San Joaquin Valley Interregional Goods Movement Plan

Task 9: Final Report




Prepared for

San Joaquin Valley Regional Transportation Planning Agencies

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Date: August 2013

CAMBRIDGE SYSTEMATICS

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August 2013

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1.0 Purpose and Scope

1.1 STUDY BACKGROUND AND PURPOSE

Located in the central part of California, the San Joaquin Valley (SJV) region is composed of eight counties (Kern, Kings, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin) and 62 cities, of which Fresno, Bakersfield, Modesto, and Stockton have populations in excess of 200,000. It is California's fastest-growing region, with a population of over 4 million that is anticipated to grow to about 6.05 million by 2040[1]. The SJV has a diverse internal economy and plays a major role in the distribution of agricultural products, processed food, and energy products throughout California, the United States, and the world. The region also has a burgeoning logistics and distribution industry. A number of companies have located large regional and national distribution centers in the SJV to take advantage of relatively inexpensive land and low cost labor, good access to the national rail and interstate highway networks, connections to major deepwater ports in Oakland, Los Angeles, and Long Beach, and proximity to major consumer markets in Southern California and the San Francisco Bay Area. Clearly, efficient goods movement is important to the long-term success of the SJV economy.

The goods movement plan presented in this report builds upon recent traffic, logistics, and long-term infrastructure improvement planning efforts throughout the study area, including the SJV Regional Goods Movement Action Plan (2007), corridor studies along SR 99 and other highways around the region (including SR 58 and SR 152), truck circulation studies to identify access points and routes for trade goods throughout the SJV region, and numerous rail studies that explore the use of the rail mode in a robust goods movement system. These studies have all helped to establish the foundation for continued dialogue on managing the freight transportation system throughout the SJV.

Building on these prior efforts and new analysis, the purpose of this study is to develop a plan of prioritized projects, strategic programs, and policies that will guide goods movement planning in the region in the future. The plan presented in this report is based on an analysis of the economic and global trade trends that are driving the demand for goods movement in the SJV region and includes a forecast of future freight flows and demand by transportation mode. The plan also includes an evaluation of infrastructure needs that were the basis of many of the projects that were selected. While accommodating growth in goods

[1] *San Joaquin Valley Demographic Forecasts 2010-2050*. The Planning Center, 2012. http://www.valleyblueprint.org/files/San%20Joaquin%20Valley%20Demographic%20Forecasts%20-%20Final%2027%20Mar%202012_0.pdf.

movement demand is important to ensuring the economic health of the SJV region, this growth must be achieved in an environmentally sustainable manner. The plan includes strategies for improving the environmental performance of goods movement in the SJV and mitigating impacts on communities. The plan concludes with a discussion of funding and implementation strategies so the SJV regional transportation agencies can move forward with next steps to realize the vision embodied in this plan.

1.2 NEED FOR GOODS MOVEMENT PLANNING

Goods movement has become an increasingly important transportation, economic, and environmental issue for the eight counties in the SJV. In the Statewide Goods Movement Action Plan, the California Department of Transportation (DOT) (Caltrans) designated the SJV as one of the State's four major international trade corridors.

The SJV is experiencing the demands of the modern global logistics system across a range of goods, from raw agricultural materials to consumer products. The critical role that the SJV plays in California and the nation's food supply will continue to require an effective goods movement system to distribute and export products quickly and efficiently. The growing regional population, and that population's growing expectations, will require increased attention to the safe and reliable movement of goods consistent with competing needs for infrastructure and greater sensitivity to emissions and congestion. Within that framework, continued pressure on costs and profits is leading shippers and receivers to seek transportation efficiency gains wherever they can be found. The overall goal within modern logistics can be summed up as "better, faster, cheaper." Within the SJV, that goal translates to continual fine-tuning of logistics chains and transportation practices, and to a willingness to shift production and distribution facilities and activities to achieve the optimum combination. The SJV has gained many distribution and production facilities in recent years due largely to inexpensive land and available labor. To retain those businesses and add new ones, the region will have to provide matching transportation advantages.

The SJV's goals can be achieved if the region effectively plans for efficient goods movement and successfully partners with the private sector, state and Federal agencies to make the necessary investment. But a failure to effectively plan and invest could result in congested and poorly maintained highways, lost economic opportunities due to inadequate access to markets, land use conflicts between logistics-oriented business and growing communities, and poor air quality due to diesel emissions.

Freight infrastructure projects tend to be expensive and institutionally complex, and the SJV must plan a way to navigate these rough seas. While the future funding picture for freight transportation is murky today, regions that take steps to develop their project plans now will compete most effectively when funds do

become available in the future. This was made very clear when funds became available for goods movement projects through California's Proposition 1B program and projects identified in the state's Goods Movement Action Plan became a major source for funding decisions. More recently, goods movement projects have been funded through the Federal TIGER program and projects identified and analyzed in goods movement plans have been able to compete effectively for these funds. Therefore, a major goal of this study was to identify high-priority goods movement projects that have interregional significance and to coordinate the selection of these projects with other efforts at the state and national levels, so that critical facilities and needs of the SJV are reflected in state and national freight transportation plans. The study also sought to identify program and policy issues that the SJV COGs and their partner agencies can advocate for in state and national freight transportation policy discussions.

1.3 STUDY SCOPE AND APPROACH

Scope

The study focused on regionally significant commodity flows, transport operations, goods movement issues, and goods movement impacts. From the perspective of users, the region's goods movement system needs to function well across county boundaries. By treating goods movement as a multicounty regional issue, the SJV COGs were able to identify strategies that address the system more holistically and in ways that should be more effective at engaging private sector, state, and Federal partners. The study did not delve deeply into urban and localized goods movement issues that are particular to specific cities or rural areas within the study area. While these issues are important, coordinated efforts among the SJV planning agencies is not ordinarily required to deal with them.

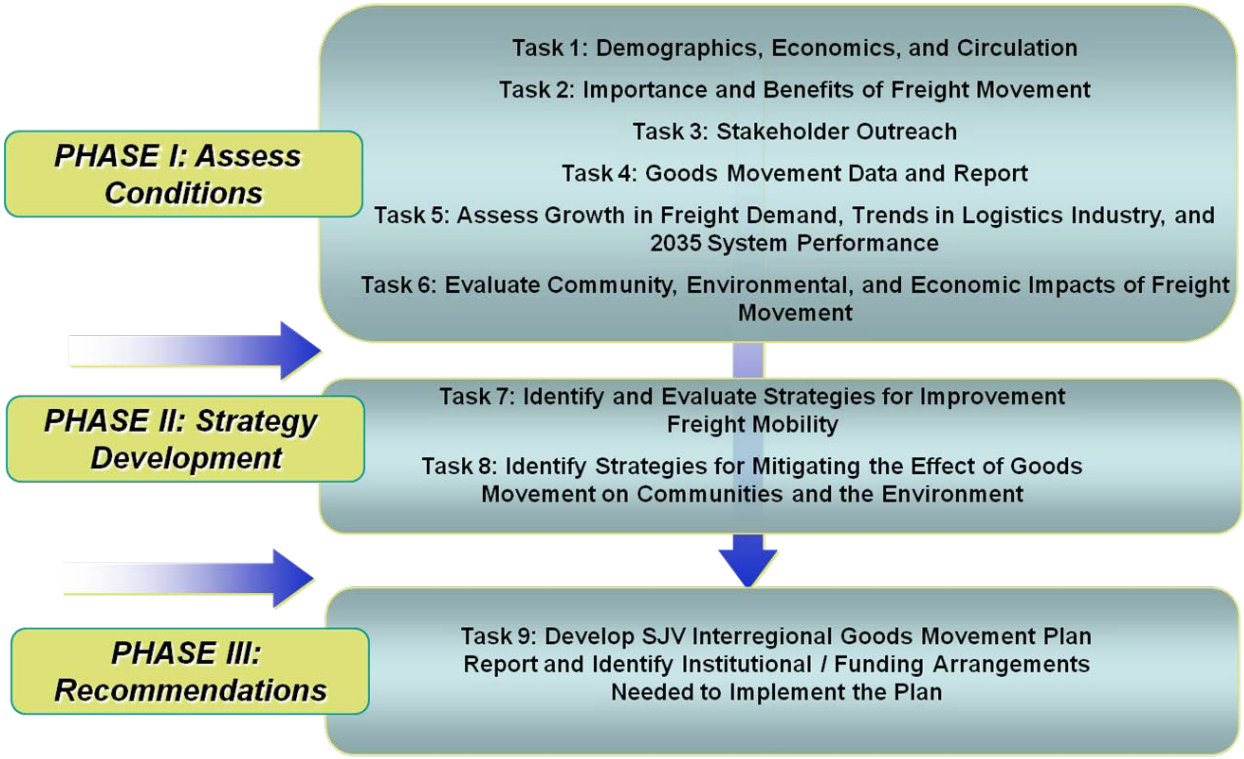
This SJV Interregional Goods Movement Plan is intended to take the next steps to develop and implement the region's freight transportation vision. This effort, more than the prior Valley-wide goods movement planning efforts, is focused on developing actionable project recommendations and implementation plans.

Approach

The study team's approach is diagrammed in Figure 1.1. In Phase I, the team used available data, previous studies, and stakeholder outreach to establish existing goods movement conditions, the nature of regional freight demand, expected growth, and current operating conditions of the major transport modes. Using this background information, Phase II concentrated on developing strategies for freight mobility improvements and mitigation of adverse impacts, including an extensive list of priority projects in multiple categories. Phase III brings these efforts together in a final report constituting the recommended SJV goods movement plan and implementation strategy. The plan identifies funding

options and also makes policy recommendations. Many of the funding strategies and policy recommendations necessitate action by other agencies both within and outside of the SJV. As such, the plan provides an agenda for advocacy that the SJV COGs can pursue over the coming years.

Figure 1.1 Project Approach



2.0 SJV Goods Movement

2.1 IMPORTANCE OF GOODS MOVEMENT

Goods Movement-Dependent Industries

Every resident of the SJV depends on the movement of goods for food, housing, clothing, and most other aspects of daily life. Even tap water depends on the timely arrival of treatment chemicals. Yet this dependence is seldom obvious to individuals.

Goods movement-dependent businesses, however, rely heavily and visibly on transportation as a key part of their operations. They may receive daily shipments of raw supplies to support their production process, or send daily deliveries of refined or finished product to market.

Goods movement-dependent industries, as shown in Table 2.1, play a major role in the economy of the SJV. This group includes industries such as agriculture, manufacturing, wholesale (and retail) trade, construction, transportation and warehousing (including utilities), and mining[2] sectors.

Table 2.1 Categorizing Industries Based on their Transportation Needs

Goods Movement-Dependent Industries	Consumer Goods and Service Industries
Agriculture, forestry, fishing, and hunting	Information
Crop and animal production (farms)	Publishing, including software
Forestry, fishing, and related activities	Motion picture and sound recording industries
Mining	Broadcasting and telecommunications
Oil and gas extraction	Information and data processing services
Mining, except oil and gas	Finance and insurance
Support activities for mining	Federal Reserve banks, credit intermediation, and related services
Utilities	Securities, commodity contracts, investments
Construction	Insurance carriers and related activities
Manufacturing: Durable goods	Funds, trusts, and other financial vehicles
Wood product manufacturing	Real estate and rental and leasing
Nonmetallic mineral product manufacturing	Real estate

[2] Mining is primarily concentrated in the southern part of the SJV (Kern County) with marginal activity in the other areas.

Goods Movement-Dependent Industries	Consumer Goods and Service Industries
Primary metal manufacturing	Rental and leasing services and lessors of intangible assets
Fabricated metal product manufacturing	Professional and technical services
Machinery manufacturing	Legal services
Computer and electronic product manufacturing	Computer systems design and related services
Electrical equipment and appliance manufacturing	Other professional, scientific, and technical services
Motor vehicle, body, trailer, and parts manufacturing	Management of companies and enterprises
Other transportation equipment manufacturing	Administrative and waste services
Furniture and related products manufacturing	Administrative and support services
Miscellaneous manufacturing	Waste management and remediation services
Manufacturing: Nondurable goods	Educational services
Food product manufacturing	Health care and social assistance
Textile and textile product manufacturing	Ambulatory health care services
Apparel manufacturing	Hospitals and nursing and residential care facilities
Paper manufacturing	Social assistance
Printing and related support activities	Arts, entertainment, and recreation
Petroleum and coal manufacturing	Performing arts, museums, and related activities
Chemical manufacturing	Amusement, gambling, and recreation
Plastics and rubber products manufacturing	Accommodation and food services
Wholesale Trade	Accommodation
Retail Trade	Food services and drinking places
Transportation and warehousing	Other services, except government
Air transportation	Government
Rail transportation	Federal civilian
Water transportation	Federal military
Truck transportation	State and local
Transit and ground passenger transportation	
Pipeline transportation	
Other transportation and support activities	
Warehousing and storage	

Source: Cambridge Systematics, Inc.

These activities remain the foundation for many local area economies within the SJV region. In 2010, there were about 1.2 million people employed across all sectors in the SJV. Of this total, over 44 percent (564,000 jobs) are associated with goods movement-dependent industries, including agriculture (187,000); wholesale and retail trade (170,000); manufacturing (102,000); and transportation/warehousing and utilities (48,000). This is a greater dependence on goods movement-dependent industries than is found in other parts of the state. For example, in Southern California, often thought of as the goods movement center of the state, goods movement-dependent industries constitute 35 percent of regional employment.

According to the United States Bureau of Labor Statistics, the Gross Domestic Product (GDP)[3] for goods movement-dependent industries in the eight-county study area in 2010 was about $56 billion.[4] The goods movement-dependent industries that contribute the most to regional GDP include wholesale and retail trade ($14 billion or 26 percent of the total goods movement GDP), agriculture ($13 billion or 24 percent of the total goods movement GDP), and manufacturing ($12 billion or 21 percent of the total goods movement GDP).

There are over 100,000 distinct firms in the SJV across all sectors, and over 30,000 from goods movement-dependent industries. The majority of businesses in the SJV are small, with between 80 and 90 percent having less than 20 employees.[5] This can affect goods movement patterns by requiring warehouses and other consolidation points for aggregating shipments for delivery. The largest goods movement-dependent businesses within the SJV include food growing and production (including raw fruits and vegetables, nuts, and milk and other dairy products); food processing and packaging; oil refineries and mineral mining operations in the southern part of the SJV, and trucking and transportation and warehousing and distribution services throughout.[6]

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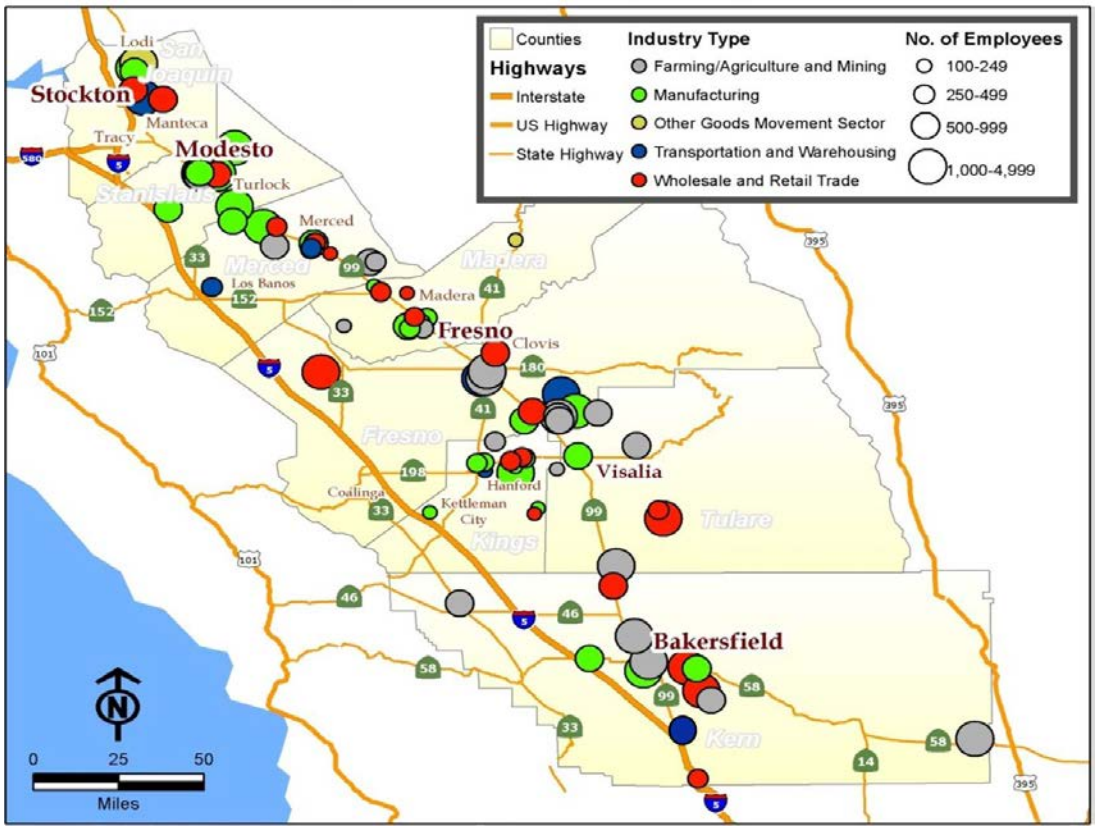
[3] Gross Regional Product (GRP) is described as the value of goods and services produced within a metropolitan area in a given period of time. In this case, the GRP applies to the SJV based on the output from each metropolitan area within each county. This total includes mining output.

[4] Data collected from the BEA web site for GDP by Metro area. The MSA was utilized for each county in the study area.

[5] California Employment Development Department (Third Quarter Payroll and Number of Business by Size, 2009).

[6] California Labor Market Info Major Employers by County.

Figure 2.1 Locations of Key Goods Movement Businesses in the SJV

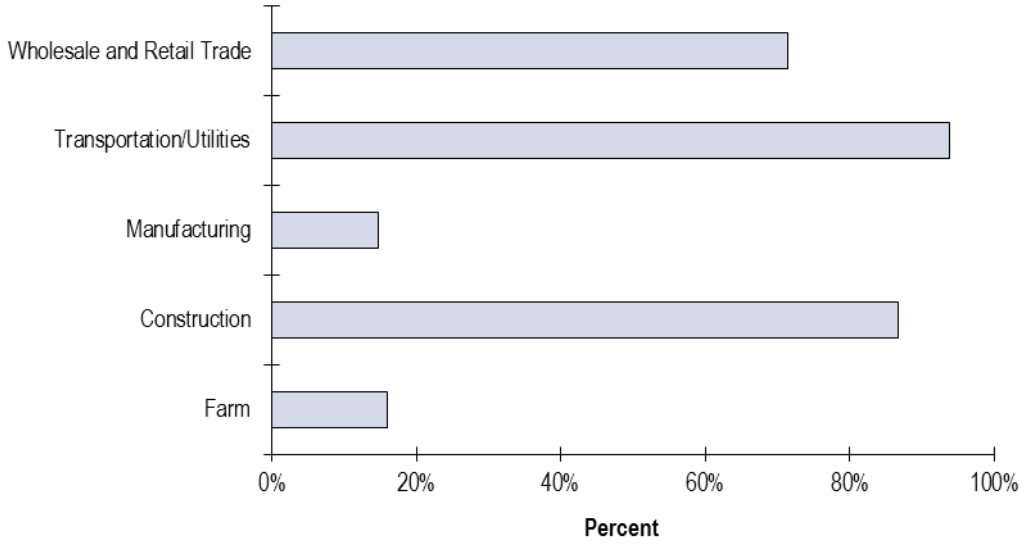


Source: California EDD: America's Labor Market Information System (ALMIS) Employer Database, 2011 First Edition.

Note: Due to the seasonal nature of agricultural production and diffuse nature of agricultural operations, location of agricultural industries may not necessarily reflect the locations of actual employment.

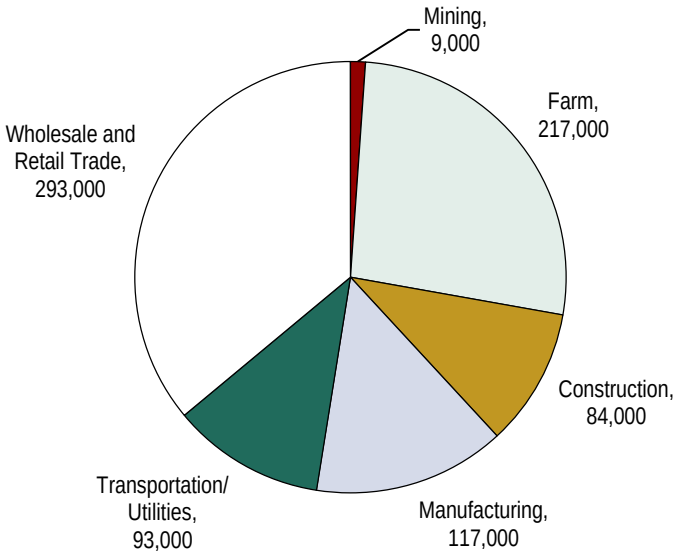
By 2040, jobs in goods movement-dependent industries are expected to increase by over 45 percent (nearly 250,000 jobs). Figure 2.2 presents expected employment growth in goods movement-dependent industries and shows that the highest rates of growth will be experienced in the transportation/warehousing and utilities, wholesale and retail trade, and construction sectors. While traditional goods movement-dependent industries such as agriculture and manufacturing will continue to be important (providing 217,000 jobs and 117,000 jobs respectively), the high growth in sectors such as transportation/warehousing and utilities indicates continuing diversification of the SJV economy and the important role that goods movement will play in this transformation. By 2040, wholesale and retail trade will be the largest industry in terms of employment in the SJV, providing 293,000 jobs. (Figure 2.3).

Figure 2.2 Percentage Employment Growth in Goods Movement-Dependent Industries between 2010 and 2040



Source: California Forecast, 2011.
Note: Mining jobs are expected to experience a net decline of 3,000 jobs between 2010 and 2040 (about 18 percent).

Figure 2.3 2040 Goods Movement Industry Employment in the SJV



Source: California Forecast, 2011, Moody's economy.com (for mining employment).

Exports and Export Growth

The recent focus on international export trade as an important element of state and national economic policy is also having important ramifications for future goods movement needs in the SJV. The SJV produces a very large share of California's exports, especially agricultural products. According to recent statistics from the California Department of Food and Agriculture, the SJV accounts for over one-half the value of the State's agricultural commodities, underscoring the region's importance in the export market. The President's export growth initiative (see sidebar) is intended to double the value of U.S. exports in five years. This initiative complements long-standing state, regional, and industry export growth efforts. To the extent that ongoing export growth initiatives succeed in increasing those exports there will be an increasing need to move agricultural and other commodities by truck and rail to Canada and to California's seaports.

President's Export Initiative:

To help promote U.S. exports around the globe, The President of the United States signed an Executive Order in 2010 with the goal to double exports from the United States within five years by working to remove trade barriers abroad and helping firms domestically overcome hurdles to entering and expanding in overseas markets.

Source: http://www.whitehouse.gov/the-press-office/executive-order-national-export-initiative.

2.2 SJV GOODS MOVEMENT INFRASTRUCTURE

The SJV is home to a variety of transportation facilities for moving goods ranging from Interstate and state highways, Class I and short line railroad facilities, intermodal terminals, inland ports and waterways, air cargo facilities, and other infrastructure that supports the movement of goods. This section will describe the freight transportation facilities that support the regional economy in the SJV.

Figure 2.4 summarizes the major freight facilities in the SJV, including highways and truck routes, rail corridors, ports, and major air terminals. Each of these features will be discussed in the sections following.

Figure 2.4 Freight Transportation Facilities in the SJV
Overview

Source: National Transportation Atlas Database, Caltrans.

Highways

The highway and local road system is the primary freight infrastructure for the region, and trucking is the dominant freight mode. Truck movements are centered on the main north-south arteries, including I-5 and SR 99, as well as numerous east-west corridors such as SR 58, SR 108, SR 120, SR 180, I-580 to 205, SR 152, SR 46, and SR 198. There are over 31,420 roadway miles in the SJV consisting of interstate highways, such as I-5 and I-580; state highways, including SR 99 and SR 58; and major county roadways. Due in large part to the SVJ's north-south orientation, the key regional highways are the north-south corridors, I-5, and SR 99. In addition to its role as an interregional connection for SJV shippers, I-5 also carries large volumes of through traffic connecting most of the major population centers and markets on the West Coast. On the other hand, the SJV's urban centers are located predominantly on SR 99, and this serves as the major intercity connection within the SJV. Given the roles that these two major north-south highways serve, east-west connections between them are critical to allowing the SJV's roadways function as an integrated system. East-west

highway connections are also important links between the SJV and California's coastal population centers (major markets for the SJV's food products and distribution centers), as well as providing connections to the rural agricultural production areas. Major east-west corridors include I-580 connecting the SJV to the San Francisco Bay Area; and SR 108, SR 152, SR 46, SR 58, SR 198 and SR 19 providing east-west connectivity in Stanislaus, Kings, Kern, and Tulare Counties. Other important highways include SR 14, SR 41, SR 43, SR 65, and SR 120, which serve both local truck traffic and as important alternate routes when SR 99 and I-5 have incidents.

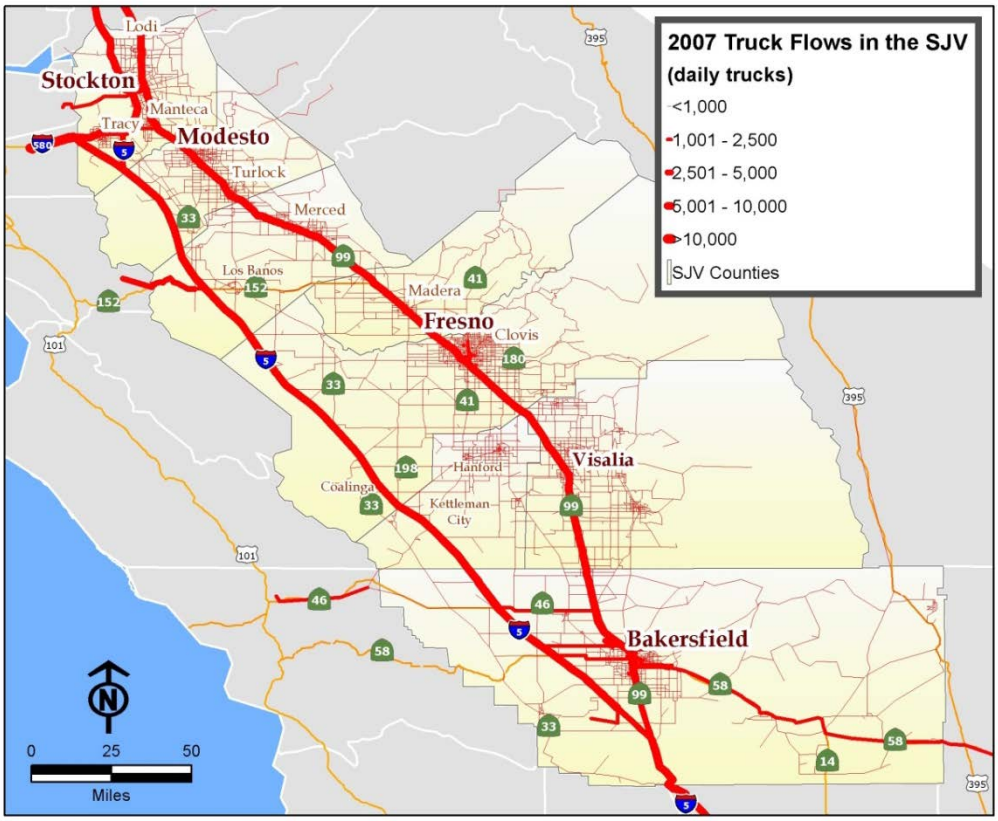
There are over 2,700 miles of truck routes in the eight-county study region, with over 80 percent designated STAA National Truck Routes. STAA truck routes and associated terminal access routes (which allow access to industrial and warehouse concentrations from major STAA routes) are the only roads that allow the largest combination (tractor-trailer) trucks that are allowed operation in California and they are a critical component of the regional trucking system. Over time, the motor carrier industry has migrated most of its long-haul business to these large trucks wherever possible because of the economies of scale they provide. In recent years however, new clusters of industries have been developing along regional roads not intended for heavy truck traffic – accelerating pavement deterioration and raising safety concerns. Updating the STAA system in the SJV was determined to be an important strategy to support the economic growth centers that are now developing in the SJV and will be discussed in Chapter 3 of this report.

