



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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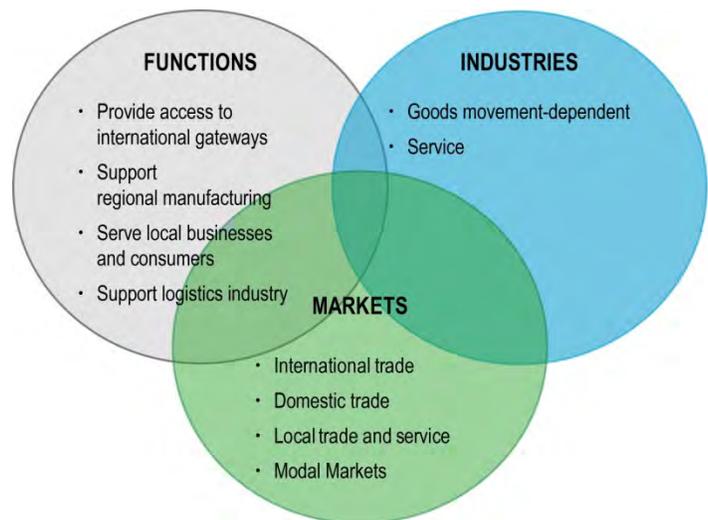
What Drives Goods Movement in the SCAG Region

2.1 Introduction

The trade and transportation system in the SCAG region is of vital regional and national significance. By linking together international gateways, regional warehousing and manufacturing facilities, and local businesses, this system helps to ensure both the diversity and vitality of the regional, statewide, and national economies. The system plays a number of different roles in the region and it is important to understand these roles, how they relate to each other, and how they might evolve in the future. In addition, understanding these different roles can provide important insights into the types of needs and issues that must be addressed and the types of stakeholders that will be affected.

As illustrated in Figure 2.1 the interaction between goods movement and the economy involves three overlapping concepts. First, there are industry sectors that rely on the goods movement system. These industries are referred to as the goods movement-dependent industries in this report. These industries create jobs and economic activity in Southern California and they rely on the goods movement system to bring supplies and distribute products. When we measure the economic impacts of goods movement activity, we are often referring to impacts on these industries. The goods movement-dependent industries trade in various markets. A simple way of looking at these markets is their geographic location – international, domestic, and local. But within these geographic markets, it is also important to understand modal markets and sub-markets. Modes compete with each other in certain markets but not in others. For example, air cargo is a market for high value time sensitive products carried long distances. Rail, which carries lower value products shipped in large shipments tends not to compete directly with air cargo in most markets. Within modal markets, there are also submarkets that are highly specialized to meet the distribution needs of particular types of shippers. For example, the distinctions between inland point intermodal (IPI), transload, and pure domestic intermodal rail sub-markets are described in more detail later in this chapter. Finally, the trade and transportation system in Southern California provides functions that serve the needs of goods movement-dependent industries trading in various markets. These functions provide a convenient way of describing the economic effects and importance of goods movement in the Southern California economy.

Figure 2.1 Goods Movement in the Economy



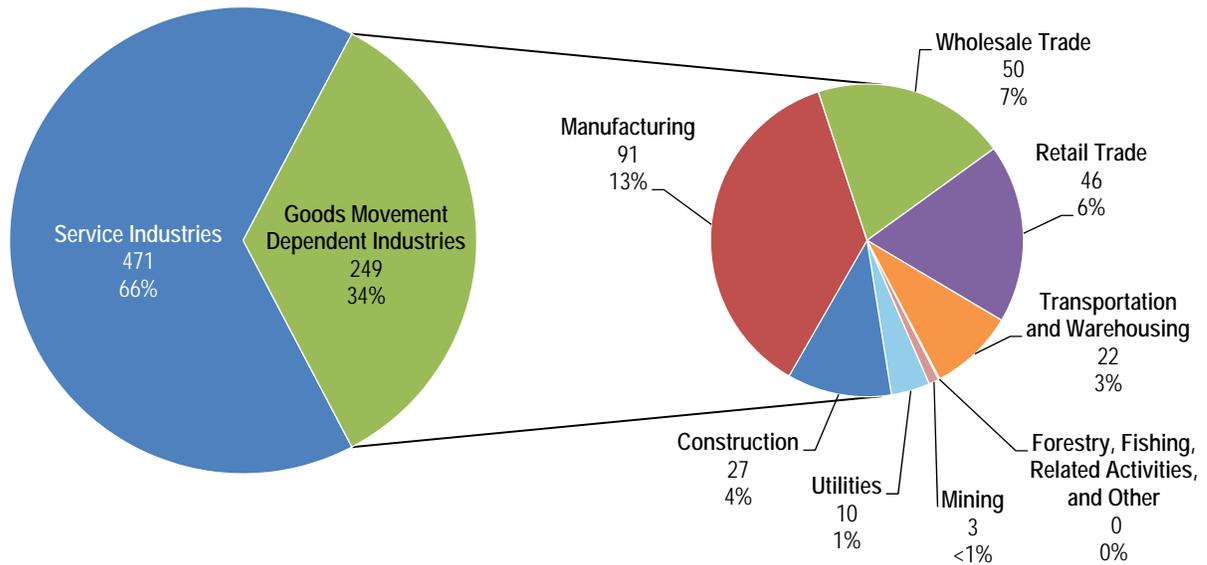
The trade and transportation system provides four key functions for the region:

- **Provides Access to International Gateways** – Southern California is the nation’s premier international gateway – the large regional consumer market, the nation’s largest port complex, major air cargo facilities, international land border crossings, 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 system’s importance in supporting the flows of containerized goods continues to grow. In 2010 alone, 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.
- **Supports Regional manufacturing Activities** – Even at the height of the 2007-2009 recession, the U.S. remained the world’s largest manufacturing economy and Southern California continued to be a critical manufacturing hub. According to Los Angeles County Economic Development Corporation (LAEDC),¹ 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 \$84 billion of the region’s Gross Regional Product (GRP) and serve both international and domestic markets.
- **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 activity, construction, utilities, and other service activities. Virtually all of this local activity takes place in trucks. While much of the region’s international trade system supports the global supply chains of national and multinational companies, approximately 25 percent of the imports moving through the San Pedro Bay ports are destined for final consumption within the region. Although this is a small percentage, it does represent almost 2 million TEUs, nearly all of which uses the region’s highway system for final delivery.
- **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 portions of the region’s trade and transportation system, from ocean shipping and air freight (for international supply chains), to trucking (for intraregional shipments and drayage moves), and even courier services and warehousing activity (to support both international trade and local delivery of consumer goods).

Taken together, these four functions serve a broad base of regional industries, many of which are critically important to the overall economic vitality of the SCAG region. This is particularly true for “goods movement dependent” industries, or those that rely on transportation infrastructure and services to receive raw supplies and manufactured goods and to send refined or finished products to market. Industries like manufacturing, construction, retail and wholesale trade, and transportation and warehousing are important contributors to the SCAG regional economy and rely on the regional trade and transportation system and all the functions it serves. In the SCAG region alone, these goods movement dependent industries account for 34 percent of both the region’s GRP and total employment, as shown in Figures 2.2 and 2.3.

