MEMO

DATE: August 11, 2004

TO: Transportation and Communications Committee
Community, Economic, and Human Development Committee

FROM: Bruce DeVine, Chief Economist 213-236-1903, e-mail: devine@scag.ca.gov

SUBJECT: Report on Logistics & Distribution: An Answer to Regional Upward Social Mobility

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SUMMARY:

The subject report was prepared by economist John Husing, who will present its findings to the Committees. It describes how the logistics industry will be a source of job advancement and good pay for the expanding minimally educated segments of Southern California's population. It also describes several regional strategies that will help ensure that the expected growth in logistics can occur, bringing these and other benefits to the region.

BACKGROUND:

The report documents the SCAG region's recent loss of relatively high-paying jobs in the manufacturing sector and the growth in lower-paying service sector jobs, along with the associated decline in per capita income and average payroll relative to other major metropolitan areas. The study points out that average earnings in the logistics industry are higher than those in either construction or manufacturing. It shows how the industry can accept less-educated workers into job ladders that can be climbed through on-the-job training and experience.

Moreover, the logistics and distribution industry has tremendous growth potential in southern California. Much of the nation's Asian trade passes through Los Angeles and Long Beach harbors. That volume will accelerate with the growth of Asia's economies and the advent of huge post-Panamax shipping vessels. This new breed of container ships is very wide and deep draft and must use one of these deepwater ports or Seattle-Tacoma since they cannot fit through the Panama Canal.

The report also describes the challenges facing the region in providing the infrastructure needed to support the growth in logistics. Major investments will be needed to reap the benefits of more productive employment for the minimally educated, as well as the improvements in noise and air quality that will come with a more efficient goods movement system. The report describes several strategies to provide the needed facilities, which are already being contemplated by SCAG and other public and private entities, including:

- Dedicated truck lanes
- Expanded railroad track and grade separations
- High-speed Maglev system
- Additional intermodal rail yards
- Shuttle trains to inland "ports" or intermodal rail yards
- Expanded air cargo capacity.

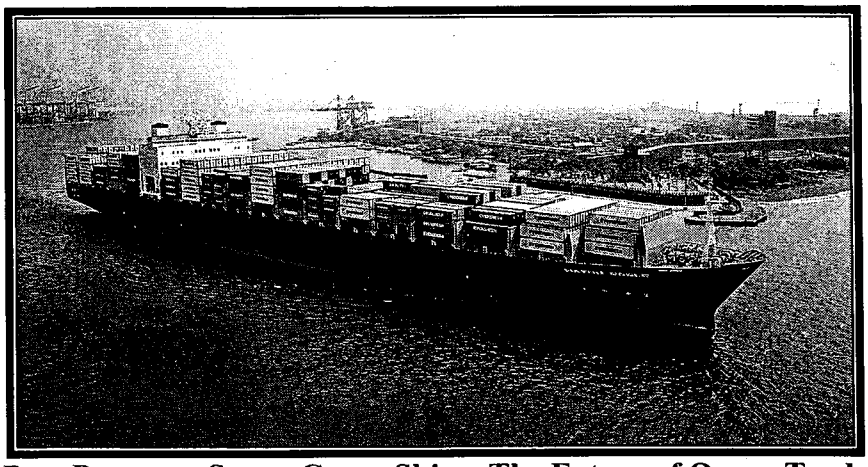
FISCAL IMPACT:

Staff time in support of this analysis is covered by Work Element 05-130 in the current Overall Work Program. Accepting the report findings will have no fiscal impact on SCAG.

#102186 - J. Husing report to TCC & CEHD
DeVine 8/11/04

Southern California Association of Governments

Logistics & Distribution: An Answer to Regional Upward Social Mobility



Post-Panamax Super-Cargo Ships: The Future of Ocean Trade

By

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June 9, 2004

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Logistics & Distribution: An Answer to Regional Upward Social Mobility

By John E. Husing, Ph.D.

EXECUTIVE SUMMARY

In the late 1950's, President Dwight Eisenhower recognized the close connection between transportation infrastructure, economic efficiency and the standard of living. He therefore launched the building of the Interstate Freeway. It is hard to imagine the performance of today's U.S. economy had that conservative President not convinced the Congress to move forward with the investment in this extraordinary system. In the 1960's, Governor Pat Brown saw the connection between infrastructure and economic growth and undertook the building of the California State Water Project. Again, it is hard to imagine the performance of California's economy had that moderate Governor not made the investment in this mammoth project.

