ON THE MOVE

SOUTHERN CALIFORNIA DELIVERS THE GOODS

SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

FREIGHTWORKS
SOUTHERN CALIFORNIA DELIVERS THE GOODS

Comprehensive Regional Goods Movement Plan and Implementation Strategy

The preparation of this report was financed in part through grants from the United States Department of Transportation (USDOT).

This Summary Report highlights key findings and recommendations of the Comprehensive Regional Goods Movement Plan and Implementation Strategy. For further details, please refer to the full report and technical supplements available at www.scag.ca.gov.

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SOUTHERN CALIFORNIA DELIVERS THE GOODS

SUMMARY REPORT
December 2012

SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

FREIGHTWORKS
SOUTHERN CALIFORNIA DELIVERS THE GOODS

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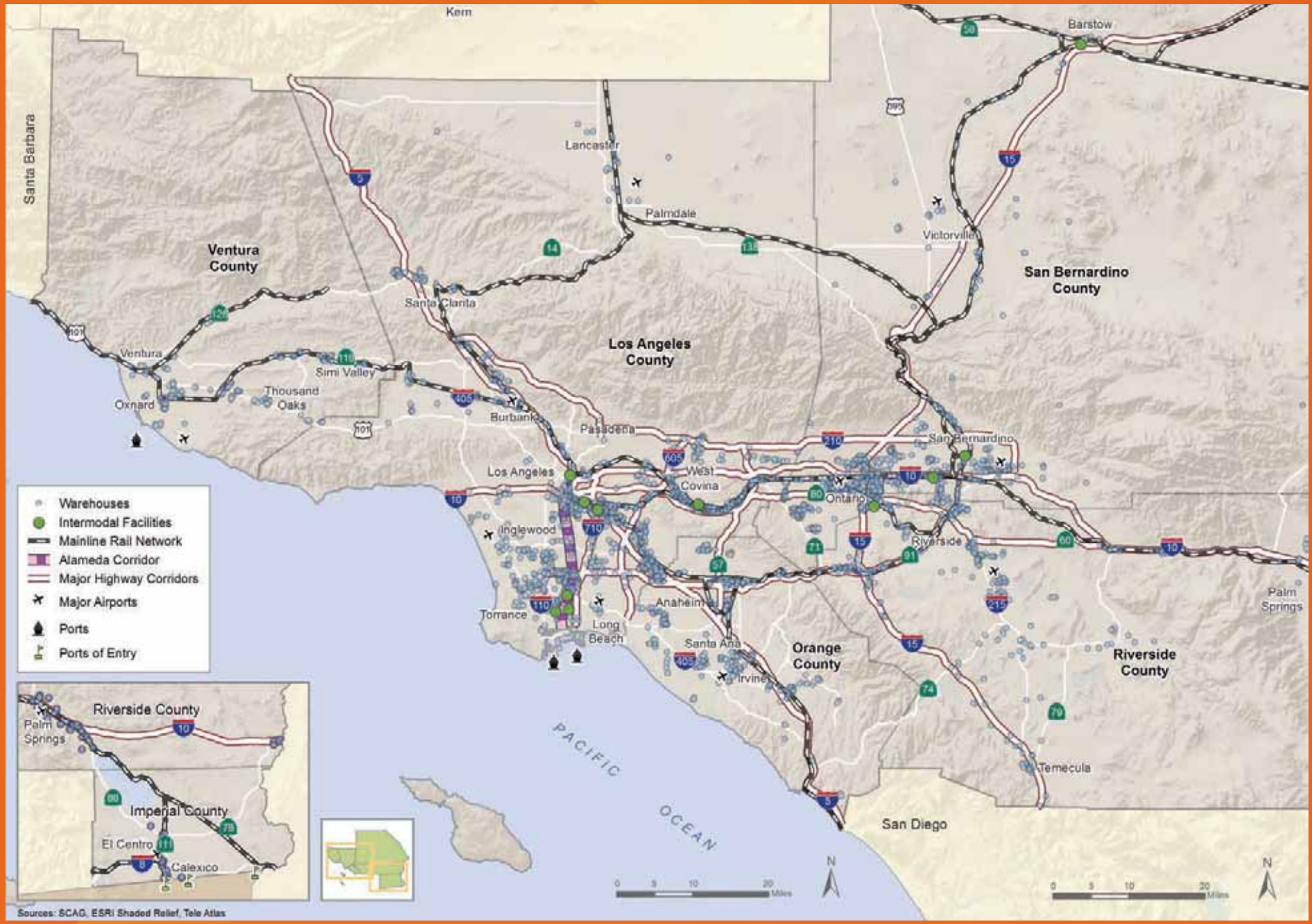
EXISTING SCAG REGION GOODS MOVEMENT SYSTEM



GOODS MOVEMENT AND SOUTHERN CALIFORNIA

A VISION FOR A WORLD CLASS SYSTEM

This report presents a long-range comprehensive plan for the goods movement system in Southern California. The Plan is designed to ensure that the region continues to play a vital role in the global supply chain while meeting regional economic goals, addressing critical mobility challenges, preserving the environment, and contributing to community livability and quality of life goals. The Plan is the final product of the Southern California Association of Governments' (SCAG) Comprehensive Regional Goods Movement Plan and Implementation Strategy, a four-year effort to collect data, conduct analyses, and engage with regional, statewide and national stakeholders covering various aspects of the region's goods movement system.

Goods movement is essential to support the economy and quality of life in the SCAG region. The regional goods movement system is a multimodal, coordinated network that includes deep-water marine ports, international border crossings, Class I rail lines, interstate highways, state routes and local connector roads, air cargo facilities, intermodal facilities, and distribution and warehousing clusters. In 2010, over 1.5 billion tons of goods valued at almost $2 trillion moved across the region's transportation system. Whether carrying imported goods from the region's international land border crossings or the San Pedro Bay Ports to regional distribution centers, supplying materials for local manufacturers, or delivering consumer goods to SCAG residents, the movement of freight provides the goods needed to sustain regional industries and consumers on a daily basis.

Southern California is a world leader in commerce and a major exchange point for international culture as businesses from across the globe trade via the region's port, airport, and border crossing facilities. Goods movement is so woven into the fabric of life in Southern California that it is easy to take for granted that it will continue to deliver benefits without significant coordinated planning by local, regional, state, and national stakeholders. However, goods movement in Southern California faces serious challenges that will require considerable collaboration and investment to remain a cornerstone of the regional and national economy.

Southern California can meet these challenges with the same creativity, innovation, and leadership that has made it one of the world's premier goods movement centers. Working with its public and private partners, SCAG has established a vision for a regional goods movement system through the Comprehensive Regional Goods Movement Plan and Implementation Strategy (the Plan). The Plan and vision are critical components of SCAG's adopted 2012-2035 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS).

GOODS MOVEMENT VISION STATEMENT

A world-class, coordinated Southern California goods movement system that accommodates growth in the throughput of freight to the region and nation in ways that support the region's economic vitality, attainment of clean air standards, and quality of life for our communities

INVESTMENT THAT TARGETS KEY INDUSTRIES TO SUPPORT THE ECONOMY

In 2010, goods movement-dependent industries employed over 2.9 million people in Southern California and contributed $249 billion to Gross Regional Product (GRP) (Figure 1). Additionally, trade through Southern California's container ports supports over 3.37 million jobs throughout the U.S. The Plan ensures that local and regional businesses have access to transportation services and facilities necessary to support growth by targeting investments in key corridors where these industries are located. In so doing, it promotes system improvements that will help contain rising costs of goods and services. Examples include a dedicated truck lane system that connects concentrations of goods movement activity, supported by a program to resolve truck bottlenecks on the region's major truck corridors. The Plan also ensures that Southern California will continue to be a leading trade gateway serving the Pacific Rim and Mexico by supporting capacity improvements in the marine terminals, intermodal terminals, railroad mainlines, and roadway access routes to the seaports, airports, and international land border crossings that make up the region's trade transportation system.

ADDRESSING GROWTH THROUGH MULTI-MODAL SOLUTIONS, CAPACITY EXPANSION, SAFETY AND OPERATIONAL IMPROVEMENTS

The Plan includes projects and strategies to promote the fluid movement of goods and people consistent with user expectations for a world-class transportation system by focusing on multimodal solutions. The Plan ensures that the regional rail system can accommodate the projected doubling of volumes without increasing delay and includes investments in highway improvements that eliminate as much as 5.85 million truck vehicle-hours-traveled each year. The Plan also includes creative approaches to shared use corridors through increased separation of passenger and freight activities, leading to a safer transportation system where possible.

EXPANDING THE GOODS MOVEMENT SYSTEM WHILE PROVIDING FOR A HEALTHY ENVIRONMENT AND LIVABLE COMMUNITIES

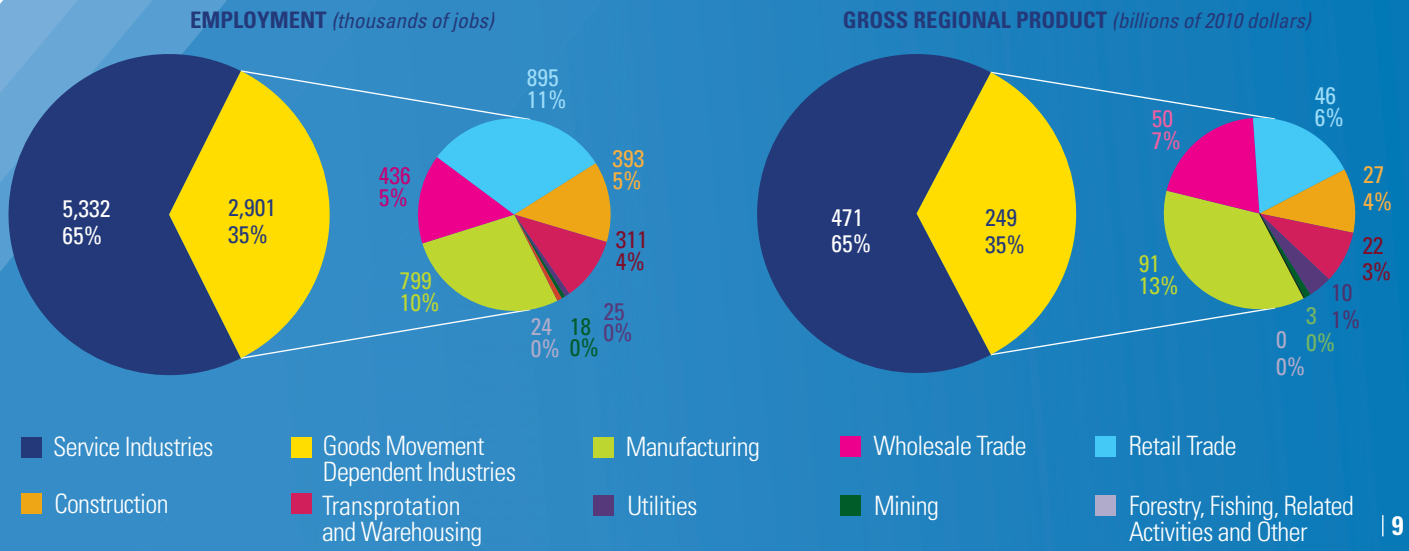
The Plan includes a strong commitment to reduce emissions from transportation sources by identifying strategies for the broad deployment of zero- and near-zero emission transportation technologies. The development of a world-class zero- or near-zero emission freight transportation system is necessary to maintain economic growth in the region, sustain quality of life, and to meet federal air quality requirements. The Plan sets forth an aggressive strategy for technology development and deployment to achieve this objective. The Plan also includes strategies that mitigate neighborhood and community impacts to the maximum extent possible. The use of non-highway right-of-way that moves truck activity closer to industrial areas and away from residential areas, is an example of this approach.

PHOTO COURTESY OF SIEMENS

BUILDING SOUTHERN CALIFORNIA'S GOODS MOVEMENT SYSTEM FOR THE NEXT CENTURY

Twenty-five years from now, the goods movement system in the SCAG region is envisioned to include bold new capacity enhancements including new and expanded rail yards, additional mainline railroad tracks, expanded and modernized port terminals, truck-only lanes along the I-710 and the East-West Freight Corridor connecting I-710 to I-15, and a modernized Gerald Desmond Bridge. The new system will also include critical bottleneck relief projects on major freeways and operational improvements such as traveler information systems and GPS technology to reduce truck delays. Multiple grade separations on railroad mainlines will provide significant traffic congestion relief throughout the region. The system will also show significant progress in reducing emissions from goods movement sources through an aggressive technology advancement plan to deploy near-zero and zero-emission vehicles. The SCAG region will continue to lead the nation and the world in the application of innovative strategies for goods movement that realize the vision embodied in this Plan.

Figure 1 **ECONOMIC CONTRIBUTION BY GOODS MOVEMENT DEPENDENT SECTORS, 2010**



KEY GOODS MOVEMENT FUNCTIONS IN THE ECONOMY

THE USERS OF THE GOODS MOVEMENT SYSTEM AND THEIR ROLE IN THE REGIONAL, NATIONAL, AND INTERNATIONAL ECONOMY

Goods movement is what economists refer to as a derived demand—the demand for goods movement is an outgrowth of overall economic activity. The goods movement system supports regional industries and global supply chains that trade in international, domestic, and local markets. In order to understand what drives demand for goods movement in the SCAG region, it is useful to think of four major functions supported by goods movement:

PROVIDES ACCESS TO INTERNATIONAL GATEWAYS

Southern California is the nation's premier international gateway. The nation's largest port complex, a large regional consumer market, and a vast supply of warehouse facilities have made it one of the nation's largest centers for distribution of imported consumer products. The importance of the region's gateways in connecting consumer goods manufactured in Asia with U.S. markets has been well documented, and the overall importance of the system in supporting the flows of containerized goods continues to grow. In 2010, maritime and air cargo valued at $414 billion moved through the Los Angeles Customs District and another $10.4 billion moved through the region's international border crossings. The Ports of Los Angeles and Long Beach alone generate more than three million jobs nationwide. The impacts these gateways have on local and regional economies are equally as important. Combined, the region's three seaports (Port of Los Angeles, Port of Long Beach, and Port of Hueneme), two international airports (Los Angeles International and Ontario International), and one commercial land border crossing (Calexico East – Mexicali II) make significant contributions to the regional economy by providing:

- Over 60,000 direct jobs at the ports, airports, and border crossings;
- More than 1.6 million trade-related jobs throughout the SCAG region; and
- Over $30 billion in local, state, and federal tax revenue.

SUPPORTS REGIONAL MANUFACTURING ACTIVITIES

Even at the height of the Great Recession, the U.S. remained the world's largest manufacturing economy, and Southern California continued to be a critical manufacturing hub. According to the Los Angeles County Economic Development Corporation (LAEDC), in 2009, the Southern California region was the third largest manufacturing center in the country, trailing only the states of California and Texas as a whole. In 2010, manufacturing activities contributed approximately $91 billion to the region's GRP with regional manufacturers trading in both international and domestic markets. The region's manufacturing sector is highly diverse with computer and electronic product, chemical, transportation equipment, fabricated metal product, processed food, and machinery manufacturing. Higher-value, time-sensitive products, like computers and electronics, rely heavily on the region's truck and air cargo systems while bulk and heavy-weight products that are less time sensitive, such as chemicals and fabricated metals, generally use a mix of trucking and rail to move products.

In 2010, manufacturing activities in Southern California contributed approximately $91 billion to the region's Gross Regional Product.

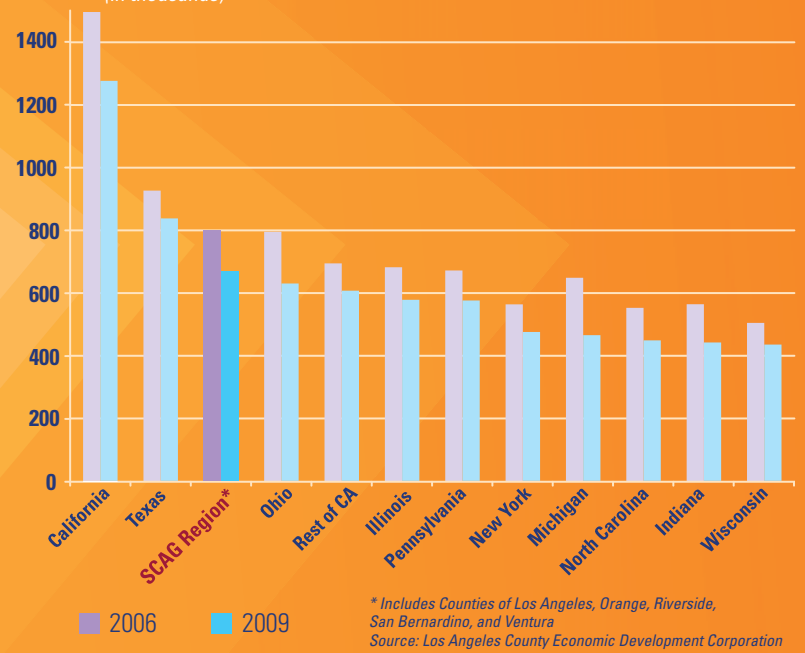
SERVES THE NEEDS OF LOCAL BUSINESSES AND RESIDENTS

Like most metropolitan areas of its size, a substantial amount of the region's goods movement activity is associated with local pickup and delivery, construction, utilities, agriculture and other services. Virtually all of this local activity takes place using trucks. As the population of the SCAG region continues to grow, the demands for consumer products distributed through the region's large wholesale and retail trade sector will fuel growth in local distribution and service trucking. Another component of the local distribution and service function is the movement of materials and equipment to/from construction sites. In 2010, construction-related activities employed 393,000 people in the region and contributed $27 billion to the GRP of the SCAG region. This is a strong indication that current growth in construction-related industries will continue. While Southern California was hit very hard by the housing market collapse, there are recent signs of a nascent turnaround. Between 2009 and 2010, the number of building permits issued in the region grew by more than 17.5 percent. Between 2010 and 2011, the number of permits issued grew by more than 21 percent.

SUPPORTS A THRIVING LOGISTICS INDUSTRY

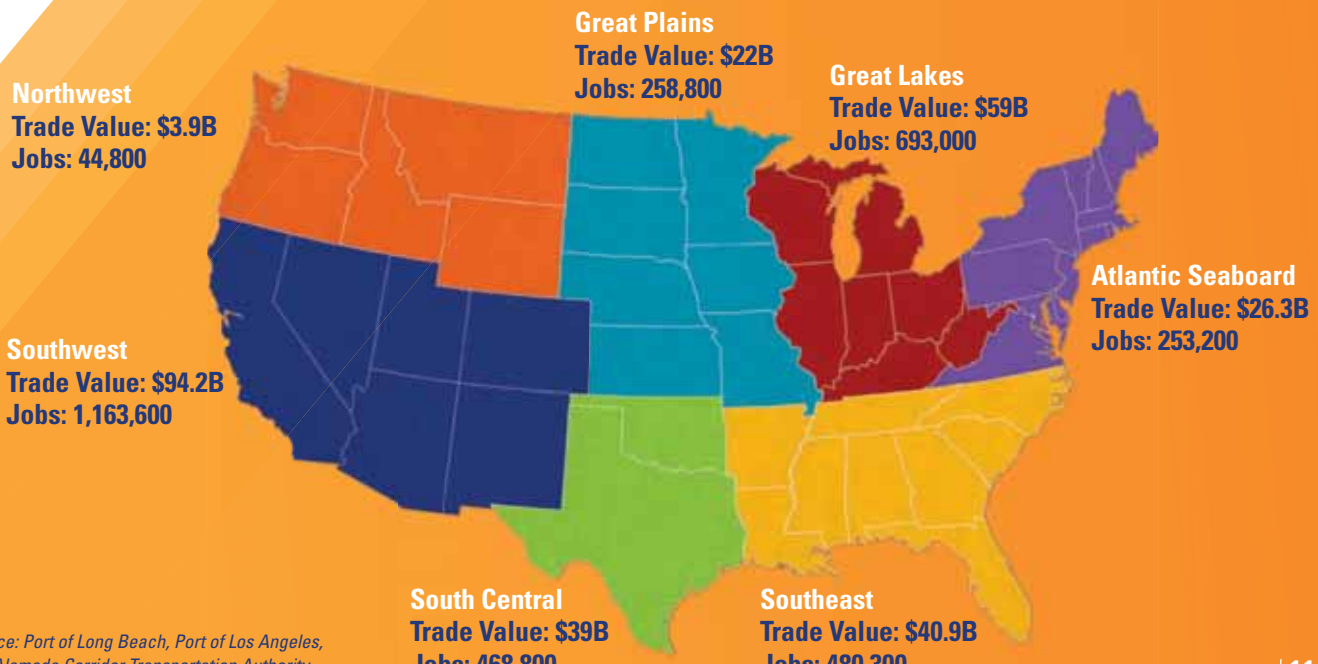
The logistics industry in the SCAG region (which includes transportation, warehousing, logistics services, and other sectors) has become an important component of the regional economy. Collectively, these industries rely on all components of the region's transportation system—ocean shipping and air freight (for international supply chains), trucking (for intra-regional shipments and drayage moves), and warehousing (to support both international trade and local delivery of consumer goods). In 2010, transportation and warehousing activities provided 311,000 jobs in the region and accounted for $22 billion of GRP in the SCAG region.