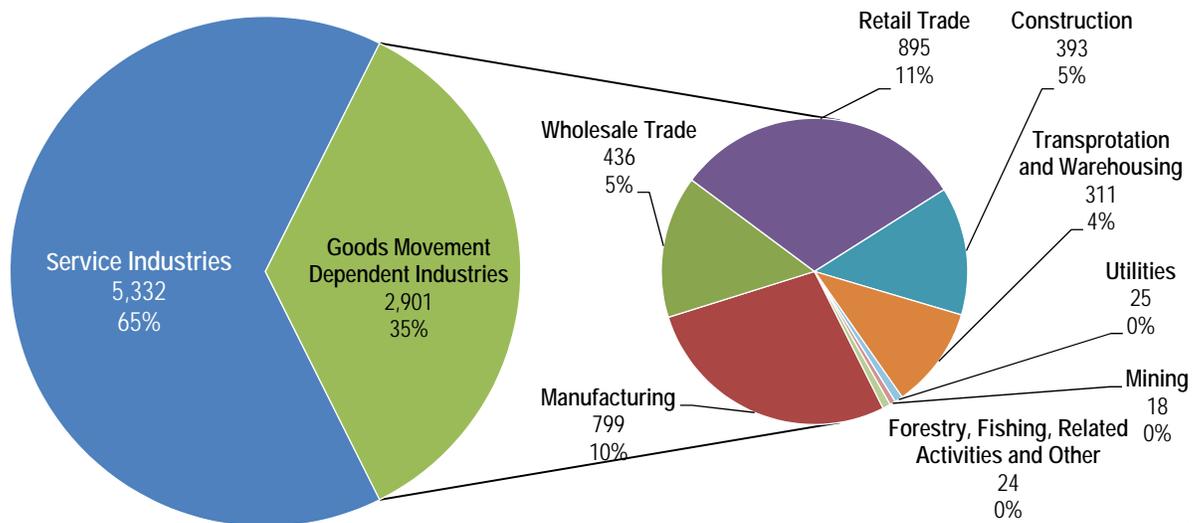
¹ *Manufacturing: Still a Force in Southern California*, Los Angeles County Economic Development Center, Kyser Center for Economic Research, 2011.

Figure 2.2 Industry Contribution to GRP by the Goods Movement Dependent Sectors
 2010 (in Billions of 2010 Dollars)



Source: REMI PI+ v1.2.4 Model Data.

Figure 2.3 Industry Contribution to Employment by Goods Movement Dependent Sectors,
 2010 (thousands of jobs)



Source: REMI PI+ v1.2.4 Model Data.

The following sections provide more detail on the four critical functions of the goods movement system and their relationship to the overall regional economy by describing:

- The **regional industries** that rely on different functions the system provides and how these industries contribute to the regional economy;
- The collection of **transportation services** that these industries utilize; and
- The **economic and market factors** that are driving industry growth or decline.

Taken together, this information will help describe the link between key industries and transportation needs and, more importantly, set the stage for describing how investments in the regional trade and transportation system will impact regional economic vitality.

The four major functions described in this section will also provide a framework that is used throughout this report to explain the relationships between the goods movement system and the industries served. In Section 3, the four functions help describe how specific elements of the multimodal infrastructure in the SCAG region serve regional, national and global industries and how the infrastructure is connected in multimodal systems to serve industrial supply chains. In Section 4, the four functions frame the discussion of how economic growth in specific industry sectors and markets creates specific demand on modal systems and the implications this has for performance of the system. If the regional goods movement system cannot serve these functions effectively in a manner that is efficient and safe and which contributes to environmental health and community livability it will have major implications for the regional, national, and global economy.

Function #1: Provides Access to International Gateways

As noted earlier, the Southern California trade and transportation system – seaports, airports, border crossings, and the highways and rail corridors that connect them to inland markets – is the country’s premier international gateway and a key element of regional, national, and international supply and distribution chains. The region’s seaports alone handle a significant percentage of all containerized shipments entering and departing the United States as well as significant volumes of bulk and break-bulk shipments, such as agricultural goods, petroleum products, and automobiles. The region’s airports play a similar role, connecting far-flung markets for high-value, time-sensitive freight shipments.

Clearly, the SCAG region ports are critical nodes in the global supply chain and have important national and international impacts. As shown in Figure 2.4, the international trade function of the region’s trade and transportation system helps to generate more than 3 million jobs nationwide.

**Figure 2.4 Value of Containerized Trade through San Pedro Bay Ports
FY 2011**



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

Note: Updated data for this figure became available after publication of the Summary Report. The updated data has been included in this figure.

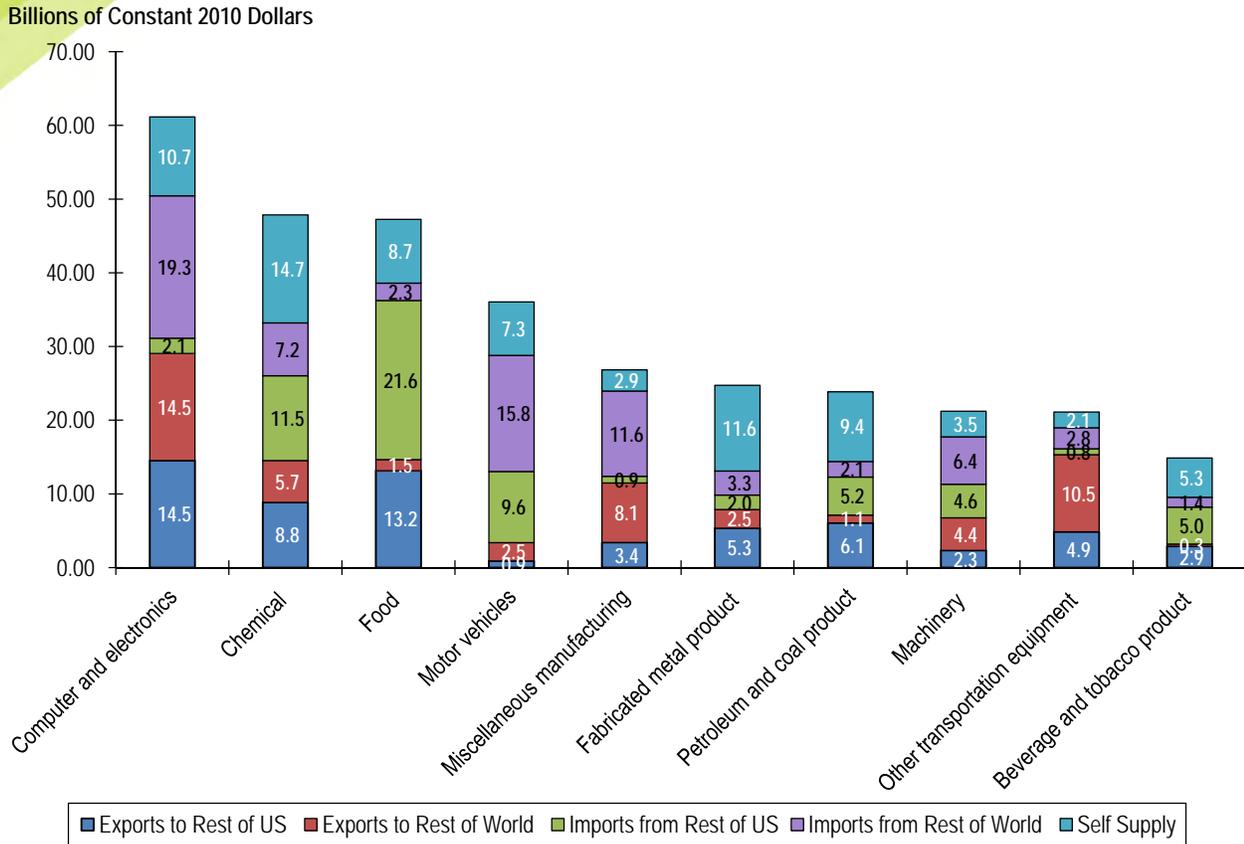
Equally important are the impacts the presence of these gateways has on the local and regional economy. Combined, the region’s three seaports (Port of Los Angeles, Port of Long Beach, and Port of Hueneme), two international airports (Los Angeles International and Ontario International), and one commercial 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 themselves;
- More than 1.6 million trade-related jobs throughout the SCAG region; and
- Over \$30 billion in local, state, and Federal tax revenue.²

Many of these impacts are attributable to the region’s importance as a gateway for *inbound* international trade and the presence of these ports, airports, and border crossings is critical in helping the region attract and retain international-trade-related industries like those involved in wholesale or retail trade or logistics and warehousing. However, the region’s international-trade-related infrastructure also is important for outbound or exported trade. Outbound movements are often considered *wealth-generating* freight because they are associated with an inflow of dollars to regional businesses. The region’s manufacturing industries are particularly reliant on export services. Nearly \$60 billion worth of exports are sent to other parts of the world each year, particularly from the transportation equipment, computer/electronics, and machinery sectors, as shown in Figure 2.5.

