



ON THE MOVE

SOUTHERN CALIFORNIA DELIVERS THE GOODS

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ASSOCIATION of GOVERNMENTS



Comprehensive Regional Goods Movement Plan and Implementation Strategy

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Comprehensive Regional Goods Movement Plan
and Implementation Strategy

final
report

prepared for

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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 can continue to play a critical 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. 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 analysis, and engage with regional, statewide, and national stakeholders covering multiple aspects of the region's goods movement system. This chapter provides an introduction to goods movement in Southern California, and discusses the importance of goods movement to the region's economy and quality of life. The chapter also lays out a vision for what the Southern California goods movement system can become as it continues to evolve to meet the needs of residents, shippers, carriers, and a wide range of public and private sector stakeholders.

1.1 What is Goods Movement in Southern California?

Goods movement and freight transportation are essential to support the SCAG region's economy and quality of life. Put simply, goods movement is the wide array of activities that are involved in moving products from producers to consumers. Whether carrying imported goods from 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.

This report describes goods movement in Southern California first in terms of the functions it serves as it supports the local and national economy; and second in terms of the modal systems that comprise the inter-related web of infrastructure that is needed to deliver goods movement services. Understanding both the functions and the corresponding modal systems of the regional goods movement system is critical to identifying strategies that meet the needs of system users and maximize regional benefits.

Goods Movement Functions in Southern California

The goods movement system in Southern California has many different types of users and each of these user groups supports different aspects of the regional and national economy. Chapter 2 of this report describes four key functions that goods movement serves that benefit different freight system users in Southern California:



- **Supports Regional Manufacturing** – Southern California is the leading manufacturing center in the U.S.¹ and regional manufacturers reach a mix of international, domestic, and local customers and suppliers by accessing the region's goods movement system. As such, the goods movement system is a lifeline between the region's export base and its markets.
- **Serves the Needs of Local Business and Consumers** – Like any metropolitan region of its size, a substantial amount of goods movement in the SCAG region involves providing goods and services to residents and local businesses. Activities that generate the most truck traffic in the region include services and deliveries to households, parcel pickup, and delivery at local businesses, and deliveries from warehouse and distribution centers to retail establishments. Even if there were no international trade system in Southern California, goods movement would continue to serve a critical role in the region's economy and quality of life.
- **Provides Access to International Gateways** – The SCAG region is the nation's premier international gateway supporting international trade through its seaports, international airports, and international land border crossings. These facilities are a critical link between the U.S. economy and the Pacific Rim, one of the world's fastest growing trade lanes.
- **Supports a Thriving Logistics Industry** – The confluence of a world class transportation system and access to a large consumer market, both within the region and in nearby Western states, has made Southern California a choice location for national and regional distribution of a wide variety of products. Growth in logistics-based businesses has created a new and diverse source of employment and economic growth.

The Goods Movement System in Southern California

Over the last century, the public and private sectors have invested in goods movement infrastructure in Southern California that has been the envy of the world. Chapter 3 describes the goods movement system in more detail, but in summary, the key modal elements of this system include:

- **Interstates, highways and local roads** that carry the highest volumes of truck traffic of any roads in the state (including I-710, I-605, SR-60, SR-91, I-5, I-10, I-15, and I-210) and provide critical "last mile" connections to regional ports, manufacturing facilities, intermodal terminals, warehouse and distribution centers, and retail outlets.
- **Class I railroads** that have some of the busiest mainlines in the country and that operate six major intermodal terminals, including the nation's most active intermodal terminal, the Burlington Northern Santa Fe Railroad's (BNSF), Hobart Yard.
- **Seaports** that include the largest container port complex in the U.S. (the Ports of Los Angeles and Long Beach) and the niche Port Hueneme, in Ventura County, that handles automobiles, fresh fruit, and produce.
- **Air cargo facilities** including Los Angeles International Airport (LAX) and Ontario International Airport (ONT), that together handled over 96 percent of the region's air cargo in 2010.
- **International land border crossings** in Imperial County, which includes the Calexico East-Mexicali II port-of-entry, the fifth busiest commercial crossing along the U.S. Mexico border.²

¹ Los Angeles County Economic Development Center, Keyser Center for Economic Research, *Manufacturing: Still a Force in Southern California*, 2011

² U.S. Bureau of Transportation Statistics, Border Crossing/Entry Data, http://www.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_QuickSearch.html, accessed June, 2012.

