3.18 Regional Growth

3.18.1 Introduction

This section describes the regulatory setting and affected environment related to regional growth, and discusses the potential growth-inducing effects of the HST alternatives. Environmental impacts that would be created by any contribution of the project to regional growth are examined in Section 3.19, Cumulative Impacts, and other sections of the EIR/EIS, including Section 3.13, Station Planning, Land Use, and Development. The analysis looks at projected statewide and regional population and employment growth trends to determine how the HST alternatives could influence these trends, either directly or indirectly. The *Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* (Bay Area to Central Valley Program EIR/EIS) (Authority and FRA 2008, Authority 2012) concluded that (1) the HST System would result in a small amount of induced population and employment growth statewide; and (2) that the largest growth effects would occur in Merced and Madera counties, followed by the remainder of the Central Valley. Program-level analysis found that additional urbanized growth statewide due to the HST System would be a small amount when compared to the overall level of growth that would occur under the No Project Alternative.

The program-level analysis also concluded that, across the state, the HST System would induce the highest incremental population growth in Madera County, followed by Merced County. Incremental employment growth would be highest in Madera and Merced counties, followed by Fresno County. The economic analysis found that the largest employment shifts by sector would occur in the Central Valley, and concluded that the HST System could be a strong influence in attracting higher-wage jobs to the Central Valley. Overall, the incremental employment effect would be much larger than the incremental population effect in all Central Valley counties. This suggests that the HST System might be more effective at distributing employment throughout the state. Taken together, these results suggest that additional population growth resulting from the HST System would be driven by job growth due to the initiation of HST service, rather than due to long-term population shifts from the Bay Area and Southern California based on long-distance commuting.

The *Final Program EIR/EIS for the Proposed California HST System* (Statewide Program EIR/EIS) (Authority and FRA 2005) and the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008, Authority 2012) did not identify growth impacts requiring mitigation for growth beyond HST System design and program objectives and mitigation for other impacts. Since that time, economic recession conditions stifled new growth in California and the Central Valley for several years. By 2013, economic conditions had largely recovered in major coastal urban centers but remained flat in the Central Valley (Mercury News, 2013). When economic conditions improve, new growth is expected to occur in those locations first. The analysis in this document indicates growth inducement for the Fresno to Bakersfield Section is not expected to be greater than that analyzed in the Program EIR/EISs.

Because population and employment growth are closely linked to land use regulations and economic activity, refer to Section 3.12, Socioeconomics, Communities, and Environmental Justice, and Section 3.13, Station Planning, Land Use, and Development for additional information. Section 3.12, Socioeconomics, Communities, and Environmental Justice, includes a discussion of economic impacts on the cities and counties. Section 3.13, Station Planning, Land Use, and Development includes a discussion of how growth is addressed in local land use regulations. However, measures that would encourage increased development density around stations, such as grants to support station area planning, are discussed at the end of this chapter.

As discussed in Section 3.1.5 and the Executive Summary, the analysis in this chapter includes revisions based on design refinements and analytical refinements. Gray shading is used as a guide to help the reader navigate the revisions.

3.18.2 Laws, Regulations, and Orders

The following federal, state, and local laws, regulations, and agency jurisdiction and management guidance are relevant to regional growth.

3.18.2.1 Federal

NEPA Requirements to Analyze Growth

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (as amended) (NEPA), require evaluation of the potential environmental consequences of all proposed federal activities and programs. This provision includes a requirement to examine both direct and indirect consequences, which 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 consequence of the HST alternatives. Direct growth effects are those caused by any HST alternative, occurring at the same time and place (40 CFR 1508.08). Direct growth effects include any permanent jobs directly associated with the HST alternatives as well as any displacement of housing related to the construction and operation of the proposed rail facilities. Indirect growth effects are considered to be reasonably foreseeable effects caused by the HST alternatives, typically occurring later in time or farther in distance from the project (40 CFR 1502.15[b]; 1508[b]). These include positive or negative growth in population numbers and/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 HST 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.

3.18.2.2 State

CEQA Requirements to Analyze Growth

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 effect, whereas a project that would construct new housing would have a direct growth-inducing effect. The CEQA Guidelines emphasize that “it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.”

Sustainable Communities and Climate Protection Act of 2008

The Sustainable Communities and Climate Protection Act of 2008 (SB 375) requires each of California’s 18 Metropolitan Planning Organizations (MPOs) to adopt a “sustainable communities strategy” (SCS) or “alternative planning strategy” (APS) as part of their regional transportation plan. The purpose of the SCS or APS is to reduce greenhouse gas emissions from automobiles and light trucks within each region to meet emissions targets set by the California Air Resources Board. The emissions targets for the San Joaquin Valley MPOs are a 5% reduction by 2020 and a 10% reduction by 2035. Compliance with SB 375 will be part of the next update of the regional

transportation plans to be prepared by the Fresno, Kings, Tulare and Kern County MPOs (i.e., MCAG, MCTC, and Fresno COG) and expected to be adopted in 2014.

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

(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 regional transportation plan, 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 greenhouse gas emission reduction targets approved by the state board.

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

The regional transportation plan adopted by each of the San Joaquin Valley MPOs 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. SB 375 is intended to require the MPOs to direct transportation funding toward investments that would reduce greenhouse gas emissions and away from investments that would not.

SB 375 grants no new land use powers to the MPOs. However, in order 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 will be encouraged by the requirement that the SCS or APS both reduce greenhouse gas emissions (which are linked to vehicle miles travelled) and plan to accommodate regional housing needs (which are expected to continue to increase). Pursuant to SB 375, MPOs are expected to work with city and county authorities responsible for adopting general plans to guide community development, including by adopting housing elements as described below.

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.

Unlike the San Joaquin Valley Blueprint described above, preparation of the SCS is mandated by law and the ability of each SCS to meet the emissions reduction target for the San Joaquin Valley must be reviewed and approved by the Air Resources Board. If implementation of the SCS would not meet the target, then the MPO must adopt an APS that would. However, the APS is not a required component of the regional transportation plan and therefore would be less likely to be implemented.

3.18.2.3 Regional and Local

This section discusses regional and transportation plans relevant to the project.

San Joaquin Valley Blueprint Roadmap Summary

The *San Joaquin Valley Blueprint Roadmap* (the Blueprint) (San Joaquin Valley Regional Policy Council 2010a) is a plan for the future of the San Joaquin Valley. Agencies involved in developing this plan included seven councils of government and one regional transportation planning agency:

- Kern Council of Governments.
- Tulare County Association of Governments.
- Kings County Association of Governments.
- Council of Fresno County Governments.
- Madera County Transportation Commission.
- Merced County Association of Governments.
- Stanislaus Council of Governments.
- San Joaquin Council of Governments.

The Blueprint describes the origins and planning process undertaken to develop a vision, goals, and alternative scenarios for growth and land use planning on a regional level. Under the Blueprint scenario that the San Joaquin Valley Regional Policy Council approved, less land is planned for development; more resources are preserved for future generations; distinctive communities are enhanced; and more travel choices, including high-speed rail, are available in the future than currently exist.

In addition, the Blueprint planning process identified 12 smart growth principles to be used as the basis of future Blueprint planning and implementation at a regional level (San Joaquin Valley Regional Policy Council 2010b). These 12 smart growth principles were based on the goals, objectives, and guiding principles developed by each council of government. Those most directly related to the HST System include the following:

- Create walkable neighborhoods.
- Foster distinctive, attractive communities with a strong sense of place.
- Create a mix of land uses.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Provide a variety of transportation choices.
- Strengthen and direct development towards existing communities.
- Take advantage of compact building design.
- Enhance the economic vitality of the region.

The Blueprint is expected to be implemented through collaborative local and regional programs and planning processes, and through projects built by private sector developers. If requested, the California Department of Transportation's California Regional Blueprint Planning Program can assist in conducting regional planning efforts and can provide resources and grant funding to integrate local land use planning across broad, multi-jurisdictional regions, while recognizing the key land use authority of counties and cities. A policy guide and planners' toolkit for

implementing the Blueprint have been completed. The planning process and associated reports are available at www.valleyblueprint.org. In addition, the Blueprint is expected to be the foundation for the "sustainable communities strategies" adopted by the regional government of each county, as described below under Senate Bill (SB) 375.

2011 Council of Fresno County Governments Regional Transportation Plan

The *2011 Regional Transportation Plan – Long Range Transportation Vision for the Fresno County Region for the Years 2010 to 2035* (CFCG 2010) provides a comprehensive, long-range plan for all transportation modes. The plan identifies the needs for travel and goods movement through 2035. Regional growth policies comprise the following:

- Establish development policies that are directed toward the long-term beneficial use of the region's resources and protection of public health, safety, and welfare.
- Protect productive and potentially productive agricultural land from urban encroachment, and thereby maintain the region's agriculturally based economy.
- Preserve and enhance the character and inherent values of natural, scenic, and open space land as well as historical features in the region.
- Encourage annexation prior to urban development on the unincorporated fringe, consistent with a city's development program.
- Promote the concentration of urban and other intensive development in and around existing centers.
- Encourage development alternatives that maximize energy conservation and promote clean air.
- Promote the Blueprint's adopted smart growth principles.

2011 Kings County Association of Governments Regional Transportation Plan

The Kings County Association of Governments (KCAG) adopted the *2011 Regional Transportation Plan* (Kings County RTP) on July 28, 2010. The Kings County RTP serves as the basis for the county's transportation decisions and provides policy direction for local plans. The 2011 Kings County RTP includes the implementation of a high-speed rail facility in the region among its stated objectives. The 2011 Kings County RTP supports state efforts to implement a high-speed-rail corridor in the San Joaquin Valley, and the development of strategies that further the goals of reduced traffic congestion through development of alternative transportation modes.

Goals and policies in the 2011 RTP related to regional growth promote the development and maintenance of a multimodal transportation system to serve the region.

The central overall goal of the RTP states the following:

> To develop a transportation system that encourages and promotes the safe and efficient development, management, and operation of surface transportation systems to serve the mobility needs of people and freight (including accessible pedestrian walkways and bicycle transportation facilities) and foster economic growth and development, while minimizing transportation-related fuel consumption and air pollution.

Additionally, Program Objective 7 states:

> Public and private transportation facilities shall be planned and developed consistent with overall growth and development policies contained in city and county general plans.

2011 Tulare County Association of Governments Regional Transportation Plan

The Tulare County Association of Governments (TCAG) adopted the *2011 Regional Transportation Plan* (Tulare County RTP) on April 30, 2010. The Tulare County RTP addresses transportation needs through 2035. Implementation would result in improvements to existing regional transportation and circulation systems. The plan anticipates construction of a high-speed train corridor that would connect the county to the Bay Area, Southern California, and other areas in the San Joaquin Valley. The RTP includes several policies supporting the extension of rail passenger service, including the HST System; encouraging participation in the planning effort for the HST System; and supporting the California High Speed Rail Authority in connecting the Bay Area with Southern California. The 2011 Tulare County RTP includes the goal of providing an efficient, integrated multimodal transportation system for the movement of people and goods that enhances the physical, economic, and social environment. Policy 14 provides for identifying opportunities for increased utilization of existing rail corridors (Tulare County Association of Governments 2010).