Figure 2 **ANNUAL AVERAGE MANUFACTURING EMPLOYMENT**
(in thousands)



** Includes Counties of Los Angeles, Orange, Riverside, San Bernardino, and Ventura*
Source: Los Angeles County Economic Development Corporation

Exhibit 2
IMPACTS OF CONTAINERIZED TRADE THROUGH SAN PEDRO BAY PORTS IN FY 2008



Source: Port of Long Beach, Port of Los Angeles, and Alameda Corridor Transportation Authority

THE GOODS MOVEMENT SYSTEM

The goods movement system in the SCAG region is a complex series of interconnected infrastructure components that must operate as an integrated whole to serve the goods movement functions from a user perspective. Costs, throughput, velocity, and reliability for shippers and customers of goods are driven by the end-to-end performance of this system. The variety of modal alternatives, access to key goods movement centers within the region, connections to markets and suppliers, and the quality of intermodal connections make the SCAG region an attractive center for goods movement activities.

The goods movement system in the SCAG region, including many elements that share capacity with passenger traffic, is owned and operated by a mix of public and private sector entities. Understanding the interactions among the diverse mix of owners, operators, and users is critical to how the goods movement system functions.

HIGHWAY

In the SCAG region, the California Department of Transportation (Caltrans) owns and operates 3,747 miles of state highways and interstate freeways. The region's highway system serves a mix of local, domestic and international cargo shipments that support numerous industries and goods movement activities. Examples include trips to deliver raw materials to local businesses and industry, trips to serve the region's large consumer base, or trips associated with the international movement of goods through the San Pedro Bay Ports, U.S.-Mexico border crossings, and regional airports. The roadway system in the SCAG region is a vital connection to manufacturing and warehouse and distribution facilities that are largely located along key highway corridors (SR-91, SR-60, I-10, I-210 and I-5) that connect to the interstate system, intermodal rail facilities, and air cargo facilities. Arterial highways throughout the region provide direct connections to commercial and residential centers, allowing for deliveries to stores, homes, construction sites, and other businesses. For goods to move efficiently on the region's roadway system, they must rely on a core set of highways that facilitate both east-west and north-south connections including I-210, I-10, SR-60, SR-91, I-5, I-110, I-710, and I-605. For example, the I-710 freeway offers direct access to the San Pedro Bay Port complex, and connects to nearly every major east-west highway corridor. It also serves as a primary access corridor to the intermodal rail terminals that handle the majority of international intermodal cargo.

RAIL

The SCAG region is served by two Class I railroads: Union Pacific Railroad (UP) and BNSF Railway. These two railroads handle the vast majority of rail cargo in the region, providing a full range of intermodal and carload rail services. Both UP and BSNF operate intermodal terminals for freight containers and trailers, classification yards for traditional rail carload commodities and auto terminals for auto trains. In 2010, the two Class I railroads handled over 4 million international and domestic containers and truck trailers at regional intermodal terminals that are experiencing growing levels of congestion. There are also three Class III railroads in the SCAG region: Pacific Harbor Line (PHL), Los Angeles Junction Railway (LAJ), and the Ventura County Railroad (VCR). These shortline railroads provide a mix of services connecting rail shippers with the Class I system through various switching operations.

SEAPORTS

The SCAG region is home to three deepwater ports: the Ports of Los Angeles and Long Beach (San Pedro Bay Ports), and the Port of Hueneme in Ventura County. The Port of Los Angeles (POLA) is comprised of 4,200 acres of land and has four on-dock rail yards. The Port of Long Beach (POLB) is comprised of 3,200 acres of land and has five on-dock rail yards. Between them, the Ports have terminals devoted to containers, liquid bulk, dry bulk, break bulk, automobile imports, and cruise terminals. Both of the San Pedro Bay Ports are expected to expand to accommodate the future growth in imports to the SCAG region. The Port of Hueneme specializes in automobiles, fresh fruit and produce, and other break bulk and project cargo.

AIRPORTS

Regional air cargo is served by a mix of commercial passenger carriers (using "belly cargo"), integrated air and truck service carriers (e.g., Federal Express, United Parcel Service (UPS), and dedicated air cargo carriers. Both Los Angeles International Airport (LAX) and Ontario International Airport (ONT) support these types of air cargo carriage. LAX has a large cargo operation that includes the 98-acre Century Cargo complex, the 57.4-acre Imperial Cargo complex, the Imperial Cargo Center, and a number of terminals on the south side of the airport. Century Boulevard, SR-90 (Imperial Highway), and La Cienega Boulevard are the major arterial roads accessing the LAX cargo facilities, and I-405 and I-105 are the major freeway connections. ONT has approximately 96,000 square feet of cargo building and office space to support all-cargo, airline belly cargo and air mail. UPS has a 156-acre West Coast Distribution Center adjacent to the airport. There is also a 94-acre site in the northwest corner of the airport proposed for a new air cargo development. I-10 and SR-60 provide freeway access to the air cargo facilities at ONT.

INTERNATIONAL BORDER CROSSINGS

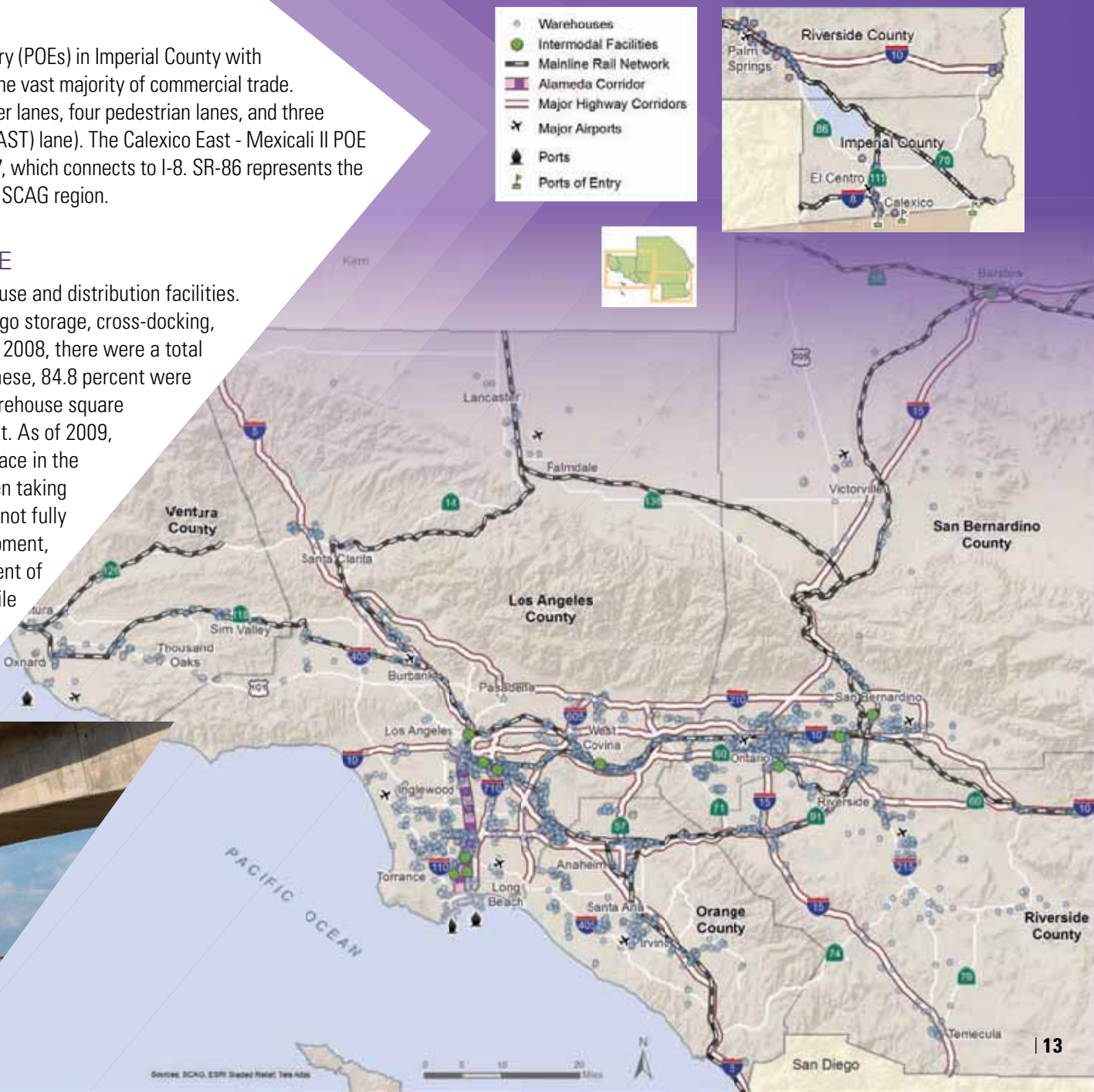
The SCAG region has three international land Ports of Entry (POEs) in Imperial County with the border crossing at Calexico East - Mexicali II serving the vast majority of commercial trade. The Calexico East - Mexicali II POE includes nine passenger lanes, four pedestrian lanes, and three commercial lanes (including one Free and Secure Trade (FAST) lane). The Calexico East - Mexicali II POE is connected to the regional freight truck network via SR-7, which connects to I-8. SR-86 represents the major truck corridor connecting Calexico to the rest of the SCAG region.

WAREHOUSE AND DISTRIBUTION SPACE

The SCAG region hosts an extensive network of warehouse and distribution facilities. These facilities serve a variety of functions including cargo storage, cross-docking, and value added services (e.g., sorting, labeling, etc.). In 2008, there were a total of 4,695 warehousing facilities in the SCAG region. Of these, 84.8 percent were occupied and 15.2 percent were vacant. Port-related warehouse square footage in 2008 was estimated at 102 million square feet. As of 2009, approximately 45 percent of the occupied warehouse space in the SCAG region was in Los Angeles County. However, when taking into account available space in recently constructed but not fully occupied space and land suitable for warehouse development, Los Angeles County accounts for approximately 39 percent of the existing and potential regional warehouse space while San Bernardino and Riverside Counties account for 26.9 percent and 22.4 percent respectively.

Exhibit 3

EXISTING SCAG REGION GOODS MOVEMENT SYSTEM



EXISTING CONDITIONS AND FUTURE NEEDS

HIGHWAY SYSTEM

Current patterns of industrial development are important indicators of where truck access and capacity improvements will be needed in the future. Most of the region's warehouse and distribution space (both developed and developable) is located in the Gateway Cities and along the I-10 and SR-60 corridors in the San Gabriel Valley, San Bernardino County, and Riverside County. Manufacturing facilities are also located along these corridors with additional concentrations along the I-5 corridor in Orange County and Los Angeles County.

HIGH GROWTH IN TRUCK TRAFFIC ON CRITICAL CENTRAL CORRIDORS

Truck traffic in Southern California is expected to grow significantly through 2035, using an increasing share of the region's highway capacity. Truck vehicle-miles-traveled (VMT) on the regional highways is projected to grow by 80 percent between 2008 and 2035, an increase from 6.8 percent to over 10 percent of total VMT.

Economic activity associated with regional high-value manufacturing, the growing logistics industry, and international trade will be major drivers of growth in truck traffic. The largest clusters of these activities are along the east-west corridors, namely SR-60 and I-10, as shown in Table 1.

Truck traffic from the San Pedro Bay Ports has major movements along I-710, SR-91, and SR-60. Future growth in warehousing and manufacturing around these corridors, and continuing shifts in warehousing to the Inland Empire, will lead to increasing concentrations of truck traffic growth. In the future, the highest volumes of truck traffic will be experienced on the southern part of I-710 and SR-60. Several segments of I-210, I-10, and I-5 will experience high levels of congestion and will be among the most congested truck corridors in the region (see Exhibit 4).

PROVIDING FOR IMPORTANT INTRA-REGIONAL TRUCKING

Truck traffic in the region is dominated by intra-regional movements that consist primarily of local service and distribution traffic throughout the region. Examples include movements that link regional distribution centers with population centers, local manufacturers and warehouses to customers, and port traffic to transload sites, import warehouses, regional distribution centers, and off-dock rail yards.

Intra-regional trucking represents more than 90 percent of the truck trips generated in the region. Although other modes will remain important to the SCAG region, movements by trucks will continue to be the dominant mode because of flexibility, adaptability for short haul goods movement, and general speed and reliability for moving high-value manufactured products to support Just-in-Time delivery.

While significant portions of port and warehouse traffic occur along the I-710 and central east-west corridors, local service and distribution traffic, and some manufacturing traffic, follow a more dispersed pattern around the region. This leads to congestion hot-spots on a wide variety of corridors that are responsible for over 1 million hours of truck delay per year. In addition to the corridors described above, service and distribution traffic also moves along key north-south corridors on the west side of the region.

GROWING TRUCK TRAFFIC AND SAFETY IN THE REGION

Truck-involved accidents often result when automobile drivers underestimate the maneuverability of trucks. Truck drivers are generally well-trained, but when faced with certain roadway geometry conditions (e.g., short or tightly curved-ramps, short merge/weave sections), there is an increased risk of incidents. These incidents tend to be serious and addressing them on-site when they occur can have significant impacts on roadway conditions. According to California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS), there were 99 fatal truck-involved accidents in the SCAG region in 2009 and 2,564 truck-involved accidents that resulted in injuries. One estimate calculates the average cost per fatal crash involving commercial vehicles at $7.2 million.

MOST DANGEROUS CORRIDORS

As shown on Exhibit 4, mapping a 5-year average of truck-involved crashes on key highway corridors reveals that:

- SR-60 between I-605 and SR-57 has a high average annual truck accident rate—at 10 to 15 truck crashes per mile yearly.
- One segment near the intersection of SR-60 and SR-57 experiences 20-30 crashes per mile yearly.
- The highest average annual truck accident rate—at 30 to 40 truck crashes per mile yearly, is on I-5 between SR-60 and I-10.

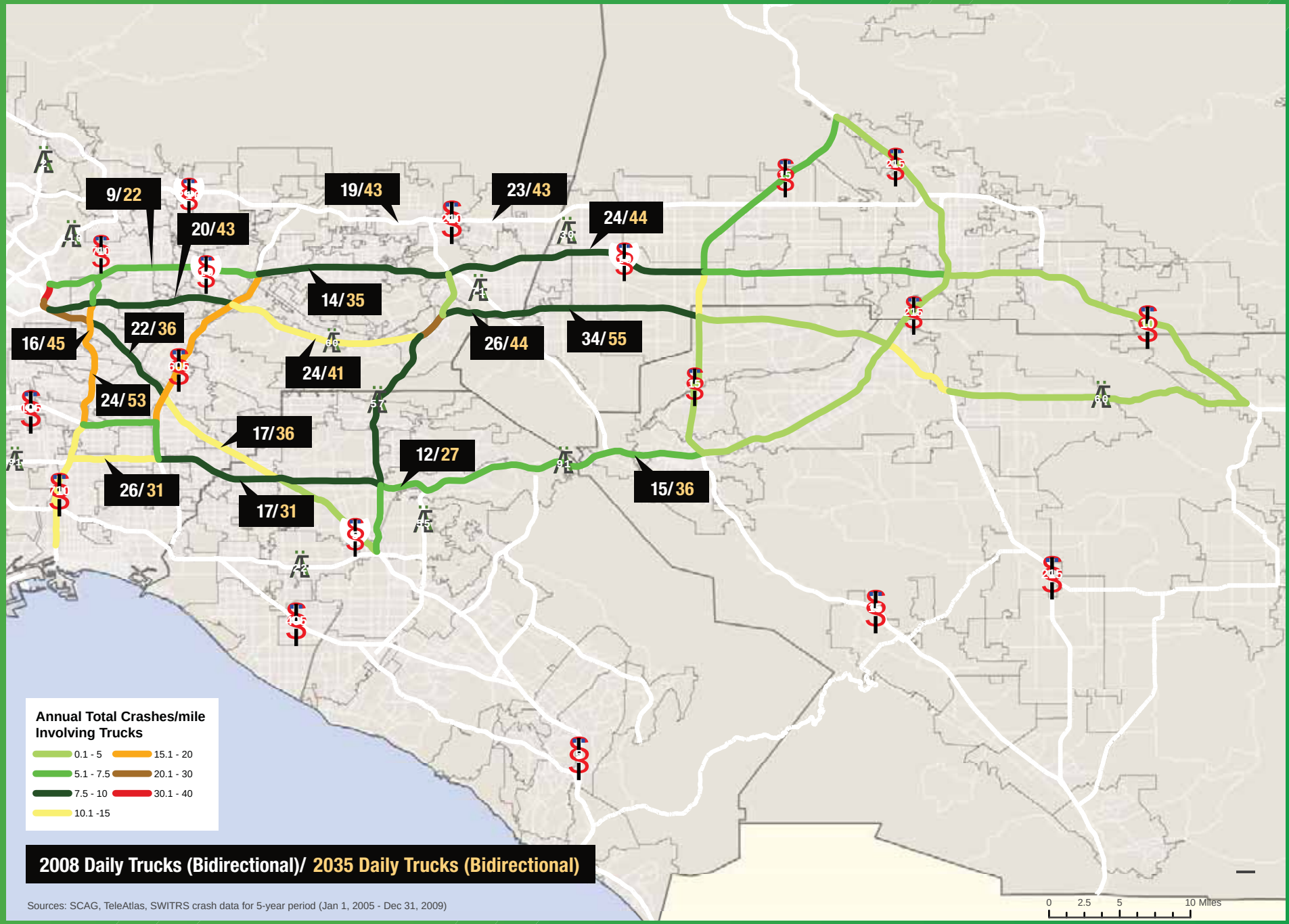
Table 1

WAREHOUSE SQUARE FOOTAGE AND MANUFACTURING EMPLOYMENT ALONG EAST-WEST HIGHWAYS (2009)

East-West Highways	Total Warehouse Sq. feet (In Millions, within 5 Miles)	Percent of Regional Total Warehousing	Manufacturing Employees (in Thousands)	Percentage of Regional Jobs
	Warehousing		Manufacturing	
SR-60	509.9	50%	227	27%
I-10	442.9	43%	156	19%
SR-91	188.9	18%	166	20%
I-210	171.2	17%	60.9	7%

Exhibit 4

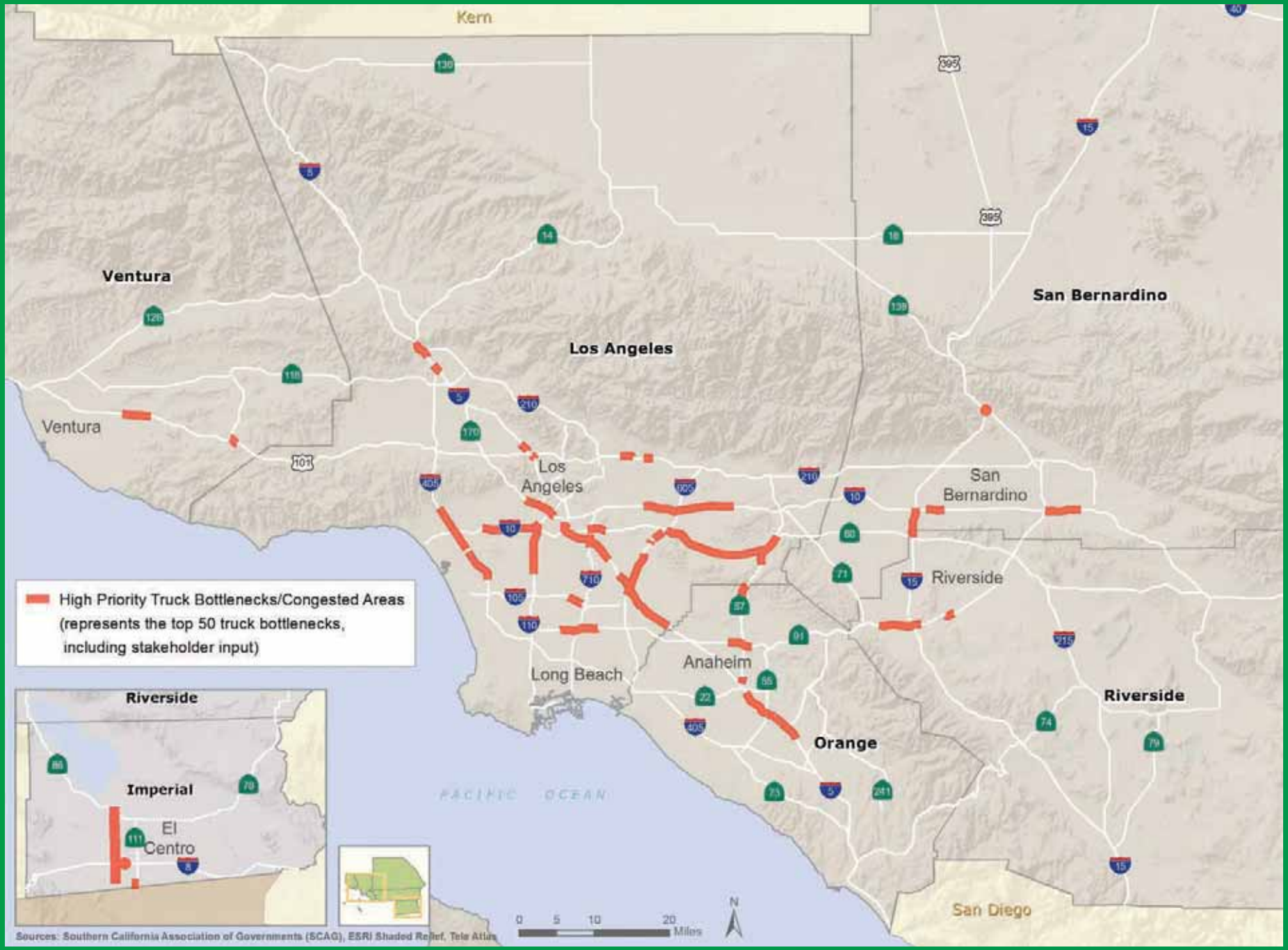
DAILY TRUCK VOLUMES (2008 AND 2035 BASELINE, IN THOUSANDS) AND TRUCK INVOLVED CRASHES PER MILE



Sources: SCAG, TeleAtlas, SWITRS crash data for 5-year period (Jan 1, 2005 - Dec 31, 2009)

Exhibit 5

HIGH PRIORITY TRUCK BOTTLENECKS



EXISTING CONDITIONS AND FUTURE NEEDS

REGIONAL RAIL SYSTEM

INCREASED DEMAND FOR RAIL CAPACITY

The extensive rail network in the SCAG region is a critical link in the supply chain that allows shippers the ability to move large volumes of goods over long distances at lower costs than other transportation methods. With over half of the international cargo arriving at the San Pedro Bay Ports utilizing rail, dramatic growth in port-related traffic will be the most significant driver for increases in mainline and intermodal rail terminal capacity in the SCAG region. Both Inland Point Intermodal (IPI) and transload traffic are projected to nearly triple over the forecast period, consistent with the overall growth in marine cargo volumes (see Figure 3). While the significant growth in transloading to rail is partly the result of increased import cargo volume, it also reflects an overall increase in the use of transloading employed in various global supply chain strategies. Although domestic intermodal and non-intermodal rail traffic is not expected to grow as rapidly as port-related traffic (about 2% per year for domestic), it is important to accommodate this growth as it provides access to markets for local manufacturers and brings important products into the region (e.g., food products, construction materials, other domestic goods, etc.).