- A **warehouse and distribution center complex** that includes over 800 million square feet of warehousing space throughout the six-county region, and the potential to expand to over one billion square feet with development of additional land already zoned for this type of development.

1.2 A Vision for the Future of Goods Movement in Southern California

Goods Movement Challenges

Forward-thinking leaders in business and government helped create the goods movement system that Southern Californians enjoy today. They had a vision of Southern California as a world leader in commerce and a major exchange point for international culture as businesses from across the globe traded via the region's port, airport, and border crossing facilities. Today, 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 to the regional and national economies without any coordinated planning on the part of regional, state, and national stakeholders. But goods movement in Southern California faces serious challenges and just proceeding with the status quo is not an acceptable choice for the region. Some of the challenges ahead include:

- **Growth in freight traffic on all modes and growing conflicts with passenger transportation on shared infrastructure threatens the efficiency and safety of the region's transportation systems.** Growth in the SCAG region's population and Gross Regional Product (GRP) (which is expected to more than double over the next 25 years³) are major drivers of growth in regional freight demand. In addition, the U.S. will continue to see growth in Pacific Rim trade and Southern California port cargo is expected to triple by 2035⁴. In response to this growth, regional truck vehicle miles traveled (VMT) are anticipated to grow by more than 80%⁵ and the region's major truck corridors will experience increasing delays if no action is taken. Freight train volumes are expected to more than double and intermodal lift volumes will grow by more than 140%.⁶ Air cargo growth is also expected to grow by over 160% by 2035.⁷ If the SCAG region can creatively accommodate this growth it can reap significant economic benefits. The consequence of not planning for this growth will mean businesses will waste time and money dealing with congestion, logistics businesses that provide good jobs will look to other goods movement hubs that can provide more efficient infrastructure, and there will be growing conflicts between goods movement users and passenger traffic.
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- **Difficulty meeting healthy air quality standards continues to challenge technology developers, system operators, and environmental regulators.** The SCAG region has moved aggressively over the past several decades to address serious air quality concerns and has made much progress. But goods movement is growing in importance as a source of emissions and will require even more aggressive efforts to bring new technologies and improved operations to the task of cleaning the air. Nitrogen oxides (NO_x) and fine particulate matter (PM_{2.5}) emissions can cause serious health effects including asthma and other respiratory ailments, increased stress, and increased cancer risk.

³ SCAG, 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy, April 2012

⁴ Tioga Group and IHS Global Insight, *San Pedro Bay Container Forecast Update*, prepared for the Ports of Long Beach and Los Angeles, July 2009.

⁵ SCAG, Op cit.

⁶ Ibid.

⁷ Ibid.

Much of the SCAG region does not meet Federal PM_{2.5} and ozone (created from the combination of NO_x and volatile organic compounds in the atmosphere) standards. While a combination of regulatory programs, incentive programs to switch to cleaner technologies, and improved operations by goods movement service providers continue to reduce emissions from goods movement, the goalposts keep moving as more is learned about the health effects of these pollutants. In the South Coast Air Basin,⁸ there is a strict deadline to reduce ozone concentration from 107 Parts per billion (ppb) today to 80 ppb by 2023 with a future deadline of 75 ppb by approximately 2031.⁹ Further, EPA is likely to propose a future standard that will bring this down to 60-70 ppb. In addition to the impacts that failure to reach these goals will have on human health, this failure would also trigger Federal sanctions such as curtailment of transportation funds. This improvement in air quality must occur against the backdrop of growth in goods movement demand already described. The South Coast Air Quality Management District (SCAQMD) estimates that with all adopted future regulations and the implementation of known clean technologies in the rail, marine, and air sectors, 2030 ozone sources will contribute emissions at levels that will not meet the standards. Efforts to introduce zero emission goods movement technologies wherever possible will be critical to meeting these proposed future standards.