² Ports of Los Angeles and Long Beach.

Figure 2.5 Top Manufacturing Sector Trade Splits
 2010 (in Billions of 2010 Dollars)



Source: REMI PI+ v1.3.13 Model Data.

Transportation Services

Businesses and industries that rely on international trade require a variety of transportation services. International trade goods that move through the San Pedro Bay Ports rely heavily on the highway and rail systems to serve locally destined and non-locally destined cargo, respectively. Other ports of entry, including the region’s major cargo airports and the international border crossing, rely heavily on trucks.

Containerized imports to the region are handled in a variety of ways depending on the cargo type, ultimate destination, and other logistics factors. However, there are three primary types of import cargo channels, described below, each of which has different impacts on the region’s transportation system.

- Inland Point Intermodal (IPI).** This cargo is moved “intact” in the original marine container from the overseas origin to the inland U.S. destination via rail on a single ocean carrier bill of lading. The destinations for the cargo are generally far from the SCAG region (over 500 miles). IPI cargo may be loaded at on-dock rail terminals at the Ports of Los Angeles or Long Beach or they may be drayed by truck to near-dock (approximately 4 miles from the ports) or off-dock rail terminals, where they are loaded on trains. At the destination end of the trip, the containers are picked up at rail terminals and delivered by dray trucks to their final destinations. It has been estimated that IPI imports amounted to about 38 percent of total loaded imports at the San Pedro Bay Ports in 2011.

- **Transload.** Transloading involves unloading a marine container at a facility and then reloading the cargo into a larger domestic container or trailer, usually 53-feet in length, which is then either delivered via truck or rail. Typically, the original marine container is driven by a dray truck from the ports to an import warehouse/transloading facility within the SCAG region where the containers are unloaded and then reloaded in the larger domestic containers or trailers. These domestic trailers are then driven either to an intermodal railyard, where they are loaded on trains, or driven to their final destination. In many cases, other value-added activities occur at these transload facilities, generating jobs and economic activity in the SCAG region (this will be described further in the discussion of the logistics industries later in this chapter). A portion of transloaded cargo is reloaded immediately using a cross-dock facility, but most are warehoused in Southern California for some time before reshipment.
- **Local without Intent to Transload.** This is cargo in marine containers that is delivered to local warehouses for local consumption within the greater region (Southern California, Southern Nevada, Arizona, New Mexico, and southern portions of Utah and Colorado). These locations are best served by the San Pedro Bay ports because they provide the lowest landside transportation costs. These movements are handled nearly exclusively by truck.

Why do Shippers Transload?

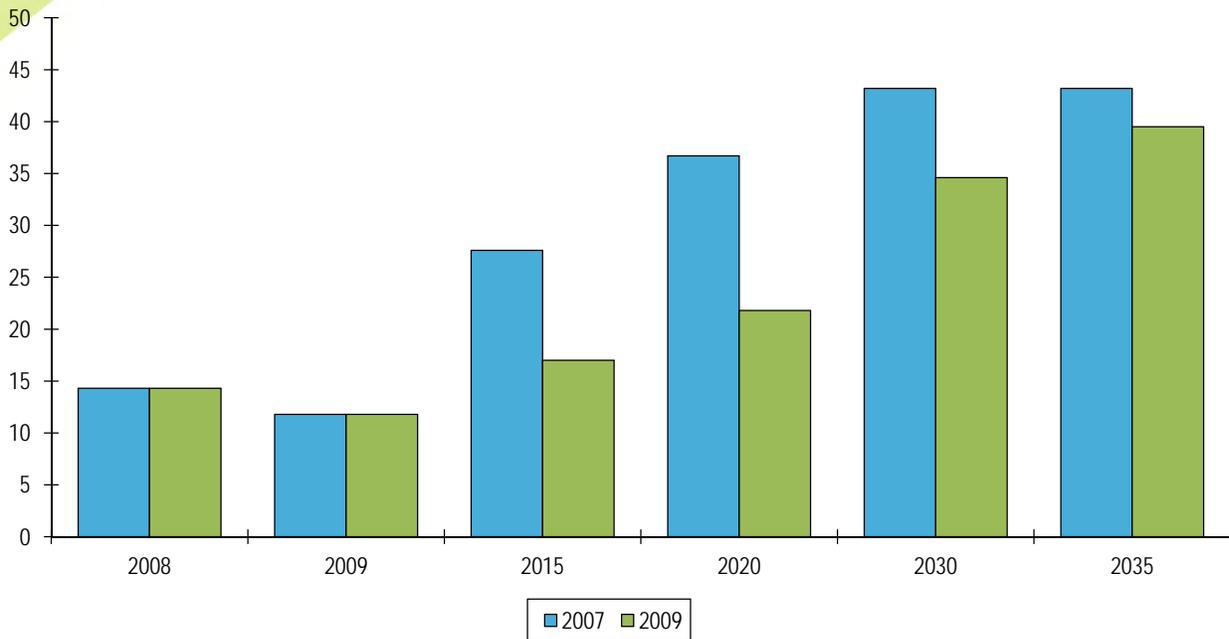
- *To better manage inventory and to minimize sales forecast errors.*
- *To consolidate high demand product into a minimal number of containers to expedite unloading at destination.*
- *To save on transportation costs when the inland location has limited export volume, leaving ocean carriers to reposition empty marine containers.*
- *To perform value-added services on products to make them store-ready or easier to handle upon arrival at destination.*

Growth Drivers

International trade is expected to grow in the next several decades, although recovery from the global recession will be slow, particularly for imports. Containerized trade through the San Pedro Bay Ports has been set back six to seven years, as shown in Figure 2.6, but will see stronger growth by 2030.³ This growth will be driven by improved economic conditions in the U.S.

³ San Pedro Bay Container Forecast Update, 2009.

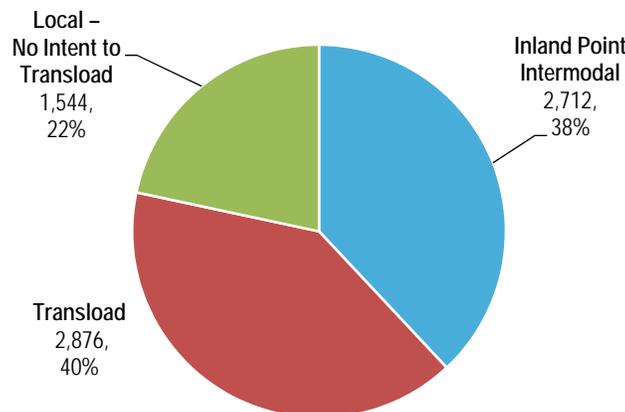
Figure 2.6 San Pedro Bay Ports Container Forecast
in Millions of TEUs



Source: San Pedro Bay Container Forecast Update, Tioga Group, Inc. and Global Insight, 2008.