Truck stops (including privately-owned truck stops and public rest facilities) – another important component of truck infrastructure – are also located throughout the SJV, though they are largely clustered along the I-5 and SR 99 corridors.

According to the SJV Truck Model, and confirmed by additional information from interviews[7] with truck drivers and owners, the main highway corridors used for truck movements are I-5, SR 99, SR 58 (east of SR 99), and I-580 both east and west of I-205 (Figure 2.5). According to the model, all of these corridors see volumes of between 5,000 and 10,000 daily trucks in segments along most of their alignment in the eight-county SJV. However, other corridors, such as SR 152, SR 46, SR 58, SR 108, SR 119, and SR 198, also carry large volumes of trucks.

[7] This includes survey results from an on-line survey administered through surveymonkey.com from January to April of 2012, and sent to truck carriers throughout the SJV.

Figure 2.5 Truck Volumes in the San Joaquin Valley, 2007



Source: SJV Truck Model

Railroads

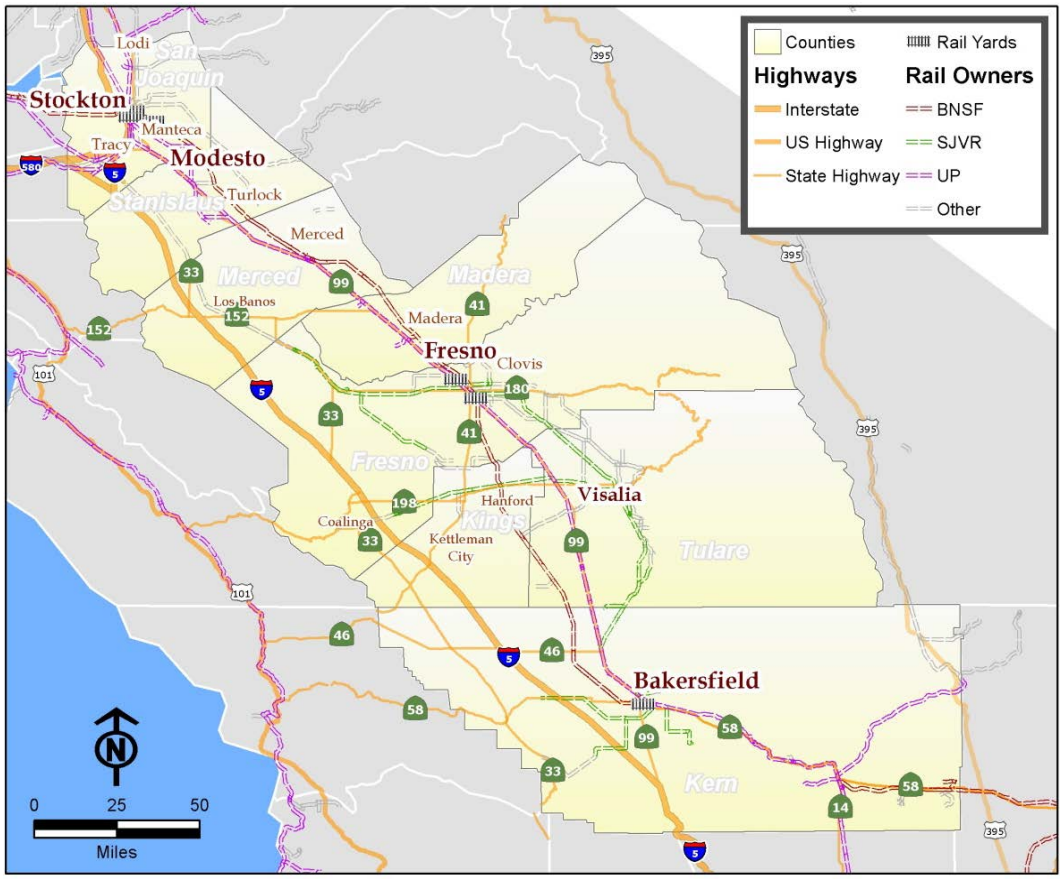
The SJV is served by two major Class I railroads[8], BNSF Railway (BNSF) and the Union Pacific Railroad (UP); and short line and regional railroads, including Sierra Northern Railway (SERA), California Northern Railroad (CNR), Stockton, Terminal & Eastern (STE), Central California Traction (CCT), Modesto & Empire Traction Company (MET), San Joaquin Valley Railroad Company (SJVR), and the West Isle Line (WFS) (Figure 2.4). The BNSF and UP mainlines provide the primary rail connections between the SJV and the national rail network. They carry both carload and intermodal traffic. Carload traffic includes a wide range of traditional rail commodities such as assembled motor vehicles, bulk commodities (such as grain, coal, and plastic pellets, and general merchandise (such as lumber, bagged cement, etc.), while intermodal traffic includes a mix of

[8] Railroads are classified by size and geographic reach and Class I railroads are the largest rail operations. According to the definitions of the Surface Transportation Board, a Class I railroad is defined as a railroad with over $399 million in annual operating revenues.

consumer products, general freight, and specialty products that can be carried by truck and train in containers or trailers. While trucking is by far the dominant freight transportation mode in the SJV, both in terms of tonnage and value, rail plays a critical role for long-haul movement of many of the SJV's traditional agricultural products and supplies. Intermodal service connecting distribution centers to markets and supplies is also a growing component of rail traffic on the Class I mainlines. In addition to the mainline track, both Class I railroads maintain major intermodal terminals and rail yards in the SJV, as indicated in Figure 2.6.

Short lines also play a vital role in the SJV goods movement system. These lines often collect traffic from shippers and deliver it to the Class I railroads for carriage on the national rail system. The SJV's rich network of short line track also provides interesting possibilities for new types of rail services in the SJV, such as short-haul intermodal or shuttle services, connectors to inland ports, and truck-to-rail transload operations. All of these new services could increase the reach of rail to new industries and provide a critical alternative to increasingly congested roadways. Some of the issues facing short line railroads are also discussed in the presentation of strategies and recommendations in Chapter 3.

Figure 2.6 Key Rail Facilities in the SJV



Source: National Transportation Atlas Database.

Ports

The SJV region is effectively served by all major California seaports, although only the Port of Stockton is actually within the region itself. The Ports of Oakland, West Sacramento, Los Angeles, Long Beach, and others are linked to SJV origins and destinations by truck.

The Port of Stockton is primarily a bulk commodity port and has two sections: the East Complex (the original Port of Stockton property) and the West Complex (the former Navy base on Rough and Ready Island). Both complexes are home to numerous non-maritime businesses on port property as well as to maritime shippers, receivers, and handling facilities. Both complexes have extensive rail trackage operated by the CCT, with connections to UP and BNSF. The Port of Stockton is also one of three ports connected by the new California Marine Trade Corridor (see callout box on page 2-13). This marine corridor offers container-on barge service between the Ports of Stockton, Sacramento, and Oakland.

The Port of West Sacramento, like Stockton, handles a mix of bulk and break-bulk cargoes and serves a number of agricultural shippers in the SJV.

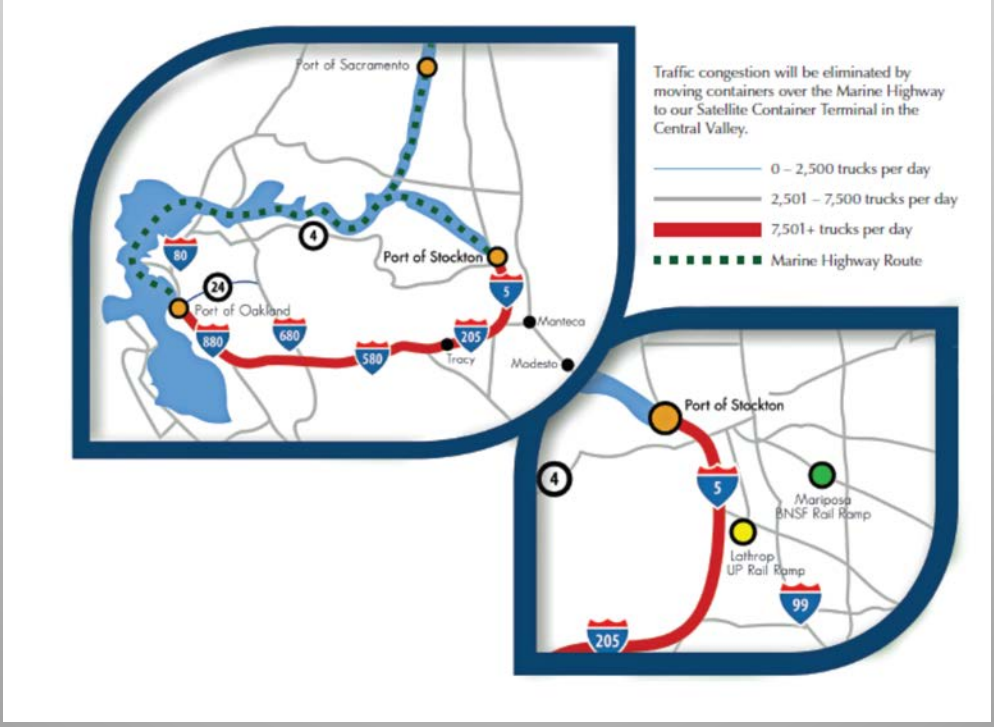
The Port of Oakland handles containerized imports and exports to and from the SJV. Transportation connections between the Port of Oakland and the SJV are by truck (as well as the planned container on barge service from the Port of Stockton). There have been several efforts to develop a rail intermodal shuttle between SJV locations and the Port of Oakland:

1. California Interregional Intermodal System (CIRIS),
2. Shafter Intermodal Rail Facility, and
3. Crows Landing (which has since shifted to emphasize the business park and airport)

At the present time, none of these shuttle services has reached commercial operations due to current rail vs. truck economics. However, as congestion levels on major connecting highways (such as I-205/I-580) or fuel costs continue to increase, interest in a rail connection to the Port of Oakland may continue to grow.

The Ports of Los Angeles and Long Beach are the nearest container ports to the southern portion of the SJV. They are also usually the preferred ports for imports because they are usually the first inbound calls for vessels from Asia or Europe. These two ports handle more total traffic than Oakland, and are heavily imbalanced towards imports.

California's ***Green Trade Corridor Marine Highway*** began operations in 2013. This innovative service provides container-on-barge service between the Ports of Oakland, Stockton, and Sacramento. It provides an alternative solution to the congested I-580 corridor, by offering container movement on the San Joaquin River. The operation, when fully utilized, is anticipated to divert up to 2000 trucks a week from the I-580 corridor, included loaded containers of agricultural product from the SJV, as well as empty containers moving back to export shippers in the SJV.



Benefits from this corridor are anticipated to include: improved logistics, reduced costs, enhanced air quality, increased safety, and congestion relief on the I-580 corridor. The corridor project cost (roughly $70 million) was funded through a variety of sources, including a $30 million TIGER grant in 2009. This grant was awarded because of factors including: the innovative partnership of the three ports, the fact that the project strengthens import and export markets, and that the three ports are all located in in economically distressed regions (Oakland, West Sacramento, and Stockton).

- FHWA TIGER Website: http://www.dot.gov/sites/dot.dev/files/docs/Tiger_I_Awards.pdf,
- *I-580 Interregional Multi-Modal Corridor Study.* Dowling Associates, Inc. August, 2011.
- *Port of Stockton, California: Short Sea Shipping- Creating Economic Growth in California Through Freight Movement on the Marine Highway.* http://www.portofstockton.com/Downloads/SSS%20Brochure.pdf

Airports

The commercial air cargo system in the SJV is comprised of seven airports (Figure 2.7) – all of which offer limited commercial passenger airline and air cargo service: Fresno-Yosemite International, Inyokern Airport, Meadows Field (Bakersfield), Merced Regional Airport, Modesto Municipal Airport, Stockton Metropolitan Airport, and Visalia Municipal Airport. With the exception of Stockton Metropolitan, all are also served by all-cargo aircraft of various sizes operated by either FedEx or UPS or their contract carriers Westair, Ameriflight, and Redding Aero Enterprises. An eighth SJV airport, Castle Airport in Merced County, currently provides no scheduled commercial service but has proposed to add air cargo capacity.[9] The regional also has numerous general aviation airports (e.g., Taft, Hanford, Delano, Madera, Shafter, Firebaugh, Porterville) without near-term plans for commercial passenger or air cargo service.

Figure 2.7 Airports in the San Joaquin Valley

Source: National Transportation Atlas Database.

[9] In 2009 Mojave Air and Spaceport in southeast Kern County experimented with one cargo shipment per week, however, for the purposes of this study is not considered part of the existing conventional air cargo system.

2.3 SJV GOODS MOVEMENT DEMAND

Regional Flow of Goods

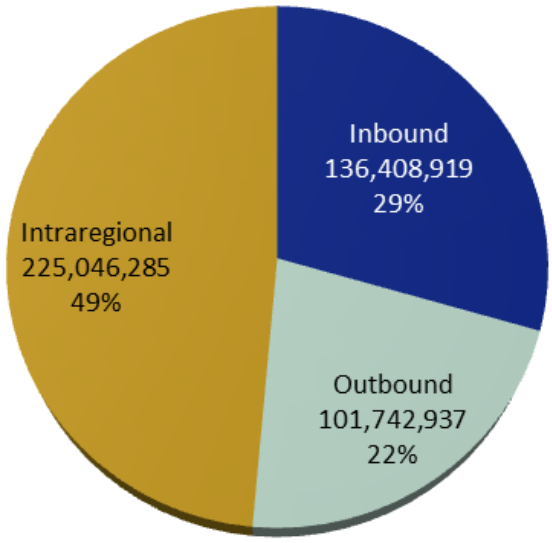
In 2007, nearly 500 million tons of goods moved into, out of, within, or through the SJV, transported by the trucks, rail, water, and air freight modes. Though much of this was carried by private-sector carriers, it utilizes public resources-including highways and waterways. Therefore, the public sector needs to understand these commodity flows, their volumes, and their needs. In addition, when making investment decisions related to infrastructure, government should consider the potential that improvements provide to enhance the safety and efficiency of these goods movement modes. This section characterizes the current volumes and types of commodities that are utilizing the SJV region's multimodal freight infrastructure system. Examination of commodity movements provides insights into which economic sectors will benefit most from investments in the goods movement system.

Inbound, Outbound, and Intraregional Flows

The predominant pattern for goods movement transport (almost 50 percent of the total tonnage) in the SJV is intraregional truck flows – those movements that have both trip ends within the eight-county SJV. These moves reflect the interconnected nature of supply chains operating in the SJV, as intraregional truck flows represent products being shipped within the region for further processing, consolidation, or distribution for retail sales. This is expected of a major agricultural and energy producing region, where there are often several "stages" of production before a particular good is actually sold to a consumer (e.g., processing of tomato sauce or refining petroleum products).

Inbound commodities to the SJV account for about 29 percent of the nonthrough flows (Figure 2.8); and originate in locations including the San Francisco Bay Area, Southern California, the Central Coast region, and outside of California. Outbound tonnage comprises about 22 percent of all nonthrough moves; again destined for locations including the San Francisco Bay Area, Southern California, the Central Coast region, and outside of California. Agricultural commodities and food products dominate the inbound and outbound tonnage for both truck and rail accounting for over one-third of the inbound and outbound truck tonnage and rail carload tonnage.

Figure 2.8 Tonnage Distribution in the SJV by Direction (Nonthrough Flows), 2007[a]



[a] It should be noted that the high percentage of intraregional tonnage is consistent with national length of haul (LOH) distribution for truck trips.

Source: SJV Truck Model, FAF3, California State Rail Plan – Freight Rail Market Assessment., Port and Airport web sites.

There are also "through" traffic flows in the SJV – those trips that pass through the SJV without stopping (i.e., without an origin or destination in the SJV). Through trips account for about 30 percent of the total truck tonnage in the SJV, and are concentrated on corridors such as Interstate 5 and SR 58. I-5 acts as a primary north-south trade corridor in California, connecting major metropolitan regions, including Los Angeles and the San Francisco Bay Area. SR 58 connects Bay Area and points north via I-5 over the Tehachapi pass to I-15 and I-40 in Barstow, which also provide travel to the Midwest and Eastern states and provide the preferred all-weather routes for crossing the Sierra Nevada Mountains and the Rocky Mountains. Rail through traffic traveling either between Southern California and points north or cargo from Northern and Southern California destined for other states to the east of California amounts to about 7 million tons (15 percent of total rail flows).

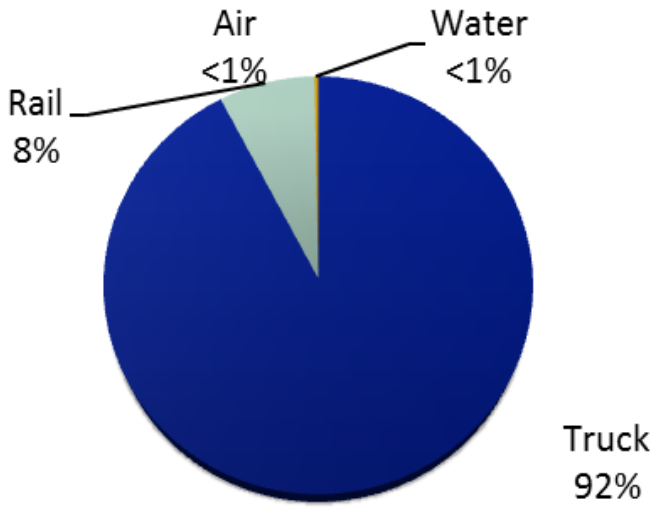
Industries depend heavily on intraregional movements within the SJV, both between counties and within the same county. About 53 percent of all truck tonnage is intraregional with raw agricultural products (such as animal feed or cereal grains) and mining materials (such as stone and sand) playing a prominent role. It should be noted that agricultural products (as well as many other commodities) move at least twice, once from the farm to the processor/ packer and again to the market, which would likely increase the associated tonnage. These commodities are often very heavy and bulky and can have a relatively low value, potentially making longer distance moves by truck less than economical.

There is no predominant origin or destination for inbound or outbound tonnage to the SJV. Slightly more prominent than the others (in truck tonnage) are the San Francisco Bay Area (for outbound flows) and Southern California Region (for inbound flows). For truck shipments outbound from locations in the SJV, the Bay Area is the destination for 10 percent of the truck tonnage, and Southern California is the origin for over 10 percent of the inbound tonnage, more than any other individual region.

Roles of Major Transport Modes

Freight in the SJV utilizes five modes of transportation; trucks, railways, water, air, and pipelines. However, due to the confidential nature of much of the data associated with pipeline commodities, commodity flows are only reported on the truck, air, water, and air modes.[10] The distribution of each mode as compared to total commodities carried in the SJV is shown in Figure 2.9. The modes are each described in the following sections.

Figure 2.9 Tonnage Distribution in the SJV by Mode, 2007



Source: SJV Truck Model, FAF3, California State Rail Plan – Freight Rail Market Assessment, Port and Airport web sites.

Truck

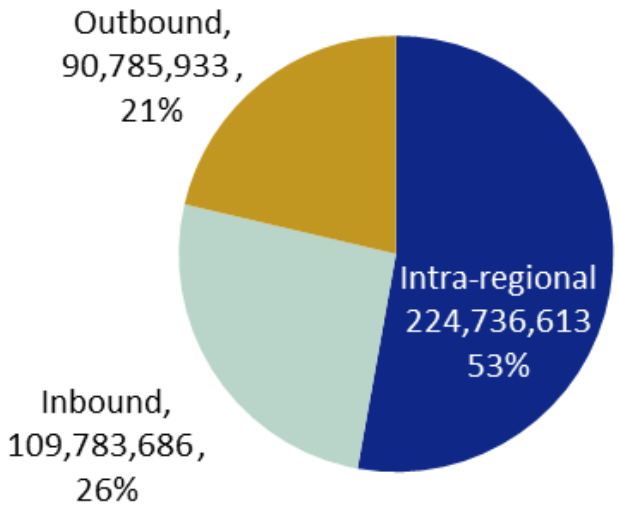
In the SJV, trucks carry more than 90 percent (425 million tons) of the total inbound, outbound, intraregional, and through tonnage on the SJV's highway network. Rail (both carload and intermodal) carries about 8 percent (50 million

[10]Stakeholder interviews with petroleum representatives suggest that pipelines are used as a transportation option for oil and petroleum-based industries along with the truck and rail modes.

tons) of the cargo and is a critical component of the goods movement system, especially for moving heavy and bulky commodities over long distances. The water (via the Port of Stockton) and air (primarily via Fresno-Yosemite Airport) modes each handle less than 1 percent of the freight tonnage in the SJV. Although comprising only a very small proportion of total freight tonnage, they are the carriers of choice for certain commodities (for example, very high-value cargo traveling long distances tends to travel by air).

Of the 425 million tons moved by truck into, out of, or within the SJV in 2007, more than one-half (53 percent or 225 million tons) are classified as intraregional moves. Roughly 21 percent (90 million tons) were shipped outbound to locations outside the SJV, and about 26 percent (110 million tons) were shipped inbound to locations inside the SJV. This is summarized in Figure 2.10.

Figure 2.10 Inbound, Outbound, and Intraregional Truck Commodity Distribution (Percentages are of Nonthrough Flows), 2007



Source: FHWA, FAF3.

Rail

Railroad freight service has been integral to the development of agriculture and commerce in the SJV. Unlike truck traffic, nearly all SJV rail traffic moves to or from other states (Table 2.2). Carload rail service in the SJV is dominated (about 75 percent of the total tonnage) by inbound flows, reflecting the region's consumption of agricultural inputs (e.g., grain and animal feed for the livestock industry, fertilizers and chemicals for farming); heavy bulky materials (e.g., coal and petroleum products, wood products); and semi-finished goods. All intraregional rail traffic is carload. The intermodal traffic is slightly imbalanced in the outbound direction. The Railex facility in Delano is an example of rail moves from SJV producers to out of state markets. The Railex ships unit trains

between Delano and Albany, New York, in 4.5 days for distribution at East Coast grocery chains.

Table 2.2 Major Trading Partners, Rail Commodities, 2007

Region	Outbound	Share	Inbound	Share	Total	Share
Other States	9,503,024	87%	24,193,548	96%	33,696,572	92%
San Jose-San Francisco-Oakland	221,556	2%	370,076	1%	602,312	2%
San Diego	74,976	1%	39,360-	0%	114,336	0%
Sacramento	10,160	0%	22,520	0%	32,680	0%
Remainder of California	52,760	0%	39,360	0%	52,760	0%
Los Angeles-Long Beach	1,083,848	10%	603,312	2%	1,686,160	6%
Total	10,957,004	100%	25,227,816	100%	36,494,492	100%

Source: California State Rail Plan – Freight Rail Market Assessment.

Air

Airports in the SJV collectively account for less than 1 percent of all air cargo handled by California's civilian airports. Products moved by air continue to use airports outside of the SJV. Airports in the SJV collectively account for less than 1 percent of all air cargo handled by California's civilian airports. However, on a tonnage basis, the leading exports from LAX and SFO are agricultural commodities, a substantial share of which were grown in the SJV. According to foreign trade statistics published by the U.S. Commerce Department, California shipped just over $1 billion in agricultural exports by air in 2011, a 27-percent increase over the preceding year. Due to the lack of direct flights linking SJV airports with overseas markets, virtually all of these airborne exports must first be trucked to LAX or SFO to reach overseas markets.

Marine

The Ports that serve the SJV region have very different roles. Of the major bulk commodities handled at the Port of Stockton, the agriculture-related imports (anhydrous ammonia, liquid and dry fertilizers, molasses, nitrates, urea, etc.) are likely to affect SJV goods movement flows. Imports to the Port of Oakland (i.e., commodities from overseas) are primarily consumer goods or semi-finished goods. A substantial portion of these import goods would be trucked to customers and distribution centers in the SJV region, notably the growing business park and logistics clusters in San Joaquin County. On the export side (i.e., commodities shipped from the U.S.), the SJV regional connection is clear with food and agricultural products dominating. As previously noted, the Ports of Los Angeles and Long Beach are usually the preferred ports for imports. A substantial share of the imports, however, is directly trucked to customers and

distribution centers in the SJV region, such as the IKEA facility at Lebec. Export movements through LA/LB include goods trucked from the SJV region, especially the southern counties.

Considerable effort has gone into Marine Highway studies and California's Green Trade Corridor project between Oakland, Stockton, and West Sacramento, and the service is now in operation. However, the long-run potential use of this service, and volumes carried, are unknown.

2.4 EXPECTED GOODS MOVEMENT GROWTH

The demographic and economic features of an economy determine the types of commodities and the volumes of traffic generated, and also the demand for particular modal services and the transportation system performance requirements. The SJV region is growing. Growing populations tend to consume more products and will require increased trucks, railcars, and airplanes to deliver consumer products to stores, homes, and businesses throughout the region. Likewise, growing industries will demand more incoming products to support their operations, and will produce a greater amount of goods for export.

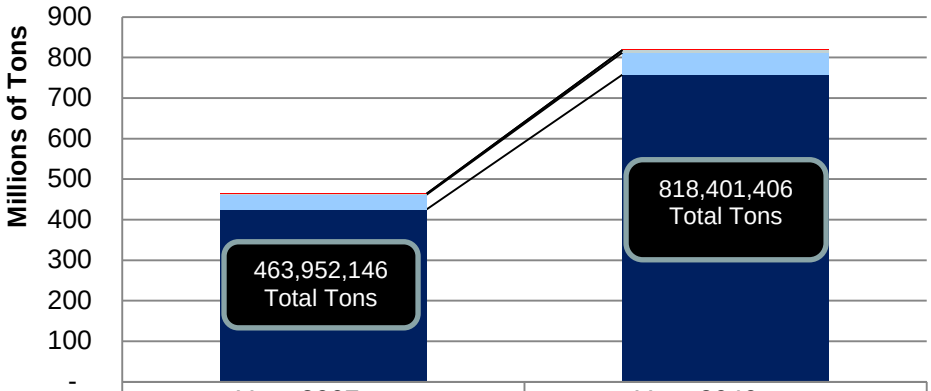
Between now and 2040 the region will grow from 4 million to just over 6 million people. This population growth will be accompanied by increased activity in certain goods movement-dependent industries, such as construction, retail, and wholesale trade. These trends will create pressure on the transportation system, as well as contribute to increasing congestion, emissions, and air quality concerns.

Between 2007 and 2040, freight moving on the SJV goods movement system is anticipated to grow substantially, reaching over 800 million tons (about 60 percent more freight) by 2040 (Figure 2.11).

Intraregional movement will be responsible for over 50 percent of the total expected tonnage (nearly 400 million tons) in the SJV in 2040. Between 2007 and 2040, outbound tonnage will increase at a greater rate (90 percent) than inbound tonnage (60 percent). Trucks are projected to carry 93 percent (750 million tons) of future freight flows, while rail is projected to carry 7 percent (50 million tons).[11] Air and water modes will continue to play a role in delivering specific types of commodities, but will continue to command less than 1 percent of the total commodity flow by weight.

[11] FHWA Freight Analysis Framework (FAF3).

Figure 2.11 2007 and 2040 Commodity Volumes Moving into, out of, or within the SJV



	Year 2007 tons	Year 2040 tons
Air	11,034	11,034
Water	2,140,388	6,234,782
Rail	36,494,492	54,205,458
Truck	425,306,232	757,950,132

Source: FHWA FAF3, California State Rail Plan – Freight Rail Market Assessment.

Note: Air and water data have a 2011 base year. Base year water data (2011) are from Port of Stockton and informal (i.e., not-official) forecasts were developed by the Tioga Group for this report. Base year air data (2011) is from the California Division of Aeronautics for Fresno-Yosemite International Airport, the only SJV airport with measurable levels of air cargo.

The projected growth in freight volume is based in large part upon future predictions of population and income growth, as well as evolving supply chains, greater production efficiencies, and national and international demand for SJV products. However, continued economic uncertainty, and other factors such as rising fuel costs could influence the near- and long-term demand projections for goods traveling on the SJV transportation system. Potential factors which may increase economic benefit from goods movement activities to the SJV may include explicit public policies directed at growth in key goods movement industries.

