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. 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. In 2008, the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) concluded that (1) the HST System would result in a small amount of induced population and employment growth statewide and (2) 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 HST would be limited when compared to the overall level of growth that would occur under the No Project Alternative. The HST alternatives would result in approximately 7,845 acres of additional growth over the No Project Alternative, or an increase of approximately 0.9% more acreage of induced urbanization. The study found that Merced and Madera counties would differ from this pattern, however, and that HST would induce sizeable urbanization increases.

The program-level analysis also concluded that, across the state, HST 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 under HST 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 Statewide Program EIR/EIS (Authority and FRA 2005) and the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) did not identify growth impacts requiring mitigation and therefore did not suggest mitigation for growth impacts. Since that time, economic recession conditions have largely stifled new growth in California and the Central Valley. As a result, there is an oversupply in the San Joaquin Valley of approved, but unbuilt development projects. When economic conditions improve, new growth is expected to occur in those locations first. Therefore, growth inducement for the Merced to Fresno Section is not expected to be greater than that identified in the prior Program EIR/EISs, and no program-level mitigation strategies related to growth have been incorporated into the proposed HST alternatives for the Merced to Fresno Section.

Population and employment growth are closely linked to land use regulations and economic activity. Discussions of these topics are provided in Section 3.12, Socioeconomics, Communities, and Environmental Justice, and Section 3.13, Station Planning, Land Use, and Development. These sections include a discussion of economic impacts on the cities and counties as well as 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 section.

3.18.2 Laws, Regulations, and Orders

This section discusses regional and transportation plans relevant to the HST Project. These plans include the San Joaquin Valley Blueprint prepared by a consortium of San Joaquin Valley councils of governments and Regional Transportation Plans (RTPs) prepared by the counties of Merced, Madera, and Fresno. NEPA and CEQA guidance relevant to regional growth are discussed in Section 3.1, Introduction.

3.18.2.1 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 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."

3.18.2.3 Regional and Transportation Plans

San Joaquin Valley Blueprint Roadmap Summary

The *San Joaquin Valley Blueprint Planning Process Summary Report* (the Blueprint) (Mintier-Harnish et al. 2010) is a plan for the future of the San Joaquin Valley. Agencies involved in developing this plan included the following 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. 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 HST 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. 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 regional government of each county, as described below under SB 375.

2011 Regional Transportation Plan for Merced County

The *2011 Regional Transportation Plan for Merced County* (Merced County Association of Governments [MCAG] 2010) provides a comprehensive, long-range view of transportation needs and opportunities for the county's transportation system over a 20- to 25-year horizon. The plan addresses the movement of goods and people by auto, truck, bus, train, airplane, bicycle, or walking. The plan includes information regarding (1) specific policies, projects, and programs needed to maintain, manage, and improve the transportation system; (2) the actions needed to achieve the goals; and (3) funding and options to implement the actions addressed in the plan. The plan includes the following goals related to the HST Project:

- Support orderly and planned growth that enhances the integration and connectivity of various modes of transportation.
- Provide a variety of transportation choices that strengthen and direct development towards existing communities, thus preserving open space, farmland, natural beauty, and critical environmental areas.
- Coordinate future land use patterns and transportation systems (such as aviation, rail, light rail, high-speed rail, transit, bike and pedestrian paths, and roads) to foster economic prosperity, environmental protection and mitigation, trip reduction, and the creation of efficient, integrated mixed-use communities.
- Encourage land use and growth patterns that enhance the livability of communities and maximize the productivity of transportation investments.

Madera County 2011 Regional Transportation Plan

The *Final 2011 Regional Transportation Plan* (Madera County Transportation Commission [MCTC] 2010) provides a comprehensive, long-range view of transportation needs and opportunities for the county's transportation system to the year 2035. The plan provides that the county transportation system and implementation of the policies and programs through the year 2035 will safely and efficiently accommodate anticipated growth within the cities of Chowchilla and Madera and unincorporated areas of the county. The plan acknowledges that HST is very important to the San Joaquin Valley and will improve connectivity to surrounding major metropolitan areas and provide greater economic development opportunities, less vehicular congestion, safer highways, improved air quality, and increased job creation.

2011 Regional Transportation Plan – Long Range Transportation Vision for the Fresno County Region for the Years 2010 to 2035

The *2011 Regional Transportation Plan – Long Range Transportation Vision for the Fresno County Region for the Years 2010 to 2035* (Council of Fresno County Governments [Fresno COG] 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 the 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.

SB 375 Sustainable Communities Strategies

SB 375 (2008) 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 RTP. The purpose of the SCS or APS is to reduce greenhouse gas (GHG) emissions from automobiles and light trucks within each region to meet emissions targets set by the California Air Resources Board. The emissions targets for the San Joaquin Valley MPOs are a 5% reduction by 2020 and a 10% reduction by 2035. The SCS will be a mandatory part of the next update of the RTPs to be prepared by the Merced, Madera, and Fresno County MPOs (i.e., MCAG, MCTC, and Fresno COG) and expected to be adopted in 2013-2014.

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 RTP, taking into account net migration into the region, population growth, household formation and employment growth.

(iii) Identify areas within the region sufficient to house an 8-year projection of the regional housing need for the region pursuant to section 65584.

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

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

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

(vii) Set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce GHG emissions from automobiles and light trucks to achieve, if feasible, the GHG emission reduction targets approved by the state board.

(viii) Allow the RTP to comply with Section 176 of the federal Clean Air Act (42 U.S.C. Sec. 7506).

The RTP 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 GHG 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 and comply with the California Transportation Commission's *California 2010 Regional Transportation Plan Guidelines* (Sections 6.23 through 6.28), the SCS or APS is expected to call for more-compact development patterns that can be served by transit and other modes of transportation (California Transportation Commission 2010). These development patterns will be encouraged by the requirement that the SCS or APS reduce GHG emissions (which are linked to vehicle miles traveled) and plan to accommodate regional housing needs (which are expected to continue to increase).