In the 2000's, Southern California faces infrastructure challenges that rival those efforts. If the area's economic power is to be unleashed, its economy must be freed of the constraints imposed by lack of truck, rail and airport infrastructure. Investment in these projects would have the beneficial effect of allowing the region's logistics sector to accelerate by providing a growing base of good paying jobs which its marginally educated workers can learn via on-the-job experience and learning. This would appear to be the only route the region has available to helping those workers achieve growing standards of living while simultaneously correcting the recent deep slide in Southern California's relative prosperity vis-à-vis other major parts of the country. Importantly, this investment would do so while helping to mitigate the environmental difficulties caused by the inevitable increase in truck and rail traffic congestion and idling diesel engines.

Falling Job Quality & Per Capita Rankings. For Southern California, the importance of dealing with these issues begins with understanding that from 1987-2001 the SCAG region slipped from 4th to 17th in per capita income among the 17 consolidated metropolitan areas in the United States. Worse, despite tremendous job growth in the post-Cold War recession period, the region slipped from 4th to 11th in average payroll per job. This decline in the region's relative standard of living came about as the 12 sectors that shrank from 1990-2003 were largely high paying manufacturing sectors that paid an average of $45,165 a year. At the same time, the 12 sectors that provided the most job growth averaged only $33,145.

Cost Competitiveness An Issue. In part, this situation came about because slippage occurred due to California's high cost environment. Recently, this has be evidenced by its very high workers compensation costs relative to other states, its high electrical rates and its extraordinarily expensive housing. As a result, companies in the sectors that have come under pressure in recent years have either avoided the state, put their growth elsewhere, or in the worst situations moved away. This has applied to aerospace/defense firms in the early 1990's, high technology companies in the late 1990's and general manufacturing in the past three years. Historically what has propelled the state's economy have been waves of innovation that have created large numbers of new jobs as California's risk taking environment and successful university systems have spawned the successful marriage of entrepreneurship, research and well educated workers.

Large Numbers of Marginally Educated Workers. Unfortunately, despite the technology boom of the late 1990's, Southern California's relative prosperity continued to slip. The reason appears to be the area's inability to provide a path to prosperity for its very large and growing

number of marginally educated workers. In the past, this group benefited during prosperous times because of the skill ladders inherent in the manufacturing sector. These firms provided acceptable starting wages to unskilled workers. It also provided them with a hierarchy of jobs up which they could move to higher levels of responsibility and income based upon experience and on-the-job learning. Unfortunately, international competition is eliminating manufacturing as a force in both the California and U.S. economies.

Logistics: A Good Paying Sector With Defined Skill Ladders. As a result, if Southern California is to increase the average level of prosperity for its labor force, it is imperative that a sector emerge that can replace manufacturing in providing these conditions. Fortunately, this is occurring with the logistics group that includes companies in such fields as wholesale trade; truck, rail and air transportation; general warehousing; and non-local courier services. It also includes operations ancillary to these sectors providing such goods handling services as stevedoring, container loading, vehicle towing and air traffic control.

From 1990-2003, this group was one of the few non-population related sections of Southern California's economy to provide significant job growth. In addition, the average 2003 pay level in logistics (*$45,314*) exceeded that of the other two blue collar sectors: manufacturing (*$43,871*) and construction (*$40,439*). This was also true for two of the three largest employing sectors in this group: wholesale trade (*$46,892 for 352,373 workers*) and support activities (*$49,829 for 52,662 workers*). Meanwhile, the logistics group provides unskilled workers with entry level salaries well above the minimum wage at $8.07 to $10.45 depending on the sector. From there, workers can attain significantly better pay through experience and on-the-job learning as they move up to $12.96 to $14.91 an hour with minimal experience, and on to annual average incomes in the mid-$30,000's to high $40,000's with more experience.

Relatively strong pay scales are possible in the logistics sector because it has become one of the most capital and information intensive parts of the U.S. economy. The shift occurred because of the adoption of "just-in-time" systems by the nation's manufacturers and retailers. These systems track inventories and only order new merchandise once existing supplies start to disappear. Logistics companies thus receive orders in a computerized format and must respond rapidly. As a result, functions like transmitting orders to foremen, communicating orders to warehousemen, picking-up orders and placing them on conveyor belts, tracking orders along highways, checking that goods meet design specifications, assembling or repairing merchandise, or driving delivery routes are governed by complex information systems. Workers are paid well because of the efficiency inherent in their increasing use and understanding of technologies like bar coding-laser scanners, e-mail, word processing, personal digital assistants, global positioning systems, geographic information systems, and robotics plus various measuring and calibration devices.