The region's desire for increased commuter rail will also be a major driver for capacity needs. Passenger traffic in the SCAG region from Metrolink and Amtrak is projected to grow by 60 percent to 100 percent by 2035 on some segments of the BNSF mainline. Exhibit 6 shows the estimated number of freight trains and passenger trains by rail segment for 2010 and 2035. The rail segment with the heaviest concentration of passenger trains is the BNSF San Bernardino Subdivision from Hobart to Fullerton.

By 2035 significant improvements to the railroad system in Southern California will be required. Major segments of track will need to be double or triple tracked, flying junctions will need to be installed at various locations, and the Colton Crossing will need to be grade separated. With train traffic projected to nearly triple by 2035, significant improvements to rail terminal capacity will also be required, including the construction of on-dock and near-dock intermodal terminals.

Dramatic growth in port-related traffic will be the most significant driver for increases in mainline and intermodal rail terminal capacity in the SCAG region. The region's needs for increased commuter rail will also be a major driver for capacity.

PHOTO COURTESY OF RIVERSIDE COUNTY TRANSPORTATION COMMISSION

TYPES OF REGIONAL RAIL TRAFFIC: FACTS AND FIGURES

Freight rail traffic in the SCAG region is a mixture of intermodal trains and non-intermodal trains.

- Intermodal trains often carry containers offloaded from cargo ships onto "flatcars" at on-dock or off-dock rail yards. This Inland Point Intermodal (IPI) cargo is moved "intact" in the original marine container from the overseas origin to the inland U.S. destination via rail. By 2035, it is estimated that 40 percent of the total TEUs handled through the Ports will be transferred at on-dock and off-dock rail yards.
- Intermodal trains also carry trailers loaded with goods that were unloaded from marine containers at warehouses near the Ports, a process known as "transloading." These trailers can later be loaded onto chassis for transportation by truck.
- Intermodal trains also carry pure domestic traffic in trailers and containers to move various cargo and consumer products long distances across the country, to and from Southern California.
- Non-intermodal trains, such as bulk and carload trains, provide access to markets for domestic and local manufacturers to bring important products into the region. Products shipped via rail cars include food products, such as grain, and construction materials, such as lumber and stone.

Figure 3 **RAIL INTERMODAL MARKET SPLIT IN SCAG REGION**
(in millions of Annual TEUs)

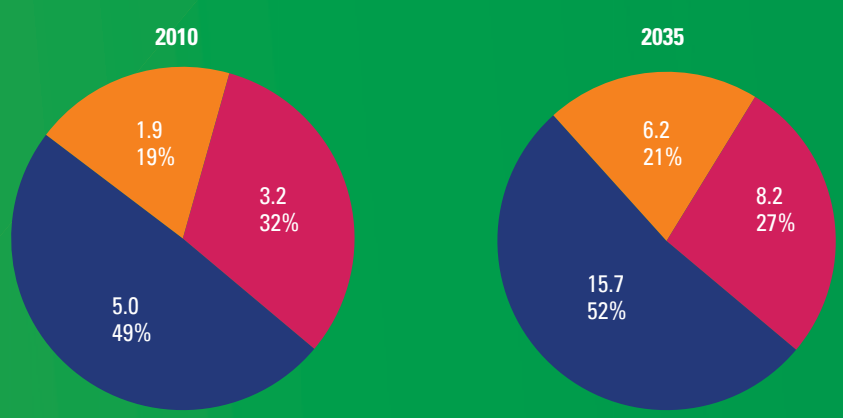
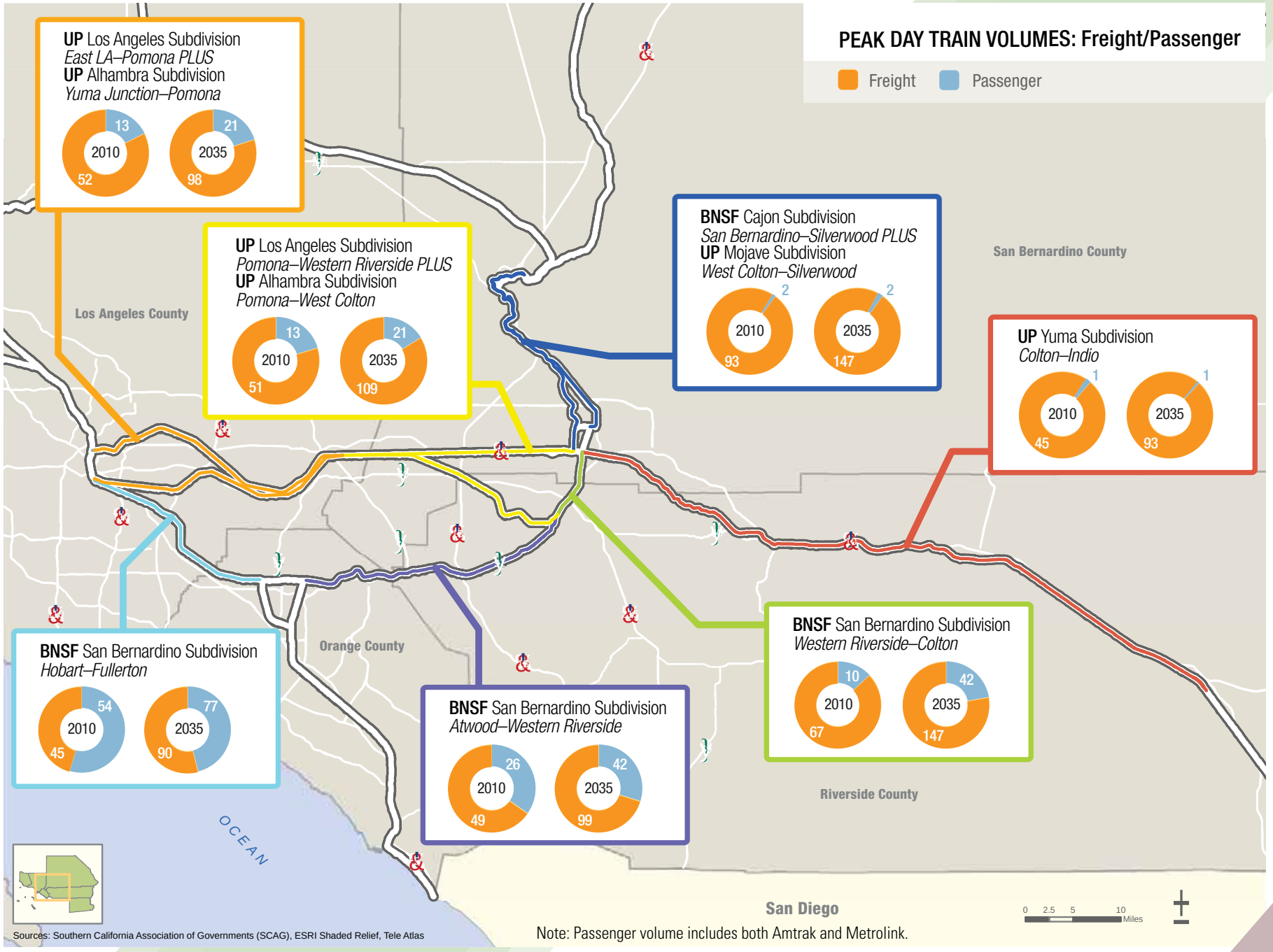


Exhibit 6

PEAK DAY TRAIN VOLUMES BY SEGMENT 2010 TO 2035 (NUMBER OF TRAINS PER DAY)



Sources: Southern California Association of Governments (SCAG), ESRI Shaded Relief, Tele Atlas

Note: Passenger volume includes both Amtrak and Metrolink.

TRAFFIC DELAYS, AUTO EMISSIONS, AND SAFETY CONCERNS AT GRADE CROSSINGS

Trains passing at-grade crossings during the morning and evening peak commute hours cause significant delays for motorists and contribute to increases in harmful emissions as cars idle in traffic while waiting for trains to pass. At-grade crossings can also be locations with significant safety problems, posing serious risks for collisions between trains and vehicles. As railroad traffic increases dramatically through 2035, grade crossing delays are expected to increase by an average of 269 percent for all rail lines combined. Grade crossing delays have been calculated for all crossings between downtown Los Angeles and Barstow on the north and Indio on the east, as summarized in Table 2.

PHOTO COURTESY OF RIVERSIDE COUNTY TRANSPORTATION COMMISSION

Table 2 **VEHICLE HOURS OF DELAY PER DAY AT AT-GRADE CROSSINGS (BY LINE SEGMENT, AND PERCENT GROWTH, 2010 AND 2035)**

	% Growth
BNSF Subdivisions	
San Bernardino (Hobart to San Bernardino)	285%
Cajon (San Bernardino to Barstow)	301%
Subtotal BNSF	**286%**
UP Subdivisions	
Alhambra (LATC to Colton Crossing)*	209%
Los Angeles (East Los Angeles Yard W. Riverside)*	275%
Combined Segment (Alhambra and LA Subdivisions, Pomona and Montclair Area)	211%
Yuma (Colton Crossing to Indio)	428%
Subtotal UP	**254%**
Total	**269%**

** Excluding combined segment of Los Angeles and Alhambra subdivisions in Pomona and Montclair area*

EXISTING CONDITIONS AND FUTURE NEEDS

SAN PEDRO BAY PORTS, INTERNATIONAL LAND PORTS OF ENTRY, AND REGIONAL WAREHOUSES

SAN PEDRO BAY PORTS

The San Pedro Bay Ports are the dominant port of entry for Pacific Rim trade with the U.S., and the demand at these ports is expected to grow. Recent forecasts project that demand at the San Pedro Bay Ports will reach 39.4 million TEUs by 2035, a volume constrained by expected capacity limitations (see Figure 4).

These limitations will become more significant in the future, as there is unlikely to be sufficient rail yard capacity to accommodate projected growth in intermodal cargo. Transloading, which can supplement on-dock rail capacity demands and provide value-added services, occurs primarily outside of port property and offers a major competitive advantage to Southern California. However, other West Coast Ports are currently exploring options that support transloading on port property with access to on-dock or near-dock rail as a strategy to enhance port competitiveness. The San Pedro Bay Ports and regional planners are continuing to examine the current inventory of suitable transloading sites and options for increasing access to near-dock rail terminals.

Growth in cargo volumes at the San Pedro Bay Ports will also exacerbate existing challenges on local highways including increased congestion and emissions impacts. The number of truck trips entering and leaving the San Pedro Bay Ports every day is expected to grow by 144 percent from 54,900 daily trips in 2008 to 134,200 daily trips by 2035, with the biggest impact likely to be on the southern part of the I-710 corridor. However, as demand for warehousing begins to move farther to the Inland Empire over the next 20 years, port-related traffic on regional east-west corridors is expected to increase considerably. As these routes become more congested, port drayage drivers will make fewer turns per day, reducing their incomes and/or increasing drayage costs.

These challenges will arise as the San Pedro Bay Ports confront increased competition from other West Coast ports, including Canadian and Mexican ports. Moreover, the San Pedro Bay Ports face fierce national competition for import and export maritime trade with other U.S. ports as the expansion of the Panama Canal may allow for the recapture of market share previously lost to West Coast ports by providing an all-water route to the East and Gulf Coasts. The Canadian and Mexican federal governments have been working with ports and provincial governments to increase their market share of Pacific Rim trade. In order to ensure its continued position as the primary gateway for international maritime trade, Southern California must make significant and meaningful investments to retain the value of its regional port assets.

INTERNATIONAL LAND PORTS OF ENTRY

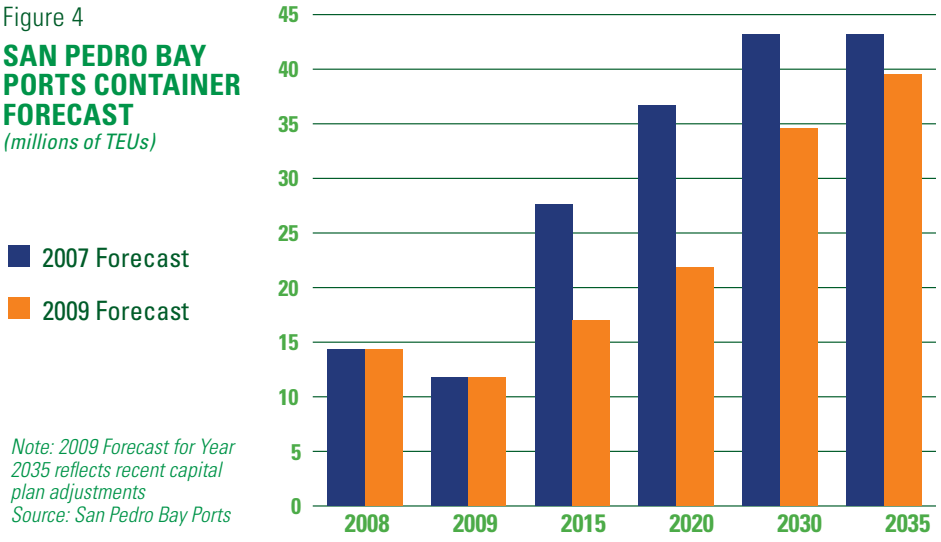
In 2011, cargo valued at nearly $12 billion in trade ($11.5 billion by truck and $400 million by rail) moved through the three international land Ports of Entry in Imperial County (Andrade, Calexico West, and Calexico East). The top commodities transported between the U.S. and Mexico through Imperial County during 2011 were electrical and computer machinery which comprised 46 percent of traded goods. Other major commodities included vehicles, measuring and testing instruments, plastics, and agriculture products. During 2011, over 313,000 trucks entered the SCAG region through Imperial County POEs (loaded and empty trucks combined). Total truck crossings have averaged a 3.5 percent annual increase since 1995. As the region continues to recover from the Great Recession, the number of loaded trucks have grown 12.9 percent between 2009 and 2011, an indication of truck demand reverting to its long term trend. In 2011, a total of 252 freight trains entered the SCAG region through Imperial County POEs (with a total of 8,265 loaded and empty rail containers). Unlike the goods transported by trucks, the amount traded through Imperial County's POEs by rail during 2011 was mainly U.S. exports to Mexico.

Since the implementation of the North American Free Trade Agreement (NAFTA), growth in manufacturing activity in Mexico, fostered by the benefits of Foreign Trade Zones (FTZs) and improved logistics, have generated a significant increase in economic activity and trade. There is pressing need to improve the region's border crossing capacity to support continued growth in regional, national, and international economic activity and trade.

Figure 4

SAN PEDRO BAY PORTS CONTAINER FORECAST

(millions of TEUs)



Note: 2009 Forecast for Year 2035 reflects recent capital plan adjustments
Source: San Pedro Bay Ports

Table 3

FUTURE WAREHOUSING SUPPLY AND DEMAND

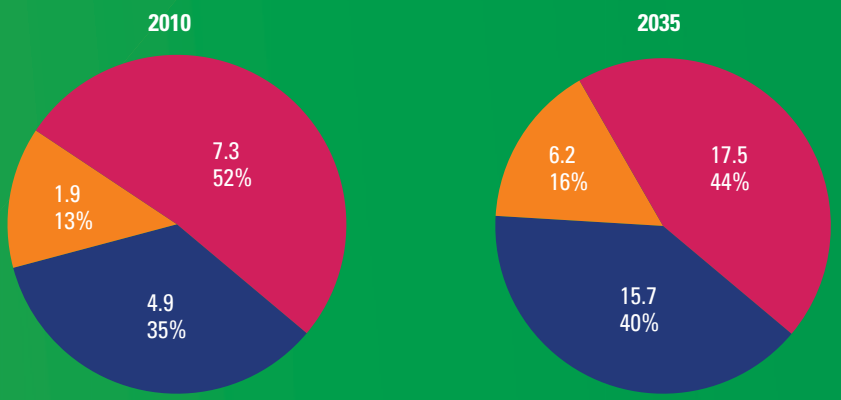
2008 total occupied warehouse space	694 million sq. ft.
2008 available warehouse space	143 million sq. ft.
2008 undeveloped suitable space	185 million sq. ft.
Demand in 2035 to accommodate port and non-port related warehouse growth	1,250 million sq. ft.
Potential shortfall of warehouse space by 2035 =	**228 million sq. ft.**

WAREHOUSING AND DISTRIBUTION

In 2008, the SCAG region had 837 million square feet of warehousing space, of which 694 million were occupied and 143 million were "available" (vacant). It was estimated that another 185 million square feet could be developed on suitably zoned vacant land (mostly in the High Desert areas of the SCAG region).

The aggregate 2035 forecast of warehouse space was developed as part of the Plan. Approximately 1,250 million square feet of port and non-port related warehouse square footage is forecast to be in demand by 2035. Given the assumed growth rates in cargo, the region would run out of suitably zoned vacant land around 2028. By 2035, forecasts show a shortage of 228 million square feet of warehouse space as shown in Table 3.

Figure 5 **SPB PORTS CONTAINER VOLUME SHARE BY MARKET**
(in millions of Annual TEUs)



ENVIRONMENTAL AND QUALITY OF LIFE CONCERNS

The U.S. EPA has designated much of the SCAG region as a non-attainment area for two criteria pollutants, ozone and $PM_{2.5}$. The goods movement industry is a significant contributor of both of these pollutants as many modes of freight transportation, including ocean-going vessels, trucks, and locomotives, are powered by diesel fuel, which is the primary source for these pollutants and their precursors.

- Ground-level ozone, also known as smog, is produced when the oxides of nitrogen (NO_X) in diesel exhaust react with volatile organic compounds (VOC) in the atmosphere. Particulate matter is emitted by diesel engines and is formed when NO_X and other emissions from fossil fuel combustion react in the atmosphere to form particles. In addition, road dust and tire and brake wear debris cause particulate pollution.

- Ground-level ozone can trigger a variety of health problems, including reduced lung function, increased mortality, worsening of respiratory symptoms, and increased rates of physician and hospital visits for respiratory disease. While people with asthma, children, and the elderly are vulnerable, healthy populations are also affected when ozone levels are elevated. $PM_{2.5}$ refers to small particles that cause a number of health effects including reduced lung growth in children, increases in hospital and physician visits and premature mortality. Diesel particulate matter is of particular concern because it is designated a Toxic Air Contaminant due to carcinogenic risk.