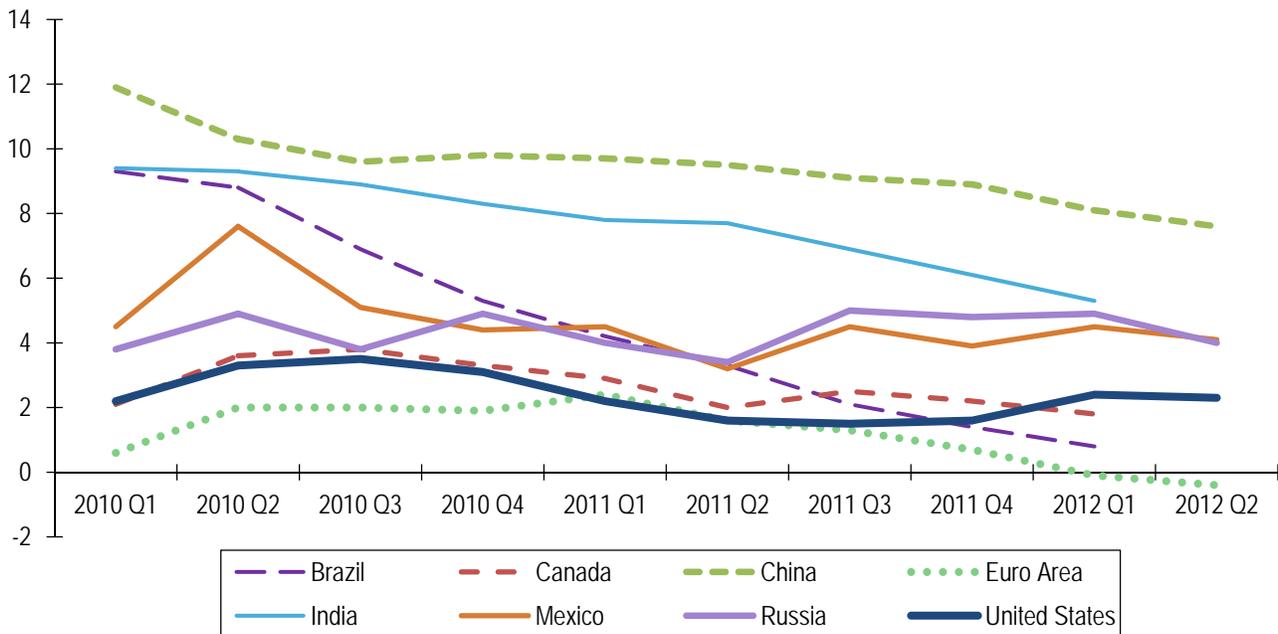
The eventual rebound also will be driven by emerging world economies, which will create products for export to the U.S. and elsewhere but will also create demand for exports from the U.S. to meet the needs of an emerging middle class. The effects of the worldwide economic downturn have not been evenly spread across countries (see Figure 2.8). Together, the growth rates of developed countries have slowed considerably, and have begun to turn negative for the Eurozone (through the second quarter of 2012). Meanwhile, the economies in the developing world, particularly China, India, and Russia, while currently experiencing reduced growth, are still growing by 7.6, 5.3, and 4.0 percent, respectively, through mid-2012.

Figure 2.7 Loaded San Pedro Bay Ports Imports (in Thousands of TEUs)
Market Shares, 2011



Source: Cambridge Systematics analysis for POLA/POLB.

Figure 2.8 GDP Growth by Country
2010 to Q2 2012



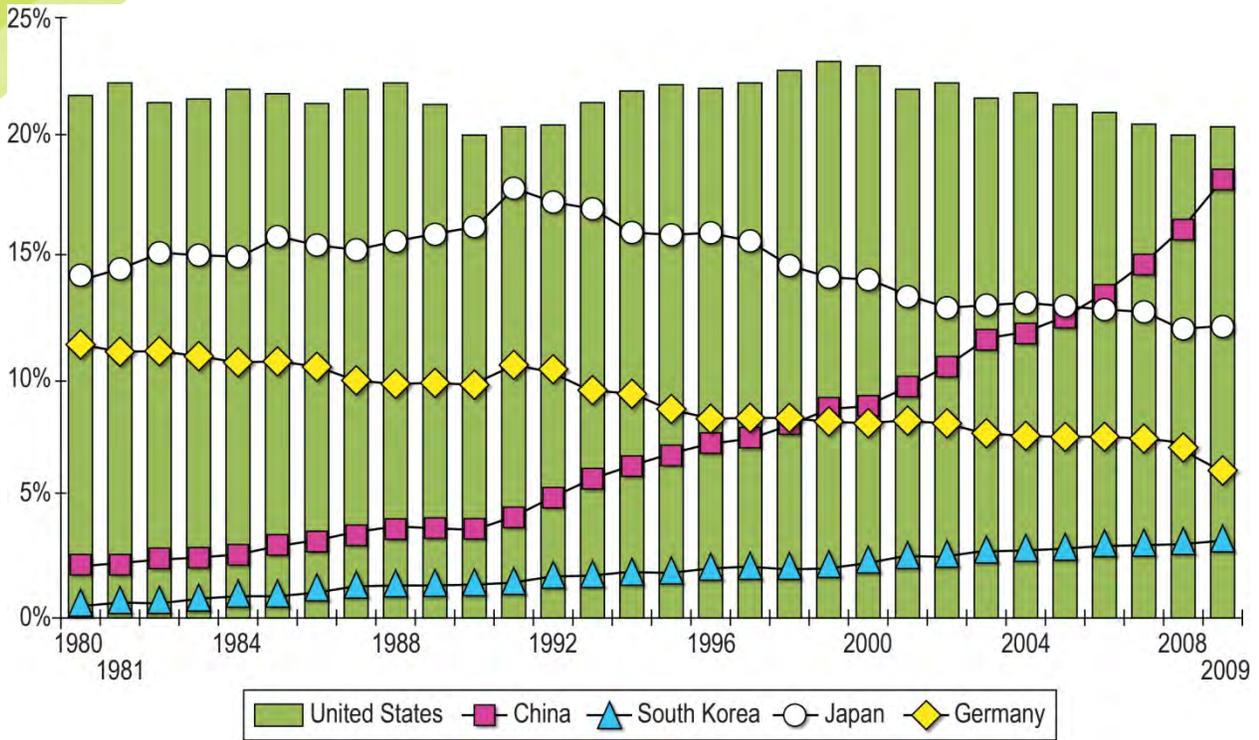
Source: Trading Economics.com.

Function #2: Supports Regional Manufacturing

In contrast to much of the discussion about the decline of domestic manufacturing and the outsourcing of manufacturing-related jobs to lower-wage countries, the United States' share of total global manufacturing output has held relatively constant over the last 30 years, as shown in Figure 2.9.⁴ And Southern California remains one of the leading manufacturing centers in the U.S., with total employment exceeding 799,000 and total contribution to GRP of more than \$91 billion. The region's trade and transportation system underpins this important component of the regional economy by providing connections to regional, national, and global suppliers and markets.

⁴ *Manufacturing: Still a Force in Southern California*, Los Angeles County Economic Development Center, Kyser Center for Economic Research, 2011.