Logistics: Powerful Long Term Potential In Southern California. In the long term, the growth of logistics employment in Southern California should not be a short term phenomenon. Since 1990, the group has been one of the few non-population serving portions of the economy to add a significant number of jobs. The just-in-time system has caused the distribution industry to create a series of large goods holding centers across the U.S. and Southern California is one of them. In part, this has occurred because of the fact that much of the nation's Asian trade passes through Los Angeles and Long Beach harbors. That volume will accelerate with those economies and the advent of giant post-Panamax container ships that are very wide and deep draft and

must use one of these harbors or Seattle Tacoma since they cannot go through the Panama Canal. The rapidly rising volume of e-commerce will further encourage the sector since it also requires the tightly controlled and rapid movement of goods using information technology. For this reason, the long term forecasts for international trade, air cargo tonnage, rail trips and container lifts are all extremely high for Southern California.

Logistics: Significant Issues. That said, the growth of the logistics group is not guaranteed due to the major issues it raises. Whether it is giant warehouses (*up to 60 acre sites*), large intermodal facilities or major airports, the facilities required by logistics firms require very large tracts of vacant land. In addition, each job requires about 2,200 square feet of space versus 1,000 square feet in manufacturing and 300 square feet in office sectors. These facts often engender opposition from neighbors and elected representatives. The huge land requirements mean that much of the future growth of logistics must occur in Southern California's inland counties. This will have the advantage of putting good paying jobs with a strong job ladders in the area that needs them the most due to its large marginally educated workforce. However, it also means that the inland area will be abnormally burdened by the logistics group's intense use of land, its heavy truck traffic, the closing of arterial streets by trains, the noise of train whistles and the air quality impacts of diesel fumes. Meanwhile, the logistics group's success is endangered by the lack of transportation infrastructure that underlies many of these difficulties.

Logistics: Strategies For Success. Fortunately, a variety of strategies exist that can allow the logistics group of sectors to increase the productivity of Southern California's economy while simultaneously helping to raise the living standards of Southern California's marginally educated workers and ameliorating the worst of its side effects.

- **Operation Jump-Start.** SCAG has proposed Operation Jump-Start, a series of privately funded initiatives that would accomplish several tasks. Two dedicated truck lanes would be built along the 141.8 miles from the Victor Valley to the ports (*$16.5 billion*). These projects would separate trucks from cars, reducing congestion, speeding the movement of goods and reducing driving dangers. The trucking industry would consider fees to pay for this infrastructure in exchange for triple trailering on the dedicated routes. Expanded rail track would be built along the UPSP and BNSF lines from Los Angeles through the San Gabriel Valley, Orange County and urbanized Inland Empire (*$1.2 billion*). In addition, grade crossings would be built separating the major arterials streets from these tracks (*$2.2 billion*). These projects would allow rail capacity to expand to meet the demand. Arterials would no longer be severed by passing trains. The speed of goods transit in and out of Southern California would be increased. Train whistles would no longer be used in urbanized areas. Finally, a Meglev train from LAX to ONT would be built, helping to further reduce road congestion and tying those two airports together. Together, these strategies would lead to the freer movement of trucks and trains, reducing diesel emissions from idling vehicles.

- **Shuttle Trains-Inland Port.** Currently, international cargo bound for Southern California is off-loaded near downtown Los Angeles with much of it hauled by truck to warehouses in the Inland Empire. The Alameda Corridor Transit Authority is investigating the feasibility of building an intermodal rail yard for international cargo in the inland area. Shuttle trains would speed the flow of this merchandise to the area while removing

it from the congested freeways. This strategy would require the expanded rail capacity outlined above.