Tulare County Regional Blueprint

TCAG and its member agencies felt that it was important to prepare a Tulare County Regional Blueprint that clarified Tulare County's role in the valley-wide blueprint process. The Tulare County Regional Blueprint is a stand-alone policy document that is consistent with the San Joaquin Valley Regional Blueprint. This document represents Tulare County's local vision and goals as a participant in the San Joaquin Valley Regional Blueprint process (TCAG 2009). One of the objectives of the Tulare County Regional Blueprint is to ensure that the high-speed rail system, if implemented, supports Tulare County in achieving its economic, environmental, land use, and mobility goals.

Kern Council of Governments 2011 Final Regional Transportation Plan

The Kern Council of Government (Kern COG) adopted the *2011 Final Regional Transportation Plan* (Kern County RTP) on July 15, 2010. The Kern County RTP is a 24-year plan representing Kern COG's goals, policies, and actions to guide the development of a multi-modal, improved regional transportation system (Kern COG 2010). The RTP promotes land use patterns that would support current and future investments for transit use, including HST alternatives. It includes the following goal and policy related to regional growth:

Goal: Livability

Policy: Support goals contained in city and county general plans that strive to enhance urban and community centers, promote the environmentally sensitive use of lands in Kern County, revitalize distressed areas, and ensure that new growth areas are planned in a well-balanced manner.

3.18.2.4 Local

Fresno, Kings, Tulare, and Kern counties and the cities of Fresno, Hanford, Corcoran, Wasco, Shafter, and Bakersfield all have adopted general plans. The cities of Fresno and Shafter, as well as the unincorporated communities of Laton and Armona, also have community and specific plans (detailed descriptions of these plans, and their goals and policies, are provided in Section 3.13, Station Planning, Land Use, and Development; and in Appendix 3.13-A of this EIR/EIS).

General plans are required by California state law, and each includes seven mandatory elements (Circulation, Conservation, Housing, Land Use, Noise, Open Space, and Safety and Seismic Safety) and must contain text that describes the goals, objectives, and policies for development. The general plans and their goals, objectives, and policies are guiding documents for long-range growth, development, and redevelopment. These local plans and policies were considered in the preparation of this analysis.

Fresno County

Fresno County General Plan

Fresno County is in the process of updating their General Plan, originally prepared in 2000. A public review draft of the General Plan policy document was issued on August 1, 2010. The *Fresno Country 2000 General Plan*: *Public Review Draft* (Fresno County 2010) establishes goals and policies to limit growth in rural areas and direct growth to urban areas in the county. The plan's fundamental policy is to direct intensive urban development to cities, unincorporated communities, and other areas planned for such development where public facilities and infrastructure are available or planned. The plan includes policies addressing development patterns in urban and urbanizing areas. These policies encourage pedestrian- and transit-oriented development and infill of vacant or underused urban land to create mixed use, higher-density developments in which jobs, commercial activities, and amenities are located along transportation corridors and closer to residential areas to encourage pedestrian and transit access. The plan prohibits the designation of new areas for rural residential development and limits the expansion of existing rural development to minimize environmental impacts and public infrastructure investments.

City of Fresno General Plan

The *2025 Fresno General Plan* (City of Fresno Planning and Development Department 2002) encourages the efficient development, investment, and use of available resources to accommodate population growth, while limiting outward expansion. A secondary goal is to revitalize the existing urban core. To achieve this goal, the City of Fresno will incorporate transit-oriented development and traditional neighborhood development approaches into its planning principles and development regulations. In addition, the City will encourage and facilitate urban infill by providing adequate public infrastructure and services that are fairly and equitably financed.

Fresno Central Area Community Plan (Adopted)

The Fresno Station is located in an area included in the *Central Area Community Plan.* The planning area for the *Central Area Community Plan* encompasses the downtown core of the city of Fresno and is bounded by SR 41, SR 99, and SR 180 (City of Fresno 1989). The focus of the *Central Area Community Plan* is to restore and revitalize the city's central core. Priorities of the plan include developing new housing and rehabilitating existing residential homes, encouraging mixed-use development, and protecting and expanding the convention center businesses. The *Central Area Community Plan* was developed to help direct the revitalization of Fresno's Central Area and restore the area as the urban center of Fresno. The policies and goals encourage a mix of residential densities that are compatible with an urban living environment. The transportation goals of the *Central Area Community Plan* include identifying, maintaining, and improving major "gateway" routes and intersections serving the central area. The plan also calls for development of a comprehensive transportation center in the central area. The plan promotes the mixed-use concept to encourage diversity of development, which further supports the project's goals.

City of Fresno Fulton Corridor Specific Plan and Downtown Neighborhoods Community Plan (Drafts)

In early 2010, Fresno initiated the preparation of two new plans: the Fulton Corridor Specific Plan and the Downtown Neighborhoods Community Plan. These plans are in progress and are planned to be adopted in 2014 (Balch 2014, personal communication. The Authority has coordinated and will continue to coordinate with the City of Fresno on the development of these plans as they relate to the proposed station. The plans will incorporate extensive outreach and will focus on revitalization, aesthetics, infrastructure, incorporation of a high-speed rail station, and attraction and expansion of businesses (City of Fresno 2011a). The Authority will identify ways for the HST station to stimulate downtown development. The City of Fresno's application for funding is supported by existing planning efforts to address sustainability and livable communities and to encourage public-private partnership investments through the development of the Fulton Corridor Specific Plan (Authority 2011a).

Kings County

Kings County General Plan

The *2035 Kings County General Plan*, (Kings County Community Development Agency 2010) which was adopted in 2010, includes land use designations and policies that are designed to encourage compact, community-centered development patterns that lower public service costs, make more efficient use of land, and discourage premature conversion of farmland to other uses. The Land Use Element supports the County's overarching priorities to protect prime agricultural land, direct urban growth to existing cities and community districts, and increase economic and community sustainability.

City of Hanford General Plan

The City of Hanford's General Plan was adopted in 2002. The policies included in the *City of Hanford 2002 General Plan Update* (City of Hanford 2002) were crafted to address growth by considering historic growth factors, infrastructure, farmland, circulation, and impact from and to adjacent communities. The goals, objectives, policies, and programs in the General Plan—together with the Land Use Diagram—provide a framework for the future development of Hanford. The Land Use Element was written to respond to issues, opportunities, and constraints within the planning area established for Hanford. Major issues considered in the Land Use Element include the location and timing of growth, and balancing economic growth with urban growth.

City of Corcoran General Plan

The *Corcoran General Plan 2025* was adopted in 2007. The General Plan includes planning principles stating that development in the community should be compact and contiguous to existing developed areas, and that the City's Sphere of Influence and growth policies should ensure that the community is physically distinct from other communities, and contains an agricultural buffer area (City of Corcoran 2007). The policies in the Corcoran General Plan Land Use Element serve as guides for reviewing development proposals, planning facilities to accommodate anticipated growth, and accomplishing community economic development strategies. Specific policies related to regional growth include policies to minimize urban sprawl and leap-frog development, to provide for an orderly and efficient transition from rural to urban land uses, and to designate growth areas that can be served by logical infrastructure extensions.

Tulare County

Tulare County General Plan

The *Tulare County General Plan 2030 Update*, includes policies stating that the County will work with every community to provide the opportunity to prosper from economic growth (Tulare County 2012). The County will also work with local communities to protect the County's important agricultural resources and scenic natural lands from urban encroachment by strictly limiting rural residential development potential in important agricultural areas outside of communities and cities to avoid rural residential sprawl.

None of the project HST alternatives pass through any incorporated cities in Tulare County. Therefore, no policies for cities within Tulare County are described here.

Kern County

Kern County General Plan

The *Kern County General Plan* was adopted in 2009 (Kern County Planning Department 2009). The Kern County General Plan's Land Use, Conservation, and Open Space Element provides for a variety of land uses for future economic growth, while also ensuring the conservation of Kern County's agricultural, natural, and resource attributes. Objectives of the General Plan are intended to encourage economic development that creates jobs and capital investments in urban and rural areas, as well as encouraging new development to use existing infrastructure and services wherever feasible in the County's urban areas. In addition, the General Plan includes policies with the intent of protecting environmental resources and the development of adequate infrastructure, with specific emphasis on conserving agricultural areas, discouraging unplanned urban growth, ensuring water supplies and acceptable quality for future growth, and addressing air quality issues.

City of Wasco General Plan

The *City of Wasco General Plan* was adopted in 2002. The General Plan includes policies and goals to encourage contiguous growth, provide incentives for infill development, develop growth-phasing boundaries, and ensure development and/or redevelopment of underused properties. In addition, the General Plan states that infill shall be encouraged on unused or underused parcels; that the City should provide for orderly growth and development patterns through the designation of growth boundaries to be phased over time; and that the City should also establish "hard" edge growth phasing boundaries such as roadways, railroad right-of-ways, irrigation ditches, etc. to protect agriculture (City of Wasco [2002] 2010).

City of Shafter General Plan

The *City of Shafter General Plan*, adopted in 2005, includes a Land Use Program that sets forth Shafter's fundamental land use philosophy and directs development to the most suitable locations while maintaining the economic, social, physical, environmental health, and vitality of the community (City of Shafter Planning Department 2005). Policies call for maintaining Shafter's downtown as the center of community life, and maintaining a buffer of agricultural and rural residential uses surrounding Shafter's urbanizing core area to provide a physical separation between the area and industrial uses to the east, south, and southeast (City of Shafter 2005).

Metropolitan Bakersfield General Plan

The planning area for the *Metropolitan Bakersfield General Plan* includes the City of Bakersfield plus additional unincorporated areas of Kern County (City of Bakersfield and Kern County 2007).

The City of Bakersfield does not have its own General Plan, and the area covered by the Metropolitan Bakersfield General Plan is the same as the Bakersfield Metropolitan Priority Area of the Kern County General Plan. The Metropolitan Bakersfield General Plan includes policies to provide for a mix of land uses that meets the diverse needs of residents; offers a variety of employment opportunities; capitalizes, enhances, and expands upon existing physical and economic assets; and allows for the capture of regional growth. The General Plan defines the sphere of influence boundaries for planned urban growth. The General Plan includes policies for land development to encourage people to live and work in the same area, serving to minimize sprawl and reduce traffic, travel time, infrastructure costs, and air pollution.