Truck will continue to be the dominant transportation mode in the SJV by 2040. The main truck corridors will continue to be I-5, SR 99, SR 58, and I-580 to 205.

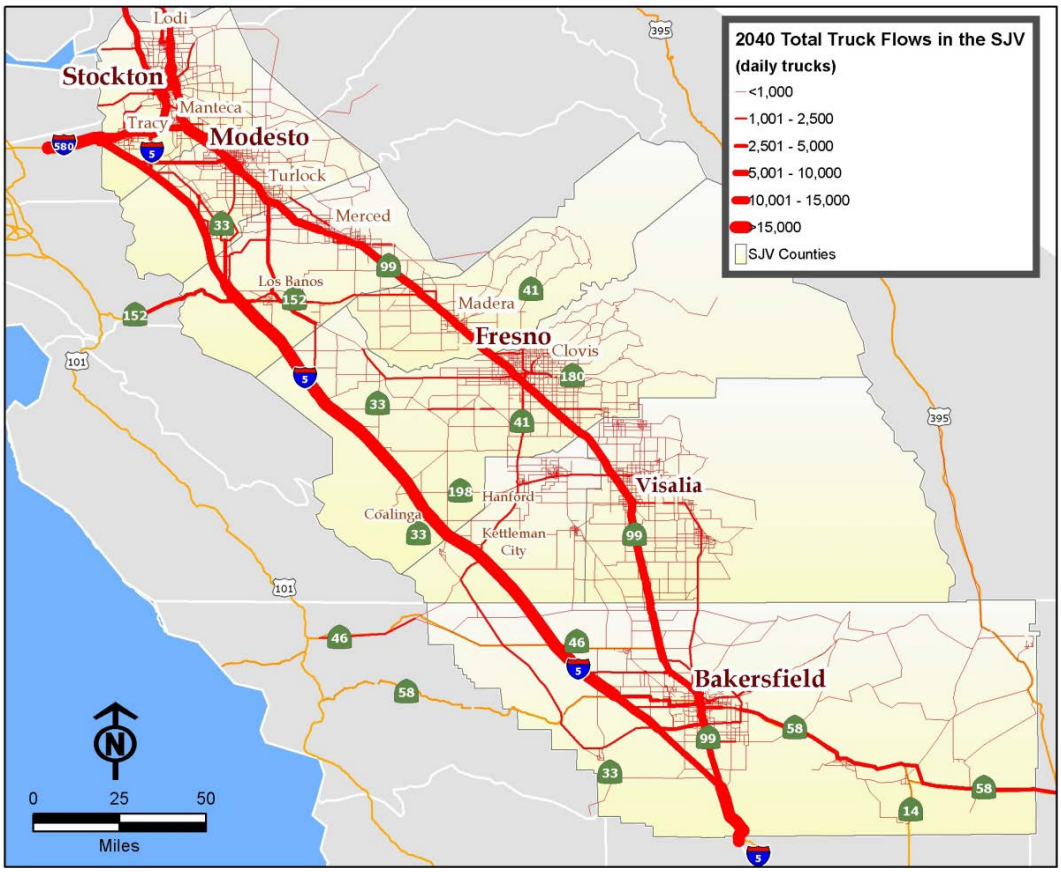
Many of the SJV primary highway corridors, including I-5, SR 99, SR 58, SR 46, and SR 152, are expected to experience substantial growth[12] in trucks between 2007 and 2040 (Figure 2.12):

[12]Projections are based on 2040 tonnage from FAF3. The highway network does include projects within the constrained long-range plans for the counties; however, other projects on each county's unconstrained funding project lists are not accounted for.

Footnote continued

- Trucks on I-5 will increase by more than 7,500 trucks per day throughout the corridor (nearly doubling in volume); and by 2040 will have segments that carry more than 15,000 trucks per day.
- Trucks traveling on SR 99 are also anticipated to increase substantially (between 5,000 to 7,500 trucks – over 50 percent) by 2040; and by 2040 will have segments that carry almost 15,000 trucks per day.
- Other freight corridors, including SR 46 and SR 58, although carrying smaller volumes overall are anticipated to more than double their existing volumes (*increasing* between 1,000 to 5,000 trucks per day. By 2040, most segments on SR 58 will carry about 5,000 trucks per day.

Figure 2.12 Truck Volumes in the SJV, 2040 (SJV Truck Model)



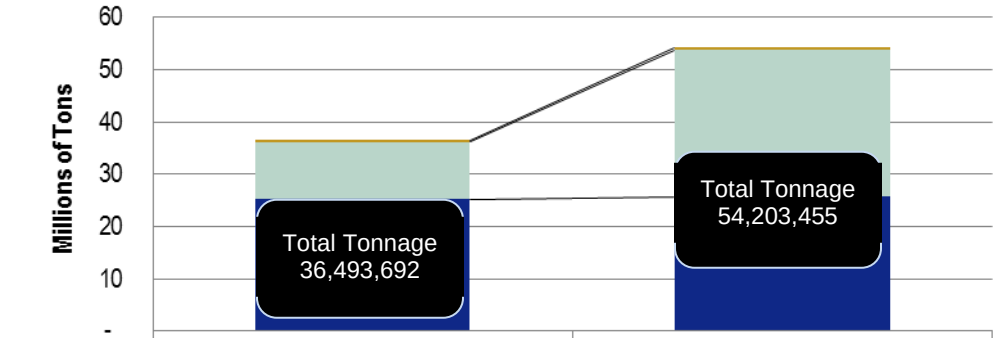
Source: SJV Truck Model.

Note: Highway network is constrained 2030 model network.

The development of these non-programmed projects in the SJV may contribute to changes in truck flows in the future.

The future rail system across the SJV will carry about 54 million tons of freight inbound, outbound, and within the region. This amounts to an increase of nearly 50 percent from 2007. By 2040, there are expected to be substantial shifts in the proportion of inbound and outbound tonnage, with outbound flows growing by nearly 20 million tons (over 150 percent) and inbound flows expecting only marginal growth (Figure 2.13).

Figure 2.13 Growth in Rail Tonnage, 2007 to 2040



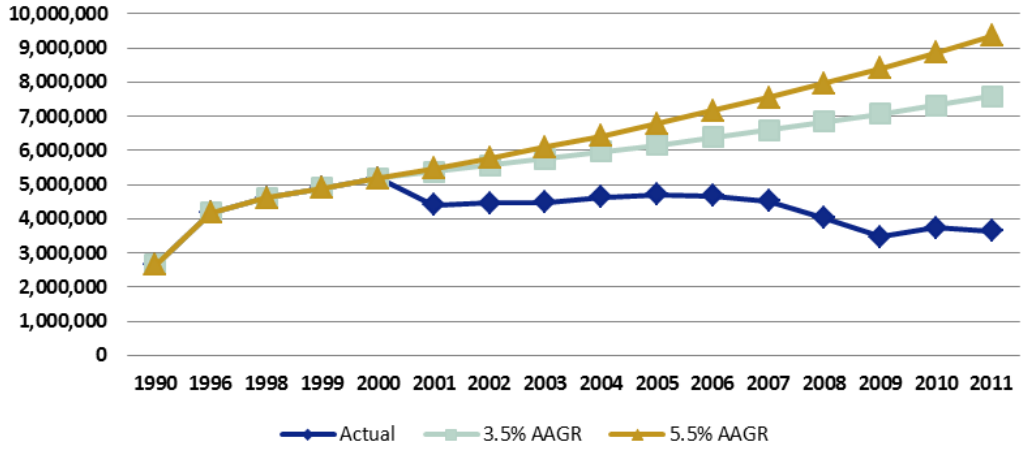
	Year 2007 tons	Year 2040 tons
Intra-SJV	309,672	462,358
Outbound	10,957,004	27,997,580
Inbound	25,227,016	25,743,517

Source: California State Rail Plan – Freight Rail Market Assessment.

Consistent with 2007, carload service will continue to account for the majority of rail flows, but a smaller proportion in 2040 (about 65 percent, compared to almost 78 percent in 2007). There is growth projected in carload service, but it is marginal (about 20 percent). By contrast, intermodal service is expected to increase by 140 percent, and account for a full one-third of rail tonnage in 2040.

Forecasts issued around the start of the current century anticipated robust rates of growth in air cargo volumes at California's airports, with cargo tonnage at the State's major airports expected to double or even triple between 2000 and 2020. Instead, air cargo tonnage at California airports has contracted since 2000 (Figure 2.14), in some cases leaving previously stressed airports with underutilized cargo handling capacity. In terms of cargo tonnage, 2000 remained the peak year at the State's airports with 5.2 million tons as opposed to 3.6 million tons in 2011, a 29.8-percent decline.

Figure 2.14 Actual vs. Forecast Air Cargo Tonnage at California Airports, 1990 to 2011



Source: University of California at Berkeley Institute of Transportation Studies and Caltrans Aeronautics Division, Jock O'Connell.

The Ports of Stockton, West Sacramento, Oakland, and Los Angeles/Long Beach will continue to serve the SJV region. The study team projected Port of Stockton cargo growth from 2.1 million short tons in 2011 to 4.5 million short tons in 2030 and 6.2 million in 2040, an average annual growth rate of 3.8 percent. While many of West Sacramento's bulk cargo flows compete with those of Stockton, West Sacramento has also developed a significant business in project cargo, including windmill parts, steel, and other heavy lift commodities. The Port of Oakland is the primary outlet for containerized SJV exports, and a competing source for SJV imports. The near-term growth is expected to average 2.7 percent annually, while longer-term growth rises to 3.5 percent. Imports are expected to grow faster than exports. The latest container forecast for Los Angeles and Long Beach anticipates growth rates somewhat higher than those expected for Oakland. Loaded imports are expected to grow at 3.7 percent to 202 and 4.8 percent between 2020 and 2030, while exports are expected to grow at 5.3 percent and 2.2 percent in the same periods.

2.5 GOODS MOVEMENT ISSUES AND CHALLENGES

Based on the analysis of infrastructure and demand just described, the study identified numerous infrastructure, operational, and institutional issues in three basic categories described in Table 2.3 below.

Table 2.3 Types of Issues that Impact Goods Movement in the SJV

Grouping	Description
Infrastructure	Physical aspects of the transportation system, including substandard roads or rail lines, bottlenecks and chokepoints, and dangerous/unsafe conditions.
Operational	Systems that manage or coordinate transportation system performance, including truck routing patterns, traffic control programs, and rail/highway grade crossings.
Institutional	Focus on regulatory and system governance issues, such as air quality and environmental regulations.

Infrastructure Constraints

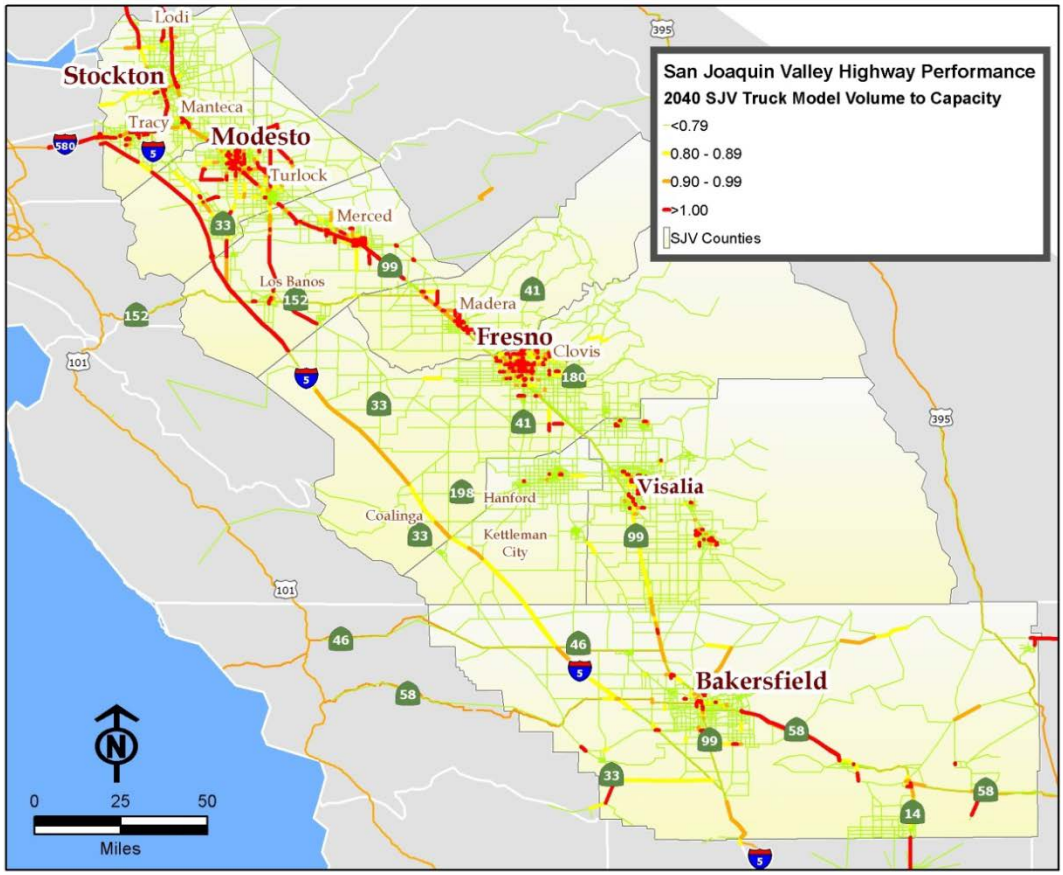
Highway Constraints

Highway Corridor Capacity on I-5 and SR 99. Daily trucks traveling on I-5 will increase by more than 7,500 throughout the corridor (about 100 percent) by 2040 and the truck volume on SR 99 is also anticipated to increase substantially (between 5 to 7,500 trucks – 50 percent). Existing congestion (especially in urban areas) will worsen on these roadways and hinder the efficient movement of goods to, from, and within the SJV. According to a recent Route Concept Report[13] by Caltrans (and confirmed by analysis completed during this study), there is currently heavy congestion on SR 99. SR 99 is also one of the main goods movement corridors in the State, and is flanked throughout its alignment by goods movement-dependent industries. The Level of Service (LOS) map, described in the Route Concept Report (Figure 2.15), indicates that several segments on SR 99, especially those near the Cities of Stockton, Madera, Fresno, and Bakersfield, are operating at LOS E or F. Much of the rest of the corridor operates at LOS C or D. With continued growth on SR 99, these segments will continue to deteriorate, further increasing delay for carriers on the corridor.[14]

[13]California 99 Updated Business Plan, September 2009 Volume 1.

[14]California 99 Updated Business Plan, September 2009 Volume 1.

Figure 2.15 Future Highway Performance in the SJV, 2040 SJV Truck Model



Source: SJV Truck Model.

Note: Colors highlight standard levels of service for highways from the Highway Capacity Manual (2000). The color green generally denotes acceptable operating conditions, with yellow and orange representing increasing congestion, and red indicating very congested conditions, with traffic volumes exceeding available roadway capacity.

East-West Connectivity. East-west connectivity and capacity is a pressing issue throughout the SJV. Segments on many of the existing east-west corridors, such as SR 58 and SR 152, already have difficulty handling existing volumes and will be unable to handle a doubling of truck tonnage by 2040, without increasing congestion. Though interstate/national connectivity is provided via SR 99 and I-5, trucks traveling to or from these highways to other locations within the SJV utilize east-west highway corridors. Many of these are two-lane roadways, and are not suitable to carry the heavy traffic/truck volumes that they experience. Some key highways identified include SR 58, the SR 152 bypass, SR 46, SR 108, SR 120, SR 4E, and SR 4W. Some of these, in particular SR 58, and sections of SR 65 and SR 198, stand out as congested segments currently carrying volumes that exceed capacity on several portions.

"Last Mile" Connectivity. Many of the SJV's agriculture and industrial facilities are located in rural regions, dispersed throughout the entire SJV. These

industries rely heavily on intraregional trucking for their day-to-day business activities. In fact, of the 180 million total tons of agricultural material moved by truck throughout the SJV, 110 million tons make intraregional (county to county) moves within the SJV. This compares with about 60 million tons that move outbound/inbound to/from the SJV. Therefore, trucks associated with agriculture and industrial activities rely on many different types of roads, including smaller local roadways connecting rural farms and industrial plants that are not designed to carry heavy vehicle traffic. This creates issues of "last mile" connectivity, where roads to individual sites are under-maintained, capacity constrained, or unsafe. Some interview respondents reported that companies have chosen to locate elsewhere because of this lack of intraregional transportation system connectivity.

Truck Parking Shortages. Truck parking shortages can result in illegal truck parking from drivers seeking out alternative spaces near their routes, which are often located on residential streets and next to goods movement facilities. Illegally parked trucks can be a safety hazard, as well as contribute to noise and localized emissions that make them a public nuisance. As a state, California ranks first in the nation in overall (private and public) commercial vehicle parking shortage.[15] Recent truck parking estimates indicate that demand exceeds capacity at all public rest areas and at 88 percent of private truck stops on the State's highest-volume corridors (including I-5).

Pavement Wear and Tear. On average, one fully-loaded 80,000 pound truck causes as much pavement wear as up to 10,000 automobiles.[16] This can contribute to the deterioration of roadway surfaces, in particular when trucks are using smaller connector facilities that are not intended for heavy truck usage (which is extremely prevalent in the SJV). Deterioration of roadway surfaces is a problem for truck owners/operators and the public sector alike.

For truck owners, and operators, deteriorating pavement conditions create safety, speed, and maintenance concerns. Uneven pavement surfaces can contribute to decreased truck speeds and accelerated truck maintenance needs, which can contribute to increased shipping costs or shipping delays. Though very little data exists to quantify this relationship, it is a relationship that is worth considering when contemplating surface restoration projects.

For the public sector, deteriorating roads can lead to costly resurfacing, maintenance, and rebuilding efforts. The problem is being compounded by construction material costs that are once again on the rise. According to the

[15] *Commercial Vehicle Parking in California: Exploratory Evaluation of the Problem and* Solutions, University of California, Berkeley, 2007.

[16] http://www.sacog.org/mtp/pdf/mtp2035/issue%20briefs/road%20maintenance.pdf.

Caltrans California Highway Construction Cost Index[17], the combined costs of construction materials, such as fuel, asphalt, steel, and concrete, rose by over 32 percent between 2004 and 2006[18], before dipping by the same amount in 2007 to 2009. In 2011, the cost index rose sharply, meaning that materials are once again becoming more expensive.

Rail Constraints

Class 1 Rail Capacity. Rail network infrastructure issues in the study area have been addressed primarily by the railroads themselves. Caltrans has also participated where Amtrak trains (primarily the San Joaquin) are affected. Generally speaking, line capacity has not been a constraint on rail transportation to, from, or through the study area. One specific concern involves the UP-owned route over the Tehachapi Mountains between Bakersfield (Kern Junction) and Mojave that is also used by BNSF. BNSF trains over the route tend to be more service-sensitive, and BNSF has been concerned over the capacity of the route for future traffic growth. Caltrans has also studied the issue. Improvements on this route are expected to receive support under the Trade Corridor Improvement Fund (TCIF). As of December 2009, the total project cost was shown at $112.7 million, with $54 million to be provided by TCIF. At that time, construction was expected to start in March 2012; however, due to issues with the TCIF bonds, the project has been delayed with construction now expected to begin in September 2013.

Short line Rail Capacity. There have been several occasions of short line rail abandonments or plans to discontinue service on parts of their system. Short-line service discontinuances are usually triggered by:

- A decline in business to the point where the profit potential is less than the scrap value of the trackage;
- A business decline to the point where operations are unprofitable; or
- Infrastructure replacement expenses that cannot be financially justified.

Where the available carload traffic can no longer support profitable operations over a given line, the operator begins abandonment proceedings before the Surface Transportation Board (STB). Significant changes since 2004 have mostly involved cutbacks and abandonment on former Southern Pacific (SP) lines operated by the SJVR. The loss or obsolescence of critical infrastructure is a particular threat to lines with numerous bridges or other structures, or with light construction that may not support newer, heavier rail cars. Often this comes down to a case of insufficient business to sustain short line maintenance. Under

[17] http://www.dot.ca.gov/hq/oppd/costest/data.htm.

[18] http://www.dot.ca.gov/hq/esc/oe/contract_progress/exhibitA.pdf.

these conditions, the short line operator may not be able to continue in operation or accept new business opportunities without additional funding.

Car supply can be a perennial problem for customers that do not ship often or that ship in peak periods when the car supply is tight. Since short lines are often reliant on borrowing equipment from the Class I railroads, they are not always able to dictate correct supply to meet demand, as they must wait for equipment from the Class I railroads. This can lead to shortages during peak periods (such as harvest season), as well as shortages of specialized equipment such as refrigerated railcars.

Grade Crossings and Separations. The mixing of rail and truck traffic at at-grade rail crossings can be a source of traffic- and safety-related concern. According to the Federal Railroad Administration (FRA), in 2011, the eight-county SJV had a total of 35 incidents at highway-rail grade crossings, which resulted in three deaths and 34 nonfatal conditions. The cost of grade crossings and their upkeep is a significant issue for rail lines and the communities in which they operate.

Marine Cargo Constraints

Port of Stockton Rail capacity. In recent years, bulk cargo movements through the Port of Stockton have grown substantially. There are also a number of non-maritime facilities shipping and receiving by rail within the greater Port perimeter. The Port has a mixed system of legacy trackage left over from the Navy on Rough and Ready Island (the present West Complex) and new or rehabilitated trackage elsewhere. All local switching within the Port area is provided by the Central California Traction Company (CCT). The three most important export commodities are iron ore (originating in Utah), sulfur (originating at Northern California oil refineries), and rice (originating at Central California producers). The iron ore arrives in unit trains, straining the Port's rail capacity. Potential development of other bulk exports and transloading at the non-maritime Port tenants will place an additional load on the system.

Port of Oakland Access. The Port of Oakland is the primary export port for the SJV. Several major industries in the SJV (such as almond as pistachio growers) depend heavily on this link to reach international markets. For this reason, SJV freight stakeholders report that highway and road congestion around the Port of Oakland is a concern, as it can lead to additional delays and costs to goods movement. Respondents indicate even greater concerns regarding road and highway congestion in the Southern California port area.

Air Cargo Constraints

Underutilized Airport Capacity. The SJV actually has available, underutilized assets in the form of eight regional air cargo facilities. One of the key issues preventing the use of this capacity is the lack of an air cargo backhaul/balance. In addition, the SJV is in close proximity to large air cargo facilities at SFO, OAK,

and LAX. These locations offer more planes, going to more destinations more frequently. This is especially crucial for SJV perishable products. In addition, competition among carriers on key routes not only gives exports more flexibility, it also adds up to cheaper rates for shippers.

Operational Constraints

Highway Operational Constraints

STAA[19] Routing Issues. STAA routes, in many places, are outdated or not fully integrated into land use decision-making. In addition, the location of STAA routes are not always known – either by public sector planners or by the shippers and carriers that need to use them. Some SJV stakeholders report that STAA routes are very outdated in certain parts of the SJV, and do not adequately reflect the transportation system needs of key industries.

Seasonality Concerns. There is strong seasonality to many agricultural industries, with significant inflows during the harvest season, (usually lasting from July through September or October). This can lead to a variety of issues, including:

- Equipment shortages for rail cars, refrigerated rail cars, or specialized truck equipment.
- Exacerbation of the "last mile" connectivity issue, by loading even more demand onto rural connectors and other roads not generally built to accommodate heavy truck traffic.
- Overwhelming of legal truck spaces available in the SJV, and exacerbating existing problems with illegal truck parking. According to stakeholders, this issue is particularly acute on east-west connector roads and rural connector roads.

Rail Operational Constraints

Rail Rates. The favorable economies and service characteristics of rail transportation are based on scale efficiencies, notably the ability of one train crew and locomotive to move numerous rail cars and the ability of one track to handle numerous trains. These scale efficiencies are negated or even reversed when business volume declines to the point where a crew and locomotive must be used and a track must be maintained for a handful of annual movements. Under those circumstances, operators may raise rates or impose substantial surcharges to recover the higher per-carload costs, or file for abandonment.

[19]STAA is named for the Surface Transportation Assistance Act (STAA). This Act oversees the routing of larger trucks, including those with 48-foot or 53-foot trailers.

Rail Service. There is also a dilemma associated with operating speeds. Track in the lowest FRA categories (Class 1 and Excepted) is restricted to speeds of 10 mph. While this is generally not a problem for short distances, some regional short-lines are 30 miles long or longer. Under those circumstances, a round trip can take six hours or longer. A Tulare County study[20] estimated the cost of upgrading track from Excepted to Class 1 status at about $198,000 per mile; and to Class 2 status (25 mph) at about $550,000 per mile.

Rail Access for New Customers. Economic development officials and others would like to use the availability of short line rail service as a tool to attract new businesses. Short line operators and railroads in general are usually cooperative if the proposal involves siting a new customer in a location already served (i.e., on an existing spur or siding). Some, such as the STE, also have sites or buildings that they actively market to new customers. Others, such as the MET at Empire and the SERA at Riverbank, have transloading sites on which they can accommodate new freight movements even if they do not directly serve the customer's own location. Construction of new trackage to extend lines or add capacity, however, is uncommon due to its cost, roughly $1 million per mile.

Air Cargo Operational Constraints

Air Cargo Supply and Demand. SJV shippers utilize Bay Area and Los Angeles air cargo facilities, especially for foreign trade. Due to the nature of air cargo operations, both inbound and outbound demand to the SJV is currently insufficient to attract air cargo service. SJV shippers truck their goods to SFO or LAX because that is where there are more planes – both all-cargo and passenger – going to more destinations more frequently. The prospects for seeing international cargo operations established on a routine basis at any SJV airfields within the near future are not encouraging.

Port Operational Constraints

Port Capacity. Operational constraints at the ports serving the SJV region are currently minimal due to the recession-induced trade reductions. As trade recovers and grows, short-term constraints may reappear. All of the ports have capacity improvements in progress or planned to address anticipated shortfalls and to capitalize on growth opportunities. Constraints and opportunities at bulk ports, such as Stockton and West Sacramento, tend to be commodity specific, such as the need for rail improvements at both ports (for iron ore at Stockton, for cement at West Sacramento). Both of these ports have a mix of port-financed public-financed and customer-financed facilities and improvements. The improvements made at the Port of Stockton for the Marine Highway barge service, for example, utilized a mix of port and air quality grant funds.

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[20] *East Side Business Plan,* prepared for TCAG by Railroad Industries, Inc., November 2010, Page 6.

The Ports of Oakland, Los Angeles, and Long Beach have ample reserve terminal capacity for near-term growth, and all three ports are adding or reconfiguring capacity in anticipation of long-term needs. The more pressing issue for containerized cargo flows is congestion on the road and highway networks leading to and from the ports.

Port Drayage. One major operational issue associated with port drayage is the return of empty containers to the Ports. While it should be possible to make a Fresno-Oakland round trip in six hours, in practical terms, the round trip will likely take eight hours or more due to time lost in highway and urban congestion, and time spent at the port terminals. A Bakersfield-Long Beach round trip should take about four hours, but that trip would actually take six to eight hours, depending on highway and port conditions. For containerized shipments, one of the two trip legs is ordinarily used to obtain an empty container for export loading or to return an empty container from an import load. To provide alternatives to existing road and rail options for travel between the Port of Oakland and the SJV, there have been efforts to develop a rail intermodal shuttle between SJV locations and the Port of Oakland.

Institutional Constraints

Integrating Freight and Planning: Land Use Issues

Freight transportation facilities do not always make good neighbors. For example, air quality concerns are partially caused by emissions from trucks and other vehicles involved in freight movement. Other issues, including truck safety, hazmat and truck parking concerns, water quality issues, excessive noise, vibration, or lighting, pavement deterioration, and land use conflicts are all exacerbated by the movement of freight. Much of the SJV's population already resides in areas close to goods movement infrastructure, such as major highways and other roadways. Interviews with stakeholders reveal that incompatibility issues are becoming more prevalent as the SJV's population grows.

Environmental Regulation Uncertainty

The SJV is classified by the Environmental Protection Agency (EPA) as in serious nonattainment for $PM_{2.5}$, and extreme nonattainment for Ozone. In order to help mitigate these issues, regulations from state and Federal agencies have been implemented to reduce emissions. The main Truck and Bus regulation from the California Air Resources Board became effective (along with amendments) on December 14, 2011; and requires the upgrading of diesel trucks and buses in the State to include PM filters by 2012.[21] Throughout the regulatory process, stakeholders reported uncertainty about how the regulation would be

[21] http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.

implemented, who it would affect, and how the regulation would impact business for goods movement industries in the SJV.