- **Additional Intermodal Rail Yards.** As with other aspects of Southern California's goods handling infrastructure, the region's intermodal rail yards near downtown Los Angeles and in San Bernardino are reaching their absolute capacity causing time delays in moving both domestic and international containers between trains and trucks. Both BNSF and UPSP are investigating the building of new facilities along their main lines in the Inland Empire.
- **Expanded Air Cargo Capacity.** Every air cargo forecast indicates that LAX cannot handle the long term volume anticipated for Southern California. Los Angeles World Airways has picked a developer for a new one million square foot air cargo cross-dock for ONT. Hillwood (*a Perot Company*) intends to build a 240,000 square foot air cargo facility at San Bernardino International Airport. Southern California Logistics Airport already provides two hour turnaround for dedicated air cargo carriers. March Air Reserve Base is being developed as a joint use facility to also handle dedicated air cargo carriers.

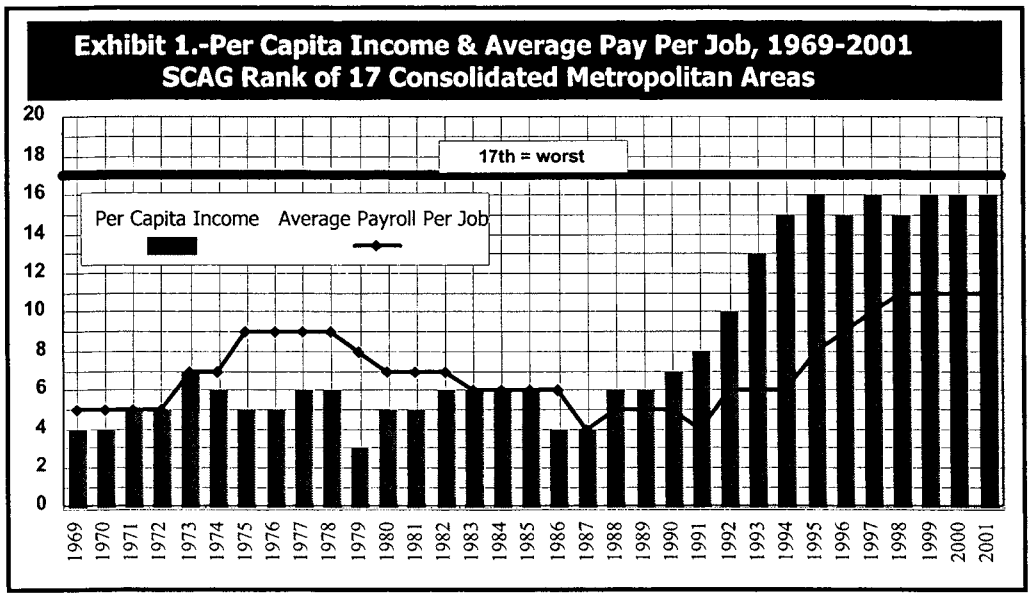
Should these strategies be brought to fruition, Southern California would benefit in several ways. During the construction phases, a very large number of blue jobs would be created. These jobs plus the strong multiplier impacts of construction spending would buoy the region's economy. Once the projects are completed, the efficiency and competitiveness of the Southland's economy would be enhanced while the most negative aspects of congestion and idling vehicles would be mitigated. Importantly, this expanded infrastructure backbone would unleash the potential strength of the logistics sectors, offering Southern California's marginally educated workers a growing path towards on-the-job learning and higher standards of living. Ultimately, these strategies thus offer the region a solution to addressing the recent declines in its relative prosperity.

Southern California Association of Governments

Logistics & Distribution:
An Answer to Regional Upward Social Mobility

By John E. Husing, Ph.D.