- **Conflicts between expanding goods movement activities and growing communities will require new solutions to land use planning and urban design.** As goods movement and passenger movement share increasingly constrained infrastructure and goods movement activities and residential/commercial activities “rub” up against each other in increasingly dense urban areas, conflicts will inevitably arise. In addition to the region’s air quality concerns and congestion on the region’s road, rail, and airport facilities, goods movement can contribute to safety challenges; excessive noise, vibration, or lighting concerns; and pavement deterioration. Goods movement oriented industries – such as construction, warehousing, manufacturing, logistics, and port and harbor facilities – can result in localized impacts and can create situations of incompatible land uses. In order for goods movement to continue to grow, it must do so as a “good neighbor,” adopting approaches that reduce conflicts and mitigate impacts.



The Goods Movement Vision


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.

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 the quality of life for our communities

⁸ Los Angeles, Orange, and non-desert portions of Riverside and San Bernardino Counties.

⁹ The attainment deadline for the 75 ppb standard (adopted in 2008) has not yet been established by U.S. EPA, but is expected to be by approximately 2031.



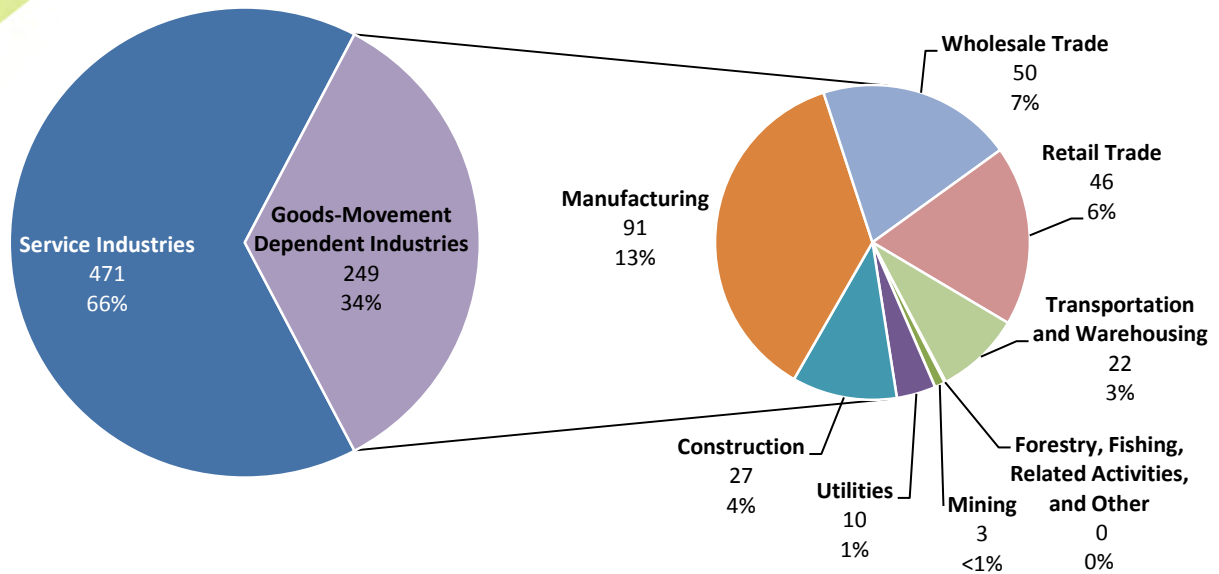
This vision reflects the important role goods movement plays in the regional economy, the need to provide a modally diverse and highly efficient system that can handle substantial growth, and a need to do so in an environmentally sustainable way. Some of the highlights of how this vision was turned into specific objectives for the development of the Plan are presented below.

Goods Movement is Fundamental to the SCAG Economy and Plays a Vital Role in the State and National Economy

Understanding the importance of goods movement to the economy, the Plan was developed with the following economic objectives.

