total induced employment	22,960 jobs			
2040 Total induced employment as % of projected RSA total jobs	1.7%			
Population Impacts				
2040 Direct, indirect, and induced population growth	2,440 people			
2040 Accessibility-based population growth	44,900 people			
2040 Total induced population growth	47,330 people			
2040 Total induced population as % of projected RSA total persons	1.7%			

Alt. = Alternative
 RSA = resource study area

During the 7-year construction period expected to peak in 2024, the total peak employment attributable to the project would add about 6,920 to 12,020 jobs, or about 0.5 to 0.9 percent to the RSA's total employment for all industries under the No Project Alternative. Direct jobs in construction trades required for the project, about 5,110 to 7,990 jobs, would represent a more substantial increase to the projected No Project Alternative construction industry employment base. These jobs would range from about 14 percent to about 22 percent of total projected construction workers in the RSA at the peak year, depending on alternative. However, observable commuting patterns for construction industry workers indicate that such workers frequently drive 90 minutes or more to job sites, and this drive time covers parts of nine counties, not just the three counties in the RSA. The construction workers required for the HSR project would represent a much smaller proportion of total construction industry workers in this commute shed.

It is anticipated that most of the construction laborers attracted from beyond the RSA—if any—would commute to work from their existing homes rather than relocating their families because of the expense and disruption of moving to what would be expected to be a relatively short-term job in the RSA. A small number of highly skilled workers could come to the region for short periods but would likely stay in area motels, mobile homes, recreational vehicles, or short-term rental units. Requirements and goals for small and local businesses and worker training programs would further help to promote opportunities for workers within the RSA to fill many of the construction jobs, rather than attracting workers from outside of the RSA. The expected peak year for the project's construction (2024) is expected to follow the peak years for the adjoining project sections to the east and north (2020 and 2022,¹⁸ respectively), creating opportunities to leverage the training or workers on other project sections while not competing for their labor at the same time.

The effects of project operations would be essentially the same for all four project alternatives because all project alternatives would have the same number of stations and maintenance facilities and nearly the same track lengths. During project operations, the workers required for direct O&M and indirect and induced employment would be about 1,110 employees in an RSA with nearly 1.4 million workers, or less than 0.1 percent of the RSA's labor force. The enhanced accessibility of the RSA due to the HSR service may attract as many as 21,860 jobs that would not occur under the No Project Alternative, but this figure represents an increase of just 1.6 percent over the employment expected under the No Project Alternative.¹⁹ Again, this level of growth is not anticipated to represent an impact on the region.

Assuming a ratio of slightly more than two local residents per local job, similar to conditions within the RSA circa 2015,²⁰ the 22,960 total jobs induced by project operations and accessibility improvements in the RSA in 2040 would raise the total population by about 47,330 persons. The estimated total direct, indirect, induced, and accessibility-related employment and population impacts of project operations would represent increases of about 1.7 percent over 2040 projected employment and about 1.7 percent over 2040 projected population under the No Project Alternative. These levels of growth are not anticipated to be substantial impacts on the region.

Throughout the RSA, jurisdictions have adopted policies and plans intending to enhance their economic base; promote dense, compact, and efficient land use; and plan growth around transportation infrastructure improvements and services. In most places, the additional employment and population resulting from the project would be accommodated without the additional construction of housing solely to meet the needs of employment and population growth of the project operations (Section 3.12.6.5, Economic Impacts). Much of the expected development in the RSA is likely to occur on sites already occupied by uses that no longer

¹⁸ The 2022 peak construction year estimate is for San Francisco to San Jose Project Section Alternatives A and B, excluding any consideration of the Scott–Alma “overlap” portion of the alignment.

¹⁹ About 80 percent of the accessibility increase for Santa Clara County would be allocated to the San Jose to Central Valley Wye Project Extent, based on San Francisco to San Jose and San Jose to Central Valley Wye proportional shares of about 65 total miles of proposed HSR route in the county.

²⁰ Total population per employment by place of work ratio in the RSA as derived from CDOF and CEDD data for 2015 (CDOF 2016; CEDD 2016a).

represent the highest and best use for the land, and which could be redeveloped to accommodate the additional employment and population growth estimated from improved accessibility provided by the HSR system. These impacts would be consistent with regional land use policies and growth management plans and could assist communities in realizing the goals of these plans.