Figure 6 **CURRENT AND FUTURE GOODS MOVEMENT EMISSION SOURCES**

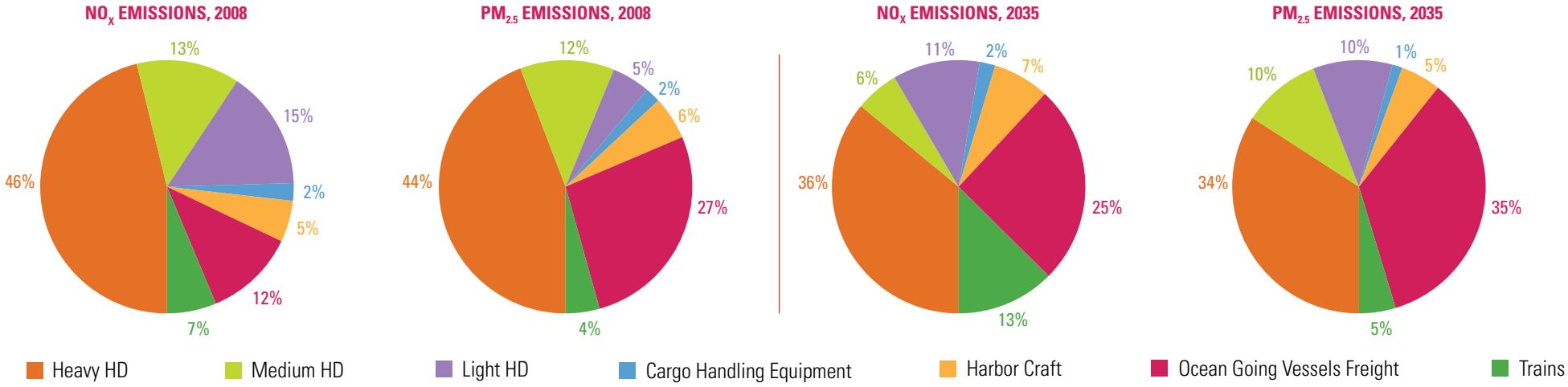


PHOTO COURTESY OF PORT OF LONG BEACH

CHANGES IN EMISSIONS FROM 2008 TO 2035

- Goods movement is currently responsible for approximately 47 percent of all NO_X emissions, and about 18 percent of all $PM_{2.5}$ emissions in the South Coast Air Basin. Heavy-duty trucks currently account for 75 percent of NO_X emissions and 61 percent the $PM_{2.5}$ emissions from goods movement sources in the South Coast Air Basin, which encompasses portions of Los Angeles, Riverside and San Bernardino Counties and all of Orange County. Ocean going vessels and freight trains are the second and third largest sources of NO_X and $PM_{2.5}$ emissions from goods movement sources, respectively.

- By 2035, goods movement will account for approximately 44 percent of regional NO_X, and 9 percent of $PM_{2.5}$ emissions, in the South Coast Air Basin. Within the goods movement sector, trucks will be responsible for a smaller share of NO_X emissions, dropping from 75 percent in 2008 to 53 percent in 2035, while the share of $PM_{2.5}$ emissions from trucks is projected to decline from 61 to 54 percent.

ENVIRONMENTAL AND QUALITY OF LIFE CONCERNS

AIR QUALITY ATTAINMENT CHALLENGES

REGULATIONS TO REDUCE EMISSIONS AND IMPROVE AIR QUALITY

Emissions regulations applied to ocean-going vessels, trucks, and locomotives are expected to reduce the environmental footprint of goods movement activities. By 2035, NO_X and $PM_{2.5}$ emissions from goods movement sources in Southern California are forecast to be less than half of 2008 totals. Nevertheless, these emission reductions will not be sufficient to meet national air quality standards. Growth within the goods movement sector will partially offset the benefits of cleaner engines and fuels. Estimates by the South Coast Air Quality Management District (SCAQMD) indicate that two of the largest projected sources of NO_X emissions in 2023 will be on-road trucks and ocean-going vessels. Their NO_X emissions, combined with other sources, will exceed the level needed to achieve regional air quality goals.

- **Trucks:** Newly manufactured trucks in California must meet emission standards set by the U.S. EPA that are consistent with those set by the California Air Resources Board (CARB). Current engine standards for heavy-duty trucks reflect a 90 percent or greater reduction in emissions compared to standards in effect just a few years ago. In 2008, CARB approved additional regulation for existing vehicles already on the road, which calls for the phase-in of "best available control technology" for NO_X and $PM_{2.5}$ emission reductions. By 2023, all heavy-duty diesel vehicles used in California must have engines with emissions outputs that comply with today's standards. As this regulation is implemented, trucks, and the goods movement sector as a whole, will account for a smaller share of total emissions within the SCAG region.
- **Ships:** In 2007, CARB adopted regulations to reduce emissions from ocean-going vehicles (OGVs) including container ships, refrigerated cargo ships, and cruise ships, while in port. The regulation mandates that ships use shore power rather than burning diesel fuel while docked at a terminal. In 2008, CARB adopted regulations to limit emissions from OGVs within 24 nautical miles of the California coastline. Under this regulation, ship operators must switch from heavy fuel oil to marine distillate fuels when within California waters. As a result, $PM_{2.5}$ emissions from OGVs along the California coastline are expected to fall 83 percent from their baseline levels.
- **Ports:** In 2006, the Ports of Los Angeles and Long Beach adopted the Clean Air Action Plan (CAAP) that identifies opportunities to reduce air pollution from port activities. Updated in 2010, the CAAP includes provisions for reducing emissions from all port-related sources to reach the 2014 goal of reducing NO_X emissions by 22 percent, SO_X by 93 percent, and diesel particulate matter (DPM) by 72 percent relative to 2005 emissions.
- **Locomotives:** In 2008, the EPA updated the emissions standards for all newly manufactured and remanufactured locomotives. The most stringent standards, Tier 3 and Tier 4, take effect beginning in 2012 and 2015, respectively. The reductions required under Tier 4 emission standards are similar to the most current heavy-duty truck standards and will require some locomotives to be equipped with diesel particulate filters or other emission control systems.

TECHNOLOGIES TO REDUCE GOODS MOVEMENT IMPACTS ON AIR QUALITY

Natural gas, electric hybrid, plug-in, and battery-operated trucks are emerging on the goods movement market through a combination of private sector research and development, and demonstration projects funded by local, state, and federal interests. Since 2009, 700 natural gas trucks have been deployed for regional freight transportation at the San Pedro Bay Ports as part of the Clean Trucks Program. The market for hybrid trucks has been accelerated significantly with the implementation of the Hybrid Truck and Bus Voucher Incentive Project (HVIP) administered by CARB. Initiatives from the California Energy Commission are also funding projects to develop and deploy plug-in hybrid electric trucks.

Measures are also being undertaken to reduce emissions from rail operations. New, lower emission Tier 4 diesel locomotives are in testing phases for availability in 2015 and could be preferentially routed to this region—as the railroads are now doing with Tier 2 locomotives. In the longer-term, continuing technology development holds promise to achieve zero-or near-zero emissions.

COMMUNITY HEALTH AND QUALITY OF LIFE

While air quality is the most significant environmental concern associated with goods movement, there are other impacts on communities. Traffic safety, noise, vibrations, and aesthetics are also major concerns for communities in close proximity to goods movement activities. The primary goods movement sources of noise in the SCAG region are trucks and trains.

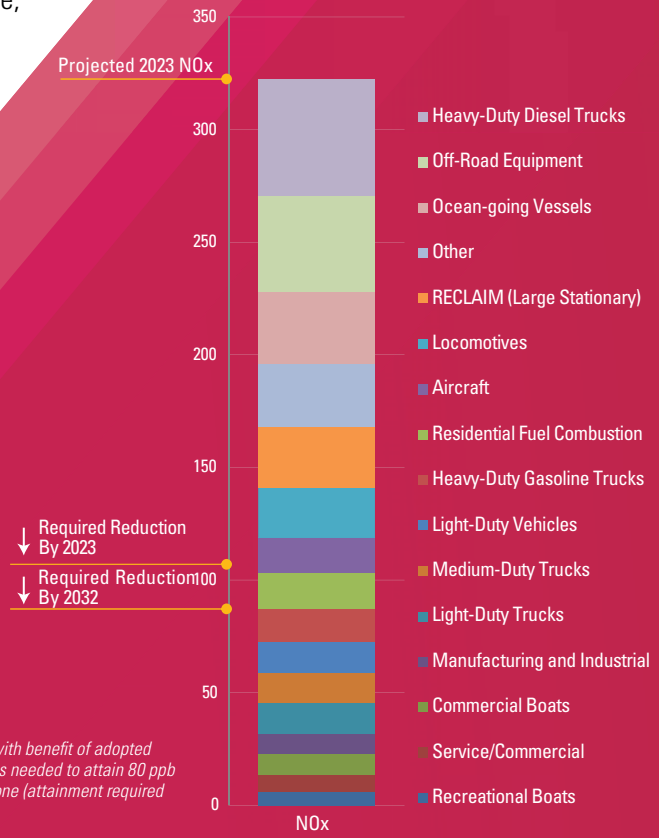
Warehouses and distribution centers are located throughout Southern California, many in close proximity to residential areas. In addition to noise and air quality concerns, these neighborhoods may be negatively affected by views of industrial operations, night glare, and increased traffic from trucks moving in and out of warehouse distribution centers. All of these impacts can influence the health and quality of life of individuals living and working near goods movement operations. These issues will continue to be of concern as increasing residential population and industrial activities both seek room to expand in an already developed urban region.

WHERE ARE WE TODAY?

Figure 7

NO_x REDUCTION TARGETS *(tons per day)*

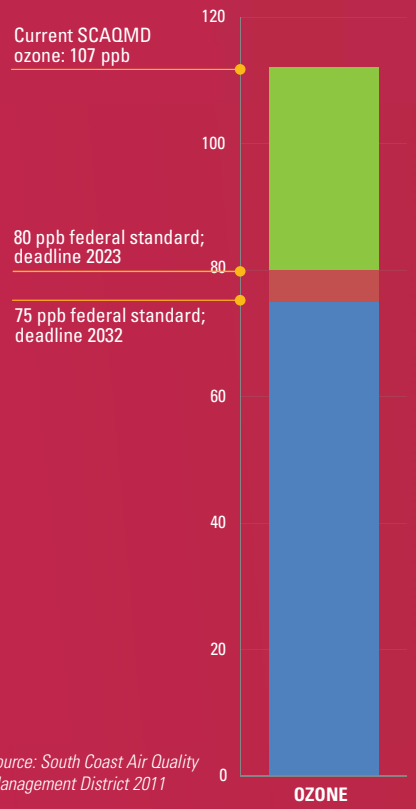
In 2008, 758 tons per day NO_x (2012 AQMP)



Preliminary estimates of baseline NO_x emissions in 2023 with benefit of adopted emission standards and programs, and emission reductions needed to attain 80 ppb and 75 ppb National Ambient Air Quality Standards for ozone (attainment required in 2023 and 2032, respectively).

Figure 8

REQUIRED OZONE REDUCTION AMOUNT TO MEET NATIONAL AMBIENT AIR QUALITY STANDARDS



Source: South Coast Air Quality Management District 2011

PHOTO COURTESY OF BALQON

THE REGIONAL GOODS MOVEMENT PLAN

Recent demand forecasts suggest that goods movement dependent industries, international trade through the region, and goods movement service providers are poised for growth—offering the potential for substantial economic benefits. To realize this opportunity, strategies have been developed that will re-shape the goods movement system, through innovative approaches that expand capacity and improve operations.

HIGHWAY STRATEGIES

Key highway strategies include bold plans for a zero-emission truck-only freight system, improvements to bottlenecks on critical truck corridors, and access improvements to border crossings, seaports, airports, and major concentrations of goods movement activity. Additionally, new technologies will be implemented that enable the region to meet its air quality and livability goals.

Highway System: Strategy #1

REGIONAL CLEAN FREIGHT CORRIDOR SYSTEM

To address growing truck traffic on core highways throughout the region, the Plan identifies a system of clean truck-only lanes, extending from the San Pedro Bay Ports to downtown Los Angeles along I-710, connecting to an east-west segment, and finally reaching I-15 in San Bernardino County. While the I-710 has been long recognized as the first segment of a comprehensive, zero-emission, truck-only freight corridor system, the subsequent alignments previously remained unidentified. Through the Plan, SCAG identified an east-west corridor concept (i.e. East-West Freight Corridor or EWFC) designed to accommodate anticipated growth in truck traffic in an environmentally responsible manner. The Plan also includes a connection on the I-15 to the EWFC, from SR-60 to I-10. This extension is included to avoid creating a freight bottleneck at the eastern end of the corridor.

The regional clean freight corridor system offers a high-capacity corridor that serves key goods movement markets and industries along routes that have the highest volumes of truck activity in the region. Approximately 50 percent of the region's warehousing, and 27 percent of regional manufacturing employment lie within five miles of the preliminary alignment that roughly parallels SR-60. These two industries alone have direct relationships with increased goods movement activities, and are expected to experience significant growth as freight volumes rise. The regional clean freight corridor system would effectively serve international, inter-regional, and local markets for the region's manufacturers and logistics industries, as shown in Exhibit 7.

The EWFC also provides an opportunity to reduce harmful pollutants through the use of zero-emission technologies for freight transportation. Although the zero-emission technology to be used will be determined as the market evolves, the EWFC offers a significant opportunity to catalyze development, deployment, and commercialization of zero-emission technologies for freight transportation.

By physically separating truck traffic, to the maximum extent possible, the EWFC has the potential to improve safety and decrease the number of accidents for trucks and autos on parallel routes.

As some segments of the EWFC are forecast to carry between 58,000 and 78,000 trucks per day in 2035, the traffic mitigation impacts of the project would be significant. The EWFC is projected to result in substantial mobility improvements for both trucks and autos, with overall traffic and heavy-duty trucks expected to experience delay reductions of approximately 4.3 percent and 11 percent in the study area, respectively. This reduced delay would provide demonstrable travel time savings as well as reduce emissions from idling vehicles on congested roadways. Moreover, the EWFC is projected to draw significant volumes of truck traffic away from parallel routes (up to 82 percent on some segments), easing congestion and creating capacity for other vehicles on general purpose lanes. The EWFC would also provide notable environmental benefits, as shown in Table 4.

Table 4

BENEFITS OF AN EAST-WEST CORRIDOR STRATEGY

Mobility	► Truck delay reduction of approximately 11% ► All traffic delay reduction of approximately 4.3% ► Reduces truck volumes on general purpose lanes—42–82% reduction on SR-60
Safety	► Reduced truck/automobile accidents (up to 20–30 per year on some segments)
Environment	► 100% zero-emission truck utilization removes: 4.7 tons NO_X, 0.16 tons $PM_{2.5}$, and 2,401 tons CO_2 daily
Community	► Preferred alignment has least impact on communities ► Reduces traffic from other freeways ► Zero-emission technology (ZET)—reduces localized health impacts
Economic	► Supports mobility for goods movement industries, which comprise 34% of SCAG regional economy and jobs

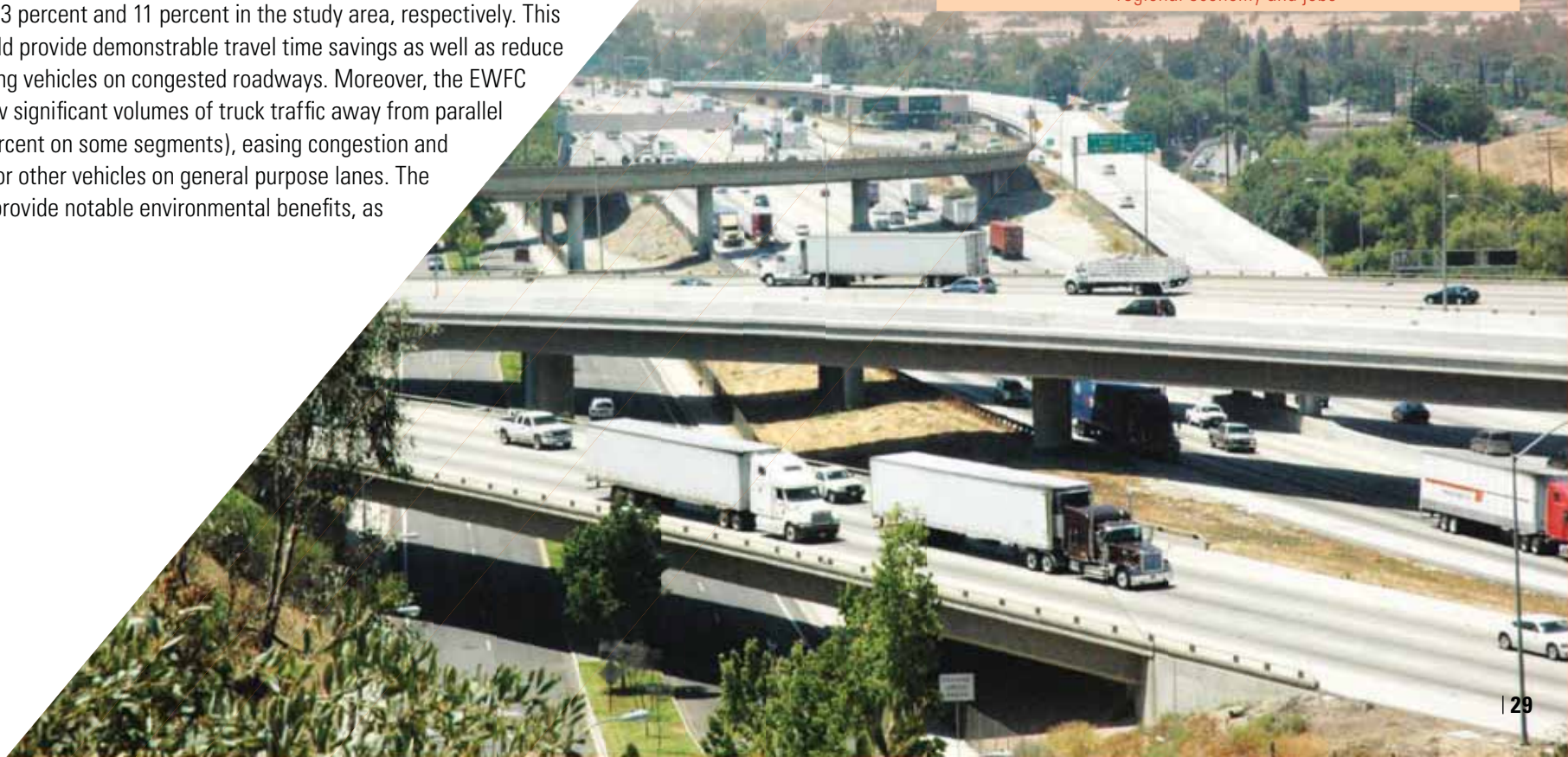
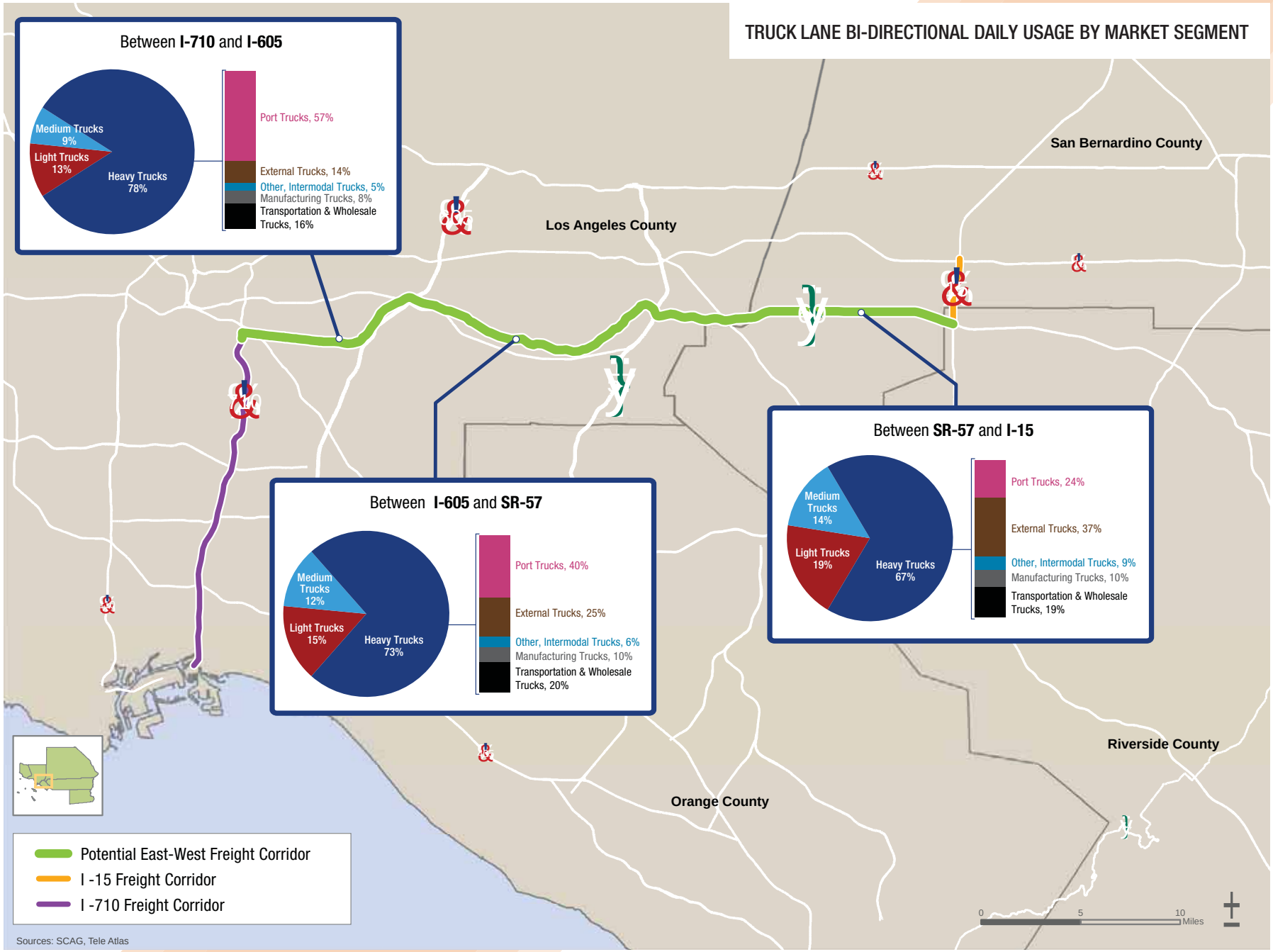


Exhibit 7

REGIONAL CLEAN FREIGHT CORRIDOR SYSTEM WITH TRUCK LANE USERS BY MARKET SEGMENT



Highway System: Strategy 2

TRUCK BOTTLENECK RELIEF STRATEGY

Truck congestion in urban areas within the SCAG region resulted in approximately $2.6 billion in costs due to wasted labor hours and fuel in 2010. Given that driver wages and fuel costs represent over 50 percent of total motor carrier costs, truck congestion has major impacts on the bottom line of the trucking industry. Truck bottlenecks are also emission "hot spots," and generally have significantly degraded localized air quality caused by increased idling from passenger vehicles and trucks.