3.18.3 Methods for Evaluating Impacts

3.18.3.1 Regional Modeling

This section describes the regional modeling process undertaken to forecast growth in the 11 counties in the core Bay Area to Central Valley study area and 5 other multicounty regions in the state. The analysis was conducted by updating the population and employment estimates that were originally developed for the growth analysis in the Bay Area to Central Valley Program EIR/EIS and by evaluating impacts on regional growth that the HST project would create. The estimates of population and employment growth developed for the Bay Area to Central Valley Program EIR/EIS only included projections to year 2030, and have therefore been updated to year 2035 for use in this EIR/EIS. Environmental impacts that would be created by any contribution of the project to regional growth are examined in Section 3.19, Cumulative Impacts, and other sections of the EIR/EIS, including Section 3.13, Station Planning, Land Use, and Development.

The analysis determined construction-related employment created using Regional Input-Output Modeling System (RIMS) II multipliers for Fresno, Kings, Tulare, and Kern counties. RIMS II multipliers are regional input-output multipliers used to estimate regional economic activity changes generated by changes in regional industries. Using these four-county RIMS II multipliers, economists estimated short-term/temporary employment generated by project construction. Long-term job creation resulting from project operation was estimated by Cambridge Systematics, and those results are presented here (Cambridge Systematics Inc. 2010).

The analytical process to estimate the growth inducement of the HST System for the Bay Area to Central Valley Program EIR/EIS required significant modeling tools and data. The following key steps summarize the process:

- Define transportation investments. The future baseline conditions of the No Project Alternative and the economic modeling process were used to forecast the incremental changes associated with the HST System.

- Estimate transportation benefits. Using results from the California Statewide High-Speed Rail Travel Demand Model, benefits such as reduced travel times and/or costs of the HST System for air, highway, and conventional rail trips were estimated using travel demand model results. Congestion, pollution, and crash reduction benefits and accessibility benefits were directly estimated using travel demand model results for the HST System in comparison with the No Project Alternative. Mode shift benefits arising from the introduction of HST service were estimated by scaling benefits calculated for the statewide program EIR/EIS using HST ridership and other output from the travel demand model (Cambridge 2003, Appendix F).

- Estimate direct economic impacts. Direct economic impacts, which are generated from the transportation benefits of the HST System, generally fall into one of three categories.

  - Business cost savings: Reductions in travel time and/or cost for long-distance business travelers and commuters benefiting from the transportation improvements.
  - Business attraction effects: New and relocated firms taking advantage of market accessibility improvements provided through transportation investments.
  - Amenity (quality of life) changes: Non-business travel time and/or cost benefits and other societal benefits that improve the attractiveness of the region.

- Determine total regional economic impacts for regions and counties. All of the direct economic impacts have the potential to create additional multiplier effects on the regional and statewide economies of California. Total regional impacts were estimated using the TREDIS-ReDyn macroeconomic simulation model. For this analysis, total economic impacts include population and industry-specific employment, with impacts forecasted for the 11 counties in the core Bay Area to Central Valley study area and the remaining 5 multicounty regions in the state.

This information was then used to allocate county-level population and employment throughout each county, and to develop estimates of county population and employment growth that would occur with the HST System.

After long-term/permanent and short-term/temporary employment was estimated using RIMS II multipliers, impacts of induced growth were evaluated based on the infill potential and magnitude of land needed to accommodate the population and employment growth. The analysis of land consumption estimated the population and employment growth that could fit within the urban growth boundaries delineated by each city and county in their current general plans. The population, employment, and land consumption estimates were then reviewed to characterize the nature and magnitude of potential secondary impacts on the human and natural environment.

This analysis presents a project-level regional perspective of anticipated project impacts in the counties crossed by the Fresno to Bakersfield Section. The analysis indicates there would be little difference in impacts among the HST alternatives considered in this document. Therefore, this analysis compares the HST System, regardless of which HST alternative is implemented, against the No Project Alternative. Project cost data were available by HST alternative, station and HMF, therefore job creation estimates for construction are presented by alternative. The economic impacts of specific HMF locations were not evaluated because there are no cost differences between locations other than the cost of the land which is not factored into estimates of construction job creation.

The growth and development forecasts are based on HST ridership assumptions at the high end of the potential ridership range. Accordingly, the growth analysis is a worst-case scenario, in that it represents the higher potential growth-related impacts from the project as a result of the high-end potential ridership assumptions.

3.18.3.2 Study Area

For this growth analysis, the study area comprises Fresno, Kings, Tulare, and Kern counties. It encompasses the incorporated cities of Fresno, Hanford, Corcoran, Wasco, Shafter, and Bakersfield. As described above, this impact analysis discusses most environmental impacts by geographic area (at the county and city level) rather than by HST alternative, because there is little difference in impacts among HST alternatives and because most sources publish economic data for areas that are within distinct geographical and political boundaries.

Although some sources provide economic data (such as total employment and unemployment rate) for cities, most economic data sources describe the correlation between various economic sectors only at the county level. County-level information includes data for the unincorporated parts of the county as well as the cities.

3.18.4 Affected Environment

With the construction of the Southern Pacific Railroad by the Central Pacific Railroad (now Union Pacific) through the San Joaquin Valley in the late 1800s, there was considerable growth in the population and economy in the region. The railroad connected the valley to Sacramento and San Francisco and provided an opportunity for ranchers and farmers to sell their goods to distant markets. The establishment of stations along the railway was a major reason for settlement and development of the cities in the study area. Irrigation transformed the agricultural potential of the drier portions of northern San Joaquin Valley. Compared to other parts of the state, the San Joaquin Valley continues to be a powerful economic center for the agricultural and livestock industries. The popularity of the automobile ushered in the establishment of a state highway system in the early 1900s. Within the interior Central Valley, a north-south highway was planned to pass through as many population centers as possible. Widening of the first paved road segments, corresponding to today's SR 99, occurred in the 1920s and 1930s. This improvement in surface transportation encouraged the growth of existing and new residential, commercial, and industrial developments (i.e., neighborhoods, shopping centers, and light industry) along SR 99, particularly during the latter half of the 20th century. Refer to Section 3.19, Cumulative Impacts, for a complete discussion on the projects that helped to shape the San Joaquin Valley.

The San Joaquin Valley's population growth rate has exceeded the statewide growth rate since 1970 (CFCG 2007). Currently more than 10% of the state's population resides in this region. Fresno, the fifth largest city in California as of January 1, 2010, is the financial and commercial capital of the central San Joaquin Valley. Bakersfield, the next largest city in the study area has about two-thirds the population of Fresno, but is growing at a faster rate than Fresno. (See Table 3.18-1 below.) In the region, slightly more than 1 out of every 10 jobs is in the trade sector, and about 1 in 3 jobs is in the services sector; jobs in educational and health services and professional and business services dominate.

3.18.4.1 Population

Table 3.18-1 shows the state population in 2000 and 2010 and growth rates for the study area cities and counties, which were higher than at the state level. Urban growth in these cities was higher than the growth in unincorporated portions of Fresno, Kings, Tulare, and Kern counties. The city of Bakersfield had an annual average growth rate of over 3%, while the cities of Hanford, Corcoran, Wasco, and Shafter, as well as the unincorporated communities of Laton and Armona, all had growth rates of 2% or greater. The city of Fresno had the lowest annual average growth rate for cities in the study area, at 1.6%. With the exception of unincorporated Laton and Armona, unincorporated areas of the counties experienced much less annual average growth than the major cities, ranging from 0.4 to 1.6%. Within the San Joaquin Valley, the agricultural sector employs the largest percentage of workers and cities attract the bulk of new population and act as the economic engine of the south San Joaquin Valley.

Table 3.18-2 shows the study area's city and county population estimates for the years 2010 through 2035. These estimates anticipate that all four counties would grow at a higher average annual rate than the State of California. Over the next 25 years, population is projected to grow in Fresno, Kings, Tulare, and Kern counties over 59%, 75%, 80%, and 81%, respectively. The economic growth study conducted for the Bay Area Program EIR/EIS found that the overflow of people from urban coastal areas seeking affordable housing within commuting range of major metropolitan areas drives the high growth projections for these San Joaquin Valley counties.

Table 3.18-1
Population Growth, 2000 – 2010

Area	Population in 2000	Population in 2010	Change 2000 – 2010	Annual Average Growth Rate
Fresno County	**799,407**	**953,761**	**19.3%**	**1.6%**
City of Fresno	427,652	494,665	15.7%	1.6%
Laton CDP[a]	1,236	1,580	27.8%	2.8%
Unincorporated	164,405	174,783	6.3%	0.6%
Kings County	**129,461**	**156,289**	**20.7%**	**2.1%**
City of Hanford	41,687	53,266	27.8%	2.8%
Community of Grangeville[a]	638	815	27.8%	2.8%
Armona CDP[a]	3,239	4,139	27.8%	2.8%
City of Corcoran	20,843	25,692	23.3%	2.3%
Unincorporated	32,545	35,634	9.5%	0.9%
Tulare County	**368,021**	**447,814**	**21.7%**	**2.2%**
City of Visalia	91,891	125,971	27.1%	2.7%
City of Tulare	43,994	59,535	35.3%	3.5%
Unincorporated	140,822	146,356	3.9%	0.4%
Kern County	**661,653**	**839,587**	**26.9%**	**2.7%**
City of Wasco	21,263	25,541	20.1%	2.0%
City of Shafter	12,731	16,208	27.3%	2.7%
City of Bakersfield	246,899	338,952	37.3%	3.7%
Unincorporated	264,111	305,536	15.7%	1.6%
Region	**1,958,542**	**2,397,451**	**22.4%**	**2.2%**
California	**33,873,086**	**38,648,090**	**14.1%**	**1.4%**

Source: U.S. Census Bureau 2000; California Department of Finance (CDOF 2010a).

CDP = census-defined place

Note:

[a] The 2010 population data were not available from the CDOF. Therefore, the 2010 populations for Laton CDP, Community of Grangeville, and Armona CDP were estimated using the annual average growth rate from 2000–2010 for Hanford, which is the closest major city. Conditions in these communities are driven by those in Hanford and would likely experience similar growth rates.