Incentives for Improving Air Quality

The regulation described previously requires the retrofitting trucks with exhaust filters to capture pollutants (particularly diesel particulate matter (PM)) before they are emitted. There are incentives programs through the State to help users with the financial costs associated with these retrofit programs; however, some stakeholder participants have reported that the funding behind these programs has not always been available.

3.0 Goods Movement Planning and Projects

3.1 GOODS MOVEMENT VISION AND GOALS

A common vision of what goods movement in the SJV region should be can serve as the foundation for setting long-term goals, near-term objectives, specific project choices, and strategic regional planning. An SJV goods movement vision should address the following goals:

- **Capacity.** The SJV goods movement system should have sufficient throughput capacity to meet the growing freight transportation and supply chain needs of the region;
- **Efficiency.** The SJV goods movement system should provide shippers and receivers with efficient service, taking advantage of transport modes and technologies;
- **Economic Development.** The SJV goods movement system should support the desired direction of regional economic development;
- **Environment.** The SJV goods movement system should minimize adverse impacts on air quality, water quality, congestion, noise, safety, and at-risk populations; and
- **Balance.** At each point in time, the SJV goods movement system should strike the best possible balance between the needs of public and private stakeholders, between the potentially conflicting goals of efficiency and environment, and between regional priorities and regional resources. The system should be multimodal and connected to take advantage of the best that each mode has to offer.

It is relatively easy to obtain agreement on high-level goals, such as these. It is more difficult to sustain that agreement as goals and objectives become more concrete and inevitable conflicts emerge. The rewards to the region of sustaining and pursuing a common vision, however, are substantial.

3.2 GOODS MOVEMENT PLANNING PRINCIPLES

The SJV goods movement planning process to date; and the planning and implementation process going forward, can be guided by a few basic principles that will assist the region in achieving its goals, particularly the goal of balancing needs and resources.

Planning for Regional Goods Movement

Goods movement is driven by economic and locational factors that transcend political boundaries. Even more than passenger transportation, freight transportation and the issues that it raises are beyond the scope of any single public agency or jurisdiction. The SJV has and will continue to have:

- Urban goods movement confined to population centers;
- Local goods movement linking origins and destinations within the SJV;
- Inbound goods movements serving the needs of SJV residents, industry, and agriculture;
- Outbound goods movements that distribute SJV products to the nation and the world; and
- Through goods movements that mingle with the other flows on the region's infrastructure.

Freight transportation service providers need to use the region's freeways, highways, arterials, urban roads, Class I railroad mainlines and short lines, ports and airports as a unified system, and by so doing meet the region's goods movement needs. To provide the required capacity and efficiency while minimizing the adverse impacts, the region's planning agencies will also have to view the infrastructure as a unified system that links to national and global supply chains.

The SJV region will achieve greater success by pursuing freight project funding as a mega-region. The implications of the Moving Ahead for Progress in the 21st Century Act (MAP-21) are clear: Federal funding decisions will favor integrated, prioritized plans for interregional corridor systems over competing requests from individual agencies. State approaches will follow. The projects listed in this report stretch 20 to 30 years into a future of limited public resources and shifting programmatic emphasis. Long-term cross-jurisdictional commitment to regionally significant projects has a record of success in these conditions.

Coordinating Land Use, Economic Development, Passenger Transportation, and Goods Movement Planning

The need for coordination and eventual integration is equally apparent from the top down and the bottom up. From the Federal and state perspectives, there is an effort to use the same infrastructure to meet passenger and freight transportation needs to gain efficiencies rather than treating them as parallel and often competing systems. This approach is clear in the provisions of MAP-21 and in current and forthcoming state transportation initiatives. Public and private stakeholders consulted in this project's outreach efforts emphasized the need for efficient co-existence of freight and passenger movements, and reinforced the linkage between those movements, regional land use decisions, and economic development opportunities. Joint sponsorship by the eight SJV councils of government (COGs) was critical to the success of this project. Their

cooperation will be just as critical to the successful implementation of the plan and the realization of its benefits.

An important component of the SJV region's economic development plans is to move up the agricultural and food product value chain, especially for exports. This will require the identification of a strong supply of industrial lands and logistics centers. At the present time, stakeholders do not see this as particular problem and goods movement land use issues are more likely to focus on ensuring proper access and land use protections for access corridors. The biggest related issue raised by stakeholders is the need to update the STAA truck system to reflect current land use and industrial development patterns and to provide proper funding to maintain the system.

By paying attention to the infrastructure needs of the shifting economic development patterns of the SJV it may be possible to provide more integrated economic development solutions and to tap new sources of funding that are economic development focused.

Involving the Private Sector

The SJV will experience significant goods movement growth as its population and economic activity expand. Shippers, receivers, and transportation providers will adapt to future transportation and land use conditions, planned or unplanned. How, where, and how well they adapt will depend on how and when they are brought into the planning process. In the stakeholder meetings for this project, consistent with consultant team experience elsewhere, the quality and insightfulness of the goods movement strategies offered improved as direct public-private communications increased.

Mitigating Impacts

SJV geography, development patterns, and demographics have created risks for communities disproportionately exposed to the adverse impacts of goods movement. Those risks will increase if the impacts of expected growth are not mitigated. Analysis conducted for this study shows that certain populations throughout the SJV are particularly disadvantaged with respect to goods movement impacts. Mitigation and remediation are both costly, and must be consciously included in the cost of goods movement growth.

Monitoring Progress and Updating the Plan

While this plan has a long horizon, shifting economic, development, and logistics trends can change conditions and priorities in just a few years. The recent recession drastically reduced growth in goods movement and virtually eliminated some major flows (such as imports of cement). Recovery has yet to strain freight infrastructure but will do so eventually. Changes in goods movement technology may also create opportunities to accelerate certain strategies contained in the plan and the plan must be continually updated to

reflect these developments. For example, the dramatic drop in the price of natural gas has greatly increased its competitiveness as an alternative fuel in the last few years and may change the composition of the truck fleet. Improvements in battery technology could make electric and hybrid vehicles as competitive for freight as they are becoming for passengers. These developments could alter freight sustainability project directions and modal economics.

These and other observations imply that even a well-supported and flexible goods movement plan can become outdated long before a list of freight projects has been completed. There is thus a need to monitor progress toward Plan goals, monitor the fit between the plan and the planning context, and update the plan as needed.

3.3 LINKING CONSTRAINTS AND APPROACHES

Addressing Infrastructure, Operational, and Institutional Constraints

The diversity of the SJV and surrounding regions is mirrored in the diversity of goods movement issues and challenges it faces. The study team's analysis and stakeholder inputs identified both general and specific challenges. These challenges were described in Section 2.5 and categorized as infrastructure, operational, or institutional constraints. Addressing these constraints requires varied approaches. Fundamentally, the constraints can be approached through:

- **Projects.** Construction or repair of infrastructure or related capital investment.
- **Strategic Programs.** Organized efforts to address constraints through planning regulation, support programs, or other nonproject measures.
- **Nonplan Measures.** Action by public or private entities outside the scope of this Interregional Goods Movement Plan. Examples include air quality regulations promulgated by U.S. EPA or private railroad investment.

Figure 3.1 provides a schematic overview of the constraints identified during development of the Plan and the types of approaches proposed for each. The project approaches are within the Plan scope and include specific near-term and long-term public sector investments already included in regional plans or new projects suggested by stakeholders that address specific needs and constraints. The strategic programs, also within the Plan scope, include several suggested efforts, such as STAA truck route analysis, that are not location-specific and which may not involve large-scale public investment. The matrix presented in Figure 3.1 was used to stimulate discussion about specific projects and strategies that could be used to fill in the matrix. As previously described, projects and strategies were identified from existing regional plans, studies, and stakeholder input. The next section describes how this "master" list was evaluated to obtain a prioritized list of projects and strategies.

Figure 3.1 Constraint/Approach Matrix

GOODS MOVEMENT ISSUE	GOODS MOVEMENT PLAN APPROACH							
	Project Approaches						Strategic Programs	Long-Term Challenge
	Highway Corridor Capacity	East-West Connectors	"Last Mile" Access	Modal Capacity	Economic Development	Inland Ports		
Infrastructure Constraints								
Highway Constraints								
Highway Corridor Capacity	■							
East-West Connectivity		■						
"Last Mile" Connectivity			■					
Truck Parking Shortages							■	■
Pavement Wear and Tear								■
Rail Constraints								
Class 1 Rail Capacity								■
Shortline Rail Capacity				■			■	
Grade Crossings and Separations								■
Marine Cargo Constraints								
Port of Stockton Rail Capacity				■				
Port of Oakland Access		■				■		
Air Cargo Constraints								
Underutilized Airport Capacity				■				
Operational Constraints								
Highway Operational Constraints								
STAA Routing Issues							■	
Seasonality Concerns								■
Rail Operational Constraints								
Rail Rates								■
Rail Service					■			■
Rail Access for New Customers					■	■		
Air Cargo Operational Constraints								
Air Cargo Supply and Demand					■			
Port Operational Constraints								
Port Capacity								■
Port Drayage		■						■
Institutional Constraints								
Land Use Issues								■
Environmental Regulation Uncertainty								■
Incentives for Improving Air Quality							■	■

3.4 GOODS MOVEMENT PROJECTS

Project Selection Process

This section outlines the process used to identify, screen, and select projects and strategies that comprise the priority project/strategy list.

The priority project and strategy list was developed to satisfy certain criteria:

1. The list should offer solutions to the goods movement issues that are facing the SJV, and as established by stakeholders or through technical work completed throughout this SJV Goods Movement Plan.
2. The list should be multimodal, and reflect the fact that goods movement in the SJV includes trucks, railcars, airplanes, and port facilities.
3. The list should represent the combined vision of the eight SJV counties. It should, therefore, be geographically diverse, be built through significant stakeholder outreach, and reflect projects of regional significance.
4. The list should be prioritized using clearly identifiable information and data, so that the selection process is objective and recognizes the different categories of benefits provided by the regional goods movement system. Reflecting the diversity of needs in the SJV (urban and rural, different economic sectors) prioritization in this study refers to identifying groups of high priority projects rather than ranked lists.

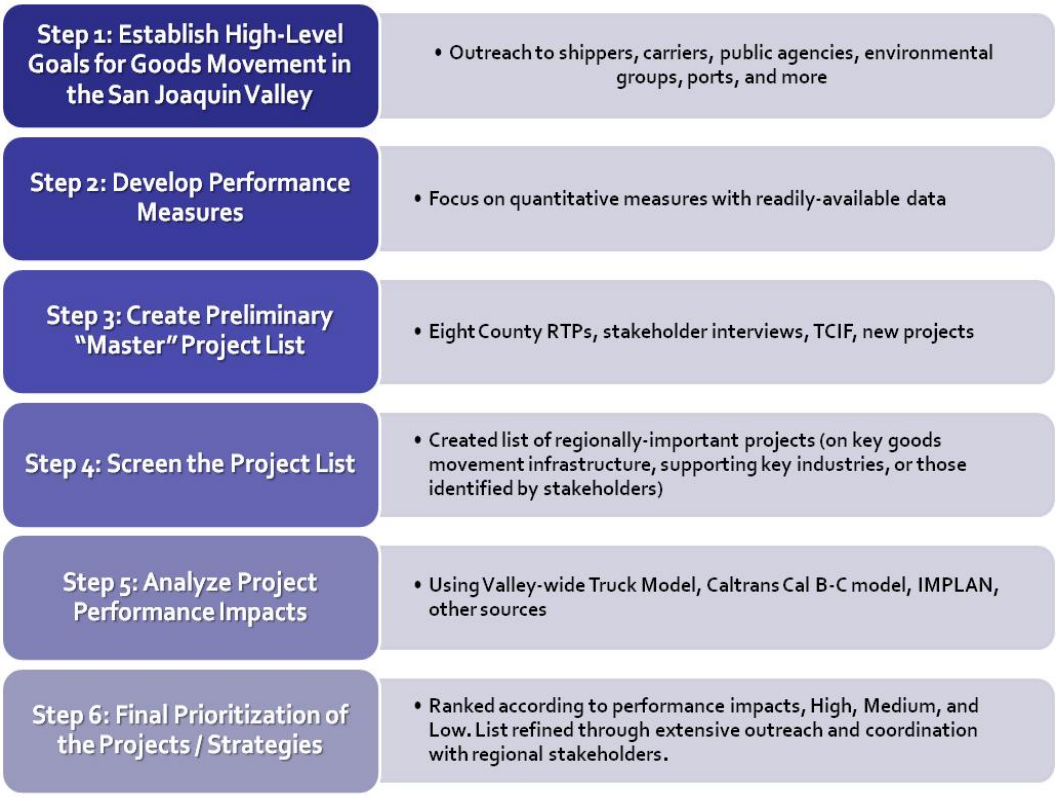
The methodology used to create the priority project and strategy list relied on a mixture of quantitative analysis, qualitative assessment, and stakeholder feedback; all completed using a six-step process. The goals identified in Section 3.1 were used to develop three categories of project prioritization criteria -- environment, mobility, and economic development – and performance metrics were developed for each evaluation criteria. In some cases, it was not possible to develop quantitative evaluation methodologies and in these cases, qualitative techniques were used during project prioritization.

The six-step evaluation process was:

1. **Step 1.** Establish high-level goals for goods movement in the SJV;
2. **Step 2.** Develop performance measures;
3. **Step 3.** Create preliminary "master" project list;
4. **Step 4.** Screen the project list;
5. **Step 5.** Analyze the project performance impacts; and
6. **Step 6.** Finalize prioritization of the projects/strategies.

The six steps are graphically depicted in Figure 3.2. A detailed description of the quantitative and qualitative evaluation process and results is presented in the technical memorandum for Task 7 of this study.

Figure 3.2 Six-Step Methodology Used to Create SJV Goods Movement Project List



Additional detail on how these projects were selected is provided in Section 3.0 of the Task 7 technical memorandum, and additional detail for each project is summarized on the "Cut Sheets" in Section 5.0 of the Task 7 technical memorandum.

Final Project List

In all, there are 50 projects named as "priority" projects. These include projects on the highway system, local and connector road system, short line rail system, and projects that support the development of an inland port facility in the SJV. In addition, long-term environmental and economic development projects are represented on this list.

The priority projects are listed in Table 3.1. The list is organized into seven project types:

1. Regional Highway Capacity,
2. East-West Connectors,
3. Local "Last Mile" Connectors,
4. Modal Capacity for Expected Flows,
5. Contingent Economic Development Opportunities,
6. Inland Ports, and
7. Strategic Programs.

It is anticipated that this project list will be forwarded into statewide and national planning efforts, including the Caltrans Freight Mobility Plan and efforts that arise out of the Federal MAP-21 process.

The projects are not prioritized within this list. In other words, all of the projects in the "priority" list are SJV priorities. It is anticipated that future uses of this project list may use the data and analysis completed for each project to complete a more nuanced prioritization of projects.

Other Projects

There is a group of projects that was evaluated side-by-side with the priority projects, but did not demonstrate sufficient regional benefit to be included in the priority project list. These projects are referred to as "additional projects", and included as Appendix C of this document. Though, at this time, these projects are not priority goods movement projects for the SJV, information gathered about these projects throughout this plan may be useful to regional stakeholders in the future. For this reason, they are included in Section 3.0 of the Task 7 technical memorandum and in the "Cut Sheets" in Section 5.0 of the Task 7 technical memorandum.

Table 3.1 Final SJV Goods Movement Project and Strategy List – Priority Projects

Regional Highway Capacity	East-West Connectors	Local "Last Mile" Access	Modal Capacity for Expected Flows	Economic Development	Inland Ports	Strategic Programs
Conventional capacity increases through widening, interchange improvements, and new construction. Benefits broadly shared.	Conventional capacity increases through widening, interchange improvements, and new construction. Benefits broadly shared.	Conventional capacity increases through widening, interchange improvements, and new construction. Local benefits.	Rail and highway capacity increases to accommodate specific expected increases in existing freight flows.	Rail and air cargo capacity increases or upgrades to support new or hoped-for freight flows. Benefits contingent on traffic development and may require collateral facility investments or other actions	Goods movement and economic development initiatives requiring both capital investment and operating subsidies, with benefits contingent on commercial success.	Regional strategies encompassing multiple projects
Priority Projects						
6 –I-580 WB Truck Climbing Lane	13 – North County Corridor New interregional expressway from SR 99 to SR 120/108.	14 – Port of Stockton, Widen Navy Drive from 2 to 4 Lanes	35 – CCT Port of Stockton West Complex Trackage Upgrade	33 – Crows Landing Industrial Park and Airport Facility	38 – Altamont Pass Rail Corridor/SJV Rail Shuttle (CIRIS)	1 – Truck Stop Electrification
15a – Widen I-5 from 6 to 8 lanes from 1 mile north of SR-12 to SR-120	16 – Widen SR 120 from I-5 to SR 99, new interchange at SR 99/120	22 – SR 4 Extension to the Port of Stockton – Phase II	37 – CCT Lodi Branch Upgrade	34 – CCT rail upgrade for new aggregates business	92 – Shafter Inland Port Phases II and III	2 – Truck Route Signage
15b – Widen I-5 from SR 120 to I-205	17 – Widen SR 132 connecting SR 99 and Dakota Road	41 – Improve Roth Road connection UP Lathrop Yard and SR 99	73 – New SR 58 Truck Weight Station	56 – Mojave Airport rail access improvements		3 – Additional Truck Rest Areas
15c – Widen I-5 from 4 to 6 lanes from 1 mile north of SR-12 to the Sacramento County Line	18 – SR 152 Bypass around the City of Los Banos		101 – New CCT trackage at Port of Stockton East Complex	89 – SJVR – Short-Line rail improvements		4 – Oversize/ Overweight Truck Pilot Program/ Research

Regional Highway Capacity	East-West Connectors	Local "Last Mile" Access	Modal Capacity for Expected Flows	Economic Development	Inland Ports	Strategic Programs
15d – Widen I-5 between Kings County and Merced County lines	19 – Widen SR 152 between SR 99 and U.S. 101		102 – New UP/CCT connection at Stockton Tower Site	91 – Expansion of Railex Facility at Delano		5 – Reexamine STAA Designated Routes
99a – Widen SR 99 French Camp Rd to Mariposa Rd 6 to 8 lanes, interchanges	20 – Widen SR 180 to 4 Lane expswy Quality Ave. to Frankwood Ave.			94 – SJVR – Expand Bakersfield Yard Capacity		104 – West Coast Green Highway Initiative
99b – Widen SR 99 from 6 to 8 lanes in Stanislaus County	26 – Widen SR 12 from I-5 to SR 99					
99c – Widen SR 99 from 4 to 6 lanes in Merced County	42 – New SR 132 West Freeway project from SR 99 to Dakota Road					
99d1 – Ave 12 – Ave 17, Widen to 6 Lanes & Ave 17 Interchange Improvements	51 – Centennial Corridor SR 58 Upgrade I-5 to SR 99 and east					
99d2 – Ave 7 – Ave 12, Widen to 6 Lanes	60 – Widen SR 137 between Lindsay and Tulare					
99e – Widen SR 99 from 6 to 8 lanes from Central Avenue to Bullard Avenue	63 – Widen SR 198 from 2 to 4 lanes from L NAS to I-5					
99f – Widen SR 99 from Avenue 200 to SR-198	69 – Add SR 58 capacity east of Bakersfield (near Sandpatch Grade)					
99g – Widen SR 99 from Kern County Line to Avenue 200						

Regional Highway Capacity	East-West Connectors	Local "Last Mile" Access	Modal Capacity for Expected Flows	Economic Development	Inland Ports	Strategic Programs
99h – Widen SR 99 from Beardsley Canal to 7th Standard Road						
105 – Widen SR 41 to 4 lane Exspwy King Co line to Elkhorn Ave.						
106 – Widen SR 65 in Tulare Co., 4 Phases, Co. Line to SR 190						

Source: Technical work completed as part of the SJV Interregional Goods Movement Plan, 2011 to 2013. Project list date is August 23, 2013.

Regional Highway Corridor Capacity Improvements

Truck transportation is and will remain the mainstay of SJV goods movement for the indefinite future. SJV shippers and receivers rely on trucks for virtually all local freight movements between origins and destinations within the region, the exceptions being a very few specialized rail moves. Trucks dominate inbound shipments from other regions, including containerized imports through California ports. Trucks also handle "last mile" pickup and delivery for rail intermodal, rail transload, and many pipeline movements.

This reliance on truck transportation makes the regional highway infrastructure the first priority within the SJV goods movement plan. There are multiple dimensions to highway capacity and thus multiple strategic options are involved.

The need for goods movement is driven by production, distribution, and consumption of the goods themselves. As new production and distribution facilities develop away from the SR 99 and I-5 corridors, east-west connectors and access routes will require additional capacity. Where industrial development is clustered around SR 99 as in Lathrop, Modesto, and Fresno, the access needs will be short and localized. As commercial and industrial development spreads out in areas such as eastern Tracy, southern Ripon, western Turlock, and northern Visalia, the access needs will be longer and more regional in scope. The most diverse commercial and industrial areas, such as those surrounding Bakersfield, will increasingly require a *network* of access and feeder routes (exemplified by the SR 58 projects). New, planned commercial industrial developments, such as those proposed for Crows Landing, Shafter, and Tejon Ranch, will have more specific, predictable needs.

In each case, proactive planning for goods movement capacity can both help direct commercial development to appropriate locations and mitigate its impacts on surrounding communities.

Expanding Existing Capacity

The most fundamental highway infrastructure strategy is increasing overall capacity which in most cases means adding lanes to existing routes. Most highway capacity projects in this plan involve adding lanes to segments of SR 99, I-5, or east-west connectors.

Highway and freeway construction is costly and time consuming. There are also concerns over emissions, noise, and safety impacts. In some urban areas, there are also land use issues where highway rights-of-way abut developed areas. These considerations suggest that adding lanes should not be the only strategy for increasing effective highway capacity. Nonetheless, when bottleneck relief, TDM, and other options have reached their limits, lane additions are often the only practical options.

Expansion of the highway network itself is a logical response to increasing demand, and is an attractive response where feasible. There are a few generic purposes in adding to highway infrastructure:

- Adding effective capacity to reduce existing or expected congestion;
- Alleviating safety hazards;
- Shifting through movements away from city centers, communities they have an impact on, or sensitive land uses; and
- Providing "last mile" access to existing or expected truck trip generators.

Bottleneck Relief

Effective capacity on SJV freeways and highways is uneven with bottlenecks creating congestion on heavily used urban segments, steep grades, and narrow stretches. These bottlenecks may reflect gaps in existing systems. An example would be short stretches of two-lane highways in a system that is otherwise a four- or six-lane system. Capacity on SR 99 is especially uneven because the route has been upgraded segment by segment over several decades from surface highway with cross traffic to limited access freeway. Other routes have bottlenecks due to natural features, such as grades, legacy construction limits, or local demand that has outstripped local capabilities.

Projects targeted at relieving recognized choke points can be less costly, less controversial, and easier to implement than broader capacity additions. The two strategies overlap, however, as bottleneck segments become longer and require end-to-end lane additions.

Bottleneck relief on arterials and surface highways can also include:

- Intersection improvements,
- Turn pockets,
- Rail grade crossing separations,
- Passing lanes and turnouts, and
- Geometry improvements.

The key to effective bottleneck relief is cost-effectiveness.

Major Regional Highway Corridor Capacity Projects

Due to the north-south orientation of the SJV and its geographic location between the major producing and consuming markets of the San Francisco Bay Area and Southern California, SR 99 and I-5 account for a large volume of truck

traffic, with as much as 30 percent of the traffic on some SJV segments of I-5 consisting of trucks.[22]

Table 3.2 lists the north-south highway corridor capacity improvement projects proposed as part of this Plan. While individual projects are listed for I-5 and SR 99 in the project list below, these projects are presented as two packages – and I-5 package and a SR 99 package because of the system linkages of each of the projects listed with each package. These projects should be implemented as packages with the long-term goal being to implement all of the projects in a package even though available funding may make it necessary to implement the projects one at a time.

Table 3.2 Regional Highway Capacity Projects

Priority Regional Highway Capacity Projects	
15a	Widen I-5 from 6 to 8 lanes from 1 miles north of SR-12 to SR-120
15b	Widen I-5 between SR 120 and I-205
15c	Widen I-5 from 4 to 6 lanes from 1 mile north of SR-12 to the Sacramento County Line
15d	Widen I-5 between Kings County and Merced County lines
99a	Widen SR 99 French Camp Rd to Mariposa Rd from 6 to 8 lanes, improve interchanges
99b	Widen SR 99 from 6 to 8 lanes in Stanislaus County
99c	Widen SR 99 from 4 to 6 lanes in Merced County
99d1	Ave 12 – Ave 17, Widen to 6 Lanes & Interchange Improvements at Ave 17
99d2	Ave 7 – Ave 12, Widen to 6 Lanes
99e	Widen SR 99 from 6 to 8 lanes from Central Avenue to Bullard Avenue
99f	Widen SR 99 from 4 to 6 lanes from SR 137 to SR 198
99g	Widen SR 99 from 4 to 6 lanes from Kern Co. Line to Prosperity Avenue
99h	Widen SR 99 from Beardsley Canal to 7th Standard road
105	Widen SR 41 to a 4 lane exprsway – King Co. Line to Elkhorn Ave.
106	Widen SR 65 in Tulare County- SR 190 to County Line

East-West Connectivity

Other major highway routes include State Highways 33, 43, 58, 65, 108, 132, 152, 198 and Interstate 580; many of which travel east-west for at least a portion of the route. The importance of these routes was repeatedly emphasized in stakeholder meetings. Much of that importance is due to the east-west spread of economic activity in the SJV beyond the vicinity of SR 99 and the major population centers.

[22] San Joaquin Valley Goods Movement Action Plan.

The multiple projects connected with SR 58 and the Centennial Corridor through Bakersfield are a special case. SR 58 is the main connection between the SJV and Interstates 15 and 40 (major cross-country routes), U.S. 395 (to eastern California, Nevada) and the Inland Empire.

The major east-west connector projects are presented in Table 3.3.

Table 3.3 East-West Connector Projects

Priority East-West Connector Projects	
6	I-580 WB Truck climbing lane
13	North County Corridor New interregional expressway from SR 99 to SR 120/108
16	Widen SR 120 between I-5 and SR 99, new interchange at SR 99/SR 120
17	Widen SR 132 connecting SR 99 and I-580
18	SR 152 Bypass around the City of Los Banos
19	Widen SR 152 between SR 99 and U.S. 101
20	Widen SR 180 to 4 Lane Expressway Quality Avenue to Frankwood Avenue
26	Widen SR 12 from I-5 to SR 99
42	Construct New Route: SR 132 West Freeway project from SR 99 to Dakota Road
51	Centennial Corridor SR 58 Upgrade I-5 to SR 99 and east
60	Widen SR 137 between Lindsay and Tulare
63	Widen SR 198 from 2 to 4 lanes from LNAS to I-5
69	Add SR 58 capacity east of Bakersfield (near Sandpatch grade)

"Last Mile" Access

Consistent with the previous recommendation, there is a clear need to plan and maintain efficient, safe truck access to major concentrations of goods movement activity including logistics centers and industrial and agricultural production facilities.

Local "last mile" projects (Table 3.4) connect major north-south or east-west routes with current or planned truck trip generators. The examples in the project list include two projects to improve access to the Port of Stockton and surrounding industries, and are to improve access to the expanding UP rail intermodal facility at Lathrop.

Table 3.4 "Last Mile" Access Projects

Priority	"Last Mile" Access Projects
14	Port of Stockton Highway Access Improvements, Widen Navy Drive from 2 to 4 Lanes (Washington Street to Fresno Avenue)
22	SR 4 Extension (Cross-town Freeway) to the Port of Stockton – Phase II. New alignment from Navy Drive to Charter Way
41	Improve Roth Road connection between UP Lathrop Yard and SR 99 (Widen from 2 to 4 lanes)

Modal Capacity

The modal capacity projects are summarized in Table 3.5. In line with the recommendation to maximize modal advantages and support pragmatic modal shift initiatives, the priority project list includes three rail upgrades on the Central California Traction lines serving the Port of Stockton. The list also includes a new truck weigh station on SR 58. An upgrade of trackage on the West Isle Lines is listed as an additional project.