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 RTP and therefore would be less likely to be implemented.

3.18.2.4 Local Plans and Policies

Merced, Fresno, and Madera counties and the cities of Atwater, Merced, Chowchilla, and Fresno all have adopted general plans. Many also have community and specific plans (detailed description of these plans and their goals and policies is provided in Appendix 3.13-A of this EIR/EIS).

General plans are required by California state law, and each must include 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.

Merced County General Plan

The *Merced County Year 2000 General Plan* (Merced County 1990) is being updated, with the goal of adopting in 2012. The plan adopts and implements the urban-centered concept for development in unincorporated areas of the county. This concept establishes a county policy to focus growth to established urbanized areas—cities and unincorporated communities—where public services are already established.

The *Merced County General Plan Update, Revised Alternatives Report* (Merced County 2009), produced as part of the general plan update, identifies two alternatives for allocating future population and employment growth within the county, both of which acknowledge HST. These alternatives will be evaluated based on the county's guiding principles of agricultural land protection, economic development, environmental quality, public facilities and services, and transportation.

City of Merced General Plan

The *Merced Vision 2030 General Plan* (City of Merced 2012) was updated and adopted in January 2012. The *Merced Vision 2030 General Plan* sets forth policies to implement the goals of compact urban form, preservation of agriculturally significant areas, and efficient urban expansion. Specific policies include implementing transit-oriented development (TOD) adjacent to the proposed HST station in Downtown Merced, encouraging development on infill sites through amendments to the zoning and subdivision ordinances, and promoting higher residential densities within the Merced urban areas. The plan expands the city's sphere of influence to accommodate projected population growth over the next 20 years and identifies areas for additional growth capacity beyond projections within an area of interest boundary. Sphere of influence and area of interest boundaries are shown in Figure 1 in Appendix 3.18-A (Figure 2.4.b of the Merced Vision 2030 General Plan).

Madera County General Plan

The *Madera County General Plan* (Madera County 1995) sets forth goals and policies addressing future growth in the County. They focus on promoting efficient land use, locating new development in existing communities, encouraging infill development to minimize conversion of agricultural land, and ensuring that new growth areas are comprehensively planned and developed as balanced independent communities. Area plan boundaries, including new growth areas, are shown in Figure 2 in Appendix 3.18-A (Figure II-1 of the *Madera County General Plan*).

City of Chowchilla General Plan

Chowchilla recently updated its general plan (City of Chowchilla 2011). The 2040 General Plan planning area encompasses approximately 14,000 acres, of which 3,891 acres are within the existing Chowchilla city limits and the remainder consists of low-density residential development and agricultural lands. The planning area boundaries reflect the city's growth projections and amount of land needed to accommodate that growth through 2040, while retaining 50% land vacancy to maintain affordable land prices within the community. An additional 16,000 acres are included within the 2040 sphere of influence, which indicates the ultimate contemplated service area. The city's planning area and sphere of influence boundaries are shown in Figure 3 in Appendix 3.18-A (Figure I-2 of the City of Chowchilla 2040 General Plan [City of Chowchilla 2010]). The draft plan acknowledges the HST Project and includes a policy stating the City shall participate in the HST planning process.

City of Madera General Plan

The City of Madera General Plan (City of Madera 2009) was updated and adopted in October 2009. The plan establishes a growth boundary to define the physical limits of development in Madera. The city's growth boundary is shown in Figure 4 in Appendix 3.18-A (City of Madera General Plan Land Use Map). The plan also encourages Madera County to assist the City in maintaining an agricultural greenbelt around the growth boundary by allowing only agricultural land uses in the greenbelt. The plan includes a policy that supports HST outside of the city limits and located so as to minimize impacts to agricultural lands outside the urban growth boundary.

Fresno County General Plan

Fresno County is in the process of updating its General Plan, originally prepared in 2000. A public review draft of the General Plan policy document was issued on August 1, 2010. The Fresno County General Plan (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 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 will incorporate TOD 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, which are fairly and equitably financed. The City of Fresno started the process to update the 2025 Fresno General Plan to reflect 2035 early in 2012 and is in the early stages of the effort.

3.18.3 Methods for Evaluating Impacts

3.18.3.1 Regional Modeling

HST construction- and operation-related employment impacts were estimated using a Regional Input-Output Modeling System (RIMS) II multiplier model of the region comprising Merced, Madera, and Fresno counties. RIMS II multipliers are regional input-output multipliers used to estimate regional economic activity changes generated by changes in regional industries. Using the three-county RIMS II multiplier model, economists estimated short-term/temporary employment by year that would be generated by project construction for the HST alternatives, stations, and HMFs within the Merced to Fresno Section. The three-county RIMS II multiplier model was also used to estimate the long-term/permanent employment generated by the operation of the HST alternatives, stations, and HMFs within the Merced to Fresno Section.

3.18.3.2 HST-Induced Population and Employment

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 (Authority and FRA 2008) and evaluated impacts on regional growth that the HST Project would create. The estimates of population and employment growth were developed for year 2030 and updated in 2010 to year 2035 for use in the Merced to Fresno Section Project EIR/EIS.

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 (Appendix F in Cambridge Systematics Inc. 2003).

- 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 multi-county regions in the state.

This information was then used to allocate county-level population and employment throughout each county and develop estimates of population and employment growth (by county) 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 within 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 regional perspective of anticipated project impacts. At the regional scale, the HST alternatives cannot be differentiated. Therefore, this analysis compares the HST system, regardless of which HST alternative is implemented, against the No Project Alternative. Where data were available, economic impacts associated with the construction and operation of the project were evaluated separately for the HST alternative, station, and HMF. The economic impacts of specific HMF locations were not evaluated unless there were cost differences between locations.

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 conservative, in that it represents the high end of the potential growth-related impacts from the project.

3.18.3.3 Study Area

For this regional growth analysis, the study area comprises Merced, Madera, and Fresno counties. It encompasses the incorporated cities of Merced, Chowchilla, Madera, and Fresno. This analysis discusses the environmental impacts by geographic area (at the county and city level) rather than by HST alternative, 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 linkages 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 population growth has exceeded the statewide growth rate since 1970 (Fresno COG 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. 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, where jobs in educational and health services and professional and business services dominate.