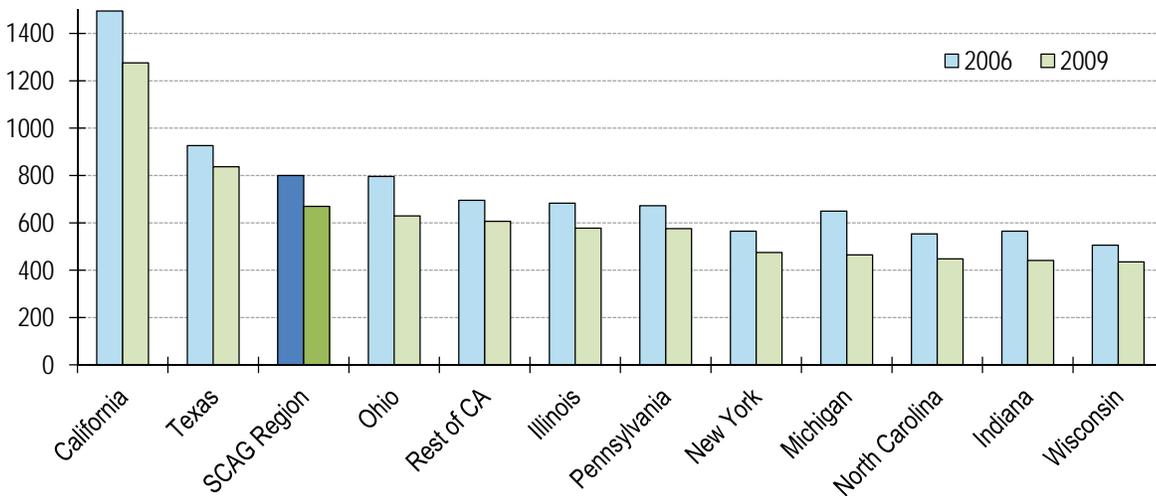
Figure 2.9 Share of Global Manufacturing Output
1980 to 2009



Source: United Nations.

Overall manufacturing employment in the SCAG region dwarfs that of many states, even those considered to be manufacturing powerhouses, like Ohio, Illinois, Pennsylvania, and Michigan (see Figure 2.10).

Figure 2.10 Annual Average Manufacturing Employment (in thousands)

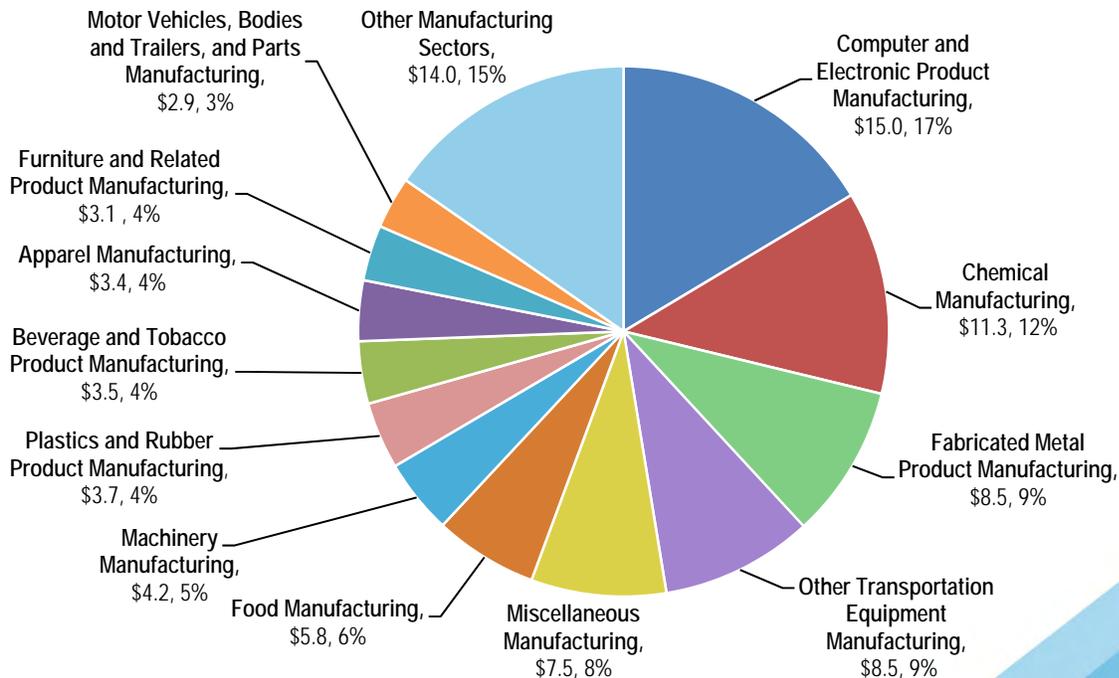


Source: Los Angeles County Economic Development Center.

Note: SCAG Region includes counties of Los Angeles, Orange, Riverside, San Bernardino, and Ventura.

The region's manufacturing footprint is large and diverse and contributes significantly to GRP, as shown in Figure 2.11.

Figure 2.11 Manufacturing Contribution to GRP by Subsector In Billions of 2010 Dollars



Source: REMI PI+ v1.3.13 Model Data.

This manufacturing activity supports both globalized (e.g., computer/electronics, apparel, leather products) and non-globalized industries (e.g., food, beverages, chemicals), as rated by the Kyser Center for Economic Research Globalization Index. Table 2.1 shows the major manufacturing industries in the region, their overall contribution to GRP, and their “globalization index.”

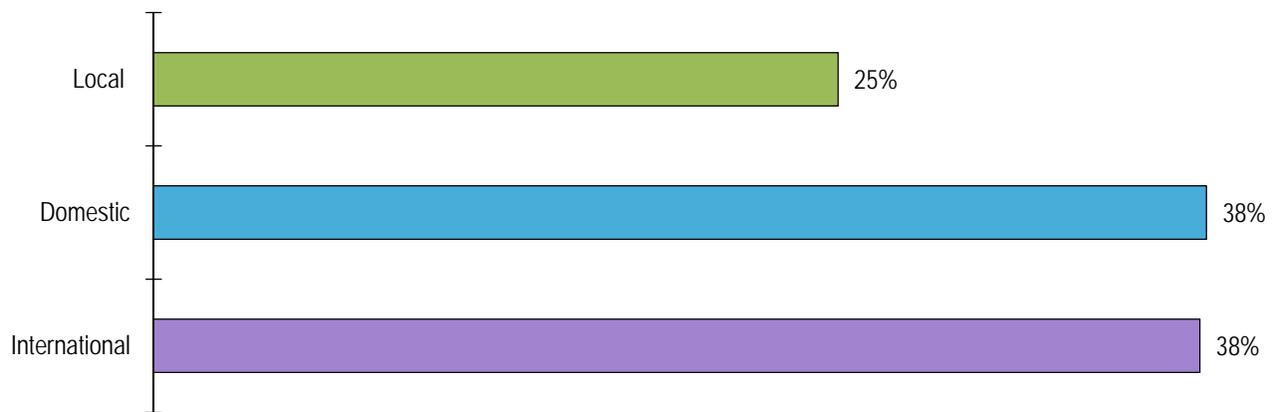
Table 2.1 Key SCAG Manufacturing Industries and Globalization Indices

Industry	Contribution to SCAG GRP	Globalization Index
Computers/Electronics	\$14.5 billion	226.0
Chemicals	\$8.6 billion	88.1
Miscellaneous	\$8.6 billion	172.3
Transportation Equipment	\$8.6 billion	115.6
Fabricated Metals	\$7.2 billion	50.0
Food	\$5.3 billion	26.5
Machinery	\$4 billion	148.9

Source: “Manufacturing in Southern California,” Los Angeles County Economic Development Corporation, March 2007.

This global/nonglobal mix is reflected in the sales output of SCAG’s manufacturing industries, which show an even split between international and domestic customers, with the balance being distributed locally.⁵

Figure 2.12 Sales Output of SCAG-Based Manufacturing Industries 2010



Source: REMI PI+ v1.3.13 Model Data.

⁵ **Output:** The amount of production, including all intermediate goods purchased as well as value added (compensation and profit). Output can also be thought of as sales or supply. The components of Output are Self Supply and Exports (Multiregions, Rest of Nation, and Rest of World).