Table 3.5 Modal Capacity Projects

Priority	Modal Capacity Projects
35	CCT Port of Stockton West Complex Trackage
37	CCT Lodi Branch Upgrade
73	New SR 58 Truck Weight Station
101	CCT New Trackage at Port of Stockton East Complex
102	New connection at Stockton Tower between UP and CCT

Economic Development

Freight transportation is an enabler of economic development, but not necessarily a driver. Efficient freight transportation alone will not attract economic development, but economic development will be less likely without it. Logistics-based economic development follows markets; freight transportation factors determine how and where those markets will be served.

The connection between freight transportation and economic development often requires long-term planning and commitments. The projects listed in Table 3.6 would increase capacity in advance of hoped-for freight traffic increases.

Table 3.6 Economic Development Projects

Priority Economic Development Projects	
33	Crows Landing Industrial Business Park and Airport Facility
34	CCT Rail Upgrade (for new aggregates business)
56	Mojave Airport Rail Access Improvements
89	SJVR -Short-Line Rail Improvements
91	Expansion of Railex Facility at Delano
94	SJVR – Expand Bakersfield Yard Capacity

The six priority projects include projects that could increase rail carload services and rail-truck transloading as well as expanding economic development in general. The Crows Landing project includes a general aviation airport.

Rail Carload Service

Rail-carload service is highly customer-specific, and opportunities for new carload business are highly customer-specific as well. Upgrading a line or adding capacity does not guarantee that new business will result or that any existing truck flows will convert to rail. Projects proposed for this study include examples of customer-specific initiatives.

Current economic conditions present a barrier to some potential rail carload developments. Rail carload movements are heavily concentrated in bulk and semi-bulk commodities whose demand tends to rise and fall with the regional and national economies. As of 2012, economic recovery was incomplete at best, and bulk commodity producers have put many if not most new projects "on the back burner" (e.g., Project 34, CCT Short line Rail Upgrade for New Aggregates Business). Construction-related industries have been particularly hard-hit, and mainstay rail carload commodities, such as lumber, structural steel, cement, and aggregates have hit a plateau or declined. Others, such as petroleum products and export, have been relatively unaffected or have benefited from devaluation of the dollar. However, as economic sectors grow, there may be additional opportunities for rail carload movements.

Rail-Truck Transloading

Rail-truck transloading is inherently more flexible. Multipurpose transload facilities can adapt to a changing customer and commodity mix (e.g., MET's Valley Transload). Single purpose facilities (e.g., Railex in Delano) handle a narrower range of commodities, but are still not dependent on a single customer. Rail transloading may therefore work better as part of a regional rail promotion strategy. Rail transloading projects suggested in this study include Project 91, Expansion of Railex Facility at Delano, Transload from Truck to Rail.

Successful customer-specific or commodity-specific rail carload developments will typically require the coordinated efforts of economic development agencies, municipalities, regional planners, and permitting agencies as well as the railroad involved. Opening a new rail-served quarry, for example, entails community and environmental concerns that would likely overshadow the rail issues.

Inland Ports

"Inland ports" are typically envisioned as business/industrial parks built around a rail intermodal facility that would connect tenants and other users to a regional seaport (Oakland, Los Angeles, or Long Beach). The economic development potential is linked to the attractiveness of the intermodal service. The best known inland port developments are at:

- Front Royal, Virginia (http://www.portofvirginia.com/facilities/virginia-inland-port.aspx);
- Alliance, Texas (http://www.alliancetexas.com/); and
- Joliet, Illinois (http://www.centerpoint-prop.com/projects/article.aspx?id=209&mode=).

Of the three, only the Virginia Inland Port at Front Royal is linked to a specific seaport (the Port of Virginia at Norfolk 220 miles away).

There are two priority inland port proposals in the current project list, as shown in Table 3.7.

Table 3.7 Inland Port Projects

Priority Inland Port Projects	
38	Altamont Pass Rail Corridor/SJV Rail Shuttle (CIRIS)
92	Shafter Inland Port Phase II and III

In all these projects, there are three elements to the overall initiative:

1. Development of a rail intermodal terminal,
2. Sponsorship of a rail intermodal service to the Port of Oakland, with the potential in the case of the Shafter project to include rail connections to the Ports of Los Angeles and Long Beach, and
3. Economic development in an adjacent business park.

Shafter may in the long run attract economic development with or without direct rail intermodal service. The Shafter project has investigated the potential for developing rail-transload services that would focus on more traditional carload rail commodities (such as lumber and other construction-related cargo). The project list also includes the CIRIS concept, a rail intermodal shuttle between the

Port of Oakland and one or more terminals in the Stockton-Modesto market. That proposal is not linked to a specific terminal.

These inland port proposals face a common dilemma: economic conditions do not currently support a commercial rail shuttle and are unlikely to do so for the foreseeable future, while there is also no near-term prospect for a public rail shuttle subsidy.

In the long term, it is possible to imagine circumstances under which a rail-linked inland port could be viable in the SJV region:

- Precipitous increases in trucking costs (such as higher fuel prices) or constraints on trucking capacity that could lead to congestion-induced cost increases for shippers,
- Development of new rail capacity, and
- A public need to reduce truck traffic that is sufficiently urgent to justify a permanent rail subsidy.

When and if such circumstances appear on the planning horizon, inland ports with rail shuttles to seaports could become integral parts of regional goods movement strategies.

Strategic Programs

Institutional constraints, such as land use, environmental regulation (and regulation uncertainty), and air quality improvement incentives are addressed in the Plan through strategic goods movement programs. The issues these programs address are long-term challenges for the region, extending across the full range of planning, transportation, economic development, and environmental functions.

The broader needs of goods movement and the SJV region will require efforts beyond conventional infrastructure projects. The "projects" in this category are really ongoing programs to improve goods movement efficiency and reduce the adverse impacts of freight transportation. These projects are also regionwide. They are summarized in Table 3.8 below.

Table 3.8 Strategic Programs

Priority	Strategic Programs
1	Truck Stop Electrification
2	Truck Route Signage
3	Additional Truck Rest Areas
4	Oversize or Overweight Vehicle Pilot Program or Research
5	Reexamine STAA Designated Routes
104	West Coast Green Highway Initiative

Air Quality Issues and Strategic Programs and Control Measures

The serious air pollution problems in the SJV require application of emission control measures and implementation of these measures depends critically on coordination between transportation planning agencies and environmental agencies, particularly air quality agencies.

- The California State Air Resources Board (CARB) has the ability to regulate truck emissions and has entered into agreements with railroads for voluntary emission reductions through early adoption of low emission locomotive technologies and controls and rail yards.
- The SJV Air Pollution Control District (SJVAPCD) is primarily concerned with stationary source emissions from manufacturing, agriculture, and commercial operations. The SJVAPCD coordinates with the eight regional transportation planning agencies on land use issues and transportation control measure (TCM) development and implementation. The District supports the use of alternative fuels through grant and incentive programs. The SJVAPCD also has the responsibility for monitoring air quality impacts on regional public health.
- The U.S. EPA sets nationwide standards for tail pipe emissions on heavy-duty trucks, locomotives, aircraft, and off-road diesel equipment (e.g., agricultural, construction, and mining vehicles).

Many strategies are available to reduce emissions from the freight sector ranging from technology applications to infrastructure improvement projects and from operations strategies to institutional and regulatory initiatives. These strategies can be classified as: 1) technology strategies or as 2) operational and transportation system management strategies.

Technology Strategies. Emissions from the freight sector can be reduced through the use of technologies in the areas of: engine retrofits, repowering (engine or vehicle replacement), alternative fuels, and energy efficiency. The range of strategies that falls into this category is at different stages of commercial development. For example, though diesel particulate filters are readily available, purely electric trucks are not yet readily adopted or available.

Engine Technology Strategies. Including engine retrofit strategies and vehicle repowering strategies. In the short term, requirements for conventional filtering technologies (diesel particulate filters), low-sulfur fuel and other modifications could be continually strengthened.

Alternative Fuel Strategies. The goal of alternative fuel strategies is to increase the use of cleaner burning fuels. Several of the strategies proposed in this SJV Interregional Goods Movement Plan propose further research of alternate fuels. For example, conversion of truck engines to burn Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG) should be encouraged. The greatest barrier

to achieving wide-spread use of LNG or CNG is the lack of fueling infrastructure. Public and private sector partnerships can help address the fueling infrastructure issue. An example of this approach is conversion of public trucking fleets to natural gas fueling in order to create a critical mass for new fuel markets that would convince public investors to finance new fuel infrastructure. In the future, zero-emission trucks will be available that present opportunities for major emissions reductions from the goods movement sector. Zero-emissions trucks eliminate both direct criteria pollutants and direct greenhouse gasses. The two major zero-emissions options are all-electric (battery) trucks for local service and hydrogen hybrid trucks for local and regional service. All-battery trucks have an inherently short range until battery technologies permits either far greater storage capacity or far more rapid charging. Class 8 hydrogen hybrid trucks have a longer range, but are limited for the present by the relatively high storage bulk of hydrogen and the lack of a regional fuelling network. A Class 8 hydrogen hybrid truck has been successfully introduced in Sothern California port drayage service, and more are planned. There are currently no hydrogen fueling stations in the SJV region. Most California locations are in the San Francisco Bay Area or the Los Angeles basin.

Energy Efficiency Strategies. The goal of energy efficiency strategies is to reduce emissions by improving vehicle design.

Existing SJV Programs to Encourage Low Emission Goods Movement

The SJV offers repowering grants through various programs, such as the Heavy-Duty Engine Program (for agricultural equipment), the On-Road Voucher Program (for heavy duty trucks), and the locomotive repower program for railroad locomotives.

Truck-stop electrification provides a means of powering cabin accessories (lighting, Internet, TV, etc.) and climate control systems (heating, air conditioning, etc.) at designated truck stops and rest areas. Currently, there are three such electrified truck stops in California; all located in the SJV (in Madera, Bakersfield, and Ripon).[23] Additional truck stop infrastructure is required to make truck-stop electrification technologies more accessible.

The West Coast Green Highway is an initiative to advance the adoption and use of electric and alternative-fuel vehicles along the I-5 corridor, named a "Corridor of the Future" by the U.S. DOT. The Corridors of the Future Program is intended to develop innovative approaches to congestion reduction and goods movement efficiency. The West Coast Green Highway includes multiple initiatives, the most pertinent of which are the West Coast Electric Highway and the Alternative Fuel Corridor Pilot Project.

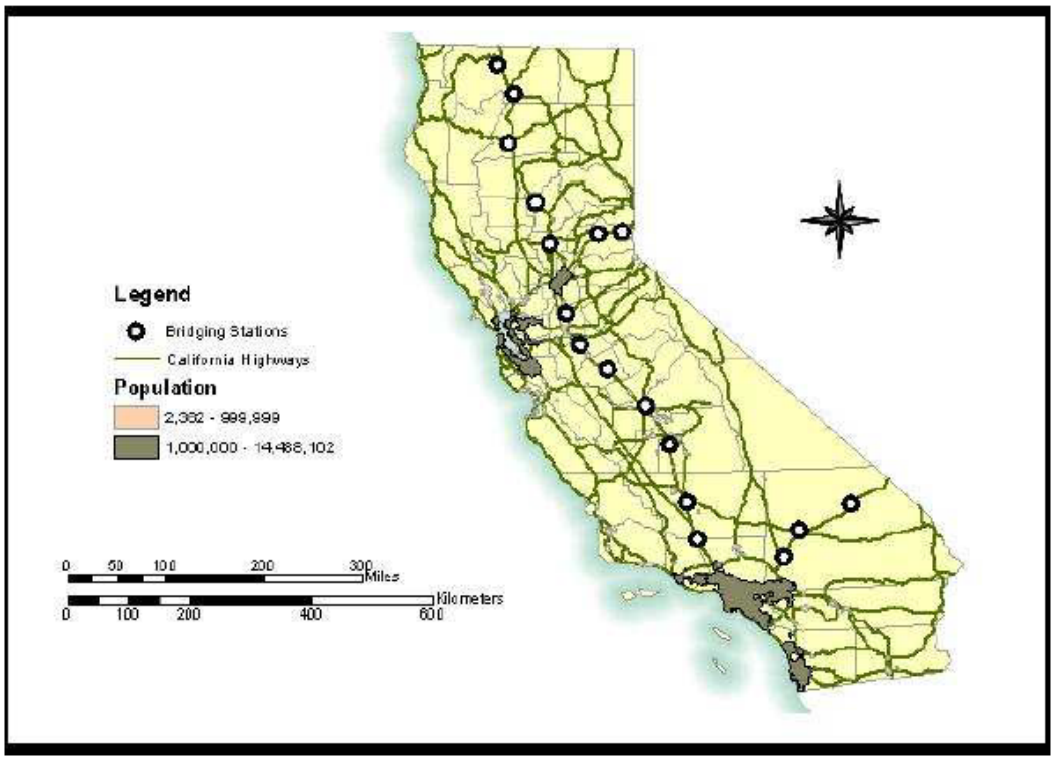
[23]Source: http://www.idleair.com/locations/california/.

The West Coast Electric Highway (Project 104) is network of electric vehicle fast charging stations along Interstate 5. Thus far, there are 18 stations open in Washington and Oregon, with plans to extend through California. When complete, the Electric Highway is expected to span the 1,300 miles from the Canadian border to the California border and with public fast charging locations every 25 to 60 miles. The fast charge technology along the Electric Highway allows drivers to recharge mass-produced electric passenger cars vehicles, such as the Nissan Leaf in 30 minutes or less. The program as it stands does not anticipate being able to charge large trucks.

The Alternative Fuels Corridor Pilot Project would establish alternative fuel (e.g., LNG) stations along the corridor. The I-5 application submitted by Washington, Oregon, and California included development of alternative fuels distribution along the corridor. In furtherance of this interstate initiative, Washington, Oregon and California signed a tri-state Memorandum of Understanding (MOU) in September 2008. Unlike the electric Highway initiative, the Alternative Field Corridor project explicitly includes trucks and could become a catalyst to broader use of LNG trucks for regional and long-haul freight.

The California Hydrogen Highway Network initiative was started in 2004. The major "blueprint" report was completed in 2005, and focused attention on the needs of major metropolitan areas and passenger vehicles. The Blueprint envisioned 50 to 100 hydrogen stations in California by 2010, a lofty goal that was not met. The Blueprint did include heavy-duty vehicles in its planning. As shown in Figure 3.3, the Blueprint envisioned a series of hydrogen fueling site in the SJV region to "bridge" the major San Francisco and Los Angeles metropolitan areas. The Hydrogen Highway initiative has not progressed as quickly as hoped for a variety of reasons, but it does provide an opportunity for coordinated, planned development of goods movement infrastructure that could dramatically reduce emissions.

Figure 3.3 "Bridging" Hydrogen Fueling Stations – Conceptual



Source: California Hydrogen Blueprint Plan, Volume 2, May 2005.

Safety

Background. In 2010 (the most current data available), there were 752 truck-involved crashes recorded in the SJV[24] (Figure 3.4 below). The cause of these crashes varies. According to the California Strategic Highway Safety Plan (SHSP), contributing factors can include poor driver performance, driver fatigue, and a lack of awareness of trucks by other roadway users. Other contributing factors are unsafe condition of truck tires, poor weather conditions, or malfunctions of braking systems and steering systems.[25]

[24] California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS) Truck-Involved Collisions data, 2010.

[25] Ibid.

Figure 3.4 Truck Crashes and their Severity in the SJV

Source: California Highway Patrol SWITRS Truck-Involved Collisions data, 2010.

The mixing of rail and truck traffic at at-grade rail crossings can be a source of traffic- and safety-related concern. In 2011, the eight-county SJV had a total of 35 incidents at highway-rail grade crossings, including 31 train/vehicle incidents, and 4 incidents that involved pedestrians[26]. These incidents resulted in three deaths and 34 nonfatal conditions (i.e., property damage, injury, or other nonfatal outcome). Each of these incidents is costly to the railroads, shippers, and property impacted by the incident, as well as potential impacts to the community from injury, death, disruption, and property damage.

Improving freight transport safety in the SJV requires the region's jurisdictions to collaborate with each other and with regional, state, and Federal agencies in the areas of engineering (infrastructure), education, enforcement, and operations.

Engineering Strategies. Freight vehicle crashes can be reduced through implementation of improved roadway and rail crossing designs. Improving

[26]Federal Railroad Administration (FRA) Office of Safety Analysis. This figure is per crossing and reflects incidents with Amtrak trains, as well as freight trains.

roadway infrastructure with respect to safety benefits freight and nonfreight users alike.

Education Strategies. Providing safety education to commercial vehicle operators helps ensure drivers are aware of and follow safe practices. Because truck-involved crashes often occur with passenger vehicles, it is also important to provide education to the driving public on how to drive safely in the presence of large trucks.

Enforcement Strategies. Effective commercial vehicle enforcement programs help reduce truck-involved crashes, protect highways and bridges from unnecessary damage from overweight vehicles, and ensure hazardous materials are transported safely.

Operations and Management Strategies. Operations and management strategies can be designed to help truck drivers operate safety by providing wayfaring information and additional facilities for drivers to pull over and rest. Some of these strategies (such as the availability of truck parking facilities) have been identified throughout this project as key issues facing the safety and efficiency of the region's transportation system.

Land Use

Land use planning is traditionally a layered process, with cities planning and zoning within their limits, and counties and regional agencies developing general plans for land use elsewhere. There are at least three basic reasons why implementation of an SJV Goods Movement Plan requires coordination with land use planning:

- **Freight transportation crosses land use planning boundaries.** Choices made in one jurisdiction – whether positive or negative – therefore affect other jurisdictions.
- **Land use influences goods movement needs and operations.** There is a direct link between planning for industrial or commercial land uses and an eventual need for greater goods movement capability. Land use plans that create needs without anticipating the means of meeting those needs are recipes for future problems.
- **Goods movement and freight facilities affect land use.** Even with the best mitigations, freight operations tend to create noise, traffic, and emissions. Uncoordinated land use planning that allows residential development adjacent to busy industry or freight facilities will likely lead to encroachment, disproportionate adverse impacts, and conflicts. If providing greater goods movement capacity requires expansion within existing rights-of-way that are immediately adjacent to residential or commercial uses or if there expansion beyond existing rights-of-way is necessary, this will be done more effectively if current land use plans acknowledge the potential conflicts. Protecting

right-of-way in strategic goods movement corridors is an important element in land use planning that is often overlooked.

The challenges of addressing freight and land use issues could be better met with cohesive action at the regional and local planning levels. This would include collaboration of public and private sector freight planning stakeholders and land use decision-makers on freight and land use integration strategies.

The land use strategies presented in the plan can help to better integrate freight into the land use planning process. Some strategies are to be implemented by the private sector, to help minimize the negative impacts of their necessary freight movement activities. Other strategies are to be implemented by the public sector, to ensure that land use design and planning recognizes freights needs and helps to plan for it. Implementing these concepts through combined action of public and private sector stakeholders can help to maximize the benefits of goods movement, while minimizing the negative impacts to communities and the environment.

These strategies can be classified into the following three types:

1. **Land Use and Transportation Coordination Tools.** These tools focus on the recognition that land use and freight planning activities should be more closely coordinated. Doing so can help ensure that freight land uses have the space that they need to operate safely and efficiently. Conversely, better integration can ensure that freight land uses minimize their negative impacts on communities within which they locate and move through.
2. **Operational and Educational Tools.** These tools focus on methods to streamline goods movement activities to increase the efficiency and safety of freight movement, or freight cargo pick-up or drop-off activities. Educational components (to the public and to freight system stakeholders) are also included in this category.
3. **Transportation System Tools.** These tools focus on ensuring that transportation system design and operation minimizes potential negative impacts on local communities and the environment. They include strategies to mitigate safety, congestion, emissions, and other types of public nuisance (i.e., noise or lighting) from transportation system operations.

The details of these potential strategies are presented in the technical memorandum for Task 8 of the SJV Interregional Goods Movement Study.

3.5 GOODS MOVEMENT POLICY OPTIONS

STAA Truck Route Policy Choices

As described in the recent STAA truck route study sponsored by SJCOG and SACOG, there are two basic policy choices for STAA routes:

1. A restrictive policy, which allows operation of STAA trucks only on designated STAA routes; and
2. A permissive policy, which allows STAA truck operation on routes where they are not explicitly prohibited.

The present *de facto* policy in the SJV region is mixed, and a deliberate choice between the two options would reduce confusion and assist private stakeholders, planners, and law enforcement agencies to proceed more confidently and with less confusion.

Caltrans generally follows a restrictive policy but the status of STAA routes and enforcement varies widely. STAA trucks commonly operate on nondesignated routes, and many trucking customers are not aware of or interested in the distinction. All other states follow a permissive policy. Truckers and trucking customers from other states typically expect California to do likewise.

In the long term, the SJV region has some latitude in pursuing either a restrictive or permissive option. The restrictive option will require the region and Caltrans to determine what routes can be used by STAA trucks to reach customers, and provide signage and mapping. Project 2 (Truck Route Signage) and Project 5 (Reexamine STAA Designated Routes) under strategic programs would be initial steps in this ongoing process. Transitioning to a permissive policy would still entail designation and signage of preferred truck routes, but would also entail changes to enforcement practices and systematic identification of routes where STAA vehicles should not operate.

Encouraging Effective Modal Shift

Maximizing the potential of each transport mode is fundamental to sound transportation strategy. In particular, SJV public and private stakeholders have expressed a strong desire to maximize the use of rail to reduce dependence on trucks, reduce emissions, and reduce highway infrastructure pressure.

Modal shift is a promising strategy for increasing the efficiency of goods movement while reducing its impacts, but is restricted in scope. Modal shift must be commercially attractive to succeed. The region's efforts at encouraging modal shift will be most fruitful where there is demonstrated market demand. Modal shift policies can help meet the region's goods movement needs, but they will only be a small part of the solution.

The potential shift from truck to rail is very limited. However, regional planners can take steps to maximize rail share within those limits. In addition, planners can take steps to minimize the shift of existing rail traffic to truck.

Rail transport is cost-effective and service-competitive for high-volume, long-haul movements of commodities that do not require expedited service. The energy and environmental advantage of rail transport are also realized in such applications. The minimum distance for cost-effective service is commonly estimated at 500 to 750 miles, depending on circumstances. Shorter rail freight movements are rare, and are commercially viable only under special conditions.

The distances required for cost-effective and service-effective rail service thus rule out regular commercial rail movements within the SJV region or between the SJV region and other points in California.

Regional planners can help maximize rail use in several ways:

- By assisting or encouraging shippers and receivers to locate on active Class 1 or short-line rail spurs. New rail line construction would be justified only for the very largest customers (e.g., a refinery or auto assembly plant).
- By assisting or encouraging Class 1 or short-line railroads to establish rail-truck transload facilities, thereby extending rail service to off-line customers.
- By maintaining and improving truck access to railroad intermodal facilities, thereby encouraging their use and minimizing their adverse impacts.
- By adopting or supporting policies and programs to support short line railroads, as discussed in more detail below.

The best opportunities for SJV shippers and receivers to increase their use of Class 1 (UP and BNSF) rail service are to use rail-truck intermodal or transloading options that extend the reach of the rail network. Major new carload service is likely to emphasize facilities shipping or receiving in large, multicar lots, such as the Railex operations at Delano.

Rail intermodal opportunities can be of two types, expansion of conventional rail intermodal terminals, and development of new "inland port" terminals. The region has three conventional rail intermodal terminals: BNSF terminals at Stockton (Mariposa) and Fresno, and the UP terminal at Lathrop. Expansion of these facilities is primarily a private sector function, while truck access to and from the facilities depends on the condition and capacity of public arterials and highways. The proposed expansion of the UP Lathrop facility is the best current example of private sector initiative while the proposed upgrade to Roth Road (Project 41) is the corresponding public sector access improvement.

Supporting Short line Rail

The importance of short line rail issues to the SJV was made clear in stakeholder meetings and the project selection process. The region has a legacy of rail carload service on a former branch line network that has evolved into a smaller,

but vital, set of short line operations. There is not a true short line system, and the potential for such a system is unclear. There is, however, a role for short line service that can be supported by a deliberate, pragmatic policy of public support.

- Expectations of the short line potential should be market-driven, and neither overly pessimistic nor overly optimistic;
- Rationalization of short line routes will be necessary to abandon unproductive segments and focus resources on the lines with the most potential; and
- Public support will be most effective in addressing specific infrastructure, bottlenecks or problems, such as obsolete bridges, the need for grade crossing upgrades, or helping short lines make investments to upgrade track and allow for faster service (reducing track speed restrictions) or delivering the heavier carloads that Class 1 railroads prefer to carry (i.e., upgrading short line track to 286,000 lb. capability).

Recognition of short line importance and short line issues in the forthcoming California Rail Plan will assist the SJV region in developing a short line strategy that meshes with statewide priorities and funding opportunities. SJV planning agencies should support well-designed short line assistance and funding programs on all government levels.

Air Cargo Development Policy

The combined potential capacity of the SJV's regional airports and redeveloped military airports is well beyond near-term air cargo needs. Air cargo volume is expected to grow slowly, and the region's current needs are met by Southern California and Bay Area cargo service. The air cargo projects in this plan are very long term, giving the region the opportunity to plan where and when to add capacity.

There are multiple dimensions to air cargo capacity development policy choices:

- **How far in advance to build capacity.** At present, air cargo is growing slowly and the SJV's needs are met by airports outside the region. Ideally, SJV capacity should be added as either other airports become congested or the SJV develops sufficient inbound and outbound cargo to justify separate SJV services. Identifying that trigger point would require regular monitoring of cargo volumes.
- **How much competition to encourage.** Here too a policy balance needs to be struck between adding enough capacity to give SJV customers the benefits of competition without over-investing public resources.
- **How to define the scope of airport improvements.** As with other goods movement facilities, airports may require access improvements, utility upgrades, and other investments outside the airport boundary to be

complete. Public funding sources for airport improvements usually only cover projects inside the perimeter.

- **Where to build capacity.** The SJV region has seven airports, each with unused capacity and a legitimate potential for development. The choice of where to invest in cargo facilities may be driven by the location of developing cargo sources and destinations, as well as the location and attributes of the airports themselves.

3.6 NEXT STEPS AND AREAS FOR FUTURE STUDY

Next Steps

The specific goods movement projects evaluated for this study are largely focused on existing and expected capacity shortfalls:

- Bottlenecks on SR 99,
- Bottlenecks and discontinuities on east west connector routes,
- Capacity constraints on access routes to major industry clusters, and
- Limitations on short-line rail capacity and track condition.

This emphasis is logical given the existence of widely recognized bottlenecks and the general inadequacy of statewide infrastructure funding over the last decade. In simple terms, SJV goods movement infrastructure capacity has fallen behind the growing demand, and there is much catching up to be done.

While the specific projects proposed and evaluated in this study will address the most visible and pressing needs of the present, they cannot meet all the foreseeable needs for the future. As the volume of goods movement continues to grow, the capacity created in the next few years will eventually be out-stripped. Moreover, shifts in goods movement patterns and in demand at new locations will stress the SJV infrastructure at new points.

The considerations are different for strategic programs and coordination efforts with other agencies needed to meet long-term challenges not addressed by infrastructure investment.

The projects and programs suggested in this Plan do not address every constraint. Several remain long-term challenges for the region.

Addressing localized constraints such as truck parking shortages, movement wear and tear, and rail grade crossings and separations may be technically the responsibility of localities rather than regional planning agencies. Yet those responsibilities might be better met through coordinated efforts. The Seattle area FAST Corridor is a prime example of sustained, coordinated action by multiple agencies with similar but parallel responsibilities. In that instance local agencies combined efforts to fund and complete rail grade crossing along a multi-jurisdiction corridor over a period of several years.

- Truck parking shortages are addressed to some extent by strategic programs to add rest areas on major highway corridors. Parking away from highways in urban and rural areas, however, remains an issue for local jurisdictions.
- Pavement wear and tear is likewise an issue for Caltrans on interstates and state highways, but an issue for localities on arterials and roads.
- There are no specific grade crossing improvement or separation projects on the final Plan list, although some east-west connectivity projects may involve grade crossing. Generally speaking, rail grade crossing issues tend to be localized, and reach regional significance when they result in delays or accidents on regional routes. In addition, rail grade crossing needs identified in this study have to a large extent been incorporated in the 2013 California State Rail Plan update.