Populations of Merced, Madera, and Fresno counties are projected to increase by 80.1%, 103.9%, and 59.3%, respectively, between 2010 and 2035. In Merced and Madera counties alone, employment is anticipated almost to double from approximately 138,000 jobs in 2010 to almost 250,000 jobs in 2035 (California Employment Development Department [CEDD] 2010a). While the recent changes in the economy have slowed this growth, the general overall trends are expected to continue because the region attracts people seeking affordable housing, and the cities of Merced and Fresno are the main economic centers.

3.18.4.1 Population

Table 3.18-1 shows the state population in 2000 and 2010 and growth rates for the cities and counties in the study area, which were higher than at the state level. Urban growth in cities in the study area is greater than the growth in unincorporated portions of Merced, Madera, and Fresno counties. The cities of Merced, Madera, and Chowchilla had annual average growth rates of 2.4% or greater. Within the San Joaquin Valley, the larger cities attract the bulk of new population and would be considered the economic engine.

Table 3.18-2 shows the study area's city and county population estimates for the years 2010 and 2035, which anticipates all three counties will grow at a higher average annual rate than the state of California. Over the next 25 years, population is projected to grow by 80.1% in Merced County, 103.9% in Madera County, and 59.3% in Fresno County. The economic growth study conducted for the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) found that the overflow of people from urban coastal areas seeking affordable housing within commuting range of major metropolitan areas drives the high growth projections for these San Joaquin Valley counties.

Table 3.18-1
Population Growth, 2000 – 2010

Area	Population (2000)	Population (2010)	Change 2000 – 2010	Annual Average Growth Rate
Merced County	210,554	255,793	21.5%	2.1%
City of Merced	63,893	78,958	23.6%	2.4%
Madera County	123,109	150,865	22.5%	2.3%
City of Madera	43,205	61,416	42.2%	4.2%
City of Chowchilla	14,416	18,720	29.9%	3.0%
Fresno County	799,407	930,450	16.4%	1.6%
City of Fresno	427,652	494,665	15.7%	1.6%
Three-County Total	**1,133,070**	**1,337,108**	**18.0%**	**1.8%**
State of California	33,873,086	37,253,956	10.0%	1.0%
Source: U.S. Census (2000 and 2010)				

Table 3.18-2
Population Projections, 2010 - 2035

Area	Population in 2010[a]	Population in 2035	Change 2010 – 2035	Annual Average Growth Rate
Merced County	258,495	465,500[b]	80.1%	3.2%
City of Merced	80,985	152,100[b]	87.8%	3.5%
Madera County	153,655	313,250[c]	103.9%	4.2%
City of Madera	58,243	137,975[c]	136.9%	5.5%
City of Chowchilla	18,698	27,039[c]	44.6%	1.8%
Fresno County	953,761	1,519,325[d]	59.3%	2.4%
City of Fresno	502,303	961,366[e]	91.4%	3.7%
Three-County Region	**1,365,911**	**2,298,075**	**68.2%**	**2.7%**
State of California	38,648,090	51,747,374[f]	33.9%	1.4%

[a] California Department of Finance (CDOF) (2010a)
[b] MCAG (2010)
[c] MCTC (2010)
[d] Fresno COG (2010)
[e] Chung (2010)
[f] CDOF (2010b)

3.18.4.2 Employment

Table 3.18-3 provides information on regional employment by industry[1] using CEDD data for 2000 and 2010 (CEDD 2010a, b). Table 3.18-3 also shows projected employment by industry for the Merced, Madera, and Fresno Metropolitan Statistical Areas (MSAs), which correspond to Merced, Madera, and Fresno counties. Between 2000 and 2010, the total number of people employed in all industries increased by approximately 3.8% in the Merced MSA, 8% in the Madera MSA, and 0.2% in the Fresno MSA. In the 10-year period, the number of people employed in the services and government sectors had the largest

[1] Total industry employment counts the number of jobs by the place of work.

increase for the three MSAs. All three MSAs had decreases in the number of people employed in the agriculture; mining, logging, and construction; manufacturing; information; and financial activities sectors. The government, agriculture, trade, and services sectors employ the most workers in all three MSAs. The CEDD data project that these same sectors will continue to account for more than 75% of the jobs within the three MSAs.

Table 3.18-4 shows the projected 2035 total employment in Merced, Madera, and Fresno counties and the region. The projections show that all three counties will grow at a higher average annual rate than California. Over the next 25 years, employment is projected to grow by an annual average growth rate of between 2.2% and 3.3% in the region. Fresno County shows the lowest annual average growth rate at 2.2%; however, the county is projected to add over 330,000 new jobs, which is over 200,000 more than Merced and Madera counties combined.

3.18.4.3 Unemployment Rates

Unemployment rates in the Central Valley have historically been higher than those for the rest of the state. Unemployment in the three counties and the region has increased over the past couple of years as a result of the ongoing nationwide economic recession, which has been exacerbated by the continued weakness in construction and state budget cuts (Central Valley Business Times 2010). Tables 3.18-5 and 3.18-6 show annual civilian labor force[2] and unemployment rates in the region for 2000 and 2010. The unemployment rates in the three counties and the cities of Merced, Chowchilla, Madera, and Fresno are higher than the state level, ranging from 15.6% to 21.7%, compared to a state rate of 12.4%. The unemployment rate was higher in the cities of Madera and Chowchilla than in Madera County. The unemployment rates were similar for the cities of Merced and Fresno compared to Merced and Fresno counties.

[2] Civilian employment counts the number of working people by where they live.