Demand: The amount of goods and services demanded by the local region (imports plus self supply).

Self-Supply = Demand – Imports = Output – Exports.

The mix of manufacturing activities in the SCAG region is important for a few reasons. First, it helps provide employment at several different levels of the regional workforce. Manufacturing in globalized industries, like aerospace or computers/electronics, typically involves design and testing (rather than assembly) and provides relatively few jobs with relatively high wages. Conversely, nonglobal industries provide more jobs at the lower end of the wage scale, although they still tend to be attractive, well-paying blue-collar jobs that often do not require advanced degrees. Second, the wide range of suppliers already in the region actually acts as a catalyst to attract additional activity (and jobs) to the region. The SCAG region can offer efficient access to both global markets and suppliers, which is an important element in any business attraction and retention strategy. Finally, the diversity of the manufacturing sector helps make the region more resistant to (though clearly not immune to) global downturns and competitive pressures. This makes for a more resilient regional economy and helps to stabilize the workforce.

Transportation Services

The mix of manufacturing activities in the region also is important from a transportation perspective, as regional manufacturers are heavily dependent on all parts of the transportation system to reach their diverse markets. Modal choice is a complicated decision, dependent on a variety of factors, including product characteristics, supply chain needs, and mode availability. In the SCAG region, the modal dependency of the manufacturing industry (summarized in Table 2.2⁶) reflects the diverse nature of suppliers and markets for manufactured products.

Higher-value manufactured goods depend on international supply chains to provide raw materials and serve markets for finished products. This is reflected in the 27.3 percent of total expenditures (\$3.9 billion dollars) spent on air transportation of goods, as well as 10.1 percent of expenditures (\$1.5 billion) on courier services. Domestic shipments move via highway and on rail. This is reflected by the 20.5 percent of expenditures (\$2.9 billion) spent on truck and the 20.4 percent (\$2.9 billion) spent on rail.

Table 2.2 **Modal Expenditures on Transportation by Manufacturing Industries**
2010

Mode	Annual Spending (In-House and Outsourced)	
	<i>Millions of 2010 Dollars</i>	<i>Percent of Total</i>
Truck	\$2,955	20.5%
Rail	\$2,944	20.4%
Air	\$3,932	27.3%
Water	\$2,451	17.0%
Courier	\$1,452	10.1%
Warehousing and Storage	\$684	4.7%
Total	\$14,418	100.0%

Source: 2011 U.S. DOT Bureau of Economic Analysis Transportation Satellite Accounts (Using 1997 Data).

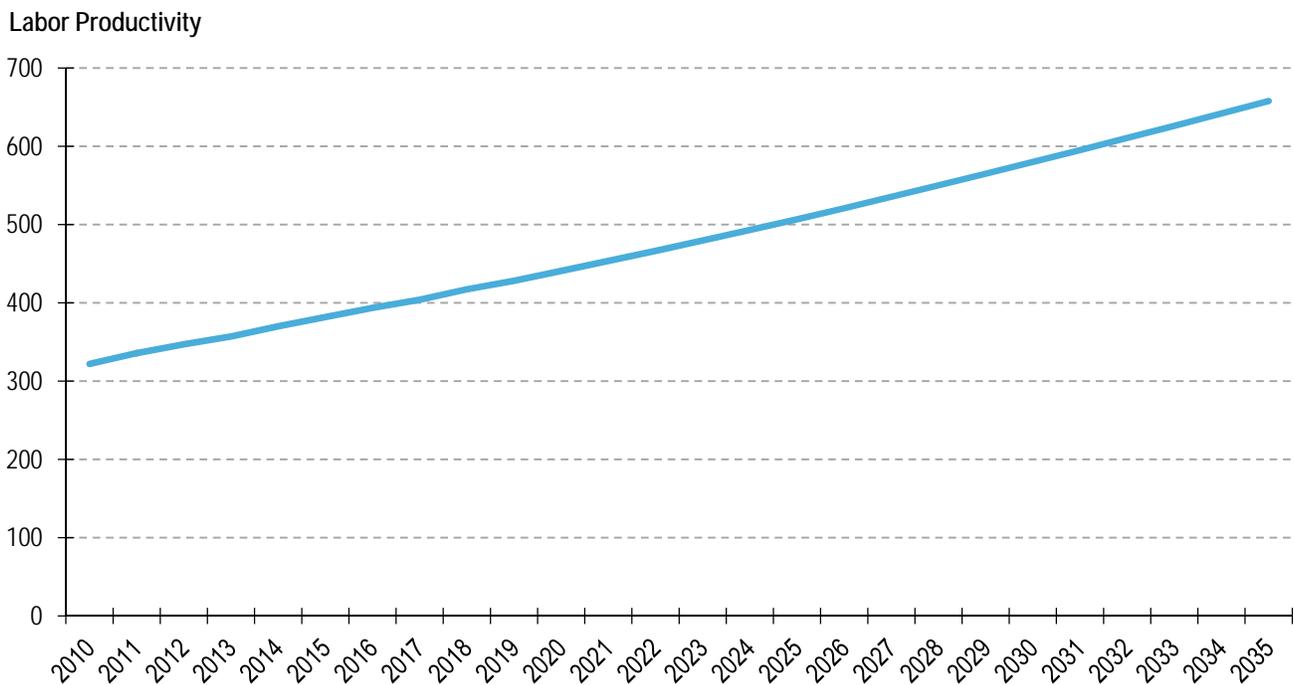
⁶ Note that this data are based on national accounts data, rather than region specific data. Additionally, this table focuses on direct spending, i.e., direct requirements per dollar of industry output, at producer's prices. It does not include indirect or induced effects.

As a whole, manufacturing industries are increasingly adopting “just-in-time” inventory strategies that are focused on delivering goods “as needed,” with very little inventory requirements. Though this strategy lowers the costs of carrying inventory, it requires a high level of flexibility from suppliers, and responsiveness in the supply chain. Goods that are part of “just-in-time” supply chains are extremely time-sensitive, as missing parts may cause disruptions in the manufacturing process. Therefore, even lower-value products are increasingly dependent on efficient and reliable freight movement.

Growth Drivers

Although the region’s manufacturing sector is projected to lose 205,000 employees between 2010 and 2035 (a reduction of 26 percent), its contribution to GRP is expected to increase by 60 percent over the same time period due to productivity gains and continuing shifts to higher value products. Increasing pressure for competitively priced manufactured products is leading manufacturers to improve productivity, either by investing in new technology and updated equipment, or using temporary and seasonal labor.⁷ As shown in Figure 2.13, regional output per employee in the manufacturing sector is expected to grow substantially – from a 2010 figure of about \$322,000 output per employee to a 2035 value of over \$658,000 per employee.

Figure 2.13 Forecast Productivity Gains in the Manufacturing Sector, 2010-2035
in Thousands of 2010 Dollars



Source: REMI PI+ v1.3.13 Model Data. Labor productivity is output per employee.

Continued productivity improvements – even though coupled with reductions in total employment – will result in increasing demand for transportation services in this sector.

⁷ Kyser, Jack. “Manufacturing in Southern California.” Los Angeles County Economic Development Corporation. March 2007.

Function #3: Serves the Needs of Local Businesses and Residents

As noted previously, every major metropolitan area generates a substantial amount of goods movement and truck activity that serves the region’s population and local businesses. This includes final delivery of consumer goods to retail outlets, but also includes service trucking (e.g., plumbing, home repair) and construction trucking which may not involve moving goods, but does have important economic and transportation benefits and impacts. In the SCAG region, this activity represents a significant element of overall freight demand and truck volume due to the sheer size of the region, the number of households and businesses, and the resulting levels of construction and service activity.