Table 3.18-2
Population Projections, 2010 – 2035

Area	Population in 2010	Population in 2035	Change 2010-2035	Annual Average Growth Rate
Fresno County	**953,761** [a]	**1,519,325** [c]	**59.3%**	**2.4%**
City of Fresno	494,665 [b]	961,366[c]	94.3%	3.8%
Laton CDP	1,824 [b]	3,860[k]	111.6%	4.5%
Kings County	**156,289** [a]	**274,576** [d]	**75.7%**	**3.0%**
City of Hanford	53,967 [b]	114,171 [e]	111.6%	4.5%
Community of Grangeville	469 [b]	992[k]	111.6%	4.5%
Armona CDP	4156 [b]	8,794[k]	111.6%	4.5%
City of Corcoran	24813 [b]	55,008[e]	121.7%	4.9%
Tulare County	**447,814** [a]	**809,789** [f]	**80.8%**	**3.2%**
City of Visalia	124,442 [b]	232,222[g]	86.6%	3.5%
City of Tulare	59,278 [b]	118,556	100.0%	4.0% [j]
Kern County	**839,587** [a]	**1,523,934** [h]	**81.5%**	**3.3%**
City of Wasco	25,545 [b]	45,700[i]	78.9%	3.2%
City of Shafter	16,988 [b]	35,500[i]	108.9%	4.3%
City of Bakersfield	347,483 [b]	609,600[i]	75.4%	4.3%
Region	**2,397,451**	**4,155,881**	**73.3%**	**2.9%**
State of California	**38,648,090**	**51,747,374** [f]	**39.1%**	**1.1%**

Notes:
[a] CDOF (2010a).
[b] CDOF (2010b)
[c] Council of Fresno County Governments (CFCG 2010).
[d] Kings County Association of Governments (KCAG 2010).
[e] Kings County Association of Governments (KCAG 2012).
[f] Tulare County Association of Governments (2007).
[g] City of Visalia (2010). An annual average growth rate of 2% was calculated to project the 2035 population, based on the 2030 and 2040 population projections in the Housing Element.
[h] Kern Council of Governments (Kern COG [2007] 2009).
[i] Kern Council of Governments (Kern COG 2010)
[j] City of Tulare (2011). The growth rate was used to project the city of Tulare's population for 2035.
[k] 2035 population projections based on the 2010 Census are not available from the CDOF for Laton CDP, Community of Grangeville, and Armona CDP. The 2010 and 2035 populations for those communities were estimated using the annual average growth rate from 2000–2010 and 2035 projection for Hanford, which is the closest major city. Conditions in these communities are driven by those in Hanford and would likely experience similar growth rates.

3.18.4.2 Employment

Table 3.18-3 provides information on regional employment by industry[1] using California Employment Development Department (CEDD) data for 2000 and 2008 (CEDD 2009a, 2009b). Between 2000 and 2008, total employment by industry increased by about 8% in Fresno County, 16% in Kings County, 13% in Tulare County, and 21% in Kern County. In Fresno County, the professional, food, and educational services and public services sectors contributed a substantial number of additional jobs, while some losses occurred in the agriculture, manufacturing, and information sectors. Kings County gained jobs in the transportation, retail, food service, and education sectors, while losing jobs in the agriculture, finance, and insurance sectors. Tulare County gained jobs in all service sectors and industries. In Kern County, the government sector contributed a substantial number of additional jobs.

The government, agriculture, retail trade, and education sectors employ the most workers in all four counties. The CEDD data indicate that these same sectors will continue to account for more than half of the jobs in the four counties. Other employment sectors with strong growth include construction; professional and management services, entertainment, accommodation, and food services; and other services.

Table 3.18-3 also shows projected employment by industry for Fresno, Kings, Tulare, and Kern counties.

Table 3.18-4 shows the projected 2035 total employment in Fresno, Kings, Tulare, and Kern counties and the study area. The projections show that employment in Fresno County will grow at a higher average annual rate than California. Together, the three other counties will grow at or below the state annual average; however, the region overall will experience an annual average job growth rate that is larger than the state as a whole. Over the next 25 years, employment is projected to grow by an annual average growth rate of 1.4% in the region. Of the four counties, Kings County shows the lowest annual average growth rate at 0.5%.

3.18.4.3 Unemployment Rates

Unemployment rates in the Central Valley have historically been higher than those for the rest of the state. Moreover, unemployment in the four counties and the study area increased in 2010 as a result of the ongoing nationwide economic recession, and has been exacerbated by the continued weakness in construction and state budget cuts (CVBT 2010). Table 3.18-5 shows annual civilian labor force[2] and unemployment rates in the region in 2000, 2008, and 2009. County unemployment rates in the study area were higher than those at the state level, ranging from 14.4% to 15.3%, compared to a state rate of 11.4%. The unemployment rates were lower for the cities of Hanford and Bakersfield than for the other cities in the region. In comparison, the small rural cities of Wasco and Shafter experienced unemployment rates of 26.1% and 25.1%, respectively.

[1] Total industry employment counts the number of jobs by the place of work.
[2] Civilian employment counts the number of working people by where they live.

Table 3.18-3
Fresno, Kings, Tulare, and Kern County and Regional Employment by Industry, 2000 – 2016

Industry	Fresno			Kings			Tulare			Kern			Regional		
	2000	2008	Projected 2016	2000	2008	Projected 2016	2000	2008	Projected 2016	2000	2008	Projected 2016	2000	2008	Projected 2016
Agriculture, forestry, fishing and hunting, and mining	56,000	49,300	48,500	7,700	6,700	8,900	34,900	37,100	36,800	56,500	59,900	61,800	155,100	153,000	156,000
Construction	15,100	17,900	24,300	1,100	1,200	1,500	5,200	6,200	7,500	11,600	16,200	21,900	33,000	41,500	55,200
Manufacturing	27,600	27,000	28,300	3,600	4,600	4,800	11,700	11,800	13,300	10,800	13,700	14,900	53,700	57,100	61,300
Wholesale trade	12,100	12,900	14,100	600	600	600	3,600	4,200	4,600	5,700	7,600	9,400	22,000	25,300	28,700
Retail trade	31,800	35,200	38,100	3,600	4,100	4,300	13,500	15,700	16,700	23,200	27,600	34,000	72,100	82,600	93,100
Transportation and warehousing, and utilities	9,100	11,100	11,100	500	900	1,000	4,600	5,300	5,900	8,400	9,600	11,000	22,600	26,900	29,000
Information	5,000	4,400	4,300	300	300	400	1,100	1,400	1,500	2,500	3,000	3,100	8,900	9,100	9,300
Finance, insurance, real estate, and rental and leasing	13,400	14,700	16,300	1,100	1,000	1,100	3,900	4,400	4,900	7,600	8,900	9,800	26,000	29,000	32,100
Professional, scientific, management, administrative, and waste management services	25,500	30,900	35,400	1,300	1,100	1,300	8,500	9,900	10,900	22,200	25,300	32,100	57,500	67,200	79,700
Educational, health and social services	63,200	74,600	80,600	2,800	4,400	4,700	7,600	10,900	11,700	43,100	53,200	57,500	116,700	143,100	154,500
Arts, entertainment, recreation, accommodation and food services	24,300	28,000	32,500	2,200	2,800	3,100	7,400	8,800	9,500	16,500	21,600	24,400	50,400	61,200	69,500
Other services (except public administration)	10,400	10,700	20,400	600	500	700	2,800	3,100	3,400	6,700	7,100	10,800	20,500	21,400	35,300
Public administration	32,800	35,400	35,200	12,500	15,600	15,000	28,300	31,600	35,000	22,100	33,900	35,300	95,700	116,500	120,500
TOTAL	326,300	352,100	389,100	37,900	43,800	47,400	133,100	150,400	161,700	236,900	287,600	326,000	734,200	833,900	924,200

Source: California Employment Development Department (CEDD 2009a, 2009b).

Table 3.18-4
Regional Long-Range Employment Projections, 2010 and 2035

Area	Jobs		Change 2009-2035	Annual Average Growth Rate
	2009 [a]	2035-RTP		
Fresno	458,366	618,700 [b]	35.0%	1.4%
Kings	64,640	72,080 [c]	11.5%	0.5%
Tulare	205,943	258,337 [d]	25.4%	1.0%
Kern	384,441	459,391 [e]	19.5%	0.8%
Four-County Study Area	1,045,704	1,408,508	34.7%	1.4%
State [d,e]	16,059,400	20,381,000 [f]	26.9%	1.0%

Notes:
[a] Cambridge Systematics, Inc. (2010).
[b] Council of Fresno County Governments (CFCG 2010).
[c] Kings County Association of Governments (KCAG 2010).
[d] Tulare County Association of Governments (TCAG 2010).
[e] Kern Council of Governments (Kern COG 2010).
[f] California Department of Finance (CDOF 2010b).

Table 3.18-5
Labor Force Characteristics – Counties, Major Cities, and Unincorporated Areas in the Study Area

	2000	2008	2009
Fresno County			
Civilian Labor Force	388,100	432,000	438,700
Percent Unemployment Rate	10.4	10.5	15.1
City of Fresno			
Civilian Labor Force	204,400	227,600	230,300
Percent Unemployment Rate	9.7	9.8	14.2
Laton CDP			
Civilian Labor Force	700	800	800
Percent Unemployment Rate	21.2	21.8	29.7
Kings County			
Civilian Labor Force	49,200	59,100	61,200
Percent Unemployment Rate	10.0	10.5	14.6
City of Hanford			
Civilian Labor Force	19,500	23,400	24,100
Percent Unemployment Rate	8.7	9.1	12.8
Community of Grangeville			
Civilian Labor Force	N/A	N/A	N/A
Percent Unemployment Rate	N/A	N/A	N/A

Table 3.18-5
Labor Force Characteristics – Counties, Major Cities, and Unincorporated Areas in the Study Area

	2000	2008	2009
Armona CDP			
Civilian Labor Force	1,500	1,800	1,900
Percent Unemployment Rate	12.8	14.0	19.1
City of Corcoran			
Civilian Labor Force	3,700	4,500	4,700
Percent Unemployment Rate	10.0	10.9	15.2
Tulare County			
Civilian Labor Force	171,800	200,000	205,400
Percent Unemployment Rate	10.4	10.7	15.3
City of Visalia			
Civilian Labor Force	47,100	54,400	54,600
Percent Unemployment Rate	6.3	6.5	9.5
City of Tulare			
Civilian Labor Force	20,000	23,200	23,500
Percent Unemployment Rate	8.8	9.1	13.0
Kern County			
Civilian Labor Force	293,500	361,100	366,900
Percent Unemployment Rate	8.2	9.7	14.4
City of Wasco			
Civilian Labor Force	6,400	8,000	8,500
Percent Unemployment Rate	15.6	18.5	26.1
City of Shafter			
Civilian Labor Force	4,700	5,900	6,200
Percent Unemployment Rate	14.9	17.7	25.1
City of Bakersfield			
Civilian Labor Force	125,200	153,300	153,300
Percent Unemployment Rate	5.7	6.7	10.1
Region			
Civilian Labor Force	902,600	1,052,200	1,072,200
Percent Unemployment Rate	9.7	10.3	14.8
California			
Civilian Labor Force	16,857,600	18,251,600	18,250,200
Percent Unemployment Rate	4.9	7.2	11.4

Source: California Employment Development Department (CEDD 2009a, 2010).

3.18.4.4 Housing Demand

Table 3.18-6 shows the number of existing housing units and the projected housing units across the study area. The predominant housing type across the study area is single-family homes, with

an average household size ranging from 3.1 to 3.3 persons. Section 3.12, Socioeconomics, Communities, and Environmental Justice, provides more information on existing housing characteristics in the region. Based on population projections, housing needs for the next 25 years will increase by 66% in the study area, with the highest rate in Kings County at nearly double the current housing stock. In 2010, approximately 61,000 housing units were vacant in the region, which represents about 7.8% of the available housing stock (CDOF 2010a).