Table 3.18-3
Merced, Madera, and Fresno County Employment by Industry

Industry	Merced MSA			Madera MSA			Fresno MSA			Regional Total		
	2000	2010	Projected 2016	2000	2010	Projected 2018	2000	2010	Projected 2018	2000	2010	Projected 2016/ 2018
Agriculture	11,600	10,500	11,800	11,900	10,300	10,100	55,600	47,100	47,600	79,100	67,900	69,500
Mining, Logging, and Construction	2,100	1,600	3,000	1,500	1,100	1,900	15,500	12,100	18,700	19,100	14,800	23,600
Manufacturing	10,400	8,200	9,600	2,900	2,800	3,400	27,600	24,900	27,600	40,900	35,900	40,600
Trade	8,400	9,200	9,800	3,600	4,000	4,900	43,900	44,200	50,900	55,900	57,400	65,600
Transportation, Warehousing & Utilities	1,700	2,300	2,400	600	900	1,000	9,100	10,700	12,300	11,400	13,900	15,700
Information	1,400	1,200	1,300	600	400	500	5,000	3,600	5,300	7,000	5,200	7,100
Financial Activities	1,700	1,600	1,800	700	700	800	13,400	13,300	15,800	15,800	15,600	18,400
Services	14,000	15,400	17,300	9,900	12,000	13,700	91,100	103,800	119,000	115,000	131,200	150,000
Government (Federal, State, and Local)	12,200	15,900	16,900	7,600	10,600	11,500	65,100	67,200	71,900	84,900	93,700	100,300
Total	**63,500**	**66,000**	**73,900**	**39,200**	**42,700**	**47,800**	**326,200**	**326,900**	**369,100**	**429,100**	**435,600**	**490,800**

Source: CEDD (2010a,b)

Table 3.18-4
Employment Projections, 2010 and 2035

Area	Jobs		Change 2010 – 2035	Annual Average Growth Rate
	2010	2035		
Merced County[a]	85,200	155,300	82.3%	3.3%
Madera County[b]	52,822	94,480	78.9%	3.2%
Fresno County[c]	397,728	618,682	55.6%	2.2%
Three County Region	**535,750**	**868,462**	**62.1%**	**2.5%**
State[d,e]	16,059,400	20,381,000	26.9%	1.1%

[a] MCAG (2010)
[b] MCTC (2010)
[c] Fresno COG (2010)
[d] CEDD (2010a)
[e] California Department of Transportation (Caltrans) (2009)

Table 3.18-5
Labor Force Characteristics – Merced, Madera, Fresno Counties

	2000	2010
Merced County		
Civilian Labor Force	90,300	107,300
Percent Unemployment Rate	9.6%	18.9%
Madera County		
Civilian Labor Force	54,900	66,900
Percent Unemployment Rate	8.7%	15.6%
Fresno County		
Civilian Labor Force	388,300	438,400
Percent Unemployment Rate	10.4%	16.8%
Three-County Regional Total		
Civilian Labor Force	533,500	612,600
Percent Unemployment Rate	10.1%	17.0%
State of California		
Civilian Labor Force	16,857,600	18,176,200
Percent Unemployment Rate	4.9%	12.4%
Source: CEDD (2010c)		

Table 3.18-6
Labor Force Characteristics – Cities of Merced, Chowchilla, Madera, and Fresno

	2000	2010
City of Merced		
Civilian Labor Force	26,700	31,800
Percent Unemployment Rate	9.5%	18.7%
City of Chowchilla		
Civilian Labor Force	3,400	4,300
Percent Unemployment Rate	9.9%	17.7%
City of Madera		
Civilian Labor Force	19,200	24,200
Percent Unemployment Rate	12.5%	21.7%
City of Fresno		
Civilian Labor Force	204,400	229,200
Percent Unemployment Rate	9.7%	15.8%
Source: CEDD (2010d)		

3.18.4.4 Housing Demand

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. Based on population projections, housing needs for the next 25 years will increase by 62.7% in the region, with highest increase in Madera County at nearly double the current housing stock (see Table 3.18-7).

Table 3.18-7
Existing Housing Units and Projected Housing Unit Demand

Area	2010	2035	Change	Annual Average Growth Rate
Merced County[a]	83,900	149,500	78.2%	3.1%
Madera County[b]	54,626	97,707	78.9%	3.2%
Fresno County[c]	314,758	490,105	55.7%	2.2%
Regional Total	**453,284**	**737,312**	**62.7%**	**2.5%**

Note: Estimates were prepared by CH2M HILL estimating housing units based on population estimated in the CDOF files, divided by average household size.

Sources:

[a] MCAG (2010)

[b] MCTC (2010)

[c] CDOF (2010a,b)

3.18.5 Environmental Consequences

3.18.5.1 Overview

The projected population and employment growth for Merced, Madera, and Fresno counties already reflects effects of the No Project Alternative. Populations are projected to increase by 80.1%, 103.9%, and 59.3%, respectively, between 2010 and 2035. Employment is projected to increase by 82.3%, 78.9%, and 55.6%, 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. However, the HST alternatives would only slightly raise the projected population and employment growth beyond growth planned under the No Project Alternative. Under current city and county general plans in the region, communities have enough area within their current spheres of influence to accommodate the planned growth identified in their transportation plans by 2035 as well as the HST-induced growth. The HST-induced growth would, therefore, not require farmland conversion or the extension of public infrastructure beyond what is currently planned. The Final Program EIR/EIS for the proposed HST System reported that the more-compact development patterns likely to occur under the HST alternatives could reduce farmland conversion by 30,000 acres by year 2030 (Authority and FRA 2008). Chapter 2, Alternatives, describes Vision California. Vision California is a modeling tool used to examine the impacts of varying climate, land use, and infrastructure policies and associated development patterns resulting from these policies. Results are produced for a range of metrics, including GHGs, 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.