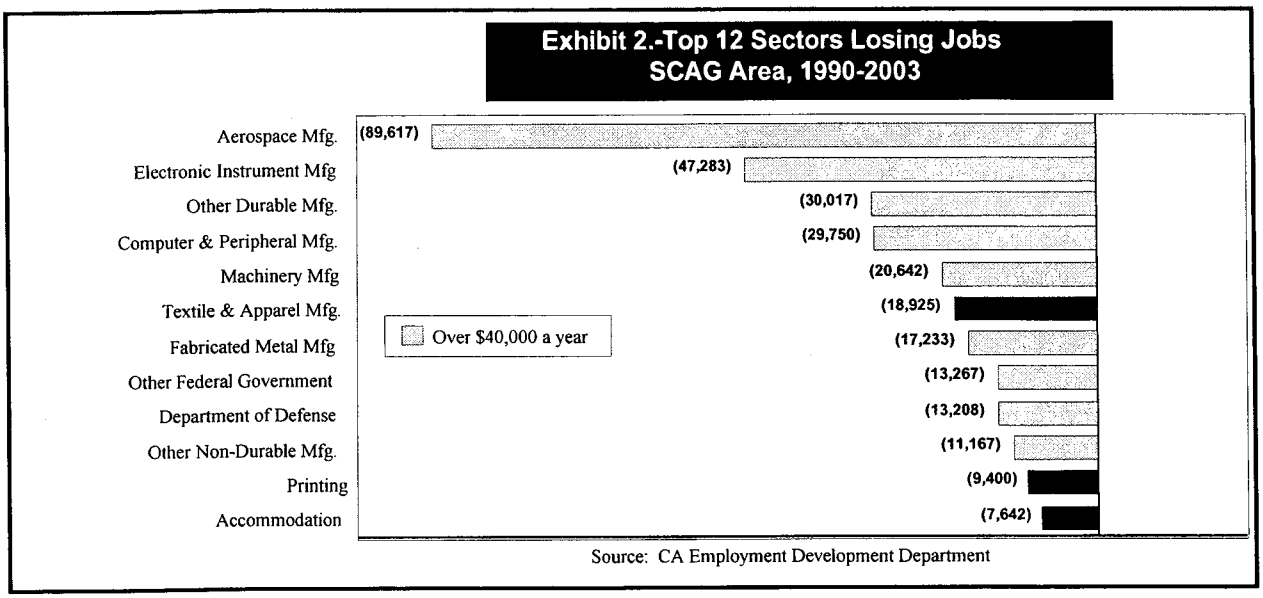
Research conducted by the Southern California Association of Governments (*SCAG*) has noted a disturbing trend within the five county Los Angeles, Orange, Riverside, San Bernardino, Ventura area that makes up most of its jurisdiction. The area's per capita income ranked 4th among the 17 major U.S. consolidated metropolitan statistical areas in 1987. By 2001, it had slipped to 16th. In 1991, its average payroll per job also ranked 4th. In 2001, it ranked 11th (*Exhibit 1*).



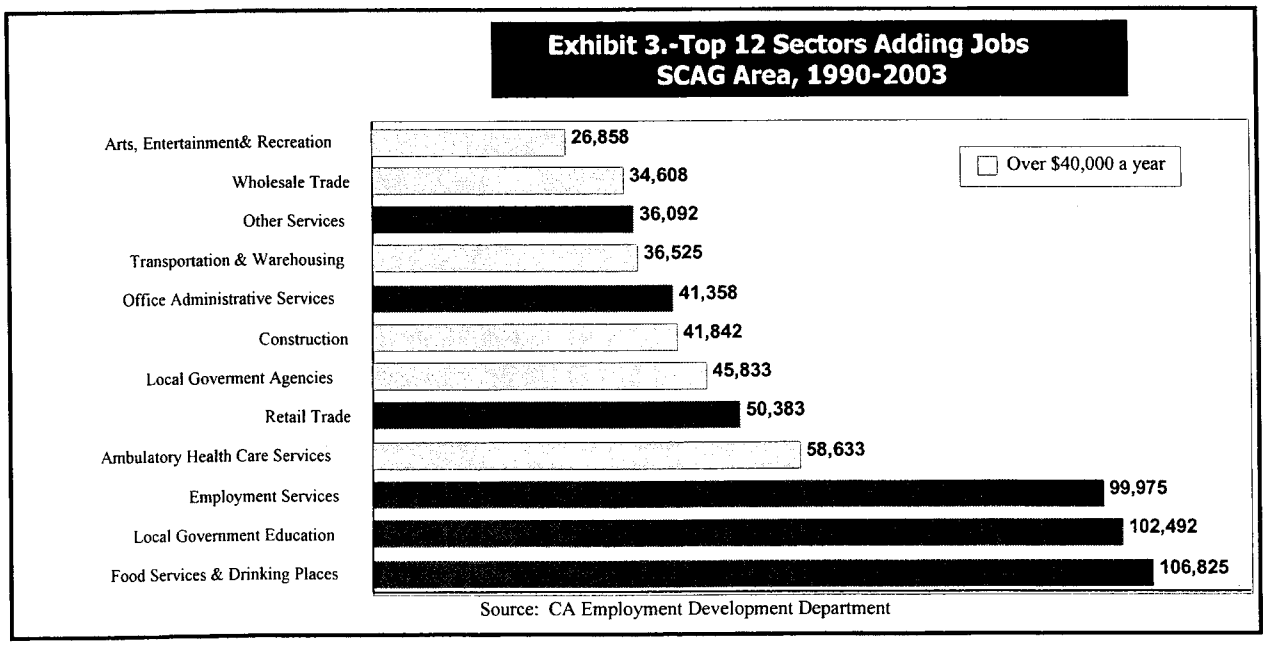
Job Losses & Long Term Quality Deterioration. These deteriorations began during the severe economic dislocations that accompanied Southern California's post-Cold War recession from 1990-1993. From the peak month to the trough, the region lost an annual average of 479,913 jobs in this period. Unfortunately, much of this reduction occurred in its high paying aerospace/defense manufacturing base. More threatening is the fact that from the low point in 1993 until 2003, the area has added an annual average of 988,075 jobs, a gain of 16.9%. Yet, in this the period, the SCAG area remained 16th of the 17 consolidated metropolitan areas in per capita income. Worse, this is the period when its average payroll per job deteriorated from 6th to 11th. Thus, while the region recovered from its job losses, the quality of the new positions created was no where near those that were lost. In fact, the new positions were not up to par with those being created in other major U.S. consolidated metropolitan areas.