Table 3.18-6
Existing Housing Units and Projected Housing Units

Location	2010	2035	Change	Annual Average Growth Rate
Fresno County	314,758	490,105	55.7%	2.2%
Kings County	42,777	85,805	100.6%	4.0%
Tulare County	142,524	253,059	77.6%	3.1%
Kern County	281,735	476,229	69.1%	2.8%
Four County Study Area	**781,794**	**1,305,198**	**66.9%**	**2.6%**
California	**13,591,866**	**17,249,125**	**26.9%**	**1.1%**

Note: Estimates were prepared by URS Corporation estimating housing units based on population estimated contained in the CDOF files, divided by average household size.

Source: CDOF (2010a).

3.18.5 Environmental Consequences

3.18.5.1 Overview

The projected population and employment growth for Fresno, Kings, Tulare, and Kern counties already reflects effects of the No Project Alternative. Populations are projected to increase in Fresno, Kings, Tulare, and Kern counties over 59%, 75%, 80%, and 81%, respectively, between 2010 and 2035. Employment is projected to increase by approximately 35%, 12%, 25, and 20%, respectively. Under the No Project Alternative, new housing and commercial development would accommodate the projected population and employment growth.

The analysis shows the HST alternatives would create additional employment and business opportunities and attract higher-wage jobs in comparison to the No Project Alternative. The HST alternatives, however, would only raise the projected population and employment growth by about 3% beyond growth anticipated under the No Project Alternative. Under current city and county general plans in the region, communities in the region have adequate space to accommodate planned growth by 2035 and HST-induced growth within their current spheres of influence.

The HST-induced growth would, therefore, require minimal farmland conversion and extension of public infrastructure beyond the projections reflected in current planning documents. The Bay Area Program EIR/EIS reported that the more compact development patterns likely to occur under the HST alternatives could reduce farmland conversion by 30,000 acres statewide by year 2030 (Authority and FRA 2008, Authority 2012). Chapter 2, Alternatives, describes Vision California. This modeling tool describes the impacts of varying climate, land use, and infrastructure policies, and describes associated development patterns resulting from these policies. Results are produced for a range of metrics, including greenhouse gases (GHG), air pollutants, fuel use and cost, building energy use and cost, residential water use and cost, land

consumption, and infrastructure cost. Essentially, the tool quantitatively illustrates the connections between land use policies and water and energy use, housing affordability, public health, air quality, GHG emissions, farmland preservation, infrastructure investment, and economic development. The Vision California model was written to highlight the unique opportunity presented by California's planned High Speed Train System in shaping growth and other investments (Calthorpe Associates 2011a, 2011b). More information about Vision California may be found at http://visioncalifornia.org/index.php.

Analysis of population increase prepared for the HST project shows that population and employment growth would be consistent with and support current and anticipated future regional growth management plans and programs, which encourage infill development concentrating growth in urban areas, and provides transit options and connections for regional residents and workers.

3.18.5.2 No Project Alternative

Section 2.4, describing the No Project Alternative, provides a detailed review of the growth that would occur under the No Project Alternative, including continued high regional population growth rates through 2035. The land use plans of Fresno and Bakersfield encourage infill and higher-density development in urban areas and concentration of uses around transit corridors to provide more modal choices for residents and workers. These policies are being implemented in the region regardless of whether HST alternatives are constructed. Under the No Project Alternative, cities and counties would have a more difficult time encouraging higher-density development closer to downtown areas absent the demand for growth downtown near stations created by HST riders, and fewer transportation choices would be available. To some extent, the SCS that will be adopted by the MPOs as part of their 2014 RTP will be expected to encourage both more-compact development and greater investment in local transit modes as a means of reducing greenhouse gas emissions. Where an APS is adopted by the MPO, there may be less encouragement of compact development. In either case, the fact that the SCS/APS will address reductions in greenhouse gas emissions will encourage cities and counties to consider its provisions during planning and zoning deliberations in order to comply with CEQA's requirement to mitigate the impacts of planning and zoning decisions on greenhouse gas emissions. The Blueprint, which is voluntary not mandatory, is also expected to encourage more-compact development, but the extent of any increase in compact development will be difficult to quantify unless the city or county chooses to adopt the San Joaquin Valley Blueprint policies as part of its general plan.

Construction of planned development and transportation projects, including the expansion of SR 99, would generate short-term construction employment in the region and a small number of long-term permanent jobs to maintain new and expanded facilities. Under the No Project Alternative, fewer business and employment opportunities would exist in comparison to the HST alternatives.

3.18.5.3 High-Speed Train Alternatives

Construction Period Impacts

Common Regional Growth Impacts

The construction of any of the HST alternatives would result in new near-term construction-related employment and increases in sales tax revenues related to construction expenditures. Section 3.12, Socioeconomics, Communities, and Environmental Justice, analyzes the changes in tax revenues. Construction could temporarily disrupt agricultural activities and, acquisition of agricultural parcels prior to construction would remove land from production. However, the amount of agricultural land in the region that would be disturbed by construction would be small

in comparison to the agricultural base (approximately 2,000 acres, depending on the HST alternative chosen). The project's impacts on agricultural resources are discussed in Section 3.14; therefore, changes from direct conversion of agricultural land will not be discussed further in this section.

Construction-Related Employment Effects

Construction impacts were evaluated for each year of the construction period, as described in Chapter 2, Alternatives. Chapter 5, Project Costs, provides the detailed capital costs developed for each of the HST alternatives, including the design options, for the Fresno to Bakersfield Section of the HST project. For this analysis, some of the costs for right-of-way acquisition, final design, and program implementation were removed because those costs would not measurably affect employment in the region. See the *Fresno to Bakersfield Section: Community Impact Assessment Technical Report* for details on job creation estimates (Authority and FRA 2012).

Not all the construction costs would be spent locally in the four-county study area. Materials from outside of the study area would be used to construct the HST System (i.e., concrete sections of the guideway, track sections, and quarry materials). Experts in the transportation field helped derive the local portions of these costs as well as the portion spent during each of the years of construction. These costs were used with the RIMS II multipliers for the four-county study area to derive the indirect and induced employment impacts of the project. The direct regional employment estimates were derived by dividing the local construction payroll by an annual average construction wage of $156,000. The $156,000 annual average wage is the actual cost of the construction workers based on an average hourly wage (including benefits) of $75.

The resulting estimate includes the number of direct jobs created as well as the indirect and induced employment. Direct employment refers to the jobs created to construct the project and primarily involves jobs created 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.

Project construction spending differs by HST alternative given differences in factors such as longer routes, more difficult construction, more expensive materials needed, and more earthmoving required. Therefore, higher spending on construction leads to greater direct job creation as well as the associated indirect and induced employment. Note that construction spending is examined below for state fiscal years – running July 1st until June 30th.

BNSF Alternative

Table 3.18-7 shows the annual direct and the indirect plus induced employment estimates for the BNSF Alternative.

Over the entire construction period, project expenditures under the BNSF Alternative would result in the creation of a total of 7,600 direct and 15,200 indirect and induced annual job years. This is a total of 22,800 additional annual job years created by the project in the four-county area over these 6 years. During the peak period of construction, the additional 1,900 direct-construction jobs created would comprise an additional 3% of the total projected 2016 construction jobs in the region (see Table 3.18-3). This small percentage increase would not be substantial enough to

greatly attract workers to the region because the existing underemployed construction work force would be expected to fill these jobs.[3]

Table 3.18-7
BNSF Alternative Employment Impacts during Construction

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	600	1,300	1,900
Year 2	1,300	2,500	3,800
Year 3	1,900	3,800	5,700
Year 4	1,900	3,800	5,700
Year 5	1,300	2,500	3,800
Year 6	600	1,300	1,900
Total	**7,600**	**15,200**	**22,800**

Hanford West Bypass 1 Alternative

The Hanford West Bypass 1 Alternative is anticipated to take 6 years to construct. Table 3.18-8 provides estimates of the incremental change in jobs created if the Hanford West Bypass 1 Alternative was constructed instead of the corresponding portions of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were lower than with the corresponding portions of the BNSF Alternative, fewer jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would decrease by 1,050 annual job years in the four-county study area. This would include a decrease of 350 direct annual job years in the construction sector, and 700 indirect and induced annual job years in other economic sectors. During the peak period of construction, this alternative would create fewer jobs than the BNSF Alternative, and would be less likely to attract workers to the region for these jobs because the existing work force would be expected to fill them.

Table 3.18-8
Hanford West Bypass 1 Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	-25	-50	-75
Year 2	-50	-125	-175
Year 3	-100	-175	-275

[3] An "annual job year" is equivalent to one person fully employed for 1 year. It is likely that some of these jobs created over the entire construction period would be held by the same person for more than a year. Therefore, the total annual employment during the heaviest period of construction is compared to 2016 employment in the construction sector to better identify the peak number of job openings created, and therefore the number of additional workers needed in the region.

Table 3.18-8
Hanford West Bypass 1 Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 4	-100	-175	-275
Year 5	-50	-125	-175
Year 6	-25	-50	-75
Total	-300	-650	-950

Hanford West Bypass 1 Modified Alternative

The Hanford West Bypass 1 Modified Alternative is anticipated to take 6 years to construct. Table 3.18-9 provides estimates of the incremental change in jobs created if the Hanford West Bypass 1 Modified Alternative was constructed instead of the corresponding portions of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were lower than with the corresponding portions of the BNSF Alternative, fewer jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would decrease by 950 annual job years in the four-county study area. This would include a decrease of 300 direct annual job years in the construction sector, and 650 indirect and induced annual job years in other economic sectors. During the peak period of construction, this alternative would create fewer jobs than the BNSF Alternative, and would be less likely to attract workers to the region for these jobs because the existing work force would be expected to fill them.

Table 3.18-9
Hanford West Bypass 1 Modified Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	-25	-50	-75
Year 2	-50	-100	-150
Year 3	-75	-175	-250
Year 4	-75	-175	-250
Year 5	-50	-100	-150
Year 6	-25	-50	-75
Total	**-300**	**-650**	**-950**

Hanford West Bypass 2 Alternative

The Hanford West Bypass 2 Alternative is anticipated to take 6 years to construct. Table 3.18-10 provides estimates of the incremental change in jobs created if the Hanford West Bypass 2 Alternative was constructed instead of the corresponding portions of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were lower

than with the corresponding portions of the BNSF Alternative, fewer jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would decrease by 200 annual job years in the four-county study area. This would include a decrease of 50 direct annual job years in the construction sector, and 150 indirect and induced annual job years in other economic sectors. During the peak period of construction, this alternative would create fewer jobs than the BNSF Alternative, and would be less likely to attract workers to the region for these jobs because the existing work force would be expected to fill them.