Much of the demand for goods and services is related to activity in the consumer economy. As the number of households and the level of disposable incomes rise, the demand for retail goods and services rise apace. The SCAG region already is home to just over 18 million people, or about 48 percent of the entire population of the State of California.⁸ And household incomes in the region have grown about 0.8 percent per year since 1979, as shown in Table 2.3.

Table 2.3 Household Income per Capita in Current Dollars
(not Adjusted for Inflation)

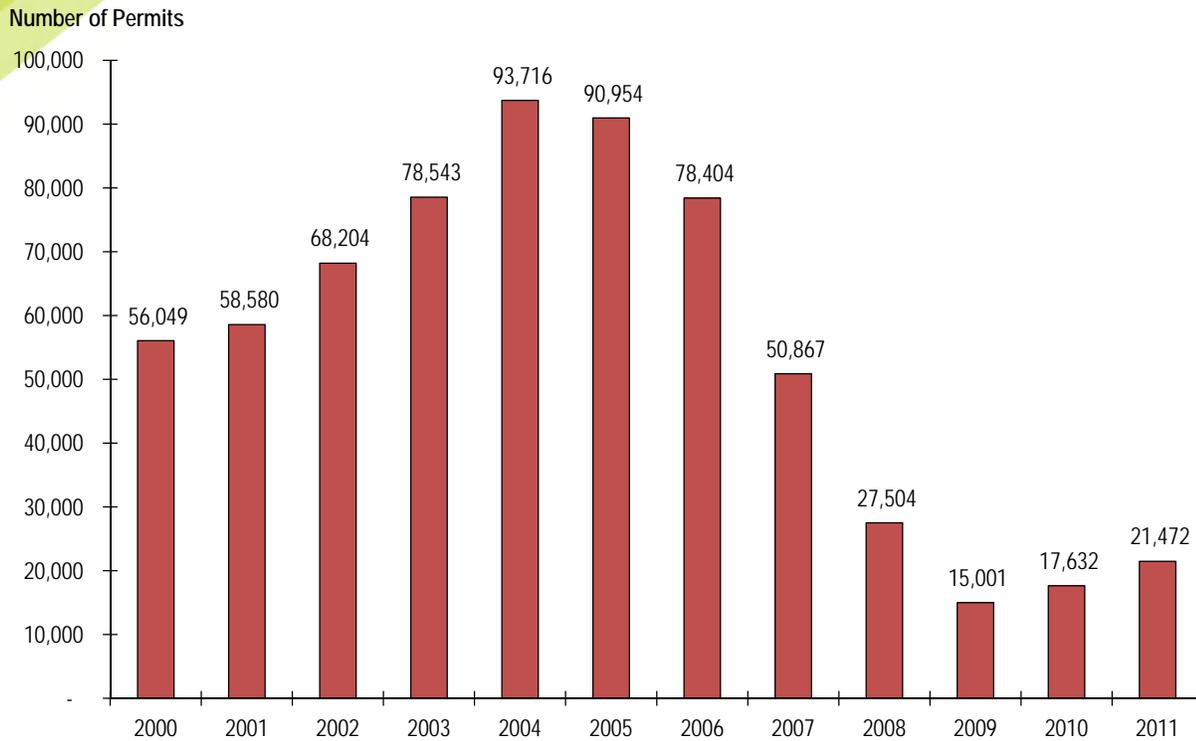
Area	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	CAGR 1990- 2000	CAGR 2000- 2011
California	33,404	33,896	34,049	34,975	36,887	38,731	41,518	43,211	44,003	41,034	41,893	43,647	4.6%	2.3%
Imperial County	18,971	20,381	22,220	22,753	23,116	23,831	24,874	26,055	27,648	27,408	27,503	28,351	1.9%	3.0%
Los Angeles County	29,878	31,523	32,080	32,995	34,534	36,498	39,610	41,273	42,881	40,111	41,025	42,564	3.3%	2.8%
Orange County	38,357	38,901	39,888	41,793	44,301	47,417	51,359	52,342	52,720	48,624	48,760	50,440	4.4%	2.4%
Riverside County	24,528	25,586	25,854	26,528	27,416	28,563	30,039	30,720	30,842	28,865	29,029	29,927	2.9%	1.4%
San Bernardino County	22,624	23,953	24,414	25,298	26,443	27,481	28,607	29,765	30,220	28,995	29,192	29,998	2.9%	2.1%
Ventura County	34,296	34,726	35,081	36,886	39,464	41,742	44,735	46,634	46,634	43,607	44,226	45,855	4.5%	2.6%

Source: Bureau of Economic Analysis.

Construction-related activity also is an important element of the regional economy and a significant contributor to overall transportation demand. In 2010, construction-related activities employed 393,000 people in the region and contributed \$27 billion to SCAG’s GRP. And this activity appears primed for growth. 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 and between 2010 and 2011, the number of permits issued grew by more than 21 percent.

⁸ <http://factfinder2.census.gov> (last accessed on July 3, 2011).

Figure 2.14 SCAG Region Building Permits Issued



Source: Southern California Association of Governments.

Transportation Services

Local distribution of goods – as well as service and construction-related activity- is completely dependent on trucks. Approximately 21 percent of the goods entering the region through the San Pedro Bay ports are distributed (and ultimately consumed) locally.⁹ In addition, household and construction-related land uses generate approximately 60 percent of the region’s intra-regional truck traffic.¹⁰

Table 2.4 provides a breakdown of the types of land uses/industry types that generate intra-regional truck trips in the SCAG region. While light-heavy trucks account for a larger percentage of the truck trips involving these economic sectors than they do for total truck trips, household (i.e., consumer- and service-related) and construction-related activity still generate a significant amount of heavy-heavy duty truck activity within the region.

⁹ Leachman and Associates, Port and Modal Elasticity Study, Phase II.

¹⁰ While agricultural trucking is not considered urban goods movement, most of the trucking related to these land uses comes from construction and quarry activity (which supports construction) and is driven by growth in housing and employment.

Table 2.4 Intra-Regional Daily Truck Trips Generated by Industry Type

Land Use	Light HDT Trip Ends	Medium HDT Trip Ends	Heavy HDT Trip Ends	Total Trip Ends	Percent of Total Trip Ends
Households	91,426	28,644	45,105	165,175	16%
Construction ¹¹	44,608	43,185	39,705	127,498	13%
Governments	7,534	3,832	3,767	15,133	1%

Source: SCAG Heavy Duty Truck Model, 2011.

Note: Light-heavy trucks (HDT) have a gross vehicle weight rating (GVWR) of 8,500-14,000 lbs.
 Medium HDT have a GVWR of 14,001-33,000 lbs.
 Heavy HDT have a GVWR of over 33,000 lbs

Growth Drivers

As discussed above, the demand for goods and services is related to activity in the consumer economy and both total population and total employment are expected to grow between now and 2035. As shown in Table 2.5, by 2035, the SCAG population is anticipated to grow by 23 percent to just over 22 million people.¹² This growing population will be accompanied – after an initial slow period – by healthy job creation. Like many of its neighbors, California has suffered since 2007 as a result of the global recession, with employment declining by 1.3 percent in 2008 and by 6 percent in 2009.¹³ Though unemployment rates in the state as a whole will remain high in the foreseeable future, employment in the SCAG region is projected to climb steadily from 9.4 million jobs in 2010 to 12.4 million jobs by 2035 – an increase of 32 percent (Table 2.5).