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

3.18.5.2 No Project Alternative

Section 2.4.1, No Project Alternative—Existing and Planned Improvements, provides a detailed review of the growth scenario that would occur under the No Project Alternative, including continued high regional population growth rates through 2035. Merced County's and Fresno County's land use plans encourage infill and higher-density development in urban areas and concentration of uses around transit corridors to provide more modal choices for residents and workers, whereas Madera County has chosen to maintain current growth patterns. These policies are being implemented in the region regardless of whether HST alternatives are constructed. Merced County and Fresno County are updating or have updated their general plans and specific plans to include policies specific to the HST. The No Project Alternative would, therefore, not be consistent with these updated plans. Under the No Project Alternative, cities would have a more difficult time encouraging higher-density development in the downtown areas absent the demand 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 RTPs will be expected to encourage both more-compact development and greater investment in local transit modes as a means of reducing GHG 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 GHG 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 GHG emissions. The Blueprint, which is voluntary rather than 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 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. Employment growth would continue to follow existing patterns and would attract fewer of the higher-wage jobs in the financial, insurance, and real estate sectors than would occur under 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. However, the amount of agricultural land in the region that would be disturbed by construction would be extremely small (approximately 1,000 to 1,500 acres depending on the alternative) and would not result in measurable changes in agricultural production in the region. Therefore, changes in agricultural production are not 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 and Operations, provides the detailed capital costs developed for each of the HST alternatives, including the design options, for the Merced to Fresno Section of the HST Project. For this analysis, about 20% of the costs for right-of-way acquisition, final design, and program implementation costs were removed because those costs would not measurably affect employment in the region.

Not all construction costs would be spent locally in the three-county region; materials from outside of the study area would be used to construct the HST System (i.e., concrete sections of the guideway, train 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 5 years of construction. These costs were used with the RIMS II multipliers for the three-county region 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.

Analysts evaluated construction impacts separately for the each of the HST alternatives. Table 3.18-8 shows the range of capital and construction costs estimates for the UPRR/SR 99, BNSF, and Hybrid alternatives. The estimates shown in the table exclude right-of-way acquisition, final design, and program implementation costs, which were assumed to be about 20% of the actual construction costs.

UPRR/SR 99 Alternative

Table 3.18-9 shows the annual direct and the indirect plus induced employment estimates for the UPRR/SR 99 Alternative. The table shows the estimates as a range to account for the differences in costs between the design options.

Over the 5-year construction period, project expenditures under the UPRR/SR 99 Alternative would result in the creation of a total of 9,380 to 12,000 indirect and induced jobs in the three counties. The project would also create between 3,800 and 4,840 new direct construction-related jobs, resulting in a total of between 13,180 and 16,840 additional temporary construction-related jobs in the three-county area. Although the total number of jobs may be compared to existing or future jobs to determine the potential

economic/socioeconomic impacts of a project, it is typical to also use peak number of jobs in that comparison. As shown in Table 3.18-9, peak construction occurs in Year 3, when the project could potentially create a maximum of 1,450 direct jobs. Although the additional 1,450 new direct jobs constitute less than 1% of the 2016 total projected regional employment, these jobs would provide approximately 6% new employment opportunities in the mining, logging, and construction sector in the three counties.

Table 3.18-8
HST Alternative Costs (2010 $M)

	UPRR/SR 99	BNSF	Hybrid
Capital Costs	$5,100 to $6,480	$4,170 to $4,600	$3,610 to $4,630
Construction Costs	$4,220 to $5,400	$3,470to $3,840	$3,010 to $3,850
Local Construction Costs	$1,480 to $1,890	$1,220 to $1,340	$1,050 to $1,350
Local Construction Costs during Year 1	$150 to $190	$120 to $130	$110 to $140
Local Construction Costs during Year 2	$300 to $380	$240 to $270	$210 to $270
Local Construction Costs during Year 3	$440 to $570	$360 to $400	$320 to $410
Local Construction Costs during Year 4	$370 to $470	$300 to $340	$260 to $340
Local Construction Costs during Year 5	$220 to $280	$180 to $200	$160 to $200

Table 3.18-9
UPRR/SR 99 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	380 to 480	940 to 1,200	1,320 to 1,680
Year 2	760 to 970	1,880 to 2,400	2,640 to 3,370
Year 3	1,140 to 1,450	2,810 to 3,600	3,950 to 5,050
Year 4	950 to 1,210	2,350 to 3,000	3,300 to 4,210
Year 5	570 to 730	1,410 to 1,800	1,980 to 2,530
Total	**3,800 to 4,840**	**9,380 to 12,000**	**13,180 to 16,840**

BNSF Alternative

Table 3.18-10 shows the annual direct and the indirect plus induced employment estimates for the BNSF Alternative. The table shows the estimates as a range to account for the differences in costs between the design options (see Table 3.18-9).

Because the construction cost estimates were lower for the BNSF Alternative than the UPRR/SR 99 Alternative, the additional employment created under this alternative was also lower. Thus, instead of the total indirect and induced employment of 9,380 to 12,000 jobs over the 5-year construction period for the UPRR/SR 99 Alternative in the three-county region, the BNSF Alternative would create 7,710 to 8,520 total indirect and induced jobs.

Table 3.18-10
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	310 to 340	770 to 850	1,080 to 1,190
Year 2	620 to 690	1,540 to 1,710	2,160 to 2,400
Year 3	930 to 1,030	2,310 to 2,560	3,240 to 3,590
Year 4	780 to 860	1,930 to 2,130	2,710 to 2,990
Year 5	470 to 520	1,160 to 1,280	1,630 to 1,800
Total	**3,110 to 3,440**	**7,710 to 8,520**	**10,820 to 11,960**

Peak direct employment occurs during the third year of construction. As shown in Table 3.18-10, the maximum total new direct jobs that the project could create under the BNSF Alternative during Year 3 would be 1,030. Although the additional 1,030 new direct jobs constitute less than 1% of the 2016 total projected regional employment, these jobs would provide approximately 4% new employment opportunities in the mining, logging, and construction sector in the three counties.

Hybrid Alternative

Table 3.18-11 shows the annual direct and the indirect plus induced employment estimates for the Hybrid Alternative. Since the cost estimate for the Hybrid Alternative with the Ave 24 Wye was the lowest among the three alternatives, the additional employment created was also the lowest. With the Ave 21 Wye design option, the costs are similar to the BNSF Alternative. Peak employment occurs during the third year of construction. The 1,040 new direct jobs created during Year 3 would constitute less than 1% of the 2016 total projected regional employment; however, these jobs would provide approximately 4% new employment opportunities in the mining, logging, and construction sector in the three counties.