Table 3.18-10
Hanford West Bypass 2 Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	0	0	0
Year 2	0	-25	-25
Year 3	-25	-50	-75
Year 4	-25	-50	-75
Year 5	0	-25	-25
Year 6	0	0	0
Total	**-50**	**-150**	**-200**

Hanford West Bypass 2 Modified Alternative

The Hanford West Bypass 2 Modified Alternative is anticipated to take 6 years to construct. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were just about the same as with the corresponding portion of the BNSF Alternative, the same number of jobs would be created by the Hanford West Bypass 2 Modified Alternative as with the corresponding portion of the BNSF Alternative. Similarly, this alternative would attract construction workers to the region, although the existing work force would be expected to fill these jobs.

Corcoran Elevated Alternative

This alternative is anticipated to take 6 years to construct. Table 3.18-11 provides estimates of the incremental change in jobs created if the Corcoran Elevated Alternative was constructed instead of the corresponding portion of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were higher than with the corresponding portion of the BNSF Alternative, more jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would increase by 500 annual job years in the four-county study area. This would include an increase of 200 direct annual job years in the construction sector, and 300 indirect and induced annual job years in other economic sectors. Due to the considerably higher cost of constructing the Corcoran Elevated Alternative compared to the BNSF Alternative in Corcoran, this alternative would create several hundred more jobs than the BNSF Alternative, and would be more likely to attract workers to the region for these jobs, although the existing work force would still be expected to fill these jobs.

Table 3.18-11
Corcoran Elevated Alternative Relative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	25	25	50
Year 2	25	50	75
Year 3	50	75	125
Year 4	50	75	125
Year 5	25	50	75
Year 6	25	25	50
Total	**200**	**300**	**500**

Corcoran Bypass Alternative

This alternative is anticipated to take 6 years to construct. Table 3.18-12 provides estimates of the incremental change in jobs created if the Corcoran Bypass Alternative was constructed instead of the corresponding portion of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were lower than with the corresponding portion of the BNSF Alternative, fewer jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative decreases by 750 annual job years in the four-county study area. This would include a decrease of 250 direct annual job years in the construction sector, and 500 indirect and induced annual job years in other economic sectors. Due to the considerably lower cost of constructing the Corcoran Bypass Alternative compared to the BNSF Alternative in Corcoran, this alternative would create several hundred fewer jobs than the BNSF Alternative, and would be less likely to attract workers to the region for these jobs because the existing work force would be expected to fill these jobs.

Table 3.18-12
Corcoran Bypass Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	-25	-50	-75
Year 2	-50	-75	-125
Year 3	-50	-125	-175
Year 4	-50	-125	-175
Year 5	-50	-75	-125
Year 6	-25	-50	-75
Total	**-250**	**-500**	**-750**

Allensworth Bypass Alternative

This alternative is anticipated to take 6 years to construct. Table 3.18-13 provides estimates of the incremental change in jobs created if the Allensworth Bypass Alternative was constructed instead of the corresponding portion of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were lower than with the corresponding portion of the BNSF Alternative, fewer jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would decrease by 100 annual job years in the four-county study area. This would include no change in the direct annual job years in the construction sector and a decrease of 100 indirect and induced annual job years in other economic sectors. During the peak period of construction, this alternative would create fewer jobs than the BNSF Alternative, and would be less likely to attract workers to the region for these jobs, because the existing work force would be expected to fill these jobs.

Table 3.18-13
Allensworth Bypass Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	0	0	0
Year 2	0	-25	-25
Year 3	0	-25	-25
Year 4	0	-25	-25
Year 5	0	-25	-25
Year 6	0	0	0
Total	**0**	**-100**	**-100**

Wasco-Shafter Bypass Alternative

This alternative is anticipated to take 6 years to construct. Table 3.18-14 provides estimates of the incremental change in jobs created if the Wasco-Shafter Bypass Alternative was constructed instead of the corresponding portion of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were lower than with the corresponding portion of the BNSF Alternative, fewer jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would decrease by 800 annual job years in the four-county study area. This would include a decrease of 300 direct annual job years in the construction sector, and 500 indirect and induced annual job years in other economic sectors. Due to the considerably lower cost of constructing the Wasco-Shafter Bypass Alternative compared to the BNSF Alternative in Wasco and Shafter, this alternative would create several hundred fewer jobs than the BNSF Alternative, and would be less likely to attract workers to the region for these jobs, because the existing work force would be expected to fill these jobs.

Table 3.18-14
Wasco-Shafter Bypass Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	-25	-50	-75
Year 2	-50	-75	-125
Year 3	-75	-125	-200
Year 4	-75	-125	-200
Year 5	-50	-75	-125
Year 6	-25	-50	-75
Total	**-300**	**-500**	**-800**

Bakersfield South Alternative

This alternative is anticipated to take 6 years to construct. Table 3.18-15 provides estimates of the incremental change in jobs created if the Bakersfield South Alternative was constructed instead of the corresponding portion of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were higher than with the corresponding portion of the BNSF Alternative, more jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would increase by 600 annual job years in the four-county study area. This would include an increase of 200 direct annual job years in the construction sector, and 400 indirect and induced annual job years in other economic sectors. During the peak period of construction, this alternative would create more jobs than the BNSF Alternative, and would be more likely to attract workers to the region for these jobs, although the existing work force would still be expected to fill these jobs.

Table 3.18-15
Bakersfield South Alternative Employment Impacts during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	25	25	50
Year 2	25	75	100
Year 3	50	100	150
Year 4	50	100	150
Year 5	25	75	100
Year 6	25	25	50
Total	**200**	**400**	**600**

Bakersfield Hybrid Alternative

This alternative is anticipated to take 6 years to construct. Table 3.18-16 provides estimates of the incremental change in jobs created if the Bakersfield Hybrid Alternative was constructed instead of the corresponding portion of the BNSF Alternative. Because the cost estimates for the Fresno to Bakersfield Section with this alternative were higher than with the corresponding portion of the BNSF Alternative, more jobs would be created by the project. Thus, the total direct, indirect, and induced employment over the 6-year construction period of this alternative would increase by 550 annual job years in the four-county study area. This includes an increase of 200 direct annual job years in the construction sector, and 350 indirect and induced annual job years in other economic sectors. Due to the considerably higher cost of constructing the Bakersfield Hybrid Alternative compared to the BNSF Alternative in Bakersfield, this alternative would create several hundred more jobs than the BNSF Alternative, and would be more likely to attract workers to the region for these jobs, although the existing work force would still be expected to fill these jobs.

Table 3.18-16
Bakersfield Hybrid Alternative Employment Impacts
during Construction Compared to the BNSF Alternative

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	25	25	50
Year 2	25	50	75
Year 3	50	100	150
Year 4	50	100	150
Year 5	25	50	75
Year 6	25	25	50
Total	**200**	**350**	**550**

HST Stations and Heavy Maintenance Facility

The alternative HST stations are each anticipated to take 3 to 4 years to construct, while HMFs would require 3 construction years. Analysts evaluated construction impacts separately for the stations and HMF. Table 3.18-17 shows estimated capital and construction costs for the Fresno, Kings/Tulare Regional, and Bakersfield stations and the HMF at any of the alternative HMF sites in this section. Local construction costs are the percentage of construction costs estimated to be spent within the region. The construction costs exclude right-of-way acquisition, final design, and program management, which were assumed to be about 20% of the actual construction costs.

Table 3.18-17
Fresno, Kings/Tulare Regional, and Bakersfield Stations and HMF Costs
(2010 $M)

	Fresno Station	Kings/ Tulare Regional Station-East	Kings/ Tulare Regional Station-West At-Grade	Kings/ Tulare Regional Station-West Below-Grade	Bakersfield Station	HMF
Capital Costs	$93	$92	$106	$116	$98	$620
Construction Costs	$77.2	$76.4	$87.9	$96.3	$81.3	$516.7
Local Construction Costs	$27	$27	$31	$33	$28	$179
Local Construction Costs during Year 1	$9	$7	$8	$8	$7	$45
Local Construction Costs during Year 2	$9	$7	$8	$8	$7	$90
Local Construction Costs during Year 3	$9	$7	$8	$8	$7	$45
Local Construction Costs during Year 4	NA	$7	$8	$8	$7	NA

Note: NA = not applicable as the Fresno Station and HMF would be constructed in 3 years and therefore there are no costs associated with year 4.

Tables 3.18-18 and 3.18-19 show the annual direct and the indirect plus induced employment estimates for the stations along the BNSF Alternative and the HMF, respectively. These estimates were derived using the annual construction costs and the RIMS II multipliers. The total employment created over the construction period is estimated to be 900 total annual job years for the stations with 275 direct annual job years in construction. The total employment created over the construction period for the HMF is estimated to be 1,925 total annual job years with 625 direct annual job years in construction. Therefore, construction of the stations and HMF would result in approximately 2,825 total annual job years with 900 direct annual job years in construction, which is about 400 construction jobs during the peak construction years. This construction workforce would comprise less than 1% of the total projected 2016 construction jobs in the region. Therefore, this increase would not be substantial enough to greatly attract workers to the region for these jobs because the existing work force would be expected to fill these jobs. The employment created by the construction of the alternative alignments overshadows the estimated employment created by construction of the stations and HMF.

Table 3.18-18
Employment Impacts during Construction of the BNSF Stations

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	75	175	250
Year 2	75	175	250
Year 3	75	175	250
Year 4	50	100	150
Total	**275**	**625**	**900**

Table 3.18-19
Employment Impacts during Construction of the HMF

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	150	325	475
Year 2	325	650	975
Year 3	150	325	475
Total	**625**	**1,300**	**1,925**

Project Impacts

Common Regional Growth Impacts

This section discusses operations impacts for the HST project. Operations impacts relate directly to operating cost estimates; however, the differences between the HST alternatives are not great enough to affect operating costs. Operation of any of the alternatives would result in similar direct effects on employment. The alternatives would result in population and employment growth, resulting in indirect effects on housing demand, farmland conversion, and urban development. Section 3.12, Socioeconomics, Communities, and Environmental Justice, briefly describes the anticipated changes in tax revenues.

Operations-Related Employment

Project operation would improve state and regional connectivity while creating job opportunities across many sectors of the regional economy (Cambridge Systematics Inc. 2010; Kantor 2008). The employment created has the potential to draw workers to the region. Overall, it is expected that employment growth from project operation would be a net benefit for the region as a whole.

Agriculture defines the socioeconomic structure of the San Joaquin Valley. As an economic driver and a factor in the socioeconomic structure of the San Joaquin Valley, agriculture will likely continue to play a decisive role in the future. However, lower land and labor costs in the valley compared to those of other regions have attracted businesses to the region in the past. Many businesses are attracted by the low-cost labor and the relatively low land prices. In 2002, the three leading sectors of employment in the San Joaquin Valley were government (260,000 jobs),

agriculture (225,000 jobs), and health services (85,000 jobs). Manufacturing, especially in smaller metropolitan areas, is also important to the region's economic growth. Manufacturing is an important stage of value-added production, and its continued and expanded role in the processing of agricultural products is regarded as an important source of future economic growth (Cowan 2005).