Seasonality concerns cannot be addressed through any one single project or program, but are an overriding concern wherever goods movement infrastructure serves fluctuating agricultural demand.

Long-term rail issues, including Class 1 and short line capacity, rail rates, and rail service to new and existing customers, will require long-term coordination with the railroads and their customers. The forthcoming State Rail Plan is one vehicle for valley-wide and statewide coordination. The act enabling the Central California Railroad Authority is a second SJV-specific vehicle.

- Class 1 railroad (UP and BNSF) capacity is almost entirely a function of private railroad investment. The exceptions are: 1) where public sector support is given for passenger-related improvements, and 2) where Proposition 1b infrastructure bond revenue is used on a project involving a Class 1 railroad.
- Rail rates are largely outside of the public sphere. Planning agencies may become involved when declining short-line traffic density or rising infrastructure costs result in high rates or surcharges to the remaining customers.
- Rail service can be addressed by infrastructure projects, but also has operational aspects that are controlled by the private sector.

Port access and capacity are long-term issues beyond the scope of individual projects. The capacity of port facilities is usually a concern for the port authorities, who have their own capital investment programs supported by revenues, bonds, and other sources. The public sector is more likely to be involved in port access capacity. Efficient access to the bulk ports of Stockton and West Sacramento involves truck connections to move bulk commodities between the two ports and points in the SJV region, and efficient rail connections to move trainloads to the ports from points outside the region. Several proposed projects address this issue, but the volatile nature of bulk commodity movements suggests that ongoing contacts between SJV planning agencies and the two port authorities will be needed. Access to Oakland and LA/LB raises different issues,

including the efficiency of highway drayage and barge or rail alternatives. Here again, proposed projects address some aspects but long-term attention will be required. Port drayage is a critical form of trucking for SJV importers and exporters. Port drayage moves are co-mingled with other types of trucking, but are of special concern on the east-west I-205/580 corridor, where they would benefit from truck climbing lanes and related improvements.

Areas for Future Study

Additional study and research will be required to support long-term goods movement planning for the region. Though this SJV Goods Movement study lays the groundwork for ongoing freight planning, several specific areas are suggested for future, targeted study. These include:

- **Additional study on the potential for short line or short haul rail.** There is a strong interest among multiple stakeholders in maximizing the effectiveness of the region's short-line rail, both in conventional connections with Class 1 railroads and in potential new short-haul services. Tulare and Kern Counties have undertaken short-line rail studies, but stakeholders still have questions about the ultimate contribution that short-line and short-haul rail can make toward the region's freight needs. As noted above, the Central California Railroad Authority could be a vehicle for coordinating or sponsoring the additional study required.
- **Continued study on the use of natural gas or other alternative, cleaner fuels for goods movement purposes.** The drastic cost reductions for natural gas due to shale gas production (in other states, whether or not it occurs in California) are changing the outlook for natural gas as a vehicle fuel. While some suggested projects already anticipate a growing role for natural gas, notably the West Coast Green Highway Initiative, additional study may be needed to better define the role of this increasingly competitive alternative fuel (or other potential alternative fuels) in goods movement.
- **Study of the potential of zero-emission or near-zero emission technologies for use in goods movement applications.** Work is ongoing in Southern California and other regions to study the potential of using electric or hybrid trucks and locomotives for goods movement activities. The SJV should continue to monitor the development of these technologies. In addition, further study could be targeted to selecting target regions for zero-emission pilot projects, in particular to support "last mile" goods movement activities.
- **Truck routing and parking needs ongoing study.** Truck routing and truck parking are a long-term priority in assuring the productive coexistence of freight transportation in the community. The truck routing study sponsored by SJCOG and SACOG may provide a starting point, but much work remains to be done on the local and regional planning levels. Large fleet owners have different routing and parking needs than owner operators, and local route truckers have different routing and parking needs than long-haul truckload

carriers. Some proposed programs on the priority list already address these issues:

- 1 - Truck Stop Electrification
- 2 - Truck Route Signage
- 3 - Additional Truck Rest Areas
- 4- Oversize/ Overweight Truck Pilot Program/Research
- 5 – Reexamine STAA Designated Routes

These programs, however, are suggested rather than *de facto*, and will require both additional research and active sponsorship to become reality.

- **Further study to understand the region's future air cargo needs and the roles that its multiple airports can play in meeting those needs.** The reversion of military airbase to civilian use has created excess near-term airport capacity; the question is how that capacity should best be used to meet long-term requirements.
- **Continue to identify "Last mile" connectors to better understand their role in regional goods movement.** "Last mile" connectivity is the link between the regional and national systems and local customers. "Last mile" connectivity is also often the nexus between freight transportation and local community impacts. In that regard regional and local planners could benefit from additional study on the true importance of local connectors and on their congestion, noise, safety, and emissions impacts.

4.0 Funding and Implementation

4.1 APPROVAL, FUNDING, AND IMPLEMENTATION STEPS

Figure 4.1, drawn from the SR 99 Business plan, provides a fairly generic view of the project approval and implementation process for infrastructure investments using the conventional state and Federal transportation improvement program funds. In many respects, the first two phases of the process are the most critical from a planning perspective:

1. Definition of project nature, scope, goals, cost, and time in the initial PID/PSR/PSSR stage; and
2. Project approval, funding, and environmental clearance in the second phase.

With those two phases complete the project transitions from the planning and programming function to the technical design and construction phases.

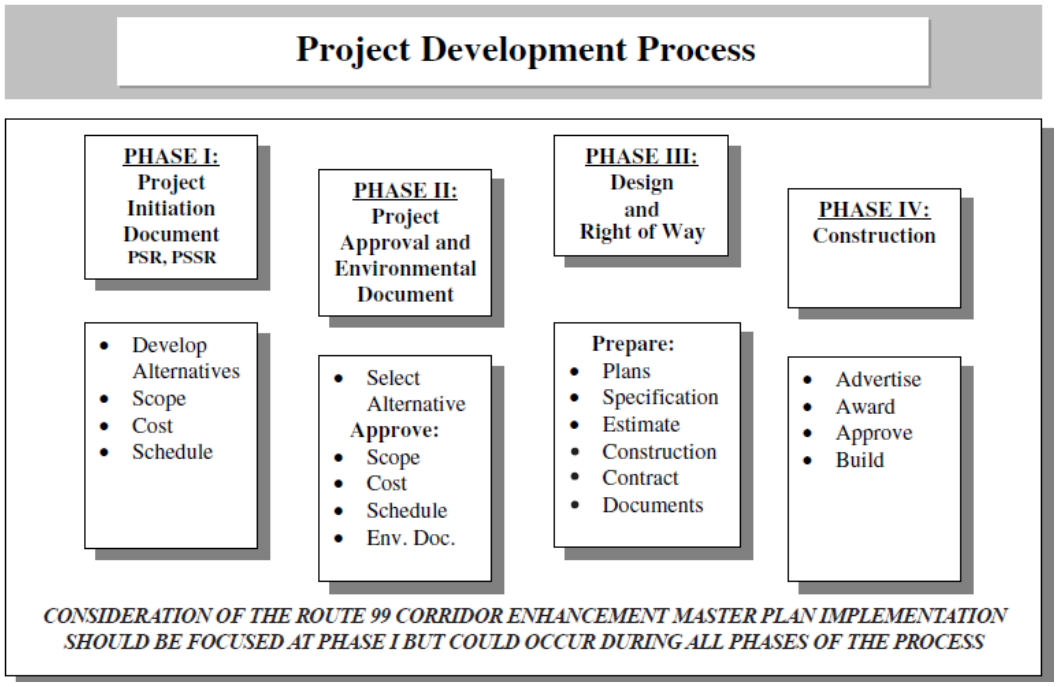
At present and for the near future, the implementation bottleneck will be the Phase II approval, funding, and environmental step.

The implementation paths for the projects in Chapter 3 will be as varied as the projects themselves. Most of the projects listed are already part of Regional Transportation Plans (RTP) or Regional Transportation Improvement Plans (RTIP), the SR 99 Business Plan, or other established planning efforts. Integration with regional, state, and even Federal planning efforts, as discussed below, is a critical part of the implementation process and could conceivably disadvantage projects that are not included in those programs.

Lead Agency

Another crucial step to implement projects is the existence of a lead agency/ project champion that can make the sustained efforts required to get the projects approved and implemented. Most of the projects in the Plan have a lead agency in the form of a county or MPO sponsor. Where a lead agency already exists there is an approval and funding process with basic features that remain intact, but with details that change from year to year. One major challenge to lead agencies for freight projects is keeping track of goods movement funding opportunities, programs, or regulations that may differ from passenger transportation programs.

Figure 4.1 Caltrans SR 99 Business Plan Implementation Process



Source: SR 99 Business Plan, http://www.dot.ca.gov/dist6/planning/sr99bus/.

4.2 INTEGRATION WITH OTHER TRANSPORTATION PLANS

Integration and coordination with other goods movement and overall transportation plans and planning efforts has become an effective prerequisite for funding. The wide range of unmet transportation needs has led funding agencies to focus on projects that have emerged from a deliberate planning process and are embodied in published plans. Integration with plans on other levels also helps demonstrate consistency of regional approach and priorities.

California Transportation Plan

The current California Transportation Plan (CTP 2025) was originally approved in 2006 and updated in 2007 (the 2030 Addendum). The next generation, CTP 2040, is planned for completion in December 2015.

The CTP is not strictly a compilation of Regional Transportation Plans in the same way that the State Transportation Improvement Plan is built up from projects in Regional Transportation Improvements. The 2006 plan included planned fragments from year 2000 RTPs compiled in the California Transportation Investment System (CTIS) database.

As the CTP is updated, it is likely to reflect the greater recent emphasis on goods movement, in particular the MAP-21 requirement for a state freight program (see

below). Integration of SJV regional freight initiatives into the CTP is therefore likely to be more important in the future.

The CTP in 2015 is also expected to draw heavily from other modal and topical plans that are being developed by Caltrans in the years leading up to the CTP development. These include the Freight Mobility Plan, the State Rail Plan, and the California Interregional Blueprint. The Freight Mobility Plan and the State Rail Plan are particularly important plans with which the SJV IGMS needs to be coordinated and these are described below.

State GMP/Freight Mobility Plan

The California State Goods Movement Action Plan (GMAP) was completed in January 2007 and this was the last time that Caltrans and the California Business, Transportation, and Housing Agency (BTH) prepared a goods movement plan. The Caltrans Division of Transportation Planning is updating the GMAP as a California Freight Mobility Plan to be incorporated in the forthcoming CTP 2040. Integration with other plans is a key objective.

Coordination with the freight element of the CTP is likely to be a critical long-term step for SJV freight projects. The freight element of the CTP will likely include prioritization of statewide freight issues and initiatives, with implications for funding. For example, after California voters passed Proposition 1B that created the Trade Corridor Improvement Fund (TCIF), the California Transportation Commission (CTC) looked to regional coalitions to develop prioritized lists of candidate projects as looking at projects that had been included in the 2007 GMAP. Consistency between the GMAP and the regional priority list became critical for getting funds for high priority projects.

The 2007 GMAP was somewhat port-centric, reflecting the concurrent issues of rapid trade growth and regional impacts. Caltrans has stated the Freight Mobility Plan Update will take a broader look at the state's pressing goods movement needs and this has potential to benefit the SJV if the COGs have a strong set of priority projects. The Freight Mobility Plan Update will look to this SJV IGMS as a primary resource for needs identification and projects in the San Joaquin Valley.

As the MAP-21 description below indicates, the freight element of the state plan will also be highly influential in Federal funding decisions.

State Rail Plan

The California State Rail Plan will establish a vision, set priorities, and present implementation strategies to enhance passenger and freight rail service in the

public interest. The draft California State Rail Plan was released in late 2012, with a final report anticipated in summer 2013.[27] The Rail Plan will:

- Describe existing conditions of the State's passenger and freight rail systems, including infrastructure and service levels, needs, and deficiencies;
- Present a clear picture of the role rail plays in key passenger and freight markets;
- Describe the blended system concept for high-speed rail and conventional intercity and commuter rail, planned for implementation in 2018;
- Describe the planned rail system and the economic and environmental benefits of freight and passenger rail improvements; and
- Incorporate plans from California commuter rail authorities.

From a goods movement perspective, the most critical aspects of the plan will be:

- Identification of state and regional interests in the development of Class 1 railroads and their operations;
- The extent to which high-speed rail and increasing demand for passenger service on freight rail lines will affect goods movement; and
- The expected role of short line railroads and the public support available for that role.

The State Rail Plan includes an investment program for freight rail in the State that is divided into three components:

- Trade corridor projects
- Short line railroad projects
- Community impact mitigation projects (mostly rail crossing grade separation projects).

All of the priority projects included in the SJV IGMS that are rail projects are included in the State Rail Plan. While there are no new funding sources identified for these projects, incorporating them in the State Rail Plan is important if new state or Federal rail funding programs do become available. There were also a number of new policies, programs, and funding sources discussed during the development of the State Rail Plan, consideration of which has been deferred for discussion with the new statewide Freight Advisory Committee and development of the Freight Mobility Plan. The policy and program options that have most relevance to the SJV are discussed later in this chapter in the section describing funding options.

[27] http://californiastaterailplan.dot.ca.gov/.

SR 99 Business Plan

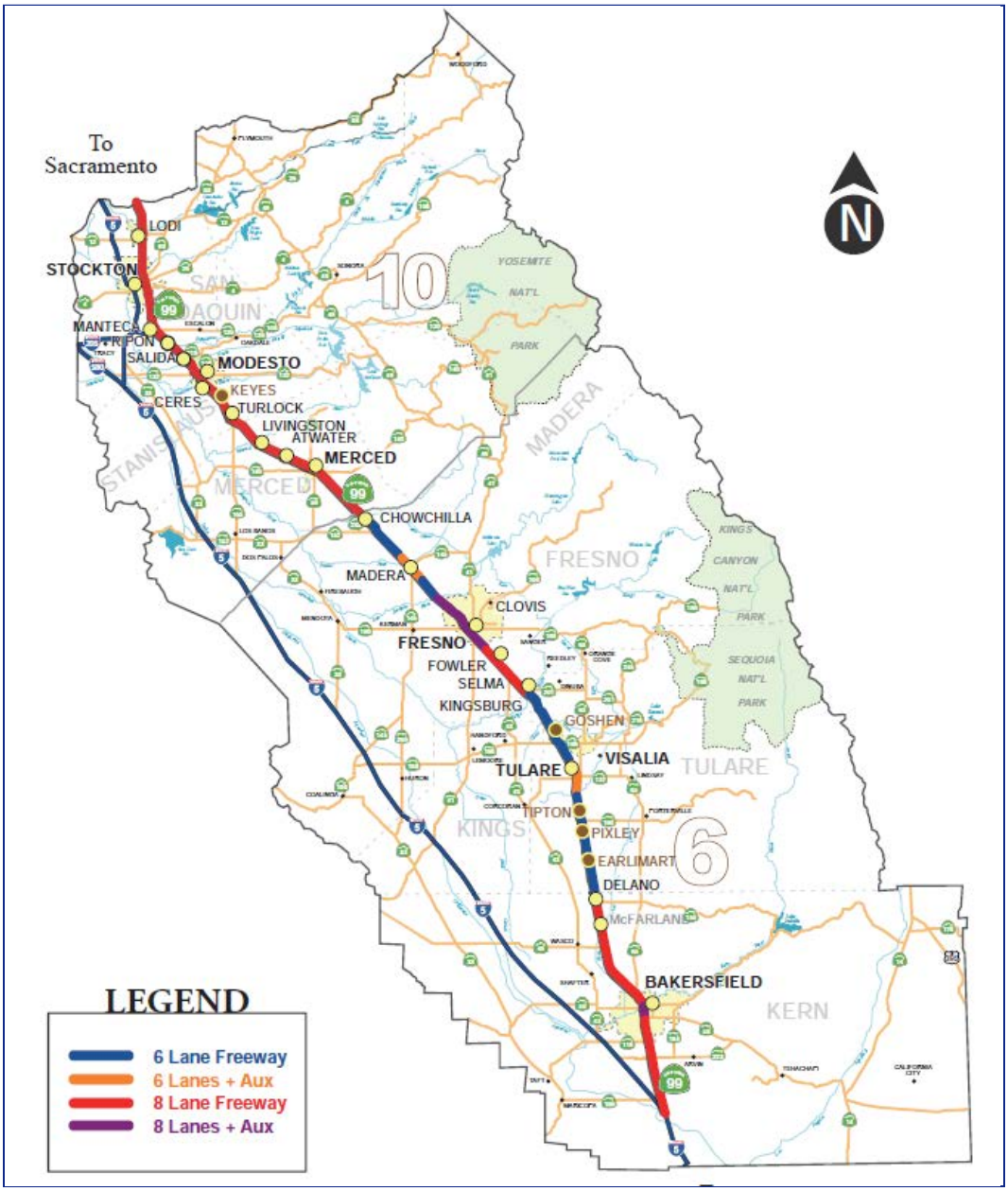
The SR 99 Business Plan was last updated in February 2013. The companion Route 99 Corridor Enhancement Master Plan was also updated at that time. The map below shows the "2035 Concept Facility" envisioned in the plan with SR 99 ranging from six-lane freeway to eight-lane freeway with auxiliary lanes.

The SJV Goods Movement Project team coordinated with the SR 99 Business Plan project team to ensure consistency between the two plans. Because of this coordination, several of the projects listed in this Plan are also part of the SR 99 Business Plan. For example:

- 99d – Widen SR 99 from four to six lanes from Avenue 7 to Avenue 12 – Programmed, fully funded;
- 99g – Widen SR 99 from four to six lanes from Kern County Line to Prosperity Avenue – Programmed, partially funded;
- 99e – Widen SR 99 from six to eight lanes from Central Avenue to Bullard Avenue – Category 2 Candidate; and
- 99h – Widen SR 99 from Beardsley Canal to 7th Standard Road – Category 2 Candidate.

The SR 99 Business Plan acknowledges that funding is not currently available or on the immediate horizon for all of the projects contemplated in Figure 4.2, nor is there a separate funding source for SR 99 projects. The key function of the Business Plan, however, is to establish a coordinated strategy and set of priorities which will guide investments as funding does become available.

Figure 4.2 SR 99 Business Plan 2035 Concept Facility



Source: SR 99 Business Plan, http://www.dot.ca.gov/dist6/planning/sr99bus/.

Regional Transportation Plans/Transportation Improvement Plans

The Regional Transportation Plan (RTP) is the centerpiece of MPO transportation planning, laying out goals, policies, and action plans to guide transportation development over the next 20 to 30 year. Federal and state funding for local projects must conform to the RTP, as well as to the State Implementation Plan (SIP) for air quality and the Federal Transportation Improvement Plan (FTIP).

There are two major divisions of projects within an RTP:

1. Constrained Projects, which have been evaluated for air quality impacts and found eligible for funding; and
2. Unconstrained projects, typically longer-term projects that are not in an air quality improvement plan and for which funding has not been identified.

Table 4.1 displays the major planning stages.

Table 4.1 Regional Planning Stages

Document	Time/Horizon	Contents	Update Requirements
RTP	20+ Years	Future goals, strategies, and Projects	Nonattainment MPOs- every 4 years Attainment MPOs – every 5 years RTPAs – every 5 years
OWP	1 Year	Planning Studies and Tasks	Annually
FTIP (MPOs only)	4 Years	Transportation Projects	At least every 4 years
RTIP (RTPAs/ CTCs)	5 Years	Transportation Projects	Every 2 years
ITIP (Caltrans)	5 Years	Transportation Projects	Every 2 years

Source: 2010 California Regional Transportation Plan Guidelines, CTC, page 22.

Most of the projects listed in Chapter 3 are listed in SJV planning agency RTPs. However, several are Unconstrained projects for which funding sources have not been identified nor air quality analysis performed. These unconstrained projects include:

- 15d – Widen I-5 between Kings County and Merced County lines;
- 99e – Widen SR 99 Central Avenue to Bullard Avenue;
- 25 – Widen SR 41 from six to eight lanes from Divisadero to Ashlan to Madera County Line;
- 32 – Widen SR 145 from two to four lanes between the SP RR and Shaw Avenue;
- 55 – InyoKern Airport Air Cargo Improvements;
- 57 – Meadows Field Capital Improvements/accommodate international air freight via industrial parks;
- 45 – Widen 7th Standard Road from two to four lanes from I-5 to Santa Fe (portions);
- 15e – Widen I-5 from 8 to 10 lanes between I-5 at Fort Tejon and SR 99;

- 58 – Widen SR 119 from two to four lanes between SR 33 to Cherry Avenue, and to Elk Hills Rd (portions);
- 89 – Arvin Short Haul Rail Improvements;
- 90 – Short Haul Rail, Rehabilitation, Gap Improvements, Extensions; and
- 92 – Intermodal Rail Facility/Inland Port Shafter (Phases II and III, portions).

Many of these projects are envisioned for implementation in 2030 or after, putting them at the edge of the current planning horizon. Between now and then, planning agencies will need to monitor industry and community conditions to determine whether and when these projects are indeed needed in their anticipated form, or whether their scope and objectives will need to be adjusted with changing circumstances.

The Regional Transportation Improvement Plan (RTIP) consists of projects that local agencies want to implement within the next four years and is usually a subset of the Constrained Projects in the RTP. The projects in the RTIP should "roll up" into the State Transportation Improvement Plan (STIP).

A Federal Transportation Improvement Program (FTIP) presents those projects within the RTIP proposed for Federal funding, including projects eligible for CMAQ funding.

The RTIPs and FTIPs are critical for near-term funding, and are discussed at greater length in the chapter on funding.

MAP-21 Process

The MAP-21 was signed into law on July 6, 2012. It is the first long-term highway authorization enacted since 2005.

One key point is that MAP-21 is only a 27-month authorization, and will be superseded within the present project planning horizon (even if, like previous legislation, it is extended for months or years).

Table 4.2 below compares relevant programs within MAP-21 with predecessor programs under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). For the most part changes were incremental, although some minor programs were discontinued.

A key provision of MAP-21 is that it calls for states to develop a freight plan to qualify for an increased share of Federal funding for certain eligible freight projects. California's state freight plan (GMAP) will be replaced by a freight element with the CTP 2040 in satisfaction of this requirement. Section 4.4 provides additional information about the limited freight funding provisions that are incorporated in MAP-21.

Table 4.2 MAP-21 vs. SAFETEA-LU

MAP-21	SAFETEA-LU
National Highway Performance Program (NHPP)	NHS, IM, & Bridge (portion
Surface Transportation Program (STP)	STP & Bridge (portion)
Congestion Mitigation & Air Quality Improvement Program (CMAQ)	CMAQ
Highway Safety Improvement Program (HSIP)	HSIP (including High Risk Rural Roads)
Railway-Highway Grade Crossing (take down from HSIP)	Railway Highway Grade Crossing
Metropolitan Planning	Metropolitan Planning
Transportation Alternatives (Set aside from NHPP, STP, HSIP, CMAQ, and Metropolitan Planning)	TE, Recreational Tails, and Safe Routes to School

Source: Moving Ahead for Progress in the 21st Century Act (MAP-21), FHWA presentation, August 2012, page 6.

MAP-21 incorporated a significant step forward in alignment between regional, state, and Federal planning regimes. Going forward, it will be necessary for regional planning agencies to anticipate MAP-21 requirements, categories, and language in RTP development. Projects outside that process and outside MAP-21 categories will become increasingly difficult to fund.

Table 4.3 below shows the alignment between MAP-21 Planning Factors and the Work Elements in an Overall Work Plan.

MAP-21 also calls for the designation of a national freight network and the development of a national freight strategic plan. Under the provisions of current law, the national freight network is primarily focused on highways and calls on U.S. DOT to designate a primary freight network (PFN) with a maximum of 27,000 centerline miles of existing roadway that is critical to freight movement. U.S. DOT can add 3,000 more centerline miles that will be critical to freight movement in the future. This is not an especially large system and it is important that the SJV advocate for inclusion of its most critical freight facilities in the PFN. At present there is no additional funding available for supporting the PFN but future funding is likely to be prioritized to this system. The approach used to identify and analyze critical freight facilities in the SJV IGMS is consistent with the approach that FHWA has announced that it will use when looking at the PFN options.

Table 4.3 MAP-21 Planning Factors

	Work Element					
	1	2	3	4	5	6
1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency	✓	✓			✓	
2. Increase the safety of the transportation system for motorized and nonmotorized users		✓		✓		✓
3. Increase the security of the transportation system for motorized and nonmotorized	✓		✓		✓	
4. Increase the accessibility and mobility of people and for freight			✓	✓		
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns	✓					✓
6. Enhance the integration and connectivity of the transportation system across and between modes for people and freight			✓		✓	
7. Promote efficient system management and operation		✓				✓
8. Emphasize the preservation of the existing transportation system				✓		

Source: Regional Planning 2013, Office of Regional & Interagency Planning, Caltrans, page 21.

Vision for Clean Air and the Air Resources Board's Sustainable Freight Initiative

The State of California, in general, and the SJV region, in particular, lead the nation in their efforts to improve air quality. In addition, the district, in conjunction with the California Air Resources Board and the South Coast Air Quality Management District recently developed a report titled *Vision for Clean Air: A Framework for Air Quality and Climate Planning*.[28] This report outlines concepts and strategies the region can use to meet its air quality and climate goals. The concepts are as follows:

- **Concept 1 – Technology Transformation.** Transformation to advanced, zero- and near-zero emission technologies, renewable clean fuels, and greater efficiency that can achieve both Federal air quality standards and climate goals;

[28]Source: http://www.valleyair.org/General_info/pubdocs/Vision_for_Clean_Air_Public_Review_Draft.pdf.

- **Concept 2 – Early Action.** Acceleration of the pace of transformation to meet Federal air quality standard deadlines, with early actions to develop and deploy zero- and near-zero technologies also needed to meet climate goals;
- **Concept 3 – Cleaner Combustion.** Advanced technology NO_x emissions standards for on- and off-duty heavy-duty engines beyond the cleanest available today to meet Federal air quality standards in a timely manner;
- **Concept 4 – Multiple Strategies.** A combination of strategies – technology, energy, and efficiency – applied to each sector;
- **Concept 5 – Federal Action.** Federal actions, in addition to actions by state and local agencies and governments, to help clean up sources that travel nationally and internationally, such as trucks, ships, locomotives, and aircraft;
- **Concept 6 – Efficiency Gains.** Greater system and operational efficiencies to mitigate the impacts of growth, especially in high-growth freight transport sectors and vehicle efficiency gains to reduce fuel usage and mitigate the cost of new technologies; and
- **Concept 7 – Energy Transformation.** Transformation of the upstream energy sector and its greenhouse gas and smog forming emissions concurrent with the transformation to advanced technologies downstream.

The conclusions of the *Vision for Clean Air: A Framework for Air Quality and Climate Planning* highlight the daunting nature of the challenge California faces in meeting its air quality and climate goals. A key finding of the report is that **to reach the State's air quality goals zero- and near-zero emission technologies must become the norm**. Furthermore, this technological transformation must be rapid and the fuels and electrical energy needed must come predominantly from renewable sources. Key challenges in implementing this *Vision* include transitioning the truck fleet to the new technologies as rapidly as possible, transforming the upstream energy sector to dramatically increase the production of alternative fuels and renewable electricity, and continuing to squeeze emission reductions out of conventionally powered trucks and locomotives.

Building on the analysis in the *Vision for Clean Air*, the Air Resources Board had developed a Sustainable Freight Initiative to develop the implementation strategies necessary to take the next steps towards a cleaner goods movement system. The SJV region needs to work with ARB and play a significant role in ensuring that the ideas envisioned in the vision document are adequately reflected in the final implementation plan and that implementation roles and responsibilities are shared by regional, state, and Federal air quality and transportation agencies.