A coordinated strategy to address the top-priority truck bottlenecks is a cost-effective way to improve the efficiency of goods movement in the SCAG region. Bottleneck projects may also be easier to implement since they are often less intrusive than other types of projects, contribute to the region's environmental goals (by reducing emissions "hot spots"), and result in substantial, tangible benefits to commuters and goods movement industries alike. Since the EWFC alone will not address congestion on all the major truck corridors, the Plan identified a program of focused investments intended to significantly reduce delay at the top 50 truck bottlenecks in the SCAG region.

The strategy would reduce congestion on routes outside of the EWFC and benefit passenger traffic flows as well. It is expected that bottleneck alleviation projects would result in substantial, tangible benefits for the region. Preliminary analyses suggest that over 1 million hours of heavy-truck delay in the region could be eliminated annually if the highest priority truck bottlenecks were addressed. The strategy would also reduce harmful pollutants that stem from truck delays. Exhibit 8 provides some key examples of projects in the planning pipeline that can help address high priority bottlenecks.

Exhibit 8

GOODS MOVEMENT TRUCK BOTTLENECK RELIEF STRATEGY PROJECTS

THE REGIONAL GOODS MOVEMENT PLAN

RAIL IMPROVEMENT STRATEGIES

The Southern California freight rail system will continue to be a vital link in the global supply chain, driven by growth in international intermodal activities for both IPI and transload markets. At the same time, passenger rail service must also be expanded. Accommodating the projected growth will require significant investment in regional rail system capacity and operational improvements.

The Plan includes a package of rail strategies, including mainline rail capacity improvements, intermodal terminal expansion, and rail operation safety improvements. It also provides for improved rail access to the Ports of Los Angeles and Long Beach, facilitating a much larger share of port cargo moving via on-dock rail. To reduce impacts on communities, the Plan calls for the continuation of a program to grade separate high priority rail-road crossings.

Rail System Improvements: Strategy #1

MAINLINE CAPACITY

Mainline capacity improvements are critical to meeting the Plan's goals of ensuring that Southern California remains the premier gateway for Pacific Rim trade. Without additional capacity improvements, the system will not be able to meet future demand for international intermodal cargo and commuter rail service.

Capacity improvements were identified on both the BNSF and UP mainlines including the installation of second, third, or fourth main tracks on specific segments; addition of crossovers, bridges, and culverts (support infrastructure); upgrades of junctions to facilitate smoother transitions; and a rail-to-rail grade separation at Colton Crossing, the most significant rail choke point in California.

Improvements are based on an alternative train routing option that would substantially reduce train movements in downtown Riverside and San Bernardino while minimizing costly improvements, safety risks, and impacts. Improvements would reduce future delays to the levels experienced in 2000—allowing the region to continue to offer high quality rail service to international shippers, intermodal and carload services for local industries, and commuter rail passengers.

Many of the projects identified for mainline capacity improvements are in the near-term capital improvement plans of the BNSF and UP railroads or are recipients of local, state, and federal funds under programs such as the State's Trade Corridor Improvement Fund (TCIF) or federal Transportation Investment Generating Economic Recovery (TIGER) grants. In other cases, the Southern California Regional Rail Authority (SCRRA) and the railroads would need to conduct negotiations regarding future passenger use of freight rail track.

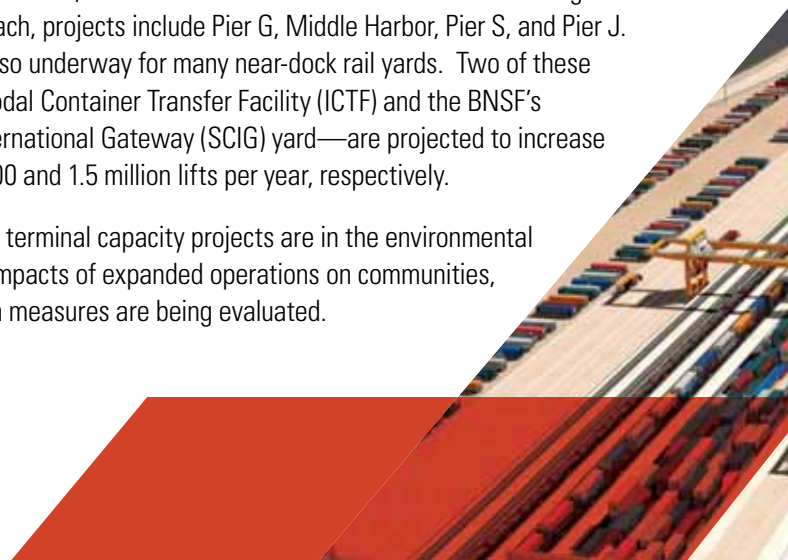
Rail System Improvements: Strategy #2

INTERMODAL TERMINAL CAPACITY

Intermodal lift capacity is a critical aspect of railroad infrastructure in Southern California. Currently, there is insufficient lift capacity at existing terminals in the region to accommodate the projected growth in combined international and domestic intermodal traffic. Significant improvement projects have been proposed for new on-dock yards at the San Pedro Bay Ports, as well as major improvements to near-dock yards within 5 miles from the Ports. Building these proposed terminal expansion projects would allow for additional port cargo to be loaded at on- and near-dock facilities, significantly reducing the distance port cargo must travel on local roads and highways.

Improvements include Pier 300, Pier 400 and West Basin for the Port of Los Angeles. For the Port of Long Beach, projects include Pier G, Middle Harbor, Pier S, and Pier J. Extensive planning is also underway for many near-dock rail yards. Two of these projects—UP's Intermodal Container Transfer Facility (ICTF) and the BNSF's Southern California International Gateway (SCIG) yard—are projected to increase lift capacities by 700,000 and 1.5 million lifts per year, respectively.

Many of the intermodal terminal capacity projects are in the environmental review stage, and the impacts of expanded operations on communities, and potential mitigation measures are being evaluated.



Rail System Improvements: Strategy #3

GRADE SEPARATIONS

At-grade railroad crossings pose several problems for communities in terms of delay to motor vehicles (including emergency vehicles), noise from train whistles, emissions from idling vehicles waiting for trains to pass, and the potential for accidents. Persistent delays at rail crossings can also have a negative effect on the local business climate.

As part of the Plan, regional grade separations were assessed and prioritized on a tiered basis through analyses and collaboration with regional stakeholders. Criteria considered in the identification included existing and future down time for gates at crossings, estimates of existing and future vehicle hours of delay at crossings, accident rates, and estimated annual emissions from idling vehicles.

By 2035, the grade separation program could eliminate 5,782 vehicle hours of delay, eliminate safety concerns at 71 at-grade crossings, and reduce emissions from idling vehicles by 22,789 lbs. per day as shown in Table 5. For some of these projects, funding has been committed (through local sales taxes, TCIF, and TIGER grants) to address the highest priority at-grade crossings, many of which are under (or soon to be under) construction. Potential funding sources for the next highest priority projects need to be identified to allow the program to move forward.

Table 5

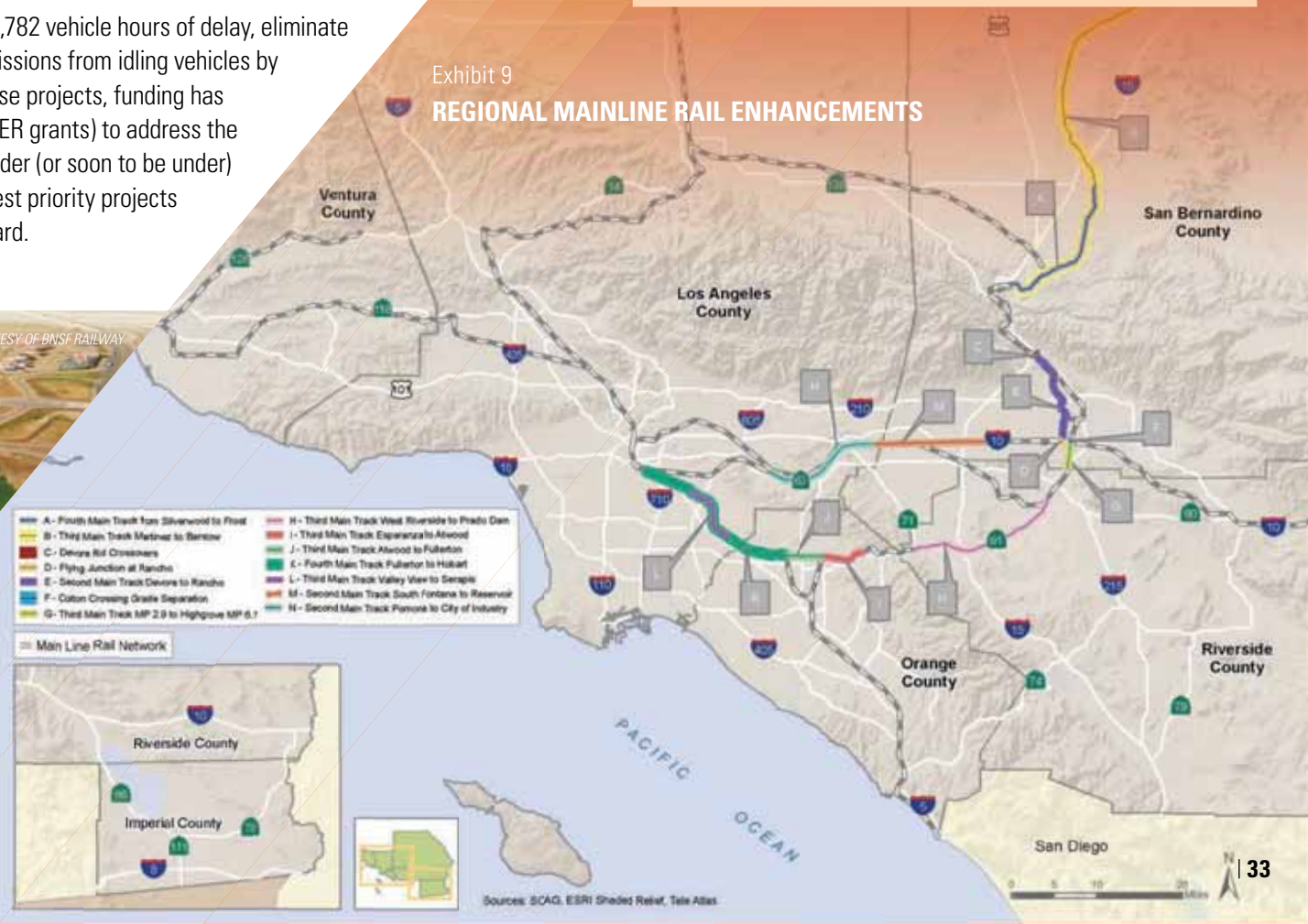
BENEFITS OF THE SCAG REGIONAL RAIL STRATEGY

Mobility	► Reduces train delay to year 2000 levels ► Provides mainline capacity to handle projected demand in 2035 (includes 39.4 million twenty foot equivalent units, or TEUs, port throughput) ► Eliminates 5,782 vehicle hours of delay per day at grade crossings in 2035
Safety	► Eliminates 71 at-grade railroad crossings
Environment	► Reduces 22,789 lb. of emissions per day (CO_2, NO_x, and $PM_{2.5}$ combined) from idling vehicles at grade crossings ► Facilitates on-dock rail ► Reduces truck trips between Ports and downtown railyards

IMAGE COURTESY OF BNSF RAILWAY

Exhibit 9

REGIONAL MAINLINE RAIL ENHANCEMENTS



THE REGIONAL GOODS MOVEMENT PLAN

OTHER TRUCK CORRIDOR AND ACCESS IMPROVEMENT STRATEGIES

Beyond the needs addressed by the regional clean freight corridor system and truck bottleneck relief strategy, there are major truck corridors in Southern California requiring capacity improvements and, in some cases, the construction of new highway facilities. Equally important are a variety of roadway and rail access improvements, the "last mile connectors" that unify the regional freight system. For example, new interchanges and roadway improvements that provide connections to the Port of Hueneme and the Calexico East border crossing will allow these regionally significant goods movement facilities to meet future demands. Access improvements, outside the gates at the San Pedro Bay Ports, will create the necessary landside connections to alleviate congestion to and from port areas, and improve air quality.

Many of these projects have been identified in previous studies, such as the 2008 Multi-County Goods Movement Action Plan, or have received Trade Corridor Improvement Fund (TCIF) grants. The Comprehensive Regional Goods Movement Plan and Implementation Strategy includes several critical initiatives:

SAN PEDRO BAY PORTS ACCESS PROJECTS

Some key projects to improve direct landside access to the San Pedro Bay Ports are already underway, including:

- The Gerald Desmond Bridge replacement
- The I-110/SR-47 Connectors Improvement Program
- The Schuyler Heim Bridge Replacement and SR-47 Expressway Project
- South Wilmington Grade Separation
- C Street/I-110 Access Ramp Improvements
- I-110/SR-47 Interchange & John S. Gibson Intersection/NB I-110 Ramp Access

PORT OF HUENEME ACCESS PROJECTS

Some key access projects anticipated to reduce truck congestion impacts include:

- Hueneme Road widening between Ventura Road and Rice Avenue
- Reconfiguring the interchange at Rice Avenue and U.S. 101
- Rice Avenue UP Grade Separation
- Hueneme Road widening between Saviers to Arcturus

IMAGE COURTESY OF PORT OF LOS ANGELES

PHOTO COURTESY OF PORT OF LONG BEACH

IMPERIAL COUNTY INTERNATIONAL PORTS OF ENTRY

Key transportation strategies identified to improve the flow of goods in the area include:

- Improving interchanges and developing bypasses to the "main streets" in the region
- The I-8/Imperial Avenue Interchange reconstruction and Imperial Avenue Extension projects in the City of El Centro
- Widening and improvements to SR-98

Additional improvement projects are identified on the list of regional goods movement strategies totaling nearly $60 billion, as shown in the Protect List at the end of this report. Although many of the near-term projects have secured some level of funding commitment through federal, state, local, and other sources—mostly completing final engineering and environmental phases—additional resources are needed for project completion.

PHOTO COURTESY OF CALTRANS

PHOTO COURTESY OF IMPERIAL COUNTY TRANSPORTATION COMMISSION

THE REGIONAL GOODS MOVEMENT PLAN

ENVIRONMENTAL STRATEGY

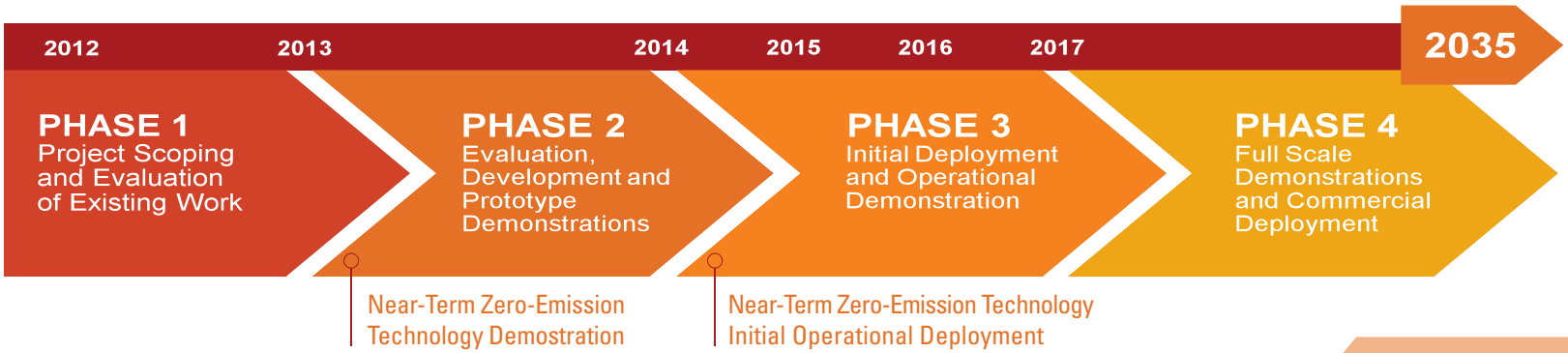
The Environmental Strategy for the Comprehensive Regional Goods Movement Plan and Implementation Strategy was developed to address community health concerns, federal air quality attainment requirements, and climate change issues, while contributing to regional economic and energy security goals. The strategy focuses on a two-pronged approach. For the near term, the regional strategy supports the deployment of commercially available, low-emission trucks and locomotives while centering on continued investments into improved system efficiencies. For example, heavy-duty hybrid trucks and natural gas trucks are already in use, but market penetration can be increased. In the longer term, the strategy focuses on advancing technologies—taking critical steps now toward phased implementation of a zero- and near zero-emission freight system. SCAG's planning efforts are cognizant of the need to incorporate evolving technologies into new infrastructure. These include technologies to fuel vehicles, charge batteries, and provide power.