- **The Plan should ensure that local business have access to the transportation services they need so that they can grow and thrive in Southern California.** The Comprehensive Regional Goods Movement Plan and Implementation Strategy identified local industries/economic sectors that generate much of the demand for goods movement services. These “goods movement-dependent industries” – including manufacturing, wholesale and retail trade, construction, and transportation/warehousing – employ over 2.9 million people in Southern California and contributed \$249 Billion to Gross Regional Product (GRP)(Figure 1.1). Some of these businesses, particularly national manufacturing firms and consumer products distributors (who maintain large import warehouses and national distribution centers in the region), form much of Southern California’s “export base.” These businesses consider many factors in making location and expansion decisions and transportation cost and service reliability are among those factors. Ensuring that the future system can meet the needs of these businesses is a critical objective of the Goods Movement Plan.
- **The Plan should promote system improvements that will keep the costs of goods and services to the region’s residents at a reasonable level.** A substantial fraction of goods movement demand in Southern California is associated with providing goods and services to local residents. According to the SCAG Heavy-Duty Truck (HDT) model, over 40% of the region’s heavy-duty truck trips are associated with this type of activity. If the region’s highway system cannot accommodate the anticipated growth in demand for trucking related to these types of goods and services, costs will go up as truck drivers spend more time in traffic and the owners and operators of these fleets need to use more trucks at lower levels of utilization in order to serve their local customers. A major objective of the Plan is to reduce overall truck delay on key truck routes in order to keep these transportation costs down for the benefit of local businesses and residents.

Figure 1.1 Industry Contribution to GRP by the Goods Movement Dependent Sectors 2010 (in Billions of 2010 Dollars)



Source: REMI PI+ v1.3.13 Model Data.

- The Plan should ensure that Southern California can continue to be the leading gateway for Pacific Rim trade.** The tremendous growth in container trade through the Ports of Los Angeles and Long Beach that were experienced over the last 30 years is the story of expansion of Asian economies and the growing importance of Pacific Rim trade. By the mid-1980s, as Asian trade began to boom, West Coast port share of containerized trade exceeded that of the Atlantic Coast for the first time and by 2007, West Coast ports held a 55 percent share of U.S. containerized trade.¹⁰ The infrastructure of rail lines and intermodal terminals and warehouse and distribution centers in Southern California supported this growth and ensured efficient delivery of imports throughout the U.S. at lower costs to U.S. consumers. While recent investments in the Panama Canal expansion, port infrastructure, and new warehouse and distribution facilities have accompanied port of entry diversification for many of the nation's largest importers, continuing growth in Asian trade is likely to drive demand for Southern California's ports. Both China and Southeast Asia are expected to continue as the fastest growing regions for U.S. import trade over the next 20 years but just as exciting is the prospect for growing exports to China as its middle class grows and general incomes rise. U.S. export trade with China is expected to grow at a rate of 5.8 percent per year between 2010 and 2020 and at 3.3 percent per year from 2020 to 2030.¹¹ Ensuring that Southern California has the port and inland transportation infrastructure necessary to handle this growth is important for the nation, as trade through Southern California's container ports supports over 3.37 million jobs throughout the U.S.¹² This international trade activity is also important to the regional economy, creating good paying jobs in the logistics services sector as well as new opportunities for both import and export-oriented firms in Southern California. A major objective of the Goods Movement Plan is to ensure that those jobs stay in Southern California by providing the modern, high efficiency transportation connections that meet the needs of the nation's importers and exporters.

¹⁰ U.S. Bureau of Transportation Statistics, *America's Container Ports: Freight Hubs That Connect Our Nation to Global Markets*, June 2009.

¹¹ Tioga Group and IHS Global Insight, *San Pedro Bay Container Forecast Update*, Prepared for the Ports of Long Beach and Los Angeles, July 2009.

¹² BST Associates, *Trade Impact Study*, 2008.

The vision underlying the Plan that reflects these objectives includes:

- A focus on markets. The Plan identifies key local industries, including manufacturing, trade, and logistics and identifies key corridors where these industries are located. It ensures that improvements are focused in these corridors and system performance meets the needs of these critical users.
- Continued expansion of and accessibility to international trade hubs balancing the needs of local and national trade-oriented businesses. The Plan supports capacity improvements in marine terminals, intermodal terminals, railroad mainlines, and roadway access routes to the seaports, airports, and land border crossings that makeup the region's trade transportation system.
- Focus on intraregional systems that connect distribution centers with population centers. The Plan envisions a core Freight Corridor that connects concentrations of goods movement activity and which is dominated by intraregional truck traffic. This is supported by a strong program to identify and resolve major truck bottlenecks on all of the region's major truck corridors.