Table 2.5 Population and Employment in SCAG Region 2010, 2020, and 2030

Name	2010	2020	2035	Change (2010-2035)	Percent Change (2010-2035)	Compound Annual Growth Rate (2010-2035)
Total Population (000s)	18,046	19,654	22,182	4,136	23%	0.8%
Total Employment (000s)	9,363	10,930	12,356	2,993	32%	1.1%

Source: REMI PI+ v1.3.13 Model Data.

Growth also is expected in the construction industry, which is expected to add nearly 11,000 jobs by 2035 (2.79 percent) and increase its contribution to GRP by over \$1 billion (4.06 percent). The continued rebound in the housing sector, coupled with and construction and repair of infrastructure (as recommended in this plan and the recently adopted 2012 Regional Transportation Plan/Sustainable Community Strategy (2012 RTP/SCS), will also create demand in this sector.

¹¹ Includes agriculture and mining movements, which are small contributors in the SCAG region.

¹² SCAG 2012-2035 RTP, Growth Forecast Appendix, page 12. http://rtpscs.scag.ca.gov/Documents/2012/final/SR/2012FRTP_GrowthForecast.pdf.

¹³ California Regional Progress Report, November 2010. <http://www.scag.ca.gov/publications/pdf/2010/CARegionalProgress2010.pdf>.

Function #4: Supports a Thriving Logistics Industry

Because of the Southern California region's importance as an international gateway, a manufacturing hub, and a large consumer market, the region supports a thriving logistics service industry. This industry includes a wide variety of specific services, including procurement/sourcing, material handling, packaging, inventory control, security, and other functions. In the SCAG region, logistics service industries supports three broad segments of the regional economy:

- **Retail trade**, or the sale of goods for personal and household use. This industry is heavily focused on serving the local and regional market with about 86 percent of its sales conducted regionally. Retail trade is the final step in the production and distribution of goods and logistics services are often required to manage inventory, provide final packaging, and distribute goods to retail outlets. Retail trade activities provide 895,000 jobs in the region and account for \$46 billion of total GRP.
- **Wholesale trade**, or the sale of large amounts of goods to industrial, commercial, or institutional users (i.e., not consumers). Wholesale trade in the SCAG region also is focused locally, with the bulk of its sales (75 percent) to local markets, with smaller amounts destined for other U.S. locations or international locations (9 and 16 percent, respectively). The regional logistics industry supports wholesale trade by providing repacking, redistribution, and sorting services. These movements often involve raw materials or inputs to larger manufacturing activities. Wholesale trade activities provide 436,000 jobs in the region and account for \$50 billion of total GRP.
- **Transportation and warehousing**, which, as the name implies, provides transportation, storage, and inventory control services. The transportation and warehousing industry in the SCAG region reflects a diverse set of markets/customers based locally, nationally, and globally. Thirty-one percent of the sales output from this industry is local, 48 percent is in other U.S. regions, and 21 percent is international. The transportation and warehousing sector relies on the local transportation system to connect to markets, but also to connections to other U.S. markets and international markets. Transportation and warehousing activities provide 311,000 jobs in the region and account for \$22 billion of total GRP.

Again, like other industries, the condition and performance of the region's trade and transportation system provides a critical foundation that supports this large and growing segment of the regional economy.

Transportation Services

Each of these industry sectors uses the region's transportation system in different ways, as described below and shown in Table 2.6:

- **Retail trade** is heavily dependent on trucking, spending approximately 65 percent of its total transportation expenditures on trucking services. Trucking (as opposed to rail or air cargo modes) allows "door-to-door" service that is important for the retail industry, and is often the choice for local distribution services.
- The global reach of **wholesale trade** supply chains, as well as local and domestic delivery needs, also is reflected in the modal expenditures of the wholesale industry. This industry is a heavier user of ocean containers and airfreight compared to the retail trade industry, reflecting the more global nature of wholesale trade activities. At the same time, this industry makes use of local and national trucking services, as well as truck and small package services.
- Companies in the **transportation and warehousing** sector have high dependence upon highways, railroads, and water/marine, and medium dependence upon air to deliver service to customers as reflected by the data. As shown in Table 2.6, the transportation and warehousing sector spent 43 percent of its 2010 transportation expenditures on truck, with 23 percent spent on air, 20 percent on courier, and 6 percent on rail.

Table 2.6 Transportation Profiles for the Retail Trade, Wholesale Trade, and Transportation and Warehousing Industries

Industry	Supply Chain Characteristics								Total 2010 Spending (billions of 2010 Dollars)
	Trade Split of SCAG Regional Output				Percent Spending on Different Transportation Modes (In-House and Outsourced)				
	Int'l	Dom	Local	Truck	Rail	Air	Water	Couriers	
Retail Trade	<1%	14%	86%	65%	5%	15%	7%	5%	\$8
Wholesale Trade	16%	9%	75%	27%	23%	19%	17%	9%	\$26
Transportation and Warehousing	21%	48%	31%	43%	6%	23%	4%	20%	\$93

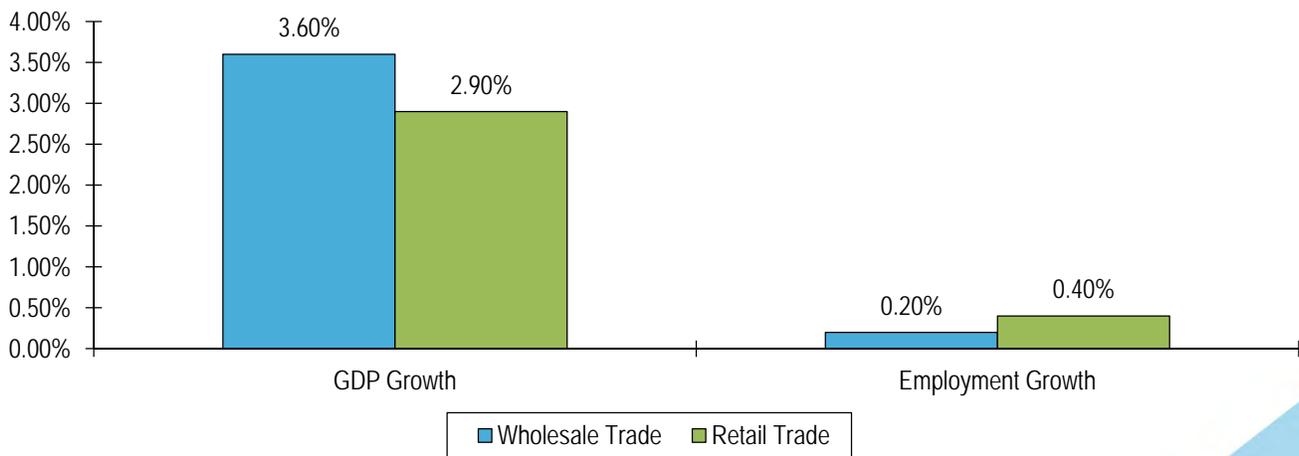
Source: REMI PI+ v1.3.13 Model Data, and 2011 US DOT Bureau of Economic Analysis Transportation Satellite Accounts (Using 1997 percentage split data).

Growth Drivers

Growth in the logistics services industry will be driven by a variety of factors. Continued growth in population, employment, international trade, and manufacturing activities, described earlier, will contribute to demand for transportation, warehousing, and other logistics services. In addition, employment and output growth in the retail and wholesale trade sectors, as shown in Figure 2.15 below, will also drive demand for logistics services.

And as shown in Figure 2.15, these industries are expected to grow, both in terms of overall employment and in output.

Figure 2.15 Average Real Annual Growth Rates by Major Goods Movement Dependent Sectors 2010-2035



Source: REMI PI+ v1.2.4 Model Data.

These and other factors will create demand in the transportation and warehousing industry, which is expected to add 112,000 jobs by 2035 (36 percent) and increase its contribution to GRP by \$16 billion (73 percent).