For the BNSF Alternative, it is estimated that approximately 47,500 jobs would be created by 2035 in the region as a result of the operation of the HST System (Cambridge Systematics Inc. 2010). This total would include the direct jobs to operate and maintain the project in the region (approximately 2,300 jobs); the indirect and induced jobs created to support these new workers (approximately 3,200 jobs); and the additional jobs created as a result of the improved connectivity of the region to the rest of the state leading to increased competitiveness of the region's industries and to growth in the overall regional economy. This total increase in jobs as a result of project operation is estimated to be only a 3.2% increase in total employment above the 2035 estimate of 1.4 million total jobs in the region under the No Project Alternative (Cambridge Systematics Inc. 2010).

The San Joaquin Valley has greater unemployment and a lower per capita income than the state as a whole. In response to the persistent unemployment problem in the valley, local governments are making a concerted effort to help create jobs. Fresno, the largest metropolitan area in the region, has taken steps to begin improving its economic structure with the Fresno Regional Jobs Initiative (RJI) that aims to create 30,000 net new jobs that pay at least $30,000 per year. Set in motion by an executive order from Governor Schwarzenegger in June 2005 and renewed in July 2010, the California Partnership for the San Joaquin Valley is a public-private partnership focused on improving the region's economic vitality and quality of life. Therefore, although job attraction has been growing in the area, efforts remain under way to continue to create jobs in the area. Jobs created directly and indirectly by operation of the HST System would provide employment opportunities for residents in the area and as described in the section below, would not be growth-inducing.

Population Growth

The HST alternatives contribute a relatively small incremental increase in the projected growth for the four-county region associated with the No Project Alternative. The HST project would result in a 2-3% population increase and 3% employment increase compared to current projections. While increasing projected population and employment growth, the HST project would also result in the benefits over the No-Project condition including reduced automobile travel on major freeways, reduced long-term air pollutant emissions, and additional economic activity that may bring the San Joaquin Valley's chronically high unemployment rate to a level that is more in line with the rest of the state.

This section discusses the ways in which the project could foster population growth, or the construction of additional housing, directly or indirectly, in the surrounding environment. In general, a project may foster spatial, economic, or 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). Included in this definition of infrastructure projects that remove obstacles to growth are projects such as the HST System, which could facilitate travel between areas of California by providing an additional mode of transportation. The HST System is designed for intercity travel to provide an alternative to the personal automobile and airplanes for rapid travel between the major urban centers of the state. It is not intended as a commuter rail service as tickets prices would not be subsidized, as is typical for commuter rail. At a ticket price equivalent to 50-80% of airfare, it would not be cost-effective for most people to live in one urban area, say Fresno, and commute to another urban area, such as San Francisco.

California's population is expected to increase by 12.5 million residents (34%) between 2010 and 2035 (CDOF 2010a). Much of this population growth can be accommodated in the metropolitan coastal areas or in Southern California's Inland Empire. However, growth and development in these regions are increasingly challenged because of environmental and quality-of-life issues. Despite economic pressure to grow, the combination of rising costs and local opposition is likely to push a substantial number of people in these areas to seek homes and employment elsewhere.

The San Joaquin Valley is a likely outlet for this population pressure, and is also a major source of growth from both the local population, as well as immigration (Teitz et al. 2005). The population of the San Joaquin Valley is projected to increase by 66.8% between 2009 and 2035, almost twice the population increase projected for California over this same time period. Within the Fresno to Bakersfield four-county project area, this increase would be approximately 73%. This population increase is projected due to three main points: (1) overflow from urban coastal areas where people are seeking affordable housing within commuting range of major metropolitan areas, (2) immigration, and (3) local population growth (Cowan 2005). Even without the HST project, the population in the Central Valley is forecasted to grow at a higher rate than the rest of California, as shown in Table 3.18-2. Based on the analysis by Cambridge Systematics Inc., with the HST project there is a small (approximately 3%) incremental effect compared to the forecasted growth in the Central Valley. The growth in population related to the HST project is expected to be slower than the increases in employment because a number of the jobs are likely to be filled by area residents and population increases are driven by the growth in indirect employment, which is spread out over time.

The HST project would serve the existing and future need for transportation, would help to provide employment opportunities in a region with high unemployment, and would encourage more compact urban transit-oriented development around the station areas and assist local governments by providing station area planning matching grants and technical assistance to cities that apply for these grants (Fresno is already participating in this program). Increased travel to central Fresno and Bakersfield by way of the HST System would provide an economic incentive for revitalization of those areas. The increases in employment are anticipated to occur faster than the growth in population as a result of the stimulative effect of the HST project, especially in the station areas. The HST System would not lead to wholesale shift in residential locations for the Bay Area and Los Angeles into the Central Valley, and any interregional shifts in residential locations are expected to be a small portion of the growth expected in the Central Valley (Cambridge Systematics Inc. 2003). Therefore, the HST System would not induce unplanned growth.

Other effects of population growth include demand for public services and utilities. It is difficult to speculate on future demands for services such as police, fire, schools, libraries and other social services. However, the incremental population growth effect of the project would have no significant effect on future water demand. See the discussion in Section 3.6.5 regarding statutory conservation requirements that would offset the incremental increase from the HST project's induced population and employment growth.

Land Use Consumption

As shown in Table 3.18-20, the HST project would increase population by approximately 2-3%, or approximately 110,650 people over the 2035 population forecasted for the four-county region. As indicated above, communities in the region have adequate space to accommodate planned growth by 2035 and HST-induced growth within their current spheres of influence. For housing and necessary supporting infrastructure, including commercial, office, transportation, parks, and schools, a typical density for an area similar to the San Joaquin Valley would be approximately 10 persons per acre of land development (see Section 2.4, No Project Alternative – Existing and

Planned Improvements). Using this assumption, the HST System would require an additional 11,065 acres of land.

Table 3.18-20
Regional Projected and Induced Population and Employment Growth

County	RTP 2035 Projections	Program EIS 2035 No Project Projections	HST-Induced Growth	Total 2035 HST Alternative Projections	Growth Inducement
Population					
Fresno	1,519,325	1,549,885	32,023	1,581,908	2%
Kings	274,576	275,143	8,269	283,412	3%
Tulare	809,789	811,225	24,379	835,604	3%
Kern	1,321,000	1,529,933	45,978	1,575,911	3%
TOTAL	**3,924,690**	**4,166,186**	**110,649**	**4,276,385**	**3%**
Jobs					
Fresno	618,682	610,166	18,549	628,715	3%
Kings	72,080	81,274	2,720	83,994	3%
Tulare	258,337	268,774	8,996	277,775	3%
Kern	459,391	513,055	17,171	530,226	3%
TOTAL	**1,408,493**	**1,473,269**	**47,436**	**1,520,710**	**4%**

Acronym:

RTP = Regional Transportation Plan

Note: For percent growth inducement, the calculations used the higher of the two growth inducement rates from the reports prepared by Cambridge Systematics (Cambridge Systematics 2003, 2007).

Source: California Department of Finance (CDOF 2010b).

However, current land consumption trends would likely change with the presence of the HST System, which is expected to result in additional population and employment near stations and indirectly influence the regional development pattern. The research conducted for the Bay Area Program EIR/EIS (Refer to Section 5.6) found that market forces and complementary regulatory-style efforts by other cities to encourage increased density and a mix of land uses near rail stations have been effective in attracting higher-density development. The HST project would encourage increased densities resulting in more compact urban development around the Fresno and Bakersfield stations. The HST project would tend to consolidate currently projected growth (under the No Project Alternative) and new regional employment and population around the downtown Fresno and Bakersfield HST stations with any of the HST alternatives. Given the dramatic population and employment growth projected in the Central Valley compared to the rest of the state under the No-Project condition, the presence of the HST stations would help direct a portion of this growth and the additional HST-induced growth into higher-density and more sustainable development patterns, and help achieve the goals of the SCS adopted by each of the four MPOs within the Fresno to Bakersfield Section pursuant to SB 375, the San Joaquin Valley Blueprint, and general plans in these areas.

Although much of the growth in the station areas is a result of market forces, government involvement through a number of strategies can help to speed up the process, including higher-density mixed-use zoning. In addition to expected SCS strategies encouraging more-compact development, a recent study by the Urban Land Institute indicates that changes in economic trends along with demographic changes, have resulted in an oversupply of single-family homes and increased demand in the California housing market for higher-density, more-compact development – particularly in proximity to around transit stations (Nelson 2011). These development patterns would be inconsistent with some current local land use plans, which do not all anticipate the HST station in Downtown Bakersfield. The City of Fresno is including a downtown Fresno high-speed train station as part of its Fulton Corridor Specific Plan process, and it is anticipated that this process will result in policies that promote higher-density development patterns than current conditions (City of Fresno 2011a).

The City of Bakersfield was provided an opportunity to enter into a station area planning grant funding agreement with the Authority and declined the opportunity. However, it is reasonable to anticipate that Bakersfield and other cities will adopt city planning policies in the future that promote infill and higher-density development in existing urban areas as a strategy to comply with SB 375 and to meet market demands for greater TOD, as the Fresno, Kings, Tulare, and Kern Councils of Governments are engaged in updates to their Regional Transportation Plans, which include a Sustainable Communities Strategy Element (Fresno COG 2014, Kings COG 2014, Tulare COG 2014, and Kern COG 2014).

The potential effect of the regulatory-style land use strategies discussed above (encouraging increased density and a mix of land uses near rail stations) was evaluated in the Statewide Program EIR/EIS. Results suggested that even a modest strategy focused on the areas immediately surrounding the stations could reduce the potential statewide urbanized acreage of agricultural land by an additional 30,000 acres under the HST System (Authority 2003). These results represent a low-end estimate of the possible densification effects of regulatory strategies in combination with the market forces likely to occur following the introduction of HST service. The research suggested that other jurisdictions have had some success in implementing more aggressive, region-wide regulatory-style strategies[4] in conjunction with high-capacity intercity and urban transit services (Authority and FRA 2005, 2008). Experience in these areas suggests that more aggressive strategies might be more attractive to policy makers because HST service could offer an economic rationale to developers to cluster new commercial and residential development to provide easy access to downtown HST stations. As described in Section 3.13, Land Use, Station Planning, and Development, the Authority has developed guidelines for station area development (HST Station Area Development: General Principles and Guidelines), as identified in the Bay Area to Central Valley HST Program final and revised final EIR/EIS documents (Authority and FRA 2008 and 2010). The Authority is working with the City of Fresno on station area plans through a matching planning grant program and has offered the City of Bakersfield the same opportunity. Ultimately, the cities and county would be responsible for developing local land use requirements that would focus the growth in the HST station areas; however, as described above, the project would encourage the cities and county to take full advantage of the HST station potential. Growth that is clustered in areas with easy access to the downtown Fresno and Bakersfield HST stations would represent the “Growing Smarter” scenario tested in the Vision California growth model. The Growing Smarter Model would result in many benefits, including reductions in auto trips, lower energy usage, reduction in greenhouse gas emissions, and less land consumption (urban sprawl). In general, the No Project Alternative does not have the potential for such market incentive. See Chapter 2 for a description of Vision California and how policies affecting transportation and land use can be analyzed in advance.