Table 3.18-11

Hybrid 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	270 to 350	670 to 860	940 to 1,210
Year 2	540 to 690	1,340 to 1,710	1,880 to 2,400
Year 3	810 to 1,040	2,010 to 2,570	2,820 to 3,610
Year 4	680 to 860	1,670 to 2,140	2,350 to 3,000
Year 5	410 to 520	1,000 to 1,280	1,410 to 1,800
Total	**2,710 to 3,460**	**6,690 to 8,560**	**9,400 to 12,020**

HST Stations and Heavy Maintenance Facilities

Analysts evaluated construction impacts separately for the stations and HMF. Table 3.18-12 shows the capital and construction costs estimates for the construction of the two stations (Merced and Fresno stations) and the HMFs (both for the Castle Commerce Center and for a generic HMF). The construction costs for the stations in Merced and Fresno would be the same. As previously stated for the HST alternatives discussed above, the construction costs exclude right-of-way acquisition, final design, and program implementation costs, which were assumed to be about 20% of the actual construction costs.

Table 3.18-12
Merced-Fresno Section Stations and HMF Costs (2010$)

	Merced and Fresno Stations	HMF – Castle	HMF – Generic
Capital Costs	$213,350,000	$1,067,000,000	$620,000,000
Construction Costs	$177,791,700	$889,166,700	$516,666,700
Local Construction Costs	$94,229,600	$471,258,300	$273,833,300
Local Construction Costs during Year 1	$9,423,000	$47,125,800	$27,383,300
Local Construction Costs during Year 2	$18,845,900	$94,251,700	$54,766,700
Local Construction Costs during Year 3	$28,268,900	$141,377,500	$82,150,000
Local Construction Costs during Year 4	$23,557,400	$117,814,600	$68,458,300
Local Construction Costs during Year 5	$14,134,400	$70,688,800	$41,075,000

Table 3.18-13 shows the annual direct and the indirect plus induced employment estimates for the Merced and Fresno stations. These estimates were derived using the annual construction costs for the stations and the RIMS II multipliers. Peak employment occurs during the third year of construction. The direct employment during Year 3 of 60 jobs would constitute less than one-half of 1% of the 2016 projected employment in the mining, logging, and construction sector in the region.

Table 3.18-13
Employment Impacts during Construction of the Merced and Fresno Stations

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	20	60	80
Year 2	40	120	160
Year 3	60	180	240
Year 4	50	150	200
Year 5	30	90	120
Total	**200**	**610**	**810**

Tables 3.18-14 and 3.18-15 show the annual direct and the indirect plus induced employment estimates for the Castle Commerce Center HMF and the generic HMF, respectively. These estimates were derived using annual construction costs and RIMS II multipliers. The direct employment created over the 5-year

period were estimated to be 1,030 jobs for the Castle Commerce Center HMF and 600 jobs for the generic HMF, accounting for about 4% and 3%, respectively, of the 2016 projected regional employment for the mining, logging, and construction sector. The peak new direct employment during Year 3 of 310 jobs for the Castle Commerce Center HMF and 180 for the generic HMF would constitute less than 1% of the 2016 total projected regional employment in the three counties (see Table 3.18-3).

Table 3.18-14
Employment Impacts during Construction of the HMF – Castle Commerce Center

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	100	300	400
Year 2	210	610	820
Year 3	310	910	1,220
Year 4	260	760	1,020
Year 5	150	460	610
Total	**1,030**	**3,030**	**4,060**

Table 3.18-15
Employment Impacts during Construction of the HMF – Generic

	Direct Employment (annual job years)	Indirect and Induced Employment (annual job years)	Total New Employment (annual job years)
Year 1	60	180	240
Year 2	120	350	470
Year 3	180	530	710
Year 4	150	440	590
Year 5	90	260	350
Total	**600**	**1,760**	**2,360**

Project Impacts

Common Regional Growth Impacts

This section discusses operations impacts for the HST Project, without consideration of the differences among the HST alternatives. Operations impacts relate directly to operating cost estimates and the differences between the alternatives are not great enough to affect operating costs. Operation of any of the alternatives would result in direct impacts on employment. The alternatives would also cause indirect impacts on population and employment growth, housing demand, farmlands, and urban development. Section 3.12, Socioeconomics, Communities, and Environmental Justice, describes the changes in tax revenues.

Operations-Related Employment

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. Over the past two decades, however, lower land and labor costs in the valley compared to those of other regions have attracted numerous businesses to the region. 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 any of the three HST alternatives, it is estimated that approximately 32,000 jobs (Table 3.18-16) would be created by 2035 within the three counties as a result of the operation of the HST Project. This total would include the direct jobs to operate and maintain the project in the three-county region (approximately 1,300 jobs), as well as the indirect and induced jobs created to support these new workers and the additional jobs created as a result of the improved connectivity and growth in the overall regional economy. The total number of new jobs created as a result of the HST is an approximate 3.8% increase in total employment above the 2035 estimate of the 845,986 total jobs in the region under the No Project Alternative (Cambridge Systematics Inc. 2010). However, as shown in Table 3.18-16, the RTP's projections are for 868,462 jobs by 2035, which is 9,329 less than the projected total of the Cambridge Systematics' model.

Table 3.18-16
Regional Projected and Induced Population and Employment

County	RTP 2035 Projections	Program EIS 2035 No Project Projections	HST-Induced Growth	Total 2035 HST Alternative Projections	Growth Inducement
Population					
Merced	465,500	490,533	32,627	523,160	7%
Madera	313,250	308,956	13,796	322,751	4%
Fresno	1,519,325	1,549,885	32,023	1,581,908	2%
Total	**2,298,075**	**2,349,374**	**78,446**	**2,427,819**	**3%**
Employment					
Merced	155,300	132,367	7,811	140,178	6%
Madera	94,480	103,453	5,445	108,898	5%
Fresno	618,682	610,166	18,549	628,715	3%
Total	**868,462**	**845,986**	**31,805**	**877,791**	**4%**

RTP = Regional Transportation Plan

For percent growth inducement, used higher of the two growth inducement rates from Cambridge Systematics, Inc. (2003 and 2007).