A Healthy and Balanced Southern California Economy Will Lead to Growth That Should Be Addressed with Multimodal Solutions and a Mix of Capacity Expansion and Operational Improvements

The forecasts that underlie this Plan are based on continued expansion of the Southern California economy, albeit at a more modest rate than has occurred over the last 25 years. Accommodating this growth will require meeting the following system performance objectives:

- **The Plan should ensure fluid movement of goods and people consistent with user expectations for a world class transportation system.** A major objective of the Plan is to allow for growth without deterioration in the overall performance of the goods movement system. The Plan should ensure that rail volumes can double without exceeding delay levels beyond what they were in 2000. Analysis of options for addressing truck delay through the development of a freight corridor through the center of the region suggests the potential to reduce truck delay in this major center of goods movement activity by over 6 million hours per year.



- **The Plan should reduce conflicts between goods movement and people movement leading to a safer system.** Currently, there are more than 2,700 truck-involved accidents per year on the key regional goods movement truck corridors¹³ and an average of 8 accidents per year at road-rail crossing throughout the region¹⁴. The Plan envisions greater separation of passenger and goods movement in order to make the system safer for all users.

The vision underlying the Plan that reflects these objectives includes:

- A focus on multimodal solutions. The Plan recognizes that the strength of the region's goods movement system is the variety of high quality modal services. Strategies ensure that the highest and best use can be made of these interconnected modal systems. The strategies proceed from an understanding that different goods movement functions and markets demand different modal solutions.

¹³ Data averaged for the period January 1, 2005 – December 31, 2009 from the Statewide Integrated Traffic Reporting System (SWITRS), California Highway Patrol.

¹⁴ Data averaged over the period January 2006 – December 2010, Federal Railroad Administration.

- Creative approaches to shared use corridors. The Plan recognizes that passengers and freight are increasingly using shared infrastructure despite having vastly different operations and capacity needs. This can lead to conflicts that reduce the efficiency of the system and lead to safety issues. The Plan promotes concepts that separate passenger and freight movements where possible.

The Goods Movement System Can and Must Expand its Operations in Ways That Provide For a Healthy Environment and Livable Communities

In order to address concerns about the impact of goods movement growth on air quality and community livability, the Plan was developed to meet the following objectives:

- **The Plan should provide for the lowest emission modal options possible.** Whenever there is the potential for modal competition, the strategies in the Plan should ensure that shippers and carriers are able to use the cleanest available modal alternatives.
- **The Plan should support development of clean goods movement technologies.** There are exciting new developments in goods movement technology that have promise for significantly reducing environmental impacts. Government commitment that is demonstrated through provision of market-based incentives, elimination of regulatory uncertainty, and public investments in supporting infrastructure can help promote the application of these clean goods movement technologies.
- **The Plan should mitigate neighborhood and community impacts to the maximum extent possible.** As goods movement activity expands, planning should look to minimize the impacts on adjacent communities by selecting the least intrusive alignments for new facilities, seeking shared-use corridors (e.g., rail and truck, transportation and utility), and separating modal system conflicts.



The vision underlying the Plan that reflects these objectives includes:

- Continued development of near-zero and zero-emission technologies. The Plan vision is to move rapidly to adopt clean fuels in the short-run and to transition to zero-emission systems as technology readiness and cost feasibility are demonstrated. An aggressive program of technology research, development, and demonstration aimed at zero-emission truck and rail technologies is a major element of this vision.
- Separating road and rail crossings in key corridors. As rail traffic grows, these crossings divide communities and create safety hazards, both through delays to emergency vehicles and through potential accidents at the crossings.

1.3 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 railyards, additional main line 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 modern 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 main lines will provide significant traffic congestion relief throughout the region. The system will also show significant progress in reducing emissions from goods movement sources, including the introduction of 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.