[4] Examples of these strategies include urban growth boundaries, maximum parking requirements, jobs-housing balance, greater diversity of land uses, higher densities, and higher service levels of mass transit.

In short, any of the HST alternatives would provide a strong economic incentive for directing the concentration of urban growth and minimizing a variety of impacts that are frequently associated with growth. Additional regional land use strategies could be considered under the anticipated SCSs to further reduce development impacts on sensitive natural resources and provide further concentration of a wide variety of activities, making local transit options more feasible and reducing vehicle miles travelled in order to meet the greenhouse gas reduction target set for the San Joaquin Valley under SB 375. The HST project, and the resulting concentration of population and employment growth it is expected to encourage, would not only be consistent with SB 375-related plans and programs, but would also assist the region in implementing the goals of those plans.

Although the Downtown Fresno and Bakersfield stations are anticipated to encourage compact growth in the surrounding area due to their urban locations, the Kings/Tulare Regional Station–East and Kings/Tulare Regional Station–West alternatives are located in entirely different types of land use areas.

The Kings/Tulare Regional Station–East Alternative is unincorporated land shown as Urban Fringe in the *2035 Kings County General Plan* (Kings County Community Development Agency 2010), a designation intended to represent residential, commercial, and industrial land uses immediately adjacent to cities. Land uses to the west inside the City of Hanford's secondary sphere of influence are designated with a variety of Urban Reserve land uses—a prefix applied to land within the City of Hanford's Planning Area Boundary that is also designated with an underlying land use designation in the Hanford General Plan. The *City of Hanford General Plan* states that the development of any Urban Reserve lands is either not anticipated within the planning horizon, or will require the resolution of significant infrastructure constraints in the area prior to moving any projected development threshold. Developing a station could remove a barrier to growth through the extension of infrastructure to the stations. This would allow for more development to occur around the stations and along the path of the infrastructure expansion. Developing around the stations may be desirable to business and residences by creating a direct transportation link to areas with more business and employment opportunities. Given the Urban Reserve and agricultural land use designations surrounding the Kings/Tulare Regional Station–East Alternative area, the potential for the Authority to purchase agricultural conservation easements around the station (easements must be purchased from willing sellers), and the Authority's vision for the Kings/Tulare Regional Station–East Alternative to act as a transit hub,[5] the potential for indirect effects on land use in the area surrounding the Kings/Tulare Regional Station–East Alternative is high. Due to this high potential, the Authority could work with local government, the California Department of Conservation and non-governmental agencies to purchase agricultural conservation easements around the station to keep the land in agricultural production to discourage direct or indirect growth around this station.

The Kings/Tulare Regional Station–West Alternative consists of unincorporated land adjacent to the City of Hanford's western Planning Area Boundary, and within the Armona Community Planning Area of Kings County. The station site would be located in an area categorized in the *2035 Kings County General Plan* (Kings County Community Development Agency 2010) as Urban Fringe, in an area designated as a Primary sphere of influence. The "Urban Fringe" Land Use Category is intended to represent residential, commercial, and industrial land uses immediately adjacent to Hanford. The station site land use designation within Kings County is Limited Agriculture, as is all adjacent land to the west, north, and east. Developing a station could remove a barrier to growth through the extension of infrastructure to the stations. This would allow for more development to occur around the stations and along the path of the infrastructure

[5] Transit hubs are located at key destinations where passengers change between various modes of transportation (e.g., rail, bus, passenger car, etc.).

expansion. Developing around the stations may be desirable to business and residences by creating a direct transportation link to areas with more business and employment opportunities. That is, people could travel from Hanford to meetings or jobs in Bakersfield or Fresno more easily and quickly.

The potential for indirect effects on land use in the area surrounding the Kings/Tulare Regional Station–West Alternative is high. See Section 3.13, Station Planning, Land Use, and Development, for a discussion of the potential for land use change around the Kings/Tulare Regional Station alternatives.

Although some housing could be accommodated in the downtowns of Fresno and Bakersfield to meet the needs of population growth, more housing would be required to accommodate the 2035 population under both the No Project and HST alternatives. Cities and counties in California are required to prepare Housing Elements to meet the State Housing Element law, which requires jurisdictions to adequately plan for existing and projected housing needs. These Housing Elements are updated on a regular basis, generally for an 8-year period, which is a much shorter planning timeframe than what the general plans address. Under SB 375, the future housing needs to be addressed in the housing elements will reflect the SCS adopted by the MPO in each county. As population increases, cities and counties would entitle development to meet the housing need in the area. Therefore, all jurisdictions within the HST project area would be required to plan for and meet the housing need for the population as it increases.

Under the No Project Alternative, population growth would be commensurate with regional growth forecasts (see Section 2.4.1 No Project Alternative). Using the methods in Section 2.4.1 for relating population growth to conversion of farmland, regional growth forecasts indicate development of approximately 56,500 acres of farmland occurring in Fresno County, 11,800 acres in Kings County, 36,200 acres in Tulare County, and 68,400 acres in Kern County by 2035 under current projections. This loss of farmland would occur even absent the HST System. The anticipated increase in development around HST stations would encourage higher-density and more sustainable development patterns by creating an economic incentive for the revitalization of the city centers and help achieve the expected goals of the regional SCSs and General Plans in these areas. Under city and county planning policies, current spheres of influence have adequate space to accommodate planned growth by 2035.

The economic growth study for the Bay Area EIR/EIS found that the HST alternatives could reduce projected farmland conversion by 30,000 acres statewide if they encourage more compact development patterns and more efficient land use in the immediate station areas. This trend would also be expected in the Fresno to Bakersfield Section, with less farmland conversion occurring long-term due to more efficient land use in urban areas.

HST-induced growth could require the development of more incremental energy production and/or transmission capacity, particularly in Fresno, Kings, Tulare, and Fresno counties, compared to the No Project Alternative. Given the availability of utility services to meet future service demands for the region, the impact on public utilities during operation of the HST System would not require an incrementally greater extension of utilities. See Section 3.6, Public Utilities and Energy for more details on the short-term direct impacts related to the project.

The HST project would serve the existing and future need for transportation, would help to provide employment opportunities in a region with chronically high unemployment, and would encourage more compact urban development around the station areas. Based on the amount of undeveloped land within urban spheres of influence throughout each county, communities in the region have adequate space within their spheres of influence to allow for development to accommodate this additional population growth. Therefore, with the exception of the Kings/Tulare Regional Stations, the HST project would not induce unplanned growth.

Consistency with Regional Growth Management Plans

The RTPs project regional population and employment growth for year 2035, using projections developed by the California Department of Finance (CDOF). The economic growth analyses performed for the Statewide Program EIR/EIS (Authority and FRA 2005) and *Final Partially Revised Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* (Authority and FRA 2008, Authority 2012) also projected regional population and employment growth, which has been updated to year 2035 for both No Project and HST alternatives for use in this analysis. Both the RTP population projections and the Statewide Program EIR/EIS No Project projections estimate the amount of growth that would occur without implementation of the HST project. However, because they use different methods and assumptions to project this growth, the two sets of projections differ. The RTP population projections are 2.2% lower than the Statewide Program EIR/EIS No Project population projections, and the RTP employment projections are 2.7% higher than the Program EIS employment projections.

The HST alternatives would result in an additional 2% to 3% population growth and 3% of jobs growth in Fresno, Kings, Tulare, and Kern counties when compared to the No Project Alternative projections (see Table 3.18-18), based on the economic growth analyses performed for the Statewide Program EIR/EIS and *Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* (Authority and FRA 2008, Authority 2012). The economic growth study conducted for the *Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* found that this additional population growth under the HST alternatives would be driven by regional job growth (that is, job growth internal to Fresno, Kings, Tulare, and Kern counties) induced by the presence of the HST System, rather than by population shifts from the Bay Area and Southern California. In general, HST station areas would offer a more attractive market for commercial and office development than the same areas under the No Project Alternative. The HST alternatives would tend to attract more jobs in the services, government, and financial activities sectors than currently exist in the region. Research of urban rail systems elsewhere in the world found that industries needing large numbers of highly skilled and specialized employees are most attracted to rail station areas, and that a noticeable densification pattern is likely to emerge in the vicinity of many HST stations under regular market forces (Authority 2007). Such development patterns would be consistent with the General Plans of both the City of Fresno and the City of Bakersfield (City of Fresno Planning and Development Department 2002; City of Bakersfield and Kern County 2007). Therefore, population growth in the San Joaquin Valley would occur absent the HST project, and the HST project alone would not meaningfully induce substantial population growth beyond that already projected for the region in most locations.

The Kings/Tulare station would not be consistent with some policies in local land use plans, but would be consistent with others, such as the San Joaquin Valley Blueprint Plan (see Section 3.13, Station Planning, Land Use and Development for more details). Operation of the Kings/Tulare station could lead to induced population growth beyond levels that had been projected for the Hanford area.

3.18.6 Summary

The HST project would induce growth, but would not induce growth substantially beyond what is projected in city and county general plans, other than in unincorporated Kings County, near Hanford, due to proximity of the Kings/Tulare Regional Station. Compared to the No Project Alternative, the HST alternatives would encourage more compact, efficient land use in the region by providing an economic driver for higher-density infill development around downtown HST

stations. These effects would support anticipated regional land use policies consistent with SB 375, and would assist communities in realizing goals in these regional transportation plans.

The proposed HST stations would be compatible with the planning goals of Fresno. The station-area planning process has been strategized such that the stations would be sited and designed to maximize potential benefits. This process also allows cities to make relevant land use decisions well in advance of any project construction. The City of Fresno, under a station planning grant from the Authority, will develop a site-specific plan to adapt to the potential of a HST station and realize new land use patterns in the city's downtown area. These funds will be used to prepare land use plans for the areas around the stations, including compact development and mixed uses compatible with the Authority's Urban Design Guidelines. The City of Bakersfield can also apply for this assistance, but has not yet done so. Refer to Section 3.13, Station Planning, Land Use, and Development, for more complete information.

The Kings/Tulare Regional Station–East and Kings/Tulare Regional Station–West Alternatives would be located in an agricultural area because of the alternatives bypass the City of Hanford, and the Authority would support local government regulations to continue to discourage growth in the agricultural area around the Kings/Tulare Regional Station alternatives. In addition the Authority would work with local government, the California Department of Conservation, local land trusts, and farm organizations to identify and acquire agricultural conservation easements to limit the potential of low-density urban development caused by a station, as described in the agricultural mitigation measures (see Section 3.14.7). Pursuant to SB 375, SCS or APS planning in each county will likely rely upon HST System development to help reach its greenhouse gas emissions reduction targets of 5% by 2020 and 10% by 2035. These planning processes, together with steps the Authority will take to assist with station area planning, is expected to encourage more-compact development within the region, particularly around HST station locations.