Source: CDOF (2010b), MCTC (2010), MCAG (2010).

The economic growth study conducted for the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) found that the additional population growth under the HST alternatives would be driven by regional job growth (that is, internal to Merced, Madera, and Fresno counties) induced by the presence of the HST System, rather than by population shifts from the Bay Area and Southern California. In general, the HST station areas would offer a more attractive market for commercial and office development than the same areas under the No Project Alternative.

The San Joaquin Valley has historically had 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. The City of Fresno, the largest metropolitan area in the region, has taken steps to begin improving its economic structure with the Fresno Regional Jobs Initiative, which 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 underway to continue to create jobs in the area. Jobs created directly and indirectly by the HST would provide employment opportunities for residents in the area and would not be growth-inducing.

Induced Population Growth

In most cases, the HST alternatives contribute only a small incremental impact over the past, present, and reasonably foreseeable project impacts and the cumulative condition associated with the No Project Alternative. The HST Project would result in a 3% population increase and 4% employment increase in the three counties compared to the cumulative condition under the No Project Alternative. Over the 25-year planning horizon, these increments are cumulatively considerable in some areas and provide beneficial effects in others. However, compared to the cumulative condition of the No Project Alternative, the project would potentially improve the future environmental condition because of the benefits afforded by TOD, reduced automobile travel, reduced air pollutant emissions, and the economic activity generated. Refer to Section 3.19, Cumulative Impacts, for complete information on how the past, present, and future projects affect the Central Valley.

This section discusses the ways in which the HST Project could induce population growth, or the construction of additional housing, directly or indirectly, in the three counties. 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 are projects such as the HST, which could facilitate travel between areas of California by providing an additional mode of transportation.

California's population is expected to increase by 12.5 million residents (34%) between 2010 and 2035 (CDOF 2010a). Much of this population growth will 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 Section 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 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 development around the station 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. Operation of the HST Project would also attract people who would live in the Central Valley and commute to the major metropolitan areas; however, much of the employment growth is expected to be filled by the local labor pool. The HST would not lead to wholesale shifts 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 would not induce unplanned growth.

Land Use Consumption

With the HST Project, population is forecasted to increase by approximately 78,446 people (Table 3.18-16) compared to the No Project Alternative (Cambridge Systematics Inc. 2010). If current population density of about 8 to 10 persons per acre on average (see Section 2.4.1, No Project Alternative—Existing and Planned Improvements for assumptions) were to continue with the HST, the induced population growth associated with the HST Project would require up to an additional 7,845 acres of land beyond what is needed to accommodate the forecasted population growth under the No Project Alternative. This area includes not only housing but also supporting infrastructure, including commercial, office, parks, transportation, water treatment, and medical facilities. In addition, the increased densities in the station areas would result in increased densities and likely the need for less land. The cities and counties in the study area are either in the process of updating or have updated their general plans, which are among the tools in planning for the future, including accommodating future population needs. Based on the amount of undeveloped land within urban spheres of influence throughout each county, communities in the region have adequate space to accommodate growth beyond planned growth by 2035 within their spheres of influence.[3] In addition, the increased densities and mix of uses in the station areas would likely result in the need for less land. The HMF site would not be expected to induce measureable growth because the site would be near existing urban areas and would be self-contained, with onsite food and other convenience services for employees.

However, current land consumption trends would likely change with the presence of the HST System, which is expected to add population and employment near stations and influence the regional development pattern. The research conducted for the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) found that market forces and complementary regulatory-style efforts by cities to encourage increased density and a mix of land uses near rail stations have been effective in attracting higher-density development. Under the HST alternatives, the cities of Merced and Fresno could more easily redirect new development to downtown sites adjacent to their HST station sites from the outlying real estate markets created by freeway interchanges under the No Project Alternative. Furthermore, the strong real estate markets around HST stations are likely to attract development into urban downtown areas that otherwise would locate throughout dispersed suburban areas. This consolidation of growth supports city planning policies that promote infill and higher-density development in existing urban areas.

Thus, the HST Project would tend to consolidate currently projected growth (under the No Project Alternative) and new regional employment and population around 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, the presence of the HST stations would help direct this growth into higher-density and more sustainable development patterns and help achieve the goals of the SCS

[3] Available space for new development was determined based on subtracting currently developed acres of land from the total number of acres within spheres of influence in the cities of Merced, Atwater, Livingston, Chowchilla, Madera, Fresno, Clovis, and Selma. Estimates of developed land acreage were made for Merced, Fresno, Clovis, and Selma using the 2010 population in those cities and an average density of 10 persons per acre. Developed land acreages for Atwater, Livingston, Chowchilla, and Madera were provided in those cities' general plans.

adopted by each of the three MPOs within the Merced to Fresno Section, 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 SB 375 and SCS strategies encouraging more-compact development, recent studies indicate that changes in the California housing market, along with market forces, would support higher-density, more-compact development around HST stations (Nelson 2011).

The potential effect of the regulatory-style land use strategies encouraging increased density and a mix of land uses near rail stations was tested in the Statewide Program EIR/EIS. Results suggested that even a modest strategy focused on the immediate station areas could reduce the potential statewide urbanized acreage by an additional 30,000 acres under the HST System (Cambridge Systematics Inc. 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 and region-wide regulatory-style strategies[4] in conjunction with high-capacity intercity and urban transit services (Authority and FRA 2008, 2005). 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, industrial, and residential development to provide easy access to the 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 Authority 2010) and is working with the cities of Merced and Fresno on station area plans. Ultimately, the cities of Merced and Fresno would be responsible for developing local land use requirements that would focus the growth in the HST station areas; but as described above, the project would encourage the cities to take full advantage of the HST station potential. Growth that is clustered in areas with easy access to HST stations would represent the "Growing Smarter" scenario tested in the Vision California growth model. The Growing Smarter Model would have many benefits, including reductions in auto trips, lower energy usage, reduction in GHG 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, Alternatives, for a description of Vision California and how policies affecting transportation and land use can be analyzed in advance.