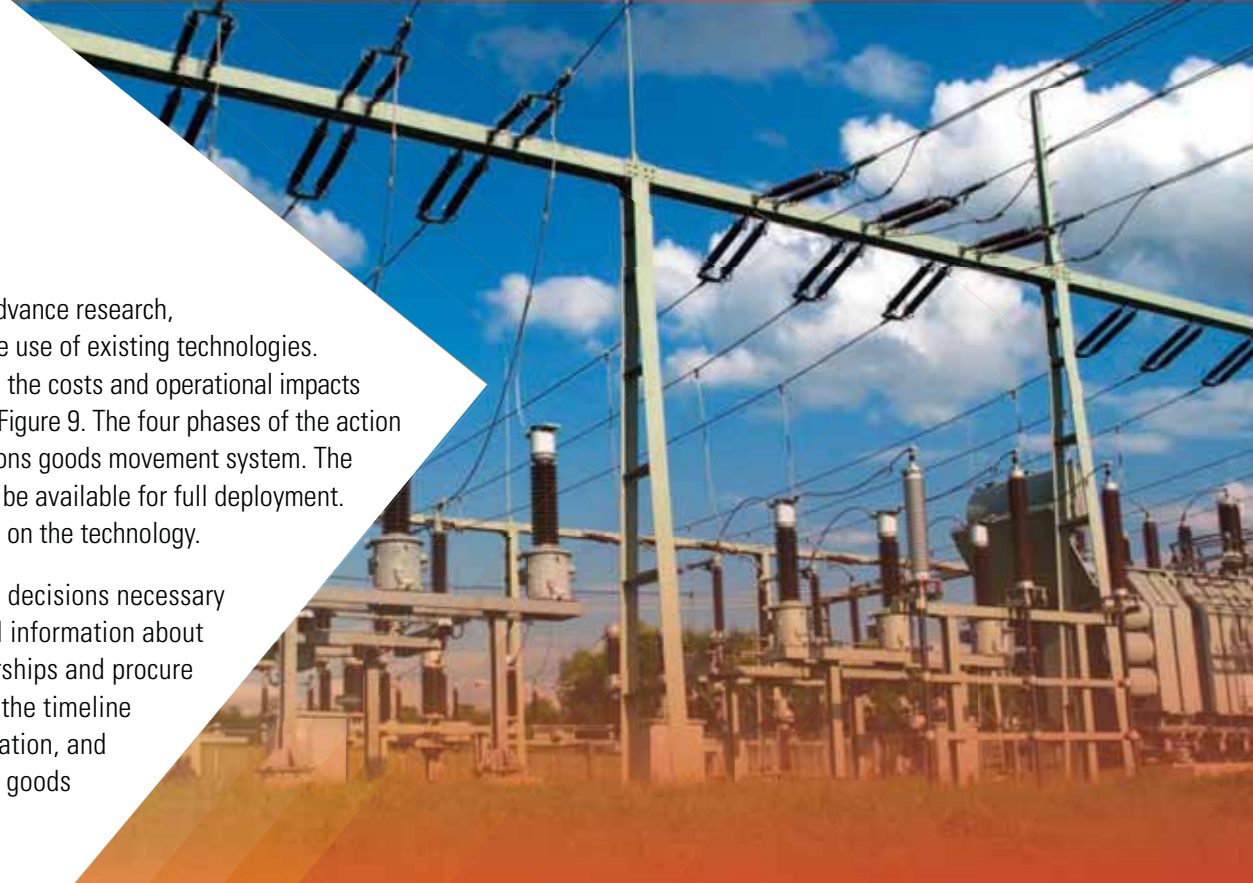
Evaluations conducted for the Plan concluded that there are several different options for zero-emission trucking, allowing the region to provide a platform for the continued development, demonstration and commercialization of these technologies. The evaluations describe the technical challenges, including costs and benefits associated with each technology. Analysis also focused on how advanced technologies can serve the Freight Corridor System and larger region. Technologies considered fell into two categories: 1) larger systems that could be paired with a freight corridor infrastructure and 2) specific truck types that could operate on this infrastructure. For instance, power for trucks along a freight corridor could be provided by independent charging systems or a wayside power system that charges trucks as they move along the corridor. Examples of wayside power systems considered include overhead catenary systems and linear induction motors. Various truck types, including fuel cell, battery-electric, and dual mode hybrids, could be charged using this power, allowing them to operate throughout the region in zero-emission mode.

Building on this analysis, and others completed by regional partners, the Plan includes a near-term project for the demonstration and initial deployment of zero-emission trucks utilizing wayside power. The project will be located in Los Angeles County along the Terminal Island Freeway and connecting routes to the Ports (or alternative routes serving the same locations). This project will be the first step in a long term development and deployment program.

Analysis conducted for the Plan also included examination of options for zero and near-zero emission rail technologies. Results indicated that electrified rail or newer technologies hold promise to achieve zero or near-zero emissions, but there are remaining technology engineering, operational, and funding issues that require further work and evaluation. Conducting this work and evaluation in an expeditious timeframe will be part of the region's zero-emission goods movement strategy.

Figure 9 **ENVIRONMENTAL ACTION PLAN TIMELINE**





The Plan calls for collaborative decision-making to determine how to advance research, development, and deployment of new technologies, and expands on the use of existing technologies. Where appropriate, evaluations will be conducted to better understand the costs and operational impacts that guide decision-making. The timeline for this action plan is shown in Figure 9. The four phases of the action plan provide a structured means to meet the objective of a zero-emissions goods movement system. The timeframe represents an estimation of when various technologies may be available for full deployment. However, the development and evaluation process may vary depending on the technology.

This proposed timeline serves as a general framework for making the decisions necessary to advance technology in the region, but may be revised as additional information about specific technologies becomes available. The ability to create partnerships and procure funding for research and development efforts may help to accelerate the timeline for specific technologies. This plan of technology development, evaluation, and eventual deployment will be undertaken in close cooperation with all goods movement stakeholders.

PHOTO COURTESY OF SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Table 6

POTENTIAL SYSTEMS FOR ZERO EMISSION FREIGHT CORRIDOR

100 % Zero-Emission Truck* + Charging and/or Fueling Stations	► Battery and/or hydrogen fuel cell power both on and off of the freight corridor ► Operate like standard truck - no specialized road infrastructure needed
Overhead Catenary System + Zero-Emission Truck*	► Powered from overhead catenary wire on corridor ► OCS extends zero emission range ► Battery power off corridor ► Requires specialized road infrastructure but safer than third-rail systems
Electromagnetic Induction + Zero-Emission Truck*	► Powered from embedded power source while on corridor ► Electromagnetic Induction extends zero emission range ► Battery power off corridor ► Requires specialized road infrastructure but no exposed wire or contact with truck

**Zero -Emission trucks can include battery-electric, fuel cell or hybrid-electric trucks operating with all electric range.*

PHOTO COURTESY OF PORT OF LOS ANGELES

GOODS MOVEMENT HAS SIGNIFICANT ECONOMIC BENEFITS

Freight transportation is a key input to economic activity. Investment in transportation generally aims to improve safety, reduce travel time, increase accessibility to desired destinations, and improve travel-time reliability. For individuals and businesses, these improvements translate into increased productivity and improved access to labor and markets, making industries more competitive and enabling economic growth.

Economic evaluations of the major strategies in the Plan were conducted using macroeconomic models to demonstrate how transportation improvements affect business costs, profitability, and output. Analyses also considered how these benefits ripple through the entire economy, increasing regional competitiveness and jobs.

ECONOMIC BENEFITS OF HIGHWAY STRATEGIES

EAST-WEST FREIGHT CORRIDOR

As previously identified, the primary benefits of the East-West Freight Corridor (EWFC) include reductions in travel times and improvements in reliability for users of the EWFC and for other users of the roadway system (who benefit from reduced congestion). These mobility improvements and resulting emissions benefits were incorporated into the economic analysis of the Plan.

The EWFC allows truckers to operate more efficiently by reducing operating costs (labor and fuel costs). Although these savings would be offset, to some degree, by levying new tolls for the use of the dedicated truck facility, the benefits to the business community outweigh the costs. With widespread use of trucking services by local businesses, the effect of reduced costs includes economic growth that is distributed across all industry sectors. The impacts, however, are greatest for goods movement-dependent industries such as manufacturing, retail and wholesale trade, and construction. Commuters also experience reduced travel times and increased amenities from improved air quality. These benefits result in increased disposable income spent in the consumer goods and services sectors of the economy.

ECONOMIC BENEFITS OF THE RAIL STRATEGY

MAINLINE RAIL EXPANSION AND INTERMODAL CAPACITY IMPROVEMENTS

Analyses completed as part of the Plan assumed that the region would invest to accommodate growth in demand for international and domestic freight, as well as commuter rail service. The benefits were assumed to accrue to each of these markets in proportion to their share of demand for new capacity.

An Efficient And Reliable Goods Movement System Leads To Greater Productivity, A Growing Economy, And More Jobs.

Building additional capacity would allow the region to meet future demand for IPI and transload cargo moved by rail from the San Pedro Bay Ports. This would have major impacts in the port, rail, and logistics sectors in the SCAG region and would also benefit local manufacturing and wholesale/retail trade businesses that are engaged in international trade. There are also benefits to the national economy as businesses outside of Southern California use the region's international trade gateway to take advantage of lower logistics costs offered in the SCAG region. The analysis suggests that regional and national stakeholders both have an economic stake in ensuring that the rail system can accommodate future growth in IPI and transload rail traffic.

GRADE SEPARATIONS

The primary benefits of grade separation projects are the reduction in delays to motorists at crossings, reduced emissions from idling vehicles, and improved safety. While there are relatively large economic impacts on the goods movement-dependent sectors (i.e., retail and wholesale trade, construction, and manufacturing), these are largely due to the overall regional economic growth generated from improved mobility and environmental amenities that make the region a more attractive place to live.

TOTAL ECONOMIC BENEFITS OF THE REGIONAL GOODS MOVEMENT STRATEGIES

The combined impact of the regional goods movement strategies, including the EWFC, rail improvements, and grade separation projects, would generate a cumulative total of 1.25 million job years in the region and increases GRP by $156 billion in 2012 dollars (cumulative total over 30 years). Employment increases by an average of almost 45,000 jobs annually from 2025 through 2037. Figure 10 shows growth in employment by industry sector during that period. Although impacts are sizeable for goods movement-dependent industries, benefits are distributed throughout the economy, including the service industries.

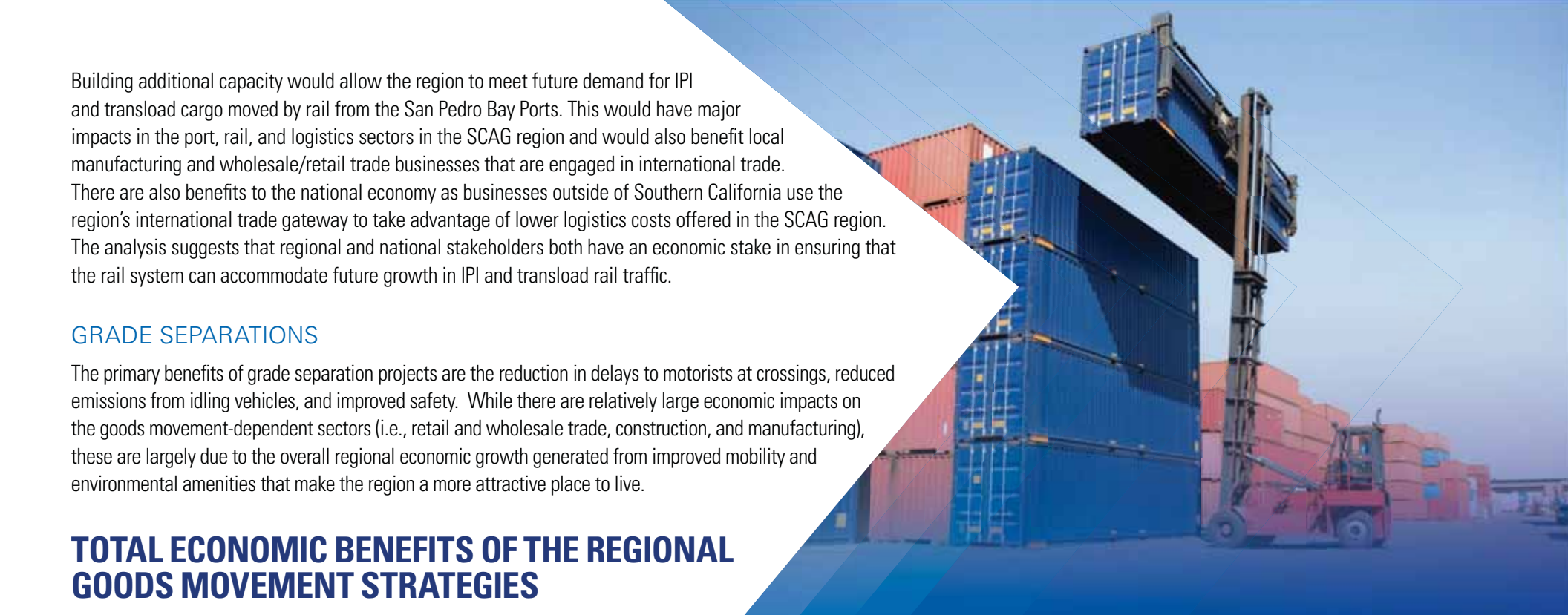
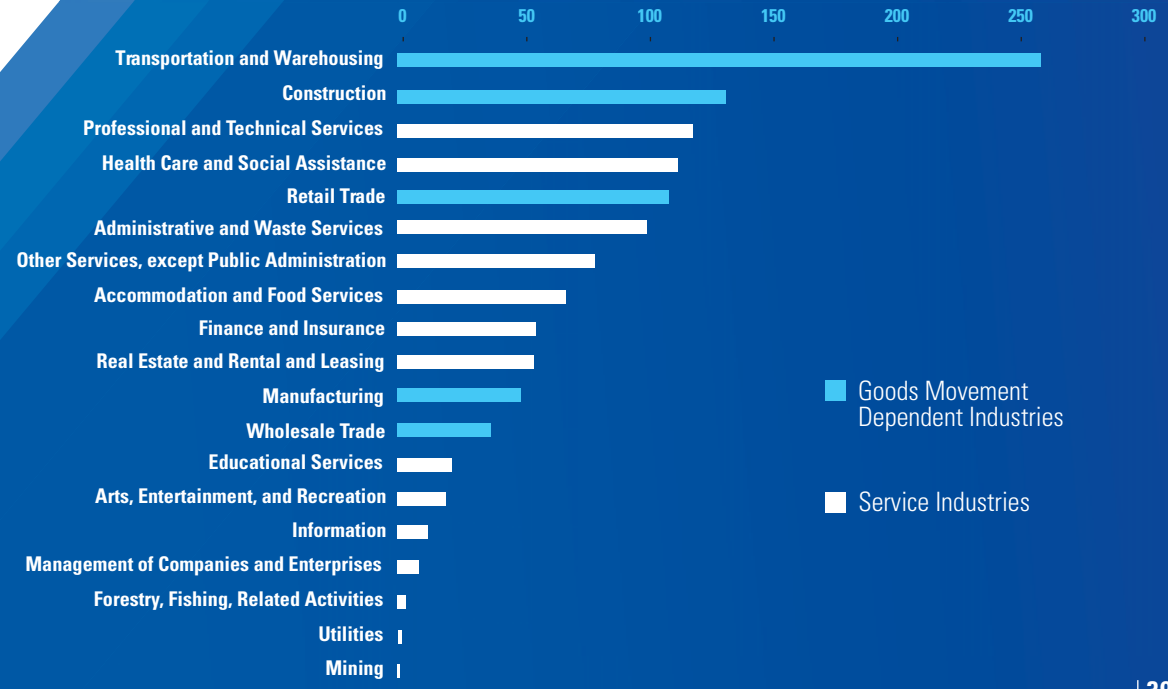


Figure 10 **EMPLOYMENT BENEFITS BY INDUSTRY** *(In Thousands, Job Years)*



PAYING FOR THE PLAN

FINANCING CHALLENGES

The users of the goods movement system are private businesses and it is often argued that these businesses should pay for system improvements. However, there is also a clear public role in planning and paying for freight transportation projects:

- Transportation infrastructure has long been viewed a public good with public benefits beyond those realized by the users alone (such as promoting a healthy and diverse economy, improving general mobility and safety).
- When freight and passenger users share costly transportation infrastructure, more efficient use can often be achieved. As a major provider of passenger transportation infrastructure, government agencies are already involved in providing some of this shared infrastructure.
- Costs of freight transportation to users do not reflect the full social costs of using the system. Government agencies can help create mechanisms by which these costs can be internalized by system users.
- The cost of freight infrastructure is very high and private businesses may not be able to raise sufficient capital in traditional markets to fund some socially valuable projects. In addition to being able to help raise these needed funds, the public sector can also encourage return-on-investment criteria that take into account a broader set of public benefits to determine the social rate-of-return.

However, the current structure of public funding and public-private partnerships (P3s) for financing freight transportation has specific limitations:

- The public sector has very limited tools for attracting private investment to facilitate P3s. Loan programs, like the Transportation Infrastructure Finance and Innovation Action (TIFIA), are options currently available, but a broader array of tools such as investment tax credits and private activity bonds could be effective in increasing the pool of funds to build important freight projects.
- The current overall structure of transportation funding in Southern California has skewed revenue sources heavily in the direction of local self-help funding, as over 70 percent of funds for transportation are generated locally. In this context, the national benefit of investing in freight infrastructure is often absent when deciding which freight projects should be built.

POLICY PRINCIPLES FOR FINANCING

The Comprehensive Regional Goods Movement Plan and Implementation Strategy has identified some fundamental principles on which financing strategies should be based and provides some examples of how these principles could be applied to projects in the Plan. Some of the key principles include:

- Ensuring that there is a nexus between those who benefit from the investments and those who pay. All beneficiaries—including the public sector (i.e., federal, state, and local) as well as the private sector—should play a role in funding the projects.
- Creating a wider array of mechanisms to encourage P3s and sharing risk across the public and private sectors.
- Ensuring that there are appropriate means for cost sharing amongst different levels of government—reflecting the significance of projects to the local, state, and national economies, and impacts on communities in which the projects are located.

Many of the tools necessary for implementing financing strategies in accordance with these principles are not available today. However, the examples provided in the Plan should provide a basis for continued dialogue amongst all the stakeholders to promote the expansion of financing tools and policies for freight transportation projects.

ESTABLISHING A NEXUS BETWEEN FREIGHT BENEFITS AND PROJECT FUNDING

When deciding how project costs should be allocated—to be more closely aligned with benefits accrued—there are two important considerations: 1) the allocation of costs and benefits between public and private stakeholders and 2) the allocation of public costs and benefits amongst the different levels of government. The Plan provides new insights into the different markets for goods movement in Southern California and highlights that different goods movement projects have different private beneficiaries. For example, the EWFC provides benefits to a broad array of private users, not just international shippers. As such, a user fee solely levied on the international trade sector would not be appropriate for funding this type of project; however, this type of fee may be more applicable for rail projects as international shipments represent a greater share of rail usage.

The economic analysis conducted for the Plan also shows that the SCAG region and individual counties benefit from the goods movement projects as overall mobility for people and goods would be improved, creating local jobs and improving the sustainability of communities through which freight moves. National and state economies also benefit by having efficient and reliable international and domestic trade connections to Southern California. This suggests that some traditional sources of public funding need to be considered, along with user fees or other private contributions, in order to reflect the public benefits of the projects.

PAYING FOR THE PLAN

FORMING PARTNERSHIPS

PUBLIC-PRIVATE PARTNERSHIP AND SHARING RISK

There are several mechanisms by which the private sector is likely to participate in funding the region's goods movement projects: 1) equity investments in privately owned infrastructure; 2) payment of user fees (such as tolls); 3) P3 financing arrangements in which private investors take on the project risks and finance costs in exchange for project revenues. The first of these mechanisms is the preferred market-based approach and is anticipated to be used to fund most of the rail capacity improvement projects. However, some of the costs will need to be borne by Metrolink and its funding agencies as planned increases in passenger rail service on several key freight corridors in Southern California, is a major contributor to capacity needs. Container fees, paid directly or indirectly by shippers, could also play a role for some of the investments where shippers reap clear benefits. However, recent analysis, conducted for SCAG's Port and Modal Elasticity Study, shows that the choice of port may be more sensitive to pricing than previously thought. If container fees are to ever represent a significant source of revenue for funding goods movement projects, they must be addressed at the national level to ensure a level playing field amongst regions.

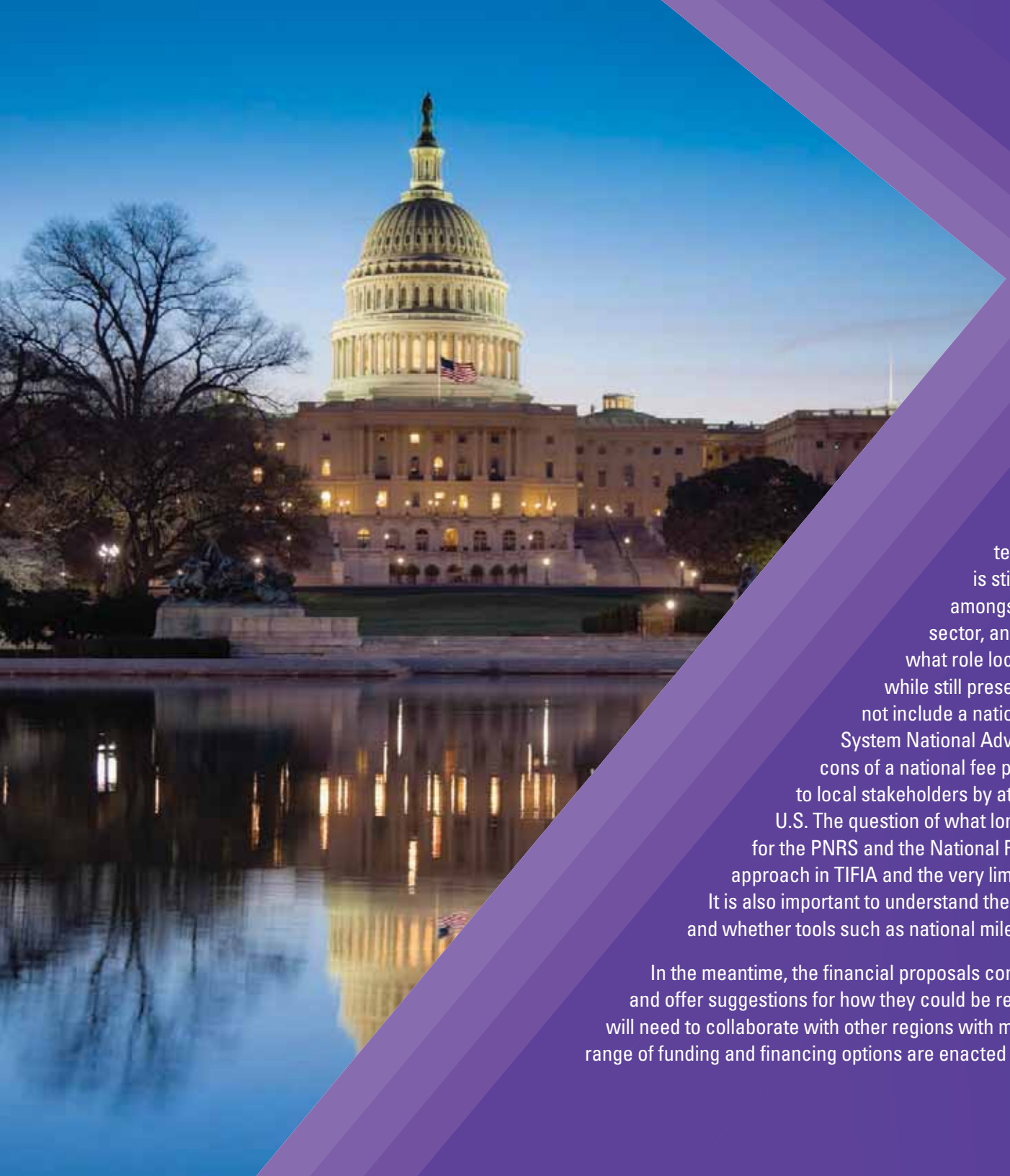
Sharing risk through P3s is another way to share costs between the public and the private-sector. The example financing plan for the EWFC assumes equity contribution of a P3 operator through a public-private concession agreement and expanded use of TIFIA under current provisions to reduce financing costs. TIFIA debt financing will be an essential source of financing for this toll-supported project. The analysis conducted for the Plan shows that there are clear delay benefits to truckers that may be translated into increased revenues and profits for truckers or passed on as savings to customers. TIFIA proceeds are assumed to contribute between $3.6 billion and $4.2 billion in funding for the project. Debt payments would be made over a 35-year period from 2030 to 2065. The loan is repaid with toll and interest revenue after payment of debt service on the toll revenue bonds. The use of the TIFIA program to create this greater leveraging of private dollars is a clear example of how the federal government can participate in a project by sharing financial risk. Other options such as targeted investment tax credits and expanded access to private activity bonds may also play a role.