4.3 FUNDING SOURCES

Funding Processes

This section outlines possible financing strategies for the SJV Goods Movement Plan. The financing strategies were developed with several objectives:

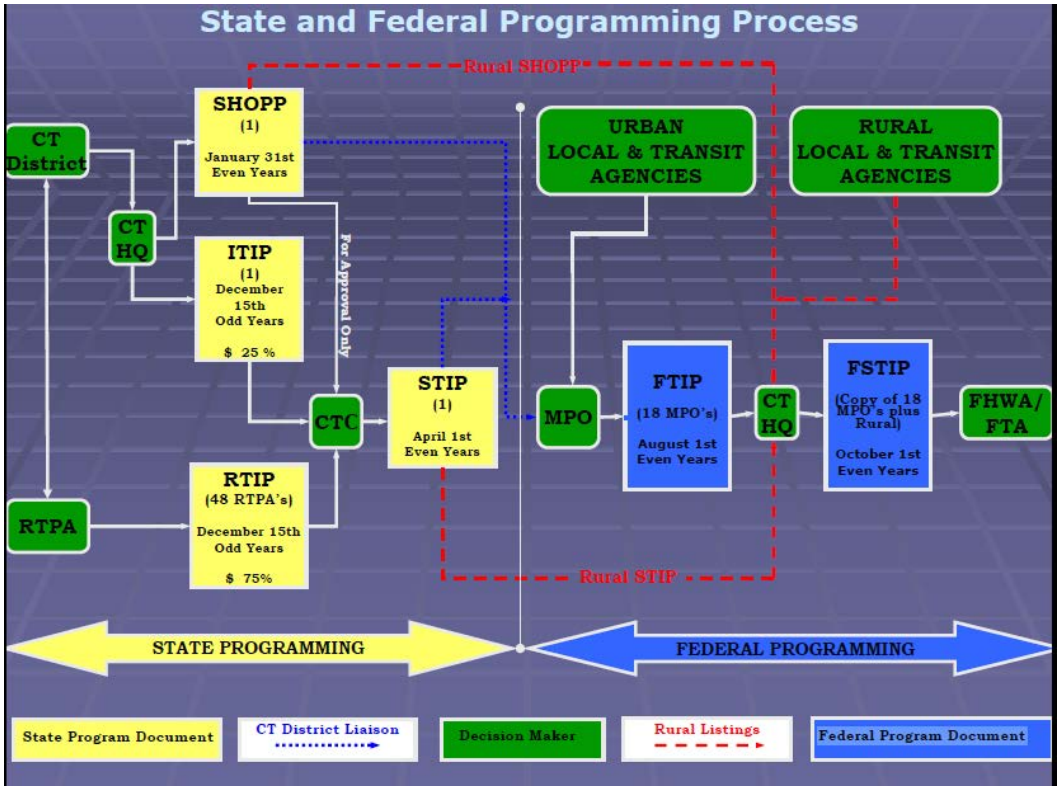
- Identify appropriate Federal, state, local, and private funding sources to ensure effective projects and equitable allocation of costs, benefits, and risks;
- Capitalize on available and pending state and Federal revenue sources; and
- Form public private partnerships whenever feasible and appropriate to attract private sector investment.

As the flowchart (Figure 4.3) suggests, project funding is a complex, multilevel, multiyear process. Freight projects move through this process along with passenger projects. Although some, such as rail grade crossing or short line upgrade loans, have special programs, most tap the broader highway project funds. At the present time there are no funding sources dedicated solely to freight projects at the state or Federal level. There are funding sources in which freight projects would compete with passenger projects. There continues to be hope that there will be dedicated freight funding in future Federal surface transportation programs and there have been dedicated freight funding sources in California at the state level in the past (e.g., the Trade Corridor Improvement Fund). Having projects identified, incorporated in appropriate planning documents, and environmentally cleared creates the greatest likelihood that these projects will be able to move more quickly through the funding and financing process if new funds become available and is critical for any of the funding sources that are identified in this section of the report.

For most state highway projects, funding comes through one of the following programs:

- State Transportation Improvement Program (STIP), developed by the California Transportation Commission; and
- State Highway Operation and Protection Program (SHOPP).

Figure 4.3 State and Federal Programming Process



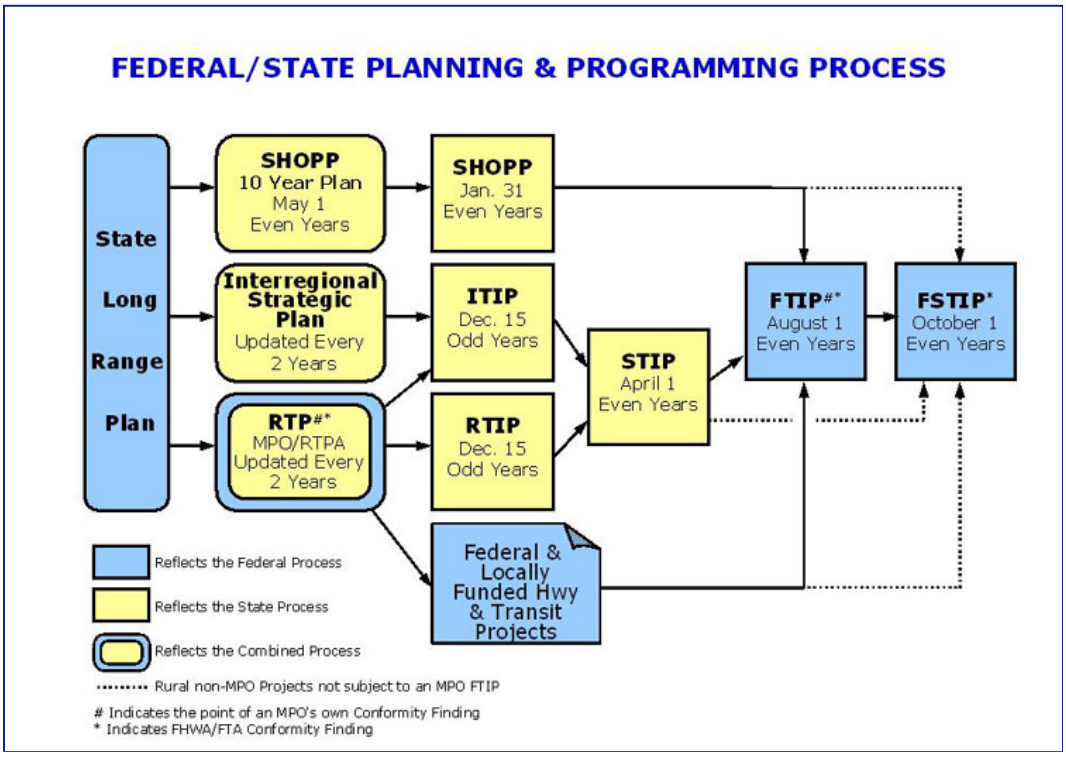
Source: 2010 California Regional Transportation Plan Guidelines, CTC page 151. RTIPs are currently updated at 4-year intervals for non-attianment areas such as the SJV.

The chart in Figure 4.4 focuses on the overlap between Federal and state processes and the critical role of the Regional Transportation Improvement Program (RTIP) as the basis for regional input and funding requests. Regional Transportation Plans RTPs are now updated every four years rather than two as indicated in the chart.

The RTIPs become the basis for the State Transportation Improvement Program (STIP). The STIP is funded primarily with National Highway System (NHS), Surface Transportation Program (STP), and State Highway Account (SHA) resources. STIP funding is apportioned to counties.

The challenge to freight planners and freight interests is to have freight needs recognized in multipurpose highway projects, and to keep freight-only or freight-focused projects on the lists when there are not enough funds to meet the legitimate needs of passenger transportation. Under these circumstances spreading the wealth means also spreading the pain.

Figure 4.4 Federal/State Planning and Programming Process



Source: Caltrans, http://www.dot.ca.gov/hq/transprog/gifs/FedState800.jpg.[29] RTPs are currently updated at 4-year intervals for non-attainment areas such as the SJV.

Federal Funding Sources

Federal Transportation Program Funds

Congress reauthorized the Federal surface transportation programs in July 2012. The legislation – MAP-21 – maintains current Federal transportation funding levels (adjusted for inflation) for the Federal fiscal years 2013 and 2014. Based on these authorization levels it is likely that California will continue to receive Federal transportation funds for the next several or more years at levels consistent with what has been received under the previous transportation bills. In this funding climate and with continuing Congressional concerns about growth in the Federal deficit, MAP-21 did little to create new funding opportunities for freight transportation programs in the short-term.

The longer-term outlook for Federal transportation funding is less clear, but Congress laid the groundwork in MAP-21 for what might eventually become a national freight program. MAP-21 calls for the establishment of a national freight policy and goals, designation of a national freight network, development

[29] RTPs and RTIPs are updated every 4 years for nonattainment areas.

of a national freight strategic plan, compilation of a freight transportation condition and performance report, and encouragement of state freight plans. It also provided for a higher Federal contribution to the construction of high-priority transportation projects, including freight projects. The new guidelines allow up to 95 percent (compared to the current 90 percent) Federal funding for Interstate Highway projects and 90 percent (compared to 80 percent) on other Federal-aid eligible projects. This opens up the possibility of future funding for nationally and regionally significant freight projects. Many of the projects contained in the SJV plan will be eligible for the increased Federal share of funding that MAP-21 makes available but they will have to compete for this funding along with other nonfreight projects and the funding available to California to pay for these projects is not specifically increased to cover freight project needs.

Special and discretionary grants are monies set aside from the Federal Highway Trust Fund (and general revenue) by Congress for specific purposes. These grants can be awarded to state and local governments on a competitive basis or at discretion of the Secretary of Transportation. Examples are Projects of National and Regional Significance program and TIGER grant programs, both of which funded projects that improved freight movement within and between modes. However, the pool of funds available for special and discretionary grants has been shrinking because Congress has mandated that almost all the Highway Trust Fund revenues be redistributed back to the states through formula grants, leaving relatively little funding for discretionary grants. In MAP-21, which reauthorized the Federal surface transportation programs, the annual appropriation bills have reduced the funding for a number of the special and discretionary programs or rescinded them altogether. However, to the extent that any of the existing discretionary programs, such as TIGER, are continued, the SJV Interregional Goods Movement Plan creates the vehicle and provides basic information for promoting these interregional projects. The U.S. DOT has moved to greater reliance on benefit-cost methodologies for selecting projects and the benefits evaluations contained in the SJV Interregional Goods Movement Study should provide much of the basic information necessary to compile competitive grant applications. As noted previously, Caltrans will look to regional plans like the SJV Interregional Goods Movement Study as the foundation for the upcoming statewide Freight Mobility Plan Update so the project priorities reflected in this SJV plan will be incorporated into the state plan and the state plan will flow up to the Federal government. Any discretionary grant programs will look to these plans as a source for project eligibility.

MAP-21 identifies grade separation projects as eligible for increased Federal share of funding, but there is no appropriation of new money to fund this increased share. It is also not clear how grade separation projects will be treated in the creation of the National Strategic Freight Network, since most of the SJV region's grade separation projects are on local roads or state highways and not on the Interstate system. A number of other stakeholders in California (e.g., the Southern California National Freight Gateway Collaboration and the Alameda

Corridor East Construction Authority) are working to ensure that grade separations and other nonhighway system elements are incorporated in future National Strategic Network definitions. The SJV COGs should seek opportunities to work with these groups to pursue changes in the Federal freight network designations.

Federal funding for rail projects might be augmented from the Railroad Rehabilitation and Improvement Financing (RRIF) programs. There is a potential for the Federal loans to offer a lower interest cost (depending on the relative level of U.S. Treasury interest rates) and flexible repayment terms that can defer debt service payments compared to freight rail corporate financing or other loan sources.

Additional possible Federal funding sources include TIGER Grants, and the TIFIA program, and several (currently not available) FRA Grant Programs. These are summarized in Table 4.4 and in the sections below.

Table 4.4 Potential Relevant Federal Funding Sources

Funding Source	Description
TIGER	The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program provides funds for road, rail, transit, and port projects. There have been five funding cycles to date, from 2009-2013. Total amount distributed in each funding cycle is between $473 million and $1.5 billion.
TIFIA	TIFIA provides Federal credit assistance to nationally or regionally significant surface transportation projects, including highway, transit and rail projects. The program is a low-cost debt program (borrowing tool) that may be accessed by the private sector (and in some cases the public sector). This can help to decrease the overall financing costs of the program. MAP-21 increased the funding for TIFIA to $750 million for FY 2013.
FRA Grant Programs	Though none of these programs are currently (as of spring 2013) accepting new applications, the FRA has in the past offered several grant programs to support freight rail safety and maintenance. These include the Railroad Safety Technology Grant Program, the Rail Line Relocations and Improvement Capital Grant Program, and the Disaster Assistance program.
Projects of National and Regional Significance Program	MAP-21 continued this program from SAFETEA-LU as a discretionary grant program. Eligible projects now include certain freight rail, port, and intermodal freight transfer facilities. Funded at $500 million in FY 2013.

TIGER Grants

The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program provides funds for road, rail, transit, and port projects. The grants are awarded on a competitive basis for projects that have a significant impact on the country as a whole, a metropolitan area, or a region.

There have been four rounds of TIGER grants, with a fifth undergoing selection at the time of writing this report (May 2013). Table 4.5 shows the amount of funding for each round and the number of projects funded under each round, nationwide. The original TIGER I program was authorized and implemented as part of ARRA. In subsequent fiscal years, Congress appropriated new funding for TIGER II, TIGER 2011, and TIGER III.

Table 4.5 TIGER Grant Program Cycles

TIGER Round Year	Total Funding (Millions of Dollars)	Projects Funded	Rural Projects Funded
TIGER 2009	$1,500	51	—
TIGER 2010	$600	42	17
TIGER 2011	$527	46	20
TIGER 2012	$500	47	19
TIGER 2013	$474	Selection Ongoing	Selection Ongoing

Source: http://ops.fhwa.dot.gov/freight/infrastructure/tiger/index.htm#tg2.

The majority of TIGER funding has been for roadway, bridge, urban transit, freight rail, and port projects. This is particularly beneficial since this is one of the few Federal or state funding programs that can provide support to nonhighway freight modal projects. Funding has been distributed to both urban and rural areas- as shown in Table 4.5 rural projects are generally awarded about 40 percent of the total grants. The region has benefitted from this program in the past, for example in the 2009 the Ports of Oakland, Stockton and West Sacramento submitted a successful $30 million request to build California's Green Trade Corridor.[30] Though it is unknown whether TIGER cycles will continue, they remain a potential funding source for large, capital-intensive projects. They also remain a very competitive grant source. According the U.S. DOT, only 5 percent of submitted TIGER applications are selected for award. Most of the projects in the SJV Interregional Goods Movement Study would be potentially eligible for funding under the TIGER program, although in the past the timing of when construction would begin has been an eligibility factor (favoring near-term projects).

TIFIA

The Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA program) provides Federal credit assistance to nationally or regionally significant surface transportation projects, including highway, transit and rail projects. The program is designed to fill market gaps and leverage substantial private co-investment by providing projects with supplemental or subordinate

[30]http://www.dot.gov/tiger.

debt. The program offers more flexible repayment terms and more favorable interest rates than other lenders. Goods movement projects are eligible, including rail, intermodal terminals, and terminal access projects. However TIFIA and related loan and credit guarantee programs are designed to complement and leverage – not replace – state and local funds.

The amount of TIFIA loans is constrained by the net amount of other revenues that can be generated and the debt service coverage requirement. This requirement means that TIFIA is most appropriate for use with projects that involve user fees and generate some revenue stream. Most of the roadway projects identified in this SJV Interregional Goods Movement Study do not contemplate tolling or other revenue streams. However for projects like short-haul rail shuttles or short-sea shipping projects where there is significant infrastructure investment (for example, in new terminals) and there is a public – private partnership, TIFIA could be an appropriate funding source.

Congress recently renewed the TIFIA program, increasing the amount of money available for loans and credit guarantees while also raising the maximum TIFIA loan amount to 49 percent of eligible project cost from 33 percent. In addition, MAP-21 expanded the funds available through TIFIA from $122 million in FY 2009 to $750 million in FY 2013, to $1 billion by FY 2014.

Projects of National and Regional Significance

MAP-21 continued the PNRS from SAFETEA-LU as a discretionary grant program. However, there are a few changes, including:

- Eligibility broadened to include tribal governments and transit agencies,
- Roadways vital to national energy security were added, and
- Evaluation criteria are adjusted.

Most importantly for goods movement projects, the list of eligible projects includes any that is eligible under Title 23 (including STP, TIFIA, and CMAQ). This includes highway projects, certain freight rail, some port projects, and intermodal freight transfer facilities. In addition, MAP-21 authorized $500 million for FY 2013 for apportionment to PRNS.

Federal Railroad Administration Freight Rail Grant Programs

The FRA has several competitive grant programs that can provide funds for freight rail projects. Though none of the rail projects currently on the priority list would likely qualify for these funding programs, they are important to recognize in the event that future eligible projects are identified. In addition, none of these programs are currently accepting new applications. However, they may become available as grant sources in the future.

- **Railroad Safety Technology Grant Program**. This program was authorized by Section 105 of the Rail Safety Improvement Act of 2008. The program's

purpose is to facilitate the deployment of train control technologies, train control component technologies, processor-based technologies, electronically controlled pneumatic brakes, rail integrity inspection systems, rail integrity warning systems, switch position indicators and monitors, remote control power switch technologies, track integrity circuit technologies, and other new or novel railroad safety technology. The legislation provides $1.6 billion for rail safety for FFY 2009 through FFY 2013.

- **Rail Line Relocation and Improvement Capital Grant Program**. To assist in mitigating the adverse effects created by the presence of rail infrastructure, Congress authorized this program in 2005. The program funds construction projects that improve the route or structure of a rail line and 1) are carried out for the purpose of mitigating the adverse effects of rail traffic on safety, motor vehicle traffic flow, community quality of life, or economic development; or 2) involve a lateral or vertical relocation of any portion of the rail line. Since FFY 2008, Congress has appropriated a total of $90.1 million for the program. Congress did not appropriate any funding for the program in FFY 2012, and all available funding has been awarded.
- **Disaster Assistance.** The Consolidate Security, Disaster Assistance, and Continuing Appropriations Act, 2009, provides $20 million to make grants to repair and rehabilitate Class II and Class III railroad infrastructure damaged by hurricanes, floods, and other natural disasters in areas for which the President declared a major disaster.

State Funding Sources

There are several California-specific programs available to help fund transportation projects. These programs are summarized in Table 4.6 and in the text following.

The California Transportation Commission allocates funds for highway construction and rail improvements throughout California.

The State Transportation Improvement Program (STIP) is the five-year plan adopted by the Commission for allocations of certain state transportation funds. State law requires the Commission to update the STIP biennially, in even-numbered years, with each new STIP adding two new years to prior programming commitments.

Table 4.6 Potential Relevant State Funding Sources

Funding Source	Description
State Transportation Improvement Program	The STIP is the five-year plan adopted by the Commission for allocations of certain state transportation funds. Some of the sources for this fund include GARVEE bond proceeds, state gasoline and diesel fuel taxes, and reimbursements from the Federal Trust Fund for Federal Aid projects.
Cap-and-Trade Program Funds	State legislation, AB 32 (Nunez 2006) mandates a reduction of statewide GHG emissions to 1990 levels by 2020. In accordance with that law, California has implemented a market-based, cap-and-trade program. Funds from the program can be used to further the purposes of AB 32. However, at this point the funding for the program is extremely limited.
State Section 190 Grade Separation Program	The Section 190 Grade Separation Program is a state-funded safety program that provides for the elimination of existing at-grade railroad crossings. (Section 130 is the corresponding Federal program.)
Infrastructure Financing Districts	California cities and counties have had authority since 1990 to create infrastructure financing districts (IFDs) to fund local infrastructure improvements. IFDs can divert an incremental portion of property tax revenues for 30 years to fund improvements including highways and transit projects. IFDs have been used very sparingly probably because of the cumbersome process for formation and the fact that redevelopment agencies were also authorized to divert incremental property tax revenues.
E-Commerce Tax revenues	California law requires that residents pay a tax on the purchase amount of goods and services when their order is placed over the internet. The e-commerce tax rate is equal to the sales tax rate. The State estimates that this law will result in an additional $260 million in revenue for FY 2013. Currently there is no guarantee that these tax proceeds will be dedicated to transportation purposes.
Warehouse Business-Tax Revenues	It may be appropriate to levy a business tax on warehousing, distribution and logistics firms that benefit from the faster and more reliable truck travel times provided by roadway improvements. In California, a business tax can be levied on all businesses in a similar trade, subject to two-thirds voter approval by the city, county or special district electorate

Current STIP

State and local funding could be drawn from a number of potential sources, including the following:

- State Transportation Programs. The bulk of State Highway Account (SHA) funding supports the state highway system, but a portion of the account also supports rail projects through the STIP. The SHA receives its funds from state gasoline and diesel fuel taxes, state vehicle weight fees, and reimbursements from the Federal Trust Fund for Federal Aid projects. The future of the SHA is uncertain; however an adjustment to the existing state excise tax rate could be made to enable funding of freight projects through

the State Transportation Improvement Program (STIP). It should be noted, however, that most STIP funding is for roadway projects, commuter and intercity rail and that most of the nonhighway projects identified in the SJV Interregional Goods Movement Study would not be eligible for these funds.

- GARVEE Bond Proceeds. The State could allocate a portion of its formula share of annual Federal-aid highway funds to significant infrastructure development in the SJV. In addition, the State also has the option of issuing Grant Anticipation Revenue Vehicle (GARVEE) bonds against those Federal funds. GARVEE bonds allow states to issue debt backed by future Federal-aid highway revenues. The State would be responsible for debt repayment.
- The Office of Federal Transportation Management Program (OFTMP) is responsible for preparing and managing the Federal Statewide Transportation Improvement Program (FSTIP). The FSTIP is a four-year statewide intermodal program of transportation projects that is consistent with the statewide transportation plan and planning processes, the metropolitan plans and the Federal Transportation Improvements Programs (FTIP). The FSTIP is prepared by Caltrans in cooperation with the Metropolitan Planning Organizations (MPO) and the Regional Transportation Planning Agencies (RTPA).

The Interregional Transportation Improvement Program (ITIP)

One component of the STIP which could be used more effectively to fund projects that have goods movement benefits is the Interregional Transportation Improvement Program (ITIP). The ITIP includes projects funded from the interregional program share of STIP funding. This represents 25 percent of new STIP funding. Projects are nominated by Caltrans in consultation with regional and local transportation authorities. Because of the inherently interregional nature of many freight projects, the SJV COGs may wish to advocate for a set-aside of some fraction of the funding to be reserved for freight projects with interregional significance. A number of the highway projects that cross county boundaries and even some of the connector projects that link to significant freight activity centers could be eligible for these funds. The California Transportation Commission envisions that the ITIP will work towards achieving six major objectives, one of which is "ensuring a dependable level of service for movement into and through major gateways of statewide significance and ensuring connectivity to key intermodal transfer facilities, seaports, air cargo terminals, and freight distribution facilities."[31] For State highway projects, the Commission expects that priority be given, among other factors, to "economic benefits to California of expanding interregional commerce through faster and more reliable access between markets." For rail one of the areas of emphasis is

[31] California Transportation Commission, "STIP Guidelines," June 27, 2012.

"the use of rail grade separations to improve service reliability for both intercity passenger rail and interregional goods movement." If a dedicated freight funding source were created as part of the ITIP, Caltrans could, through its Freight Mobility Plan and advice from the new Freight Advisory Committee, identify major gateways of statewide significance, key intermodal transfer facilities, seaports, air cargo terminals, and freight distribution facilities to determine eligibility for funding. As such, the input that this SJV Interregional Goods Movement Study provides to the statewide Freight Mobility Plan would ensure that SJV facilities are identified among these critical freight facilities. Establishing a state fund through the ITIP could also provide non-Federal shares for projects that have eligibility for MAP-21 funding and other Federal sources described above.

Cap-and-Trade Program Funds

State legislation, AB 32 (Nunez 2006) mandates a reduction of statewide GHG emissions to 1990 levels by 2020. In accordance with that law, California has implemented a market-based, cap-and-trade program. Funds from the program can be used to further the purposes of AB 32. SJV Interregional Goods Movement Study projects such as truck stop electrification and green corridor projects could benefit from this funding source.

To create a framework for spending the revenue, on September 30, 2012, the Governor signed AB 1532 (Perez) and SB 535 (de Leon). AB 1532 creates the Greenhouse Gas Reduction Account within the Air Pollution Control Fund, requires fees collected from polluters through the cap-and-trade program be deposited in this account, and requires the money to be granted to programs and activities that achieve feasible, cost-effective GHG emission reductions in the State through investments that also maximize economic, environmental, and public health benefits. AB 1532 establishes a public process and framework for allocating monies in the Greenhouse Gas Reduction Account, and requires the Department of Finance to provide three-year investment plans for program revenues, beginning with the SFY 2013 to 2014 May Budget Revision.

SB 535 requires that at least ten percent of program revenues be used for projects located within disadvantaged communities, and at least 25 percent be spent on projects that benefit disadvantaged areas disproportionately affected by pollution. Though these communities are to be identified by the California Environmental Protection Agency, it is very likely that the SJV, with its air quality issues, will be the location of one or more of these disadvantaged areas.

The Governor's SFY 2013 to 2014 Budget Summary recommends that because transportation is the single largest contributor to GHG emissions in California, cap-and-trade funds should make reducing transportation emissions a top priority. However, at this time, there is very little funding available through this Cap-and-Trade program.

State Section 190 Grade Separation Program

The Section 190 Grade Separation Program is a state-funded safety program that provides for the elimination of existing at-grade railroad crossings. (The corresponding Federal program is "Section 130".) Most projects funded under this program are grade separations. However, consolidations or track removal projects that eliminate grade crossings can also be considered. Eligible projects are identified on the basis of the priority list established by the California Public Utilities Commission (PUC). This list is developed every two years and becomes effective in July of even numbered years. Local agencies, railroad companies, or Caltrans can nominate projects. Nominated projects are prioritized on the basis of a formula that incorporates such factors as traffic volumes (both roadway and railroad), projected state contribution, accident history, and physical conditions at the crossing to be eliminated.

Once the PUC list has been established, Caltrans administers the program. Section 190 of the California Streets and Highways Code requires the State's annual budget to include $15 million for funding these projects. The maximum funding per project is $5 million annually. In general, the state contribution for any one project is limited to 80 percent or $5 million, whichever is less.

Infrastructure Financing Districts

California cities and counties have had authority since 1990 to create infrastructure financing districts (IFD) to fund local infrastructure improvements. IFDs can divert an incremental portion of property tax revenues for 30 years to fund improvements including highways and transit projects. IFDs have been used very sparingly probably because of the cumbersome process for formation and the fact that redevelopment agencies were also authorized to divert incremental property tax revenues. Although the State eliminated redevelopment agencies in 2011, local governments can still establish IFDs to support infrastructure investments that benefit local businesses and economic development.

For example, cities clustered along one of the main east-west corridors could, potentially, form an IFD to help generate funds for a necessary improvement project. Some of the inland port projects or logistics-oriented industrial development projects recommended in the SJV Interregional Goods Movement Study could benefit from an IFD funding approach. IFD funds would go towards pay-as-you-go capital costs. As with the redevelopment authorities, creation of an IFD would require a two-thirds voter approval; however, the State Legislature has considered bills that would either eliminate or reduce the voter approval thresholds to 55 percent (Senate Bill 214 Wolk, Assembly Bill 2144 Perez). Although these bills were not enacted, there has been continuous policy dialogue about the need for changes to existing IFD law for implementation. As the impact of eliminating redevelopment agencies becomes better understood, modifications to tax increment allocations may be more palatable to the state and local jurisdictions.

E-Commerce Tax Revenues

California law requires that residents pay a tax on the purchase amount of goods and services when their order is placed (or price and terms of the sale are negotiated) over the internet, an extranet, an EDI network, by electronic mail or over similar on-line systems. The e-commerce tax rate is equal to the sales tax rate. As of September 2012, the State also requires out-of-state and internet retailers who are part of a commonly controlled group or who work through California affiliates to pay a use tax.

The State estimates that this recent change in law will result in an additional $260 million in revenue for FY 2013. A portion of this e-commerce revenue could reasonably be dedicated to transportation purposes given the high volume of e-retailing and distribution businesses in California. Though there is no guarantee that these proceeds will be used for transportation, there is a potential nexus between the fast, reliable, and cost-effective movement of e-commerce goods, and the transportation systems that support these movements.

Warehouse Business-Tax Revenues

It may be appropriate to levy a business tax on warehousing, distribution and logistics firms that benefit from the faster and more reliable truck travel times provided by upgraded infrastructure. In California, a business tax can be levied on all businesses in a similar trade, subject to two-thirds voter approval by the city, county or special district electorate. Such taxes are usually based on the square footage of building space occupied by a firm.