In short, any of the HST alternatives would provide a strong incentive for directing the concentration of urban growth and minimizing a variety of impacts that are frequently associated with growth. Additional land use strategies could be considered 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 possibly reducing local automobile travel. The HST Project, and its resulting concentration of population and the employment growth it is expected to encourage, not only would be consistent with SB 375-related plans and programs, but also would assist the region in implementing the goals of those plans.

While some additional housing could be accommodated within the downtown area of Merced and Fresno to serve population growth, more housing would be needed 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 a 5-year period, which is a much shorter planning timeframe than what the general plans address. 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. As described under Induced Population Growth, the increases in population induced by the HST Project over what is forecasted for the Central

[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.

Valley represent a small increment and the induced population growth would occur more slowly than the induced employment growth in the Central Valley. As discussed earlier, the housing elements will be required to incorporate the housing needs allocations established by the applicable MPO's SCS. The HST Project would allow them to "harness" market forces in the station areas in furtherance of this requirement to a greater degree than if the project were not built.

Under the No Project Alternative, population growth would be commensurate with regional growth forecasts (see Section 2.4.1, No Project Alternative—Existing and Planned Improvements). Under city and county planning policies, current spheres of influence are anticipated to have adequate space to accommodate planned growth by 2035. Using the methods in Section 3.18.3 for relating population growth to conversion of farmland, regional growth forecasts indicate development of approximately 91,000 acres in the three counties by 2035. This loss of farmland would occur without the HST Project. Additionally, the economic growth study for the Bay Area to Central Valley HST Program EIR/EIS (Authority and FRA 2008) found that the HST alternatives would reduce farmland conversion by 30,000 acres statewide because they would encourage more-compact development patterns and more efficient land use. This trend would be expected in the Merced to Fresno Section too, with less farmland conversion occurring long term because of 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, Merced, and Madera counties, compared to the No Project Alternative. Because existing urban spheres of influence could accommodate the growth, the physical extension of utilities such as electrical transmission, natural gas, water supply, and wastewater lines would not be any greater than already planned under current city and county policies.

The HST Project would encourage some induced growth but would also encourage increased densities resulting in more-compact urban development around the Merced and Fresno stations. These development patterns, known as TOD, would be consistent with local land use plans, which anticipate the HST stations in Downtown Merced and Downtown Fresno and would not induce unplanned growth. TOD around the HST stations would direct housing into higher-density and more sustainable development patterns and help achieve the goals of regional growth management plans and general plans in these areas. Refer to Section 3.13, Station Planning, Land Use, and Development, for additional information on TOD in the HST station areas.

Consistency with Regional Growth Management Plans

The RTPs project regional population and employment growth for year 2035, using projections developed by CDOF. The economic growth analyses performed for the Statewide Program EIR/EIS (Authority and FRA 2005) and Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) 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 Program 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 Program EIS No Project Alternative 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 7% increase in population and a 3% to 6% increase in the projected number of new jobs in Merced, Madera, and Fresno counties when compared to the No Project Alternative projections (see Table 3.18-16), based on the economic growth analyses performed for the Statewide Program EIR/EIS and Bay Area to Central Valley Program EIR/EIS. The economic growth study conducted for the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) found that the additional population growth under HST alternatives would be driven by regional job growth (that is, job growth internal to Merced, Madera, and Fresno 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 (Cambridge Systematics, Inc. 2007). Such development patterns would agree with both the City of Merced and City of Fresno general plans. Therefore, population growth in the San Joaquin Valley would occur without the HST Project, and the HST Project alone would not induce substantial population growth beyond that already projected for the region.

3.18.6 Summary

The HST Project would not induce growth substantially beyond what is projected. The HST alternatives would encourage more-compact, efficient land use in the region and would generate higher-density infill development around HST stations. These effects would not only agree with regional land use policies and growth management plans, but would assist communities in realizing the goals of these plans.

The HST alternatives would create employment and business opportunities and would attract higher-wage jobs in comparison to the No Project Alternative. The HST alternatives would only slightly raise the projected population and employment growth beyond growth planned under the No Project Alternative. Under current city and county general plans in the region, communities in the region have adequate space to accommodate both growth beyond planned growth by 2035 and HST-induced growth within their current spheres of influence. The HST-induced growth would, therefore, not require farmland conversion or the extension of public infrastructure beyond what is currently planned.

The proposed HST stations would be compatible with Merced County's and Fresno County's planning goals. The station-area planning process has been organized so that the stations are sited and designed to maximize potential benefits. This process also allows cities to make relevant land use decisions well in advance of any construction that would occur. The Vision California effort and the San Joaquin Valley Blueprint processes are working to explore the interaction of transportation and land use, which is intended to help local and regional governments envision land use changes based on major public transportation infrastructure improvements. Based on these efforts, the cities of Merced and Fresno are developing site-specific plans to adapt to the potential of an HST station and realize new land use patterns in the downtown areas. Refer to Section 3.13, Station Planning, Land Use, and Development, for more complete information.

In addition, the Authority is providing matching funding for station area planning for the cities of Merced and Fresno. The grant program will provide funding that 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 HST Station Area Development General Principles and Guidelines. As of April 2012, the City of Fresno has signed the agreement with the Authority, and Authority staff will meet with the City to initiate the coordination over the planning, and the City of Merced is still working on the application for funding.

The SB 375-mandated SCS in each county will likely rely upon HST development to help reach its GHG emissions reduction targets of 5% by 2020 and 10% by 2035. The SCS process, together with steps the Authority will take to assist with station area planning, is expected to encourage more-compact development within the region and particularly around HST station locations.