Additional P3 initiatives are being explored and supported by the Imperial County Board of Supervisors and the Calexico City Council to finance and build improvements or new land POEs. In September 2012, the California Senate and Assembly passed Senate Joint Resolution No. 16 declaring joint support for such a concept. The participation of federal agencies—in particular, the Department of Homeland Security and General Services Administration—would be needed to finance and build improvements to border projects jointly with local governments and private industry. Both San Diego and Imperial counties are proactively considering ways to plan and finance crossborder infrastructure that ensures the continued vitality of the region's binational economies.

LOCAL VS. STATE/NATIONAL CONTRIBUTIONS AND LOANS VS. GRANTS

Southern California has a long tradition of "self-help" funding of transportation projects through mechanisms such as local sales-tax measures and user-fee programs like the Alameda Corridor fees. This is likely to continue and several new user-fee mechanisms, such as tolls and industrial assessment districts for warehouse and manufacturing properties adjacent to the EWFC are options evaluated in this Plan. The State has also contributed to a number of significant projects such as the Colton Crossing rail project and many of the region's grade separation projects. But given the current financial condition of the State, new funding programs for goods movement improvements are likely to be few and far between.

Recently the federal government has contributed to several significant projects in the Plan through the Transportation Investment Generating Economic Recovery (TIGER) grant program. Additionally, the most recent federal surface transportation program, Moving Ahead for Progress in the 21st Century (MAP-21), increases the federal participation rate for freight projects on the federal-aid highway system and authorizes $500 million in 2013 for Projects of National and Regional Significance (PNRS)—but nothing beyond 2013. The biggest and perhaps most significant change in financing provisions contained in MAP-21, applicable to freight, is the expansion of the TIFIA loan program. This program can be used when there is a reliable revenue stream, thus encouraging the use of self-help approaches to access low-cost TIFIA loans. While these federal tools are promising, they represent a very modest program to fund projects that would be identified as part of the National Freight Network. If there is to be a true National Freight Strategic Plan, a greater federal role is going to be needed in the future.



WHERE DO WE GO FROM HERE?

The Comprehensive Regional Goods Movement Plan and Implementation Strategy lays out clear principles for designing financing strategies for the identified projects. It also provides examples of how these principles could work in practice with a range of public and private programs (see full report and technical supplement for further details). However, there is still work to be done to fill in gaps and obtain consensus amongst all affected stakeholders in the public and private sector, and at all levels of government. Questions linger about what role local user fees, particularly container fees, can play while still preserving regional competitiveness. While MAP-21 does not include a national freight fee, members of the Marine Transportation System National Advisory Council (MTSNAC) are debating the pros and cons of a national fee program. A national approach might be more palatable to local stakeholders by at least ensuring a level playing field amongst ports in the U.S. The question of what long-term role the federal government can play in paying for the PNRS and the National Freight Strategic Plan—beyond the loan guarantee approach in TIFIA and the very limited grant funding in MAP-21—needs to be addressed. It is also important to understand the long-term picture for transportation funding in general and whether tools such as national mileage-based user-fees will be available in the future.

In the meantime, the financial proposals contained in the Plan attempt to frame the key policy issues and offer suggestions for how they could be resolved. Building from this work, Southern California will need to collaborate with other regions with major freight activity centers to ensure that the complete range of funding and financing options are enacted in the next round of federal reauthorization.

PAVING THE PATH FORWARD

Building on almost two decades of work to develop an understanding of the role and needs of goods movement in Southern California, the Comprehensive Regional Goods Movement Plan and Implementation Strategy includes some key conclusions that will guide future goods movement planning:

- Goods movement is critical to the region's economy and serves a diverse set of functions, markets and industries. The focus on functions and markets helped to identify critical multi-modal corridors and modal connections. With enhanced understanding of functions and markets, a wide-range of strategies were developed to serve growing regional industries.
- The region faces many challenges including congestion, safety, and environmental concerns. Strategies were assessed by how well they address multiple challenges, thus reducing not only truck and rail delay, but delay to other system users.
- Strategies have been identified that can improve the environmental performance of the goods movement sector by introducing cleaner operations, fuels, and technologies. Development of strategies focused on reducing impacts on communities by moving goods movement activities closer to industrial areas, away from residential and commercial centers, and reducing locations where goods movement activity physically divides communities.
- Strategies in the Plan provide for local access improvements on "last mile" connectors and expand terminal capacity for key goods movement facilities.

COMPLETING THE REGIONAL FREIGHT CORRIDOR SYSTEM

The EWFC is now better defined in terms of which specific corridors should comprise the system. A number of promising alignment concepts have been identified but additional work is needed to resolve remaining issues concerning community impacts. The project can proceed with environmental evaluation (NEPA/CEQA) to finalize some of these alignment concepts with more detailed engineering feasibility assessments.

IMPLEMENTING THE RAIL IMPROVEMENT STRATEGIES

A complete package of rail improvements including expanded on-dock rail, mainline capacity improvements, intermodal terminal improvements, and rail grade crossing separations has been identified. The Class I railroads, Metrolink, and affected partner agencies will need to determine the appropriate level of shared use operations to meet the region's future needs. Additionally, all regional stakeholders will need to come together in support of this package, recognizing the commitments that each party is already making to contribute to these investments. The region's public and private stakeholders will need to collaborate with state and federal funding agencies to promote a unified program. Collective endorsement for the region's package of improvements can more effectively advocate for new funding mechanisms.

A ZERO-EMISSION FUTURE

The region has established an ambitious vision for how zero and near-zero emission technologies can be applied in the goods movement sector. This should signal to technology developers that there will be a market in Southern California. Nevertheless, there still a continuing need for research, development, and demonstration. The private sector will undertake much of this research, but the regional partners will need to identify opportunities to conduct application experiments and demonstrations using public infrastructure. Regional partners will also need to advocate for a more active role by the federal agencies.

DEVELOPING NEW STRATEGIES TO ADDRESS CHANGING GLOBAL SUPPLY CHAINS

The Plan identified some important land use planning and operational issues stemming from changes in the global supply chain. The region may need to adapt infrastructure and operations strategies to ensure that modern transload facilities are available in proximity to the Ports and that there is sufficient available intermodal infrastructure to meet the needs of shippers. The Plan identified a potential shortfall in the future supply of warehouse space, but also showed how sensitive this conclusion is to operational assumptions. There is potential to meet future demand with operational changes.

PROJECT FUNDING

Funding for goods movement in the region remains one of the more difficult challenges. The region continues to use creative approaches to financing that rely on user fees and other local sources, but many raise concerns about the impact on regional competitiveness and the nexus between costs and benefits. Moreover, current discussions about a national freight policy and funding as embodied in MAP-21, suggest that much work still remains to ensure that the federal government can play a proper role as a partner in funding nationally significant freight assets. Programs such as national freight fees, targeted investment tax credits, expanded leveraging opportunities including access to private activity bonds, and discretionary grants (such as the TIGER program) to fund investments in projects of national significance, will need to be explored further.

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
A. ROADWAY ACCESS TO MAJOR GOODS MOVEMENT FACILITIES				
A.1	Los Angeles	I-5: Phase 1 of 3 — in Santa Clarita from SR-14 to Pico Canyon/Lyons Avenue in the southbound direction and from SR-14 to Gavin Canyon Road in the northbound direction; construct truck climbing lanes.	$131,000	S
A.2	Los Angeles	I-5: Phases 2 and 3 of 3 — in LA/Santa Clarita: Phase 2 (northbound from SR-14 to Weldon Canyon Road; construct HOV lane) and Phase 3 (from SR-14 to Parker Road Overcrossing; construct HOV, truck, and auxiliary lanes.	$410,000	S
A.3	Los Angeles	SR-47 Expressway: replacement of Schuyler Heim Bridge (Segment 1) to include 2 through lanes and 1 auxiliary lane northbound; and 3 through lanes and 1 auxiliary lane southbound; ACTA completing preliminary engineering (PE), right-of-way (ROW), and design support during construction. Construct expressway (Segment 2 - ACTA only) and 2-lane flyover (Segment 3 - ACTA only).	$416,800	S
A.4	Los Angeles	SR-47: replacement of Schuyler Heim Bridge to include 2 through lanes and 1 auxiliary lane northbound; and 3 through lanes and 1 auxiliary lane southbound.	$278,993	L
A.5	Los Angeles	Widen and reconstruct Washington Boulevard from western city boundary at Vernon (350 feet west of Indiana Street) to I-5 at Telegraph Road; widen from 2 lanes to 3 lanes in each direction, increase turn radius and medians, upgrade traffic signals and street lighting, and improve sidewalks.	$32,000	S
A.6	Los Angeles	Ocean Boulevard, from the Los Angeles River over Union Pacific Railroad (UPRR) and Back Channel, to 0.1 mile east of SR-47; replace 5 lane existing Gerald Desmond Bridge with new 6 lane bridge (3 lanes in each direction); other improvements include construction of new approach structures and roads, reconstruction of the existing horseshoe interchange ramp connectors, reconstruction of the existing connectors to SR-710, and reconstruction of 2 ramp connections to Pico Avenue.	$1,001,617	S
A.7	Los Angeles	Olympic Boulevard and Mateo Street Goods Movement Improvement — Phase II; improvement of freeway access by widening westbound Olympic Boulevard between Mateo Street and Santa Fe Avenue for a right-turn lane and northbound Mateo Street between Olympic Boulevard and Porter Street for increased curb return.	$4,421	S

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

* All projects are included in 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) adopted on April 4, 2012, except Project IDs A.39 and A.44; Inclusion of these projects in the RTP/SCS are subject to future amendments.

** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
A.8	Los Angeles	At I-110 northbound at John S. Gibson Boulevard northbound ramps and northbound SR-47/ I-110 Connector; widen SR-47 to northbound I-110 Connector from 1 to 2 lanes from SR-47 PM 0.72 (Station 535+00) just west of Front Street on-ramp; additional through lane continues on northbound I-110 and ends just north of the John S. Gibson off-ramp; widen northbound I-110/John S. Gibson on-ramp to improve access to freeway and intersection of John S. Gibson/I-110 northbound ramps with improved turn radii and re-striping.	$35,051	S
A.9	Los Angeles	I-110 C Street Access Ramps Improvement: improve flow of traffic from I-110 on/off-ramps at C Street by consolidating 2 closely spaced intersections into 1.	$23,980	S
A.10	Los Angeles	Reconstruct SR-60/Grand Avenue Interchange — widen Grand Avenue: add 1 though lane southbound (2 existing), add 1 through lane northbound (3 existing); replace Grand Avenue Overcrossing, add eastbound loop on-ramp, construct additional eastbound through lane from Grand Avenue trap lane to SR-57 add lane, add 2 bypass ramp connectors, add auxiliary lanes eastbound and westbound from east of and west of the junction of the confluence.	$257,900	L
A.11	Los Angeles	I-605 Corridor "Hot Spot" interchanges in Gateway Cities.	$3,200,000	M
A.12	Los Angeles	I-710 Early Action Projects.	$687,000	M
A.13	Los Angeles	Construction of interchange at SR-47 / Navy Way.	$47,800	L
A.14	Los Angeles	New westbound SR-47 on- and off-ramps at Front Street just west of the Vincent Thomas Bridge and eliminate the existing non-standard ramp connection to the Harbor Boulevard off-ramp. Front Street north of the new intersection will be modified to provide 2 northbound lanes, 2 southbound lanes and an exclusive right-turn lane. Front Street south of the new intersection will be modified to provide 1 northbound lane, 2 northbound left-turn lanes and 2 southbound lanes.	$23,800	L
A.15	Los Angeles	Alameda Street between I-10 and Seventh Street in City of Los Angeles. Project will provide congestion relief, improve mobility/reduce conflicts, and improve safety for both automobiles and trucks by providing intersection improvements, new signalization improvements and left turn only signals. Project will also remove abandoned rail lines, repair pavement, add new street lighting, and construct pedestrian improvements.	$7,132	S

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

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Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
A.16	Orange	SR-57 truck climbing auxiliary lane from Lambert Road to Los Angeles County line.	$124,600	L
A.17	Orange	Add 1 mixed flow lane on northbound SR-57 from 0.4 mile north of SR-91 to 0.1 mile north of Lambert Road (5.1 miles) (SR-91/Orangethorpe Avenue to Yorba Linda Boulevard segment).	$72,208	S
A.18	Orange	Add 1 mixed flow lane on northbound SR-57 from 0.4 mile north of SR-91 to 0.1 mile north of Lambert Road (5.1 miles) (Yorba Linda Boulevard to Lambert Road segment).	$73,243	S
A.19	Orange	Connect existing auxiliary lane through interchanges on westbound SR-91 between SR-57 and I-5 with intelligent transportation systems (ITS) elements.	$73,400	S
A.20	Orange	I-5 from El Toro Road truck bypass to SR-55: add 1 mixed flow lane in each direction and merging improvements.	$298,025	M
A.21	Orange	SR-57 northbound: widen existing 4 mixed flow lanes to 5 mixed flow lanes from 0.3 miles south of Katella Avenue to 0.3 miles north of Lincoln Avenue.	$41,086	S
A.22	Orange	SR-91: add 1 mixed flow lane eastbound between SR-91/SR-55 Connector and SR-241 and westbound between SR-241 and Imperial Highway; modify westbound on-ramps from Lakeview Avenue to improve merge (add auxiliary lane between northbound SR-55 and eastbound SR-91 on-ramp and Lakeview Avenue off-ramp).	$85,986	S
A.23	Orange	SR-91: add 1 mixed flow lane eastbound; improve interchange at SR-91/SR-55 and Lakeview Avenue; operational, no increase in capacity.	$355,764	M
A.24	Orange	I-5: add 1 lane in each direction (SR-57 to SR-91).	$336,904	L
A.25	Orange	SR-91 westbound (SR-55 through Tustin Avenue interchange) extend lane and reconstruct auxiliary lane.	$41,930	S
A.26	Orange	SR-91 in Orange County: add a westbound mixed flow lane from SR-241 off-ramp to Gypsum Canyon Road and auxiliary lanes in each direction between SR-241 and Orange County / Riverside County line. See Riverside County for additional improvements.	$173,728	S

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
A.27	Orange	SR-91 eastbound lane addition between SR-241 and SR-71, and improve northbound SR-71 Connector from SR-91 to standard 1 lane and shoulder width.	$77,575	S
A.28	Orange	I-5: add 2 mixed flow lanes in both direction from Avery Parkway to Alicia Parkway; extend second HOV lane from El Toro Road to Alicia Parkway in both directions; and reconfigure interchanges at Avery Parkway and La Paz Road.	$558,700	M
A.29	Orange	SR-55: add 1 mixed flow lane in each direction and fix chokepoints from I-405 to SR-22; add 1 auxiliary lane in each direction between select on/off ramps through project limits (I-405 to SR-91).	$343,055	M
A.30	Orange	I-405: add 1 mixed flow lane in each direction from I-5 to SR-55 to improve merging.	$374,540	M
A.31	Orange	I-405: add 1 mixed flow lane in each direction from SR-73 to I-605.	$1,694	M
A.32	Orange	I-405: construct fourth northbound through lane on Beach Boulevard at I-405 interchange and remove off-ramp on I-405 at Beach Boulevard (northeast corner of Beach Boulevard and Edinger Avenue).	$1,500	S
A.33	Riverside	On I-10 near Beaumont: add/construct new eastbound truck climbing lane from San Bernardino County line to I-10/SR-60 junction.	$26,000	M
A.34	Riverside	On SR-60 near Beaumont: construct new eastbound and westbound truck lanes from Gilman Springs Road to 1.6 miles west of Jack Rabbit Trail.	$100,000	S
A.35	Riverside	Construct new interchange at I-10/SR-60 junction/split.	$184,464	L
A.36	Riverside	On Van Buren Boulevard near March Air Reserve Base: widen from 4 to 6 lanes from approximately 0.5 miles west of I-215 to Barton Street.	$6,700	S
A.37	San Bernardino	I-10/Cherry Avenue interchange reconstruction — replace overcrossing, widen overhead and widen interchange from Slover Avenue to Valley from 4 to 6 lanes with double left-turns to ramps.	$84,090	S

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
A.38	San Bernardino	I-15/I-215 interchange improvements — Devore Interchange south of Glen Helen Parkway to north of Kenwood Avenue and I-215 from south of Devore Road Interchange to I-15 (16.0-17.8); add 1 mixed flow lane in each direction to existing 3 mixed flow lanes from 3,800 feet south of Glen Helen Parkway to 3,100 feet north of I-215 Interchange; add 1 deceleration lane from 3,200 feet south of I-15/I-215 interchange off-ramp to southbound Devore on I-215.	$324,273	S
A.39	San Bernardino	On I-10 : Add a truck climbing lane from Live Oak Avenue to Riverside County Line *	$30,000	L
A.40	Ventura	US-101: in Oxnard at Rice Avenue (Santa Clara Avenue); reconstruct interchange.	$83,977	S
A.41	Ventura	Hueneme Road from Oxnard city limits to Rice Road — widen from 2 to 4 lanes.	$6,953	L
A.42	Ventura	Hueneme Road from Saviers Road to Arcturus Avenue — widen from 2 to 4 lanes.	$3,179	S
A.43	Imperial	Widen SR-111 from SR-98 to I-8 with interchange improvements.	$997,259	L
A.44	Imperial	Expansion of the Calexico East Port of Entry - the proposed project is to increase the number of commercial vehicle inspection lanes and booths from the existing 3 to 6 lanes and booths; and widen bridge over the All-American Canal, which serves as U.S./Mexico Border. *	$90,000	L
SUBTOTAL - ROADWAY ACCESS TO MAJOR GOODS MOVEMENT FACILITIES			**$11,528,327**	**-**

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
B. FREIGHT CORRIDOR SYSTEM				
B.1	Los Angeles	I-710 Corridor User-fee Backed Capacity Enhancement — widen to 5 mixed flow plus 2 dedicated lanes for clean technology trucks (in each direction) and interchange improvements, from Ocean Boulevard in Long Beach to the intermodal railroad yards in Commerce/Vernon.	$5,580,000	L
B.2	Various	East-West Freight Corridor Segment 1 (UPRR Adjacent Segment).	$2,413,086	L
B.3	Various	East-West Freight Corridor Segment 2 (SR-60 Adjacent).	$9,102,359	L
B.4	Various	East-West Freight Corridor Segment 3 (SR-60 Adjacent).	$3,777,816	L
B.5	Various	I-15 Freight Corridor (Initial Segment).	$856,570	L
SUBTOTAL - FREIGHT CORRIDOR SYSTEM			**$21,729,831**	**-**