This may be a desirable strategy to pursue if warehousing continues to grow in the SJV. Doing so would allow for funds to be raised to help offset the necessary maintenance and capital improvement costs that might be necessary to support growing truck volumes. However, the presence of this new tax may also serve as a disincentive for warehousing companies select the SJV for new development.

Emerging Financing Strategies

Public-Private Partnerships

Public-Private Partnerships (PPP) have received considerable attention in the literature and are frequently included in proposed strategies for infrastructure funding. PPPs appear to be a viable means of facilitating project-specific funding, thereby reducing the pressure on other funding mechanisms. The major value of PPPs is not in providing capital that would otherwise be inaccessible, but in facilitating more rapid capital investment at a comparable or even lower financing cost. The sources of PPP funding can, for the most part, be accessed through revenue bonds or other instruments. The efficiency attributes of private sector development and operation are, theoretically, accessible through outsourcing and design-build contracts without private financing. PPPs, however, may prove to be a quicker and more flexible means of tapping those

funding sources and efficiencies. In that respect the true function of PPPs may be more institutional than economic. However, PPPs may also provide significant leverage for limited public investments.

Railroad Grant Agreement PPPs

There are a number of private freight railroad projects that have been funded in part by state and Federal grants. These projects have been referred to as PPPs because of the combined application of public and private funding. Grant-based railroad PPP projects are generally major railroad infrastructure improvements that are believed to have significant public sector benefits. These large projects would not go forward without some element of public participation due to inadequate rail carrier return.

The funding objective is to prorate the project cost on the basis of the projected benefits. The public sector contribution is based on the public benefits, and the rail carrier contribution is based on the private benefits. Public benefits from a rail infrastructure project can come from a variety of sources. Several types of public benefits have been identified:

- Economic impact and job creation,
- Reduced highway congestion and enhanced mobility,
- Environmental benefits from reduced greenhouse gas emissions,
- Improved railroad at-grade crossing safety, and
- Improved passenger rail service on the freight rail system.

The funding theory advocated for these PPPs is that the public sector pays for the public benefits and the private sector pays for the private benefits. From a political perspective, it appears that the PPP projects are very attractive and warrant funding support. From the private sector perspective, many of the component projects in the overall program would not have gone forward without public funding support. However, it is likely that some of the component projects would have gone forward separately without the formation of the PPP. Overall, the PPPs are enabling funding of significant rail freight transportation infrastructure.

Potential for SJV Goods Movement PPPs

As the discussion above suggests, the best candidate projects for PPPs are those that generate revenue – toll revenue, landing fees, intermodal transfer fees, etc. These conditions are unlikely to be met by highway capacity expansions or east-west connector improvements because those projects add to existing facilities that do not have tolls or other user fees. PPPs would more likely be applicable to new construction for which tolls or fees could be charged or for expansion/ upgrade of port, rail, or air cargo facilities for which user fees of some kind are already in place.

In principle, PPPs do not bring any "new money" into the system. Instead, PPPs provide easier, quicker access to sources that have been tapped in the past through revenue or tax bonds. PPPs may thus enable project sponsors to "build now and pay later." However, they remain as a potential future financing source- in particular for large, capital-intensive projects.

4.4 FUNDING RECOMMENDATIONS

Though Section 4.3 offers some potential funding sources for goods movement projects in the San Joaquin Valley, there are recognized shortfalls in the availability of many of these sources for practical use in funding goods movement projects. For example, TIGER grants, though a successful source for multimodal goods movement projects, are extremely competitive- and in fact only about 5 percent of total applicants eventually receive an award. Likewise, the FHWA's Section 130 grants are capped at $220 million annually – money that is distributed among all 50 states (and thousands of potential grade crossing improvement projects). New sources of revenue- including the California Cap-and-Trade program – may take years before they become a fully capitalized, ongoing source of funding for goods movement projects.

Therefore, like many other regions across the nation, the San Joaquin Valley must be proactive in searching and advocating for new sources of funding. In addition, SJV stakeholders can continue to build the right alliances to make sure that SJV projects have broad support from numerous stakeholders, as well as clearly demonstrated regional benefits. This approach has been shown to be successful in procuring Federal grant funds from sources such as TIGER. Other funding recommendations are described below.

Look forward to MAP-21 Actions

The region can work to strengthen the National Freight Policy and National Freight Network provisions to identify ways that the Federal government, in partnership with the states and regions, will invest in and maintain the national freight network. The freight provisions established by MAP-21 are summarized in Table 4.7 below.

Table 4.7 Freight Provisions in MAP-21

Provision	Action
Establishes National Freight Policy	Establishes a national freight policy, including establishing goals for national investment into freight infrastructure. These goals are to include economic competitiveness, reducing congestion, increasing productivity and economic efficiency, improving security, making use of performance management, innovation, and enhancing the environment.
National Freight Strategic Plan	Calls for development of a National Freight Strategic Plan, which would assess the condition and performance of the national freight network (though limited to the highway system). This requires the U.S. DOT to identify highway bottlenecks, major trade gateways, and barriers to improved freight performance on national freight corridors. It also would create a process for addressing multistate projects and projects to improve intermodal connectivity.
State Freight Advisory Committee and State Freight Plans	Encourages states to establish freight advisory committee, and develop state freight plans. State freight plans are to be comprehensive plans for immediate and long term planning activities and investments to improve the efficiency of freight movement.
National Freight Network	Calls for the establishment of a National Freight Network. This network would consist of a primary network established by the FHWA, but also portions of the interstate system and critical rural freight corridors.

Source: FHWA MAP-21 Significant Freight Provisions Fact Sheet: http://www.fhwa.dot.gov/map21/freight.cfm.

These new provisions suggest several opportunities for the San Joaquin Valley. For instance, the inclusion of critical rural freight corridors in the upcoming National Freight Network may be an opportunity for the SJV to gain national recognition for several of its critical east-west or north-south corridors. Though guidelines for selecting the National Freight Corridors are not yet known, it is likely that corridors will be selected for their importance to national commodity flows, and the national economic significance of these flows. Work completed throughout this SJV Interregional Goods Movement Plan lays the groundwork for the region to demonstrate the regional and national importance of several of its goods movement corridors, and may be a head start to getting National Freight Network designation. It is likely that investments targeted for facilities included in the National Freight Network will be more likely to receive future Federal funds.

Advocate for a Series of Short Line Rail Programs at the Regional and State Levels

The Stakeholder outreach efforts completed during this San Joaquin Valley Goods Movement Study reveal strong support for short line rail systems. Shifts from truck to short line rail could bring benefits such as decreased congestion, decreased wear and tear on regional roads, reduced truck emissions, and reduced truck safety concerns.

In response to this desire, the following recommendations were developed regarding potential policies and funding programs to support short line rail. Most of these programs would be state- or Federal-level programs. Therefore, the role of SJV stakeholders is mostly to advocate for these programs, or to offer potential pilot projects for the demonstration of the efficacy of any of these programs. Many of these program options were identified in a review of best practices in short line planning and funding from other states. Others have been developed through this San Joaquin Regional Goods Movement Study. They are summarized in Table 4.8 and discussed more below.

Table 4.8 Short Line Rail Recommendations

Potential Program	Program Summary
Freight Rail Assistance Program	• Grant or loan source at the state level to support short line rail maintenance or capacity projects • More than 30 states have such a program
Industrial Rail Access Program (IRAP)	• Provide grants and loans for build-out to rail-served industries • Facilitate development of a transload & transload terminals in agricultural regions
Create Performance Goals for Short Line Rail	• Create performance targets for short line rail

Freight Rail Assistance Program

Numerous states across the nation have adopted freight rail assistance programs designed to address short line rail needs, to recognize the important role that rail has in job creation and economic development, and, in some cases, to formalize the state's participation in funding rail projects. More than 30 states have some kind of freight rail assistance program in place; however, California is not one of these states. A summary of state programs is provided in Table 4.9. This includes information from Kansas, Oregon, Wisconsin, Iowa, and Indiana; and suggests different approaches to state involvement in helping to finance short line and Class I rail improvement projects.

Though this type of program would be a state-level program, SJV stakeholders can advocate for the development of such a program. There are numerous examples from other states (some of which are summarized in Table 4.9) on which to model an appropriate program, and to learn best practices.

Table 4.9 Freight Rail Assistance Programs from Other States

State/Fund Name	Funding Amount	Funding Cycle	Eligibility
Kansas State Rail Service Improvement Fund (SRSIF)	$5 million	Annual	Railroads and port authorities
*Connect*Oregon	$40 million-$100 million	Bi-annual	Class I and short line railroads
Wisconsin Freight Rail Infrastructure Improvement Program (FRIIP)	$112 million since 1992	Annual	County, municipality, or town, a railroad, or a current or potential user of freight railroad service
Wisconsin Freight Rail Preservation Program (FRPP)	$30 million	Bi-annual	
Iowa Railroad Revolving Loan and Grant (RRLG) Program	At least $2 million	Annual	Industries, railroads, local governments, or economic development agencies
Indiana Industrial Rail Service Fund	$1.5 million (in 2010)	Annual	Class II and Class III railroads, or port authorities

Source: Cambridge Systematics, Inc., 2013.

Other short line and short haul recommendations include:

Industrial Rail Access Program (IRAP)

The development of an **Industrial Rail Access Program (IRAP)** could help to maintain the competitiveness of California's freight intensive industries. The program would focus on providing grants and loans to accomplish build-out to rail-served industries. It could also be used to facilitate the development of transload and intermodal terminals in agricultural regions. This program could be complemented with other actions at the state level, including a streamlined approval and permitting process for qualifying facilities, and the support of investments to provide sufficient main line capacity for handling industrial traffic generated by the new facilities.

Short Line Performance Metrics

The development of **short line performance metrics** could help to better understand and quantify system needs throughout the SJV. For example, the region could commit to the goal of upgrading the entire short line rail system to 286K capacity, and FRA Class II track classification. This would contribute to the safety and competitiveness of any short line rail system. In addition, being able to quantify the costs of meeting these performance metrics would establish a baseline assessment of regional short line rail "needs". This would also help to position the region for successful grant applications for TIGER, or other competitive grant sources (for example, if California freight rail assistance program were to be established).

Coordination with Other Plans

One of the needs highlighted by stakeholders in the public outreach process is the need for coordination between different transportation and goods movement planning efforts at the state and regional levels. Stakeholders expressed concern for a unified and consistent goods movement "vision," which is carried through all regional and state transportation planning efforts. Because of this concern, this plan coordinated closely with the *California Statewide Rail Plan*, the *SR 99 Business Plan,* and other ongoing studies. This is a concept of growing importance, in particular, when considering the opportunities presented by MAP-21.[32]

Agency and Stakeholder Collaboration

Ongoing interregional collaboration can bring about reduced costs of service, improved service and better economic competitiveness for the region. This type of coordination is already occurring- for example this San Joaquin Valley Goods Movement Plan represents the combined goods movement planning efforts of all eight counties within the San Joaquin Valley. Likewise, other efforts of the San Joaquin Valley Regional Planning Agencies Policy Council have created a strong venue for collaborative, multiagency planning. This type of multiagency coordination has been successful in procuring Federal funds in the past—in particular, through competitive, nationwide programs, such as the TIGER grants in 2010, 2011, and 2012.[33]

[32]Moving Ahead for Progress in the 21st Century, signed into law on July 6, 2012.

[33]http://www.dot.gov/tiger.

A. Dominant Commodities by County

Breaking down the commodity flow information to the county level helps to better understand which industries are clustered within each county. Commodity movements from each of the eight SJV counties are provided in Table A.1, with Table A.2 summarizing the shipments to each county. Note that both of these tables include intraregional shipments.

Farm products are the top commodity by tonnage shipped in seven of the eight SJV counties, with the exception of Kern County. Kern County has a large proportion of truck flows in bulk commodities, such as stone and aggregates, including sand and gravel, for use in construction (e.g., residential buildings, roads, etc.). These materials, combined with gasoline, account for about 60 percent of the totals. This tonnage is likely associated with the cluster of resource extraction and other mineral mining operations in Kern County. Other major commodities for all SJV counties include waste/scrap and mixed freight. Mixed freight typically refers to packaged materials (including packaged food products) and other items shipped primarily in dry van truck trailers or containers. The large volume of mixed freight testifies to the growing importance of warehousing and distribution operations at businesses throughout the SJV.

Table A.1 Top 10 Commodities Shipped from SJV Counties
In Tons

Description	Fresno	Kern	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare	Total SJV	Rank
Farm Products	16,239,285	10,493,976	3,536,695	2,979,494	5,618,971	15,720,402	12,041,855	8,830,275	75,460,953	1
Stone and aggregates	446,438	20,519,713	a	10,205	108,028	374,184	429,409	81,791	21,969,769	2
Food and Tobacco Products	3,897,081	2,453,346	1,191,628	848,067	2,061,135	3,569,071	4,093,055	3,349,295	21,462,678	3
Nonmetal min. prods.	3,808,221	2,073,313	618,245	627,917	1,234,277	3,494,399	3,784,061	1,822,395	17,462,828	4
Waste/scrap	2,925,958	1,592,982	475,014	482,446	948,328	2,684,840	2,907,395	1,400,195	13,417,157	5
Mixed freight	1,848,447	1,577,796	97,945	119,336	385,849	3,093,817	1,040,549	1,194,550	9,358,288	6
Wood prods.	1,627,928	886,294	264,286	268,420	527,625	1,493,777	1,617,600	779,033	7,464,964	7
Gasoline	131,141	6,027,638	a	2,998	31,733	109,916	126,138	24,026	6,453,590	8
Coal-n.e.c.	1,232,477	670,998	200,086	203,216	399,456	1,130,913	1,224,657	589,792	5,651,596	9
Logs	832,462	510,061	106,999	97,312	212,842	708,121	635,104	350,815	3,453,716	10
All Others	3,109,639	5,800,724	434,328	457,385	890,365	2,776,516	2,783,513	1,391,077	17,643,548	
Total	36,099,077	52,606,842	6,925,225	6,096,796	12,418,610	35,155,957	30,683,336	19,813,245	199,799,086	

a: Marginal tonnages reported from all sources.

Source: FAF3, SJV Truck Model, 2007 data.

Note: Data in this table includes intraregional moves.

Note: "Wood prods" includes wood chips, treated lumber, and other processed wood. "Logs" include unprocessed wood in the rough.

Table A.2 Top 10 Commodities Shipped to SJV Counties
In Tons

Description	Fresno	Kern	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare	Total SJV	Rank
Farm Products	14,149,353	8,755,573	3,305,016	2,462,123	5,371,847	15,872,154	11,852,322	7,865,654	69,634,043	1
Stone and aggregates	797,379	36,650,061	a	18,228	192,948	668,327	766,962	146,087	39,239,991	2
Food and Tobacco Products	3,498,791	2,169,435	1,013,931	740,837	1,770,656	3,204,992	3,652,661	2,858,513	18,909,816	3
Nonmetal min. prods.	3,547,218	1,931,215	575,872	584,882	1,149,683	3,254,904	3,524,714	1,697,494	16,265,982	4
Gasoline	256,551	11,791,906	a	5,865	62,080	215,030	246,765	47,002	12,625,198	5
Waste/scrap	2,595,991	1,413,338	421,445	428,039	841,383	2,382,065	2,579,522	1,242,292	11,904,075	6
Coal-n.e.c.	1,908,707	1,039,170	309,888	314,736	618,644	1,751,419	1,896,598	913,410	8,752,572	7
Mixed freight	1,100,306	939,199	58,303	71,036	229,680	1,841,626	619,397	711,068	5,570,615	8
Wood prods.	1,396,143	986,675	127,501	140,417	250,381	1,104,475	875,119	512,640	5,393,350	9
Fertilizers	1,074,272	651,011	146,570	123,826	290,368	902,180	813,219	456,346	4,457,791	10
All Others	6,821,416	11,073,774	689,645	775,840	1,469,246	4,925,741	4,452,827	2,545,224	32,753,712	
Total	37,146,128	77,401,356	6,648,170	5,665,828	12,246,917	36,122,912	31,280,105	18,995,731	225,507,146	

A: Marginal tonnages reported from all sources.

Source: FAF3, SJV Truck Model, 2007 data.

Note: Data in this table includes intraregional flows.

Note: "Wood prods" includes wood chips, treated lumber, and other processed wood. "Logs" include unprocessed wood in the rough.

B. Stakeholder Outreach Process

B.1 STAKEHOLDER GROUPS

A wide variety of stakeholders are involved in the goods movement activities in the San Joaquin Valley (SJV). Though freight stakeholders are diverse (both geographically and functionally), they can be grouped into three categories:

1. Public-sector stakeholders, including California Air Resources Board, FHWA, California Highway Patrol, and air cargo and port facilities;
2. Private-sector and industry association stakeholders, including freight carriers (railroads, Motor Carrier Association) operating in the region, shippers that generate or receive significant amounts of freight, representatives of key industries such as agriculture, oil production, and warehousing, and Chamber of Commerce staff involved in business attraction and retention efforts; and
3. Other stakeholders, such as members of the region's academic community, banking community or environmental communities, or any other identified by the eight SJV Council of Government (COG) representatives.

From the start, it was determined that this SJV interregional goods movement plan needed to reflect the vision and goals of all of these stakeholders. However, it was also determined that the stakeholder input needed to be flexible, and not place undue responsibility on any one stakeholder group. With this goal in mind, the stakeholder outreach process was divided into three groups:

- Technical Working Group;
- Stakeholder Advisory Committee; and
- Informational Distribution List.

Table B.1 summarizes the composition, size, and frequency of interaction for each of the groups. A short paragraph describing each group is included in the section following Table B.1.

Table B.1 Stakeholder Groups and their Roles in the SJV Goods Movement Study

Stakeholder Group Name	Size	Composition	Frequency and Type of Interaction	Intent
Technical Working Group	20-40 Invited Attendees	• COG Representatives • Caltrans Headquarters • Caltrans Districts	• Standing Conference Calls • In-person meetings as needed	• Guides study content and direction • Reviewed materials
Stakeholder Advisory Committee	60-100 Invited Attendees	• Private-sector stakeholders (shippers, industry, etc.) • Public-sector stakeholders (economic development, MPOs, etc.) • Other SJV stakeholders (academics, environmental, etc.)	• Three meetings at key milestones • Four workshops to create project list • One-on-one interviews as needed	• Key public workshop invitees to create project list criteria and recommendations • Reviewed materials
Informational Distribution List	100+ (Open Ended)	• Expanded list of public, private, and other SJV stakeholders	• Received e-mailed notification of deliverables and progress • Invited to participate in "survey monkey" to document key issues in the SJV	• Ensure that key issues reflect entire SJV • Create venue for public to be involved with the study

Technical Working Group (TWG)

This group guided the content, direction, goals and objectives of the entire project. It was comprised of representatives of all eight SJV Council of Governments, as well as Caltrans Headquarters and Districts 6 and 10. Interaction between this group and the consultant team was frequent, and conducted through a mixture of group and individual meetings and teleconferences. A standing teleconference with this group occurred once every three weeks throughout the duration of the project, or at intervals requested by the Technical Working Group. In addition, one-on-one interviews and meetings occurred as needed to respond or address comments and questions on the technical work as it progressed.

Stakeholder Advisory Committee (SAC)

Members from this group were the key invitees to a series of workshops to identify, develop, and prioritize the strategies and recommendations during Task 7 of the project. This included an initial kickoff meeting, several meetings to build the issue and project lists, and a final round of meetings to finalize the project lists. In addition, this team received periodic updates and e-mails from the consultant team, in particular when deliverables were ready for review. Finally, members of the SAC were approached for one-on-one interviews, both in-person and via telephone.

Informational Distribution List

This group represents the broad swath of "freight stakeholders" throughout the SJV. It did not have a defined size or membership number; rather it was a "living" list of private sector, public sector, and other interested stakeholders. One purpose of this list was to ensure that all SJV freight stakeholders have access to project information and the project team. Those that were interested in finding out more, or in being moved onto the Stakeholder Advisory Committee, could reach out to the project team. In addition, this group was targeted for a web-based survey, focused on gathering key infrastructure and operational transportation system issues throughout the SJV. Finally, this group served as a "pool" for any issue-specific stakeholder needs that arose throughout the project.

B.2 INTERVIEWS

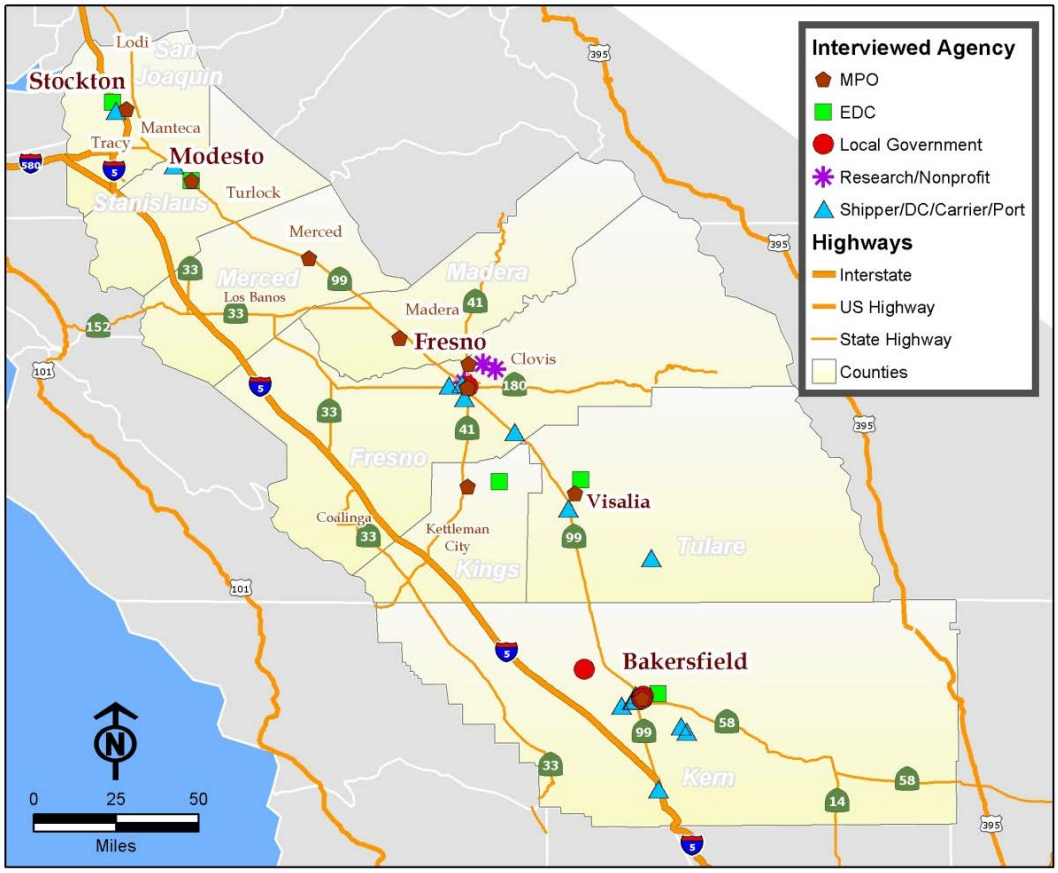
Several interviews were conducted with key shippers, economic development organizations, and local government officials to help substantiate the data and provide insight into issues and solutions to transportation challenges. Table B.2 identifies the interview subjects and the Figure B.1 exhibits the location of each interview conducted. There were also a number of interviews conducted with industry associations and shippers within the tomato, dairy, and nut industries

in the SJV for the industry profiles. A comprehensive list of those interviewees will be included in the final report.

Table B.2 Interview Subjects

County	Label	Organization
Kern	EDC	Kern Economic Development Corporation
Kings	EDC	Kings County Economic Development Corporation
Fresno	Local Government	City of Fresno Dept. of Development and Resource Management
Fresno	Research/Nonprofit	Fresno Center for International Trade Development, State Center Community College District
Fresno	Research/Nonprofit	Fresno State University
Fresno	Research/Nonprofit	Coalition for Clean Air
San Joaquin	EDC	San Joaquin Partnership
Stanislaus	EDC	Stanislaus Economic and Workforce Alliance
San Joaquin	Shipper/DC/Carrier/Port	Port of Stockton
Davis	Research/Nonprofit	USDA Rural Development California
Kern	Local Government	City of Shafter (previous VP of Calcot LTD)
All SJV	Shipper/DC/Carrier/Port	BNSF Railroad: Local
Kern	EDC	California Central Valley EDC
Kern	Shipper/DC/Carrier/Port	IKEA
Kern	Shipper/DC/Carrier/Port	Chevron Pipeline Co.
Kern	Local Government	Bakersfield City Economic Development
Kern	Local Government	Bakersfield City Traffic Operations Department
Kern	Local Government	Engineering Manager Kern County Roads
Kern	Shipper/DC/Carrier/Port	San Joaquin Refining Co. Inc
Tulare	EDC	Visalia Chamber of Commerce
Kern	Shipper/DC/Carrier/Port	Western States Petroleum Association (SJV)
Kern	Shipper/DC/Carrier/Port	SJV Quality Cotton Growers Association
All SJV	Shipper/DC/Carrier/Port	California League of Food Processors

Figure B.1 Interview Locations



C. Additional Goods Movement Projects

Table C.1 Other Goods Movement Projects in the San Joaquin Valley

Regional Highway Capacity	East-West Connectors	Local "Last Mile" Access	Modal Capacity for Expected Flows	Economic Development	Inland Ports	Strategic Programs
Conventional capacity increases through widening, interchange improvements, and new construction. Benefits broadly shared.	Conventional capacity increases through widening, interchange improvements, and new construction. Benefits broadly shared.	Conventional capacity increases through widening, interchange improvements, and new construction. Local benefits.	Rail and highway capacity increases to accommodate specific expected increases in existing freight flows.	Rail and air cargo capacity increases or upgrades to support new or hoped-for freight flows. Benefits contingent on traffic development and may require collateral facility investments or other actions.	Goods movement and economic development initiatives requiring both capital investment and operating subsidies, with benefits contingent on commercial success.	Regional strategies encompassing multiple projects.
Additional Projects						
15e – Widen I-5 between Fort Tejon and SR 99	21 – Extend SR 180 from Mendota to I-5.		95 – West Isle Line Track Upgrade.	12 – Castle Airport Air Cargo Improvements.	98 – Short haul rail shuttle from Fresno to the POLA / LB (ex 99).	39 – State Financial Support for Short Lines.
54 – Widen SR 223 from 2 to 4 lanes and associated improvements	24 – Widen SR 41 from 4 to 6 lanes from Madera County Line to Ave 12.			55 – InyoKern Airport Air Cargo Improvements.		90 – Short-Line Rail Rehab, Gap Closure, Extensions.
65 – Widen SR 41 2 to 4 lanes SR 198 to I-5.	25 – Widen SR 41 from 6 to 8 lanes Divisadero to Madera County Line.			57 – Meadows Field Air Cargo Improvements.		93 – Construct Eastside Short-Line Rail System.
77 – Widen SR 65 between James Rd and Merle Haggard Dr	32 – Widen SR 145 between the SP RR and Shaw Ave			96 – SJVR – Upgrade & Replace Rail.		
85 – Develop Bakersfield West Beltway	44 – New Construction: Atwater-Merced Expressway.					
99i – Widen SR 99 between SR 223 and SR 119	45 – Widen 7th Standard Rd from I-5 to Santa Fe, two phases.					

Regional Highway Capacity	East-West Connectors	Local "Last Mile" Access	Modal Capacity for Expected Flows	Economic Development	Inland Ports	Strategic Programs
	58 – Widen SR 119 2 to 4 lanes SR 33 to Cherry Ave and Elk Hills Rd.					
	59 – Widen SR 119 from Elk Hills Road to I-5, and to Buena Vista.					
	61 – SR 166 Improve speeds from Cuyama grade to SR 33.					
	62 – Widen SR 190 from 2 to 4 lanes from SR 65 to SR 99.					
	66 – Widen SR 43 from SR 119 to Shafter.					
	67 – Widen SR 46 from 2 to 4 lanes between SR 99 and Lost Hills.					
	68 – Widen SR 58 between I-5 and Allen Rd (E of SR 43).					
	103 – New Route, Develop Expressway Connector Between SR-99 and I-5 from Turlock to Patterson.					

Source: Technical work completed as part of the SJV Interregional Goods Movement Plan, 2011 to 2013.