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
C. ZERO EMISSION TECHNOLOGY				
C.1	Los Angeles	Zero-Emission Container Movement: near-term technology demonstration and initial deployment. Demonstration by 2013; initial deployment by 2015.	$35,000	M
SUBTOTAL - ZERO EMISSION TECHNOLOGY			$35,000	-
D. OFF DOCK AND NEAR DOCK INTERMODAL YARD PROJECTS				
D.1	San Bernardino	Track and intermodal yard improvements (Phases 1 through 4).	$673,305	L
D.2	San Bernardino	Southern California Logistics Airport (SCLA) rail service from Air Expressway approximately 5 miles north of Colusa Road between Phantom East and Mojave River — put in new rail line from BNSF to SCLA (for freight); project in connection with new intermodal/multimodal facility on SCLA property.	$250,000	S
D.3	Los Angeles	Near-dock railyard improvements / intermodal facilities (SCIG/ICTF).	$1,000,000	S
SUBTOTAL - OFF DOCK AND NEAR DOCK INTERMODAL YARD PROJECTS			**$1,923,305**	**-**

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
E. MAINLINE RAIL				
E.1-A to E.1-N	Various	"Rail package — mainline rail capacity expansion: Colton rail-to-rail grade separation–BNSF Cajon Subdivision; Barstow to Keenbrook–BNSF San Bernardino Subdivision; Colton Crossing to Redondo Junction–UP Mojave Subdivision; Devore Road to West Colton (inc. Rancho Flying Junction)–UP Alhambra Subdivision; West Colton to City of Industry–UP Los Angeles Subdivision; UP Yuma Subdivision."	$3,092,400	-
E.2	San Bernardino	▪ Colton Crossing: in Colton from 0.2 miles (0.3 KM) west of Rancho Avenue to 0.9 miles (1.5 KM) east of La Cadena Drive; construct railroad to railroad grade separation. (Cost included in the Rail package — mainline rail capacity expansion)	$201,994	S
E.3	Orange	▪ BNSF Line - 10 miles of triple track from Fullerton to Orange/Riverside County line. (Same as Atwood to Fullerton and Esperanza to Atwood) (Cost included in the Rail package — mainline rail capacity expansion)	$70,000	L
SUBTOTAL - MAINLINE RAIL			**$3,092,400**	**-**
F. ON-DOCK RAIL				
		OTHER IN-PORT MAINLINE (ON-DOCK RAILYARDS):	-	-
F.1-LB		▪ Pier G New North Working Yard.	-	S
F.2-LB		▪ Pier G South Working Yard Rehabilitation.	-	M
F.3-LB		▪ Middle Harbor Terminal Rail Yard (3 Phases).	-	M
F.4-LB		▪ Pier A On-Dock Rail Yard Expansion To Carrack.	-	TBD
F.5-LB		▪ Pier A On-Dock Rail Yard East of Carrack.	-	TBD
F.6-LB	Los Angeles	▪ Pier S On-Dock Rail Yard.	-	TBD
F.7-LB		▪ Pier J On-Dock Rail Yard Reconfiguration.	-	TBD
F.8-LB		▪ Pier G Metro Track Improvements.	-	S
F.9-LA		▪ Pier 400 On-Dock Rail Yard Expansion.	-	L
F.10-LA		▪ Pier 300 On-Dock Rail Yard Expansion.	-	L
F.11-LA		▪ Terminal Island Rail & Seaside (Evergreen Terminal On-Dock Railyard).	-	L
F.12-LA		▪ West Basin ICTF Rail Yard Expansion (Phase 1) - TraPac On-Dock Rail Project.	-	S
SUBTOTAL - ON-DOCK RAIL			**$998,100**	**-**

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
G. RAIL ACCESS IMPROVEMENTS TO PORT OF LONG BEACH & PORT OF LOS ANGELES				
G.1	Los Angeles	Port Truck Traffic Reduction Program: West Basin Railyard. Intermodal railyard connecting Port of LA with Alameda Corridor to accommodate increased loading of trains at the port, reducing truck trips to off-dock railyards.	-	S
G.2-LA	LOS ANGELES	Ports Rail System (Outside Marine Terminals): ▪ Pier 400 Second Lead Track	-	L
G.3-LB		▪ Pier B Street Realignment - Pier B Street Intermodal Railyard Expansion. Project will expand Pier B Street Intermodal Railyard to facilitate additional rail shipments and realign and widen Pier B Street.	-	L
G.4-LB		▪ Pier F Support Yard - this project provides storage tracks on the Pier F Road cul-de-sac, which are useful for support functions such as set out of bad order rail cars and possibly engine tie-up.	-	S
G.5-LB		▪ Track Realignment at Ocean Blvd - this project will create improved lead tracks to the Metropolitan Stevedoring Co. (Metro) rail yard and to Pier F on-dock rail yard.	-	S
G.6-LB		▪ Terminal Island Wye Track Realignment - this project will provide for double tracking the south leg of the Wye to accommodate simultaneous train switching moves from these various activities on Terminal Island.	-	S
G.7-LB		▪ Reconfiguration of Control Point (CP) Mole - the new control point at the Mole will enable increased train speeds and reduced train delays caused by manual switch operations.	-	TBD
G.8-LB		▪ Navy Molde Road Storage Yard - the proposed project includes three new tracks along the west side of Pier T. This project will also involve relocating the existing utilities.	-	TBD
G.9-LB		▪ Pier B Rail Yard (Phase II - 9th Street Alternative) expansion of Pier B Street intermodal railyard.	-	S
G.10-LB		▪ Pier B Rail Yard (Phase III - 10th/12th Street Alternative) expansion of Pier B Street intermodal railyard.	-	M
SUBTOTAL - RAIL ACCESS IMPROVEMENTS TO PORT OF LONG BEACH & PORT OF LOS ANGELES			**$1,537,900**	**-**

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Project Cost ($YOE, Thousands)	Timeframe (Short, Medium, Long)
H. RAIL-HIGHWAY GRADE SEPARATIONS				
H.1 to H.71	Various	Rail Package — Grade Separations (see detailed list)	$5,568,900	-
SUBTOTAL - RAIL-HIGHWAY GRADE SEPARATIONS			**$5,568,900**	**-**
I. BOTTLENECK RELIEF PROJECTS				
I.1 to I.22	Various	Goods Movement — Bottleneck Relief Strategy. **	$5,000,000	-
SUBTOTAL - BOTTLENECK RELIEF PROJECTS			$5,000,000	-
J. FUTURE INITIATIVE THAT COULD SERVE GOODS MOVEMENT				
J.1	Los Angeles/ San Bernardino	High Desert Corridor - construct new 4-6 lane facility: east-west facility between SR-14 and US-395 (connecting at San Bernardino County); east-west facility between I-5 and SR-14; and north-south facility between SR-14 and SR-138.	$6,925,029	M
SUBTOTAL - FUTURE INITIATIVE THAT COULD SERVE GOODS MOVEMENT			**$6,925,029**	**-**
TOTAL GOODS MOVEMENT PROJECTS			***$58,338,792***	***-***

Projects not listed in the order of priority. Projects A.11, A.12, A.39, C.1, D.1 and G.1 are not mapped.

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** The 2012–2035 RTP/SCS includes an estimate of $5 billion for goods movement bottleneck relief strategies. See examples of INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS.

Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

GOOD MOVEMENT PROJECT LIST: INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS

Map ID	County	Project Description	Timeframe (Short, Medium, Long)
INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS			
I.1	Imperial	Widen SR-98 from V.V. Williams Avenue to Ollie Avenue and intersection improvements of SR-98 and Cesar Chavez from 2 to 4 lanes (Phase 1B).	S
I.2	Imperial	Widen SR-98 from Ollie Avenue to Rockwood Avenue from 4 to 6 lanes.	S
I.3	Imperial	Widen SR-98 from All American Canal to V.V. Williams Avenue from 2 to 4 lanes.	M
I.4	Imperial	Widen SR-98 from All American Canal to Dogwood Road from 2 to 4 lanes.	M
I.5	Imperial	SR-98 or Jasper Road from SR-111 to SR-7: widen and improve to 4/6 lanes.	L
I.6	Imperial	Forrester Road Corridor (Proposed SR-86): widen and improve to 4 lane arterial from I-8 to SR-78.	S
I.7	Imperial	Reconstruct I-8 interchange at Imperial Avenue from a 2 lane to a 4 lane diamond-type overcrossing; realign and reconstruct on- and off-ramps, and provide access to Imperial Avenue south of I-8.	M
I.8	Imperial	Widen SR-115 from I-8 to Evan Hewes Highway.	L
I.9	Los Angeles	Westbound I-210: connect and converge Altadena Drive on-ramps into a single on-ramp.	M
I.10	Los Angeles	I-210 westbound at Lake Avenue: construct center drop ramp with two drop ramps to serve HOV and general purpose vehicles heading toward SR-134.	M
I.11	Los Angeles	Westbound I-210: connect and converge Santa Anita Avenue on-ramps into a single on-ramp.	M
I.12	Los Angeles	I-210: construct westbound auxiliary lane from Santa Anita Avenue to Baldwin Avenue and eastbound auxiliary lane from Santa Anita Avenue to Huntington Drive.	M

Projects not listed in the order of priority.
* Project I.18 is not mapped.
Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Timeframe (Short, Medium, Long)
I.13	Los Angeles	I-210: modify Rosemead Boulevard/Michilinda Avenue interchange; converge westbound I-210 on-ramps.	M
I.14	Los Angeles	I-210: modify north side of I-210 at Baldwin Avenue interchange and eliminate collector-distributor.	M
I.15	Los Angeles	I-110: in Los Angeles from 8th Street on-ramp to I-110/I-10 connector – construct northbound and southbound auxiliary lanes and modify ramps; convert existing southbound auxiliary lane to optional lane and modify ramps; I-110 northbound Harbor Freeway, from north end of 12th Street undercrossing to north end of the 7th Street undercrossing, add storage lane on the mainline and reconstruct ramp.	S
I.16	Los Angeles	I-710: reconstruct I-710 interchanges at I-5, at I-405, at SR-91, and at I-105. As part of the I-710 Corridor Program proposing 4 truck lanes (Ports to rail yards), 10 mixed flow lanes (Ports to SR-60).	S
I.17	Los Angeles	I-405: in Los Angeles from La Tijera Boulevard to Jefferson Boulevard – add auxiliary lane.	S
I.18*	Los Angeles	Other potential relief projects - concept plans under review.	L
I.19	Orange	SR-57: add 1 mixed flow lane northbound between Orangewood Avenue and Katella Avenue.	M
I.20	Ventura	US-101: in Thousand Oaks; improvements at various locations between Los Angeles County line and Moorpark Road; convert auxiliary lanes to mixed flow lanes, add 1 lane in each direction by shifting centerline northwards and widening on northbound side, realign ramps, construct soundwalls, widen 3 bridges (Hampshire Road, Conejo School, and Moorpark Road) on north side; improve US-101/SR-23 Connectors.	S
I.21	Riverside	SR-91 from Magnolia Avenue to between Merced Drive and Fillmore Street (PM 10.6 to 11.6): reconstruct and widen from 4 to 6 lanes and reconstruct/widen interchanges and ramps.	M
I.22	San Bernardino	I-10 Tippecanoe Avenue interchange – add eastbound off-ramp auxiliary lane from Waterman Avenue on-ramp to Tippecanoe Avenue off-ramp and widen bridge (non-capacity).	S

Projects not listed in the order of priority.
* Project I.18 is not mapped.
Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Timeframe (Short, Medium, Long)
I.23	San Bernardino	Improve I-10 interchange at Mt. Vernon Avenue.	M
I.24	San Bernardino	Improve I-10 interchange at Mountain View Avenue.	M

Projects not listed in the order of priority.
* Project I.18 is not mapped.
Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

GOODS MOVEMENT PROJECT LIST: RAIL-HIGHWAY GRADE SEPARATIONS

Map ID	County	Project Description	Timeframe (Short, Medium, Long)
RAIL-HIGHWAY GRADE SEPARATIONS			
H.1	Los Angeles	Valley View Avenue	S
H.2	Los Angeles	Reeves Avenue	S
H.3	Los Angeles	South Wilmington Area (bounded by Harry Bridges Boulevard to the north, Pier A Street to the south, Fries Avenue to the west, and Marine Avenue to the east)	S
H.4	Los Angeles	Mission Boulevard	S
H.5	Los Angeles	Greenwood Avenue	M
H.6	Los Angeles	Baldwin Avenue (in City of El Monte)	S
H.7	Los Angeles	Ramona Street	S
H.8	Los Angeles	Mission Road	S
H.9	Los Angeles	Del Mar Avenue	S
H.10	Los Angeles	San Gabriel Boulevard	S
H.11	Los Angeles	Puente Avenue	M
H.12	Los Angeles	Nogales Street	S
H.13	Los Angeles	Turnbull Canyon Road	M
H.14	Los Angeles	Fairway Drive	M
H.15	Los Angeles	Fairway Drive	M
H.16	Los Angeles	Fullerton Road	M
H.17	Los Angeles	Hamilton Boulevard	M
H.18	Los Angeles	Durfee Avenue	M
H.19	Los Angeles	Del Amo Boulevard	S
H.20	Los Angeles	Passons Boulevard	RECENTLY COMPLETED
H.21	Orange	Kraemer Boulevard	S
H.22	Orange	Lakeview Avenue	S
H.23	Orange	Placentia Avenue Undercrossing	S
H.24	Orange	Raymond Avenue	S
H.25	Orange	State College	S
H.26	Orange	Tustin Avenue/Rose Drive	S
H.27	Orange	Jeffery Road	RECENTLY COMPLETED
H.28	Orange	Orangethorpe Avenue	S
H.29	Riverside	Auto Center Drive	S

Projects not listed in the order of priority.
Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Timeframe (Short, Medium, Long)
H.30	Riverside	Iowa Avenue	S
H.31	Riverside	Magnolia Avenue	S
H.32	Riverside	Mary Street	S
H.33	Riverside	McKinley Street (engineering only)	L
H.34	Riverside	Clay Street	S
H.35	Riverside	Riverside Avenue	S
H.36	Riverside	Streeter Avenue	S
H.37	Riverside	Avenue 52	S
H.38	Riverside	Avenue 56	S
H.39	Riverside	Sunset Avenue	S
H.40	Riverside	Chicago Avenue	L
H.41	Riverside	Pierce Street	L
H.42	Riverside	Bellgrave Avenue	L
H.43	Riverside	Madison Street	L
H.44	Riverside	Spruce Street	L
H.45	Riverside	Jurupa Road	L
H.46	Riverside	Tyler Street	L
H.47	Riverside	Joy Street	L
H.48	Riverside	Adams Street	L
H.49	Riverside	Viele Avenue	L
H.50	Riverside	California Avenue	L
H.51	Riverside	22nd Street	L
H.52	Riverside	San Gorgonio Avenue	L
H.53	Riverside	Hargrave Street	L
H.54	Riverside	Avenue 62	L
H.55	Riverside	Avenue 66	L
H.56	Riverside	3rd Street	L
H.57	San Bernardino	Glen Helen Parkway	S
H.58	San Bernardino	Green Tree Boulevard Extension (engineering only)	M
H.59	San Bernardino	Lenwood Road	S
H.60	San Bernardino	Palm Avenue	S
H.61	San Bernardino	Laurel Street	S

Projects not listed in the order of priority.
Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

Map ID	County	Project Description	Timeframe (Short, Medium, Long)
H.62	San Bernardino	Mt. Vernon Avenue	S
H.63	San Bernardino	Main Street	L
H.64	San Bernardino	North Vineyard Avenue	S
H.65	San Bernardino	South Milliken Avenue	S
H.66	San Bernardino	South Archibald Avenue	S
H.67	San Bernardino	Campus Avenue	L
H.68	San Bernardino	Hunts Lane	S
H.69	San Bernardino	San Antonio Avenue	L
H.70	San Bernardino	Ramona Avenue at State Avenue	RECENTLY COMPLETED
H.71	Ventura	Rice Avenue / Fifth Street	S

Projects not listed in the order of priority.
Notes: 1. Short-term (S) (2012 - 2019); Medium-term (M) (2020 - 2027); Long-term (L) (2028 - 2035+)

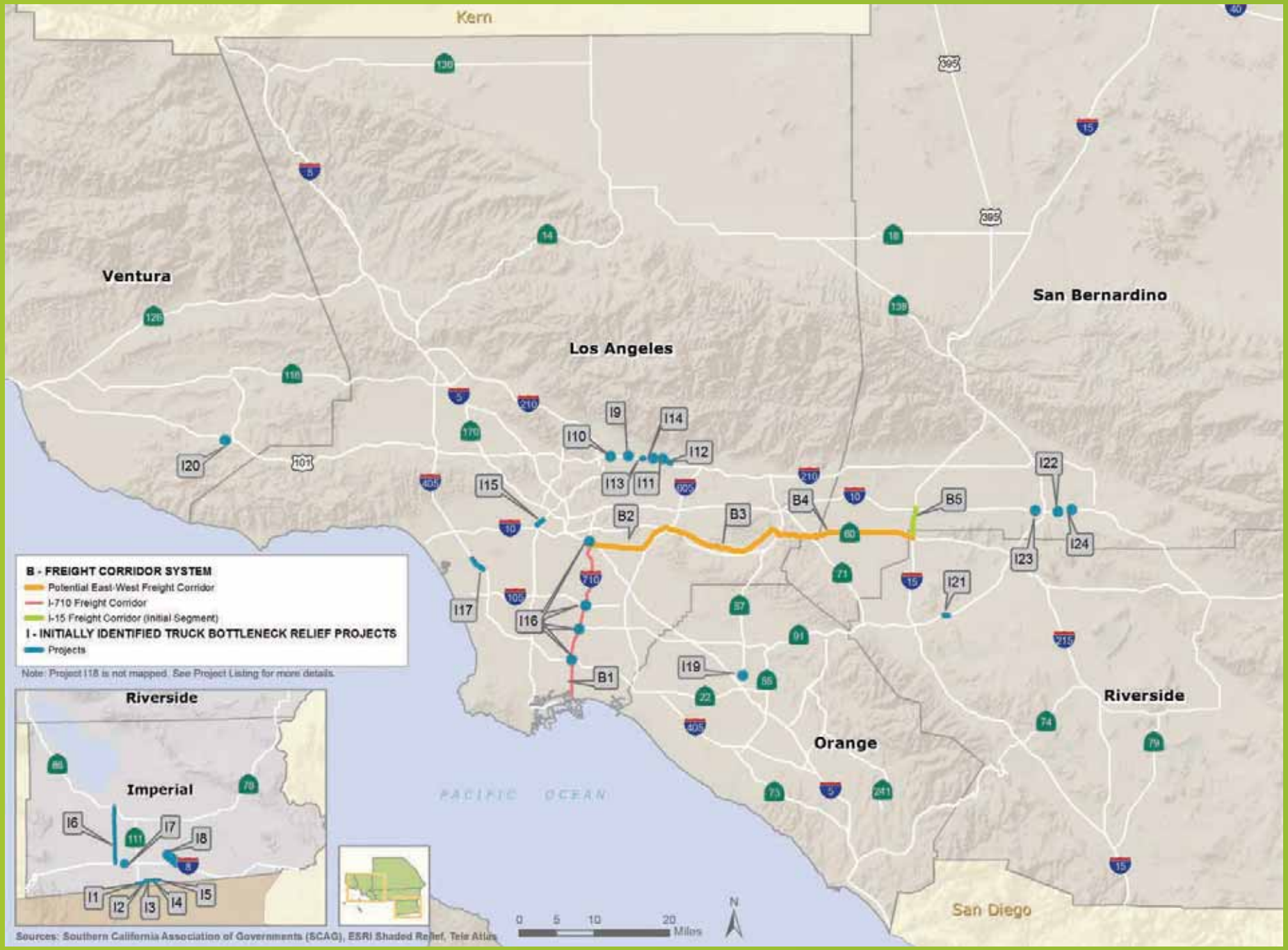
Exhibit 10

GOODS MOVEMENT PROJECT LIST – A. ROADWAY ACCESS TO MAJOR GOODS MOVEMENT FACILITIES AND J. FUTURE INITIATIVE THAT COULD SERVE GOODS MOVEMENT

 Note: Project Identification corresponds to Project Listing

Exhibit 11

GOODS MOVEMENT PROJECT LIST – B. FREIGHT CORRIDOR SYSTEM AND I. INITIALLY IDENTIFIED TRUCK BOTTLENECK RELIEF PROJECTS



Note: Project Identification corresponds to Project Listing

Exhibit 12

GOODS MOVEMENT PROJECT LIST – D. OFF-DOCK AND NEAR-DOCK INTERMODAL YARD PROJECTS, E. MAINLINE RAIL AND H. RAIL-HIGHWAY GRADE SEPARATIONS

Note: Project Identification corresponds to Project Listing

Exhibit 13

GOODS MOVEMENT PROJECT LIST – F. ON-DOCK RAIL AND G. RAIL ACCESS IMPROVEMENTS TO PORT OF LONG BEACH & PORT OF LOS ANGELES

Note: Project Identification corresponds to Project Listing

SOUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

Southern California
Association of Governments
818 West Seventh Street, 12th Floor
Los Angeles, CA 90017
www.scag.ca.gov