How this occurred is seen in looking at the top 12 sectors that have shrunk from 1990-2003 versus the top 12 sectors that have expanded. The losers represented a net loss of 308,150 jobs (*Exhibit 2*). Of these, 231,000 or 75.0% were in nine sectors with 2003 average pay levels over $40,000 (*striped bars*), including seven manufacturing sectors: aerospace, electronics, other dur-

ables, computer & peripherals, machinery, fabricated metals, other non-durables, plus the defense and non-defense federal government.

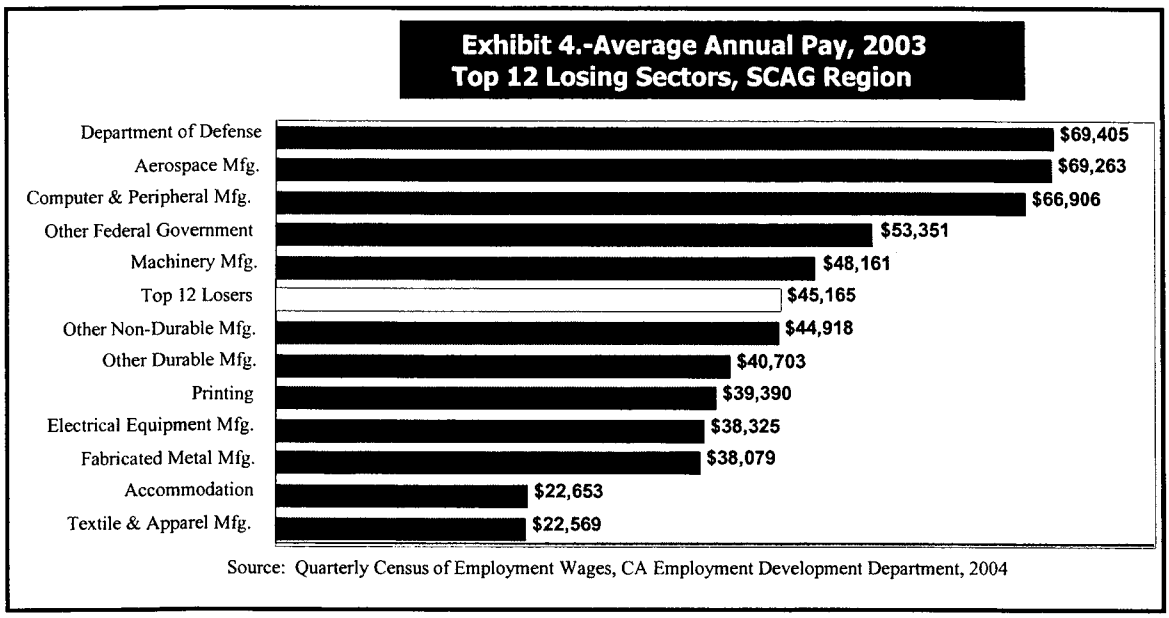


The 12 winning sectors represented a net gain of 681,425 jobs (*Exhibit 3*). Of these, 229,313 or 33.7% were in six sectors earning over $40,000 a year in 2003 (*striped bars*) including arts, entertainment and recreation; wholesale trade; transportation and warehousing; construction; local government agencies and ambulatory health care. The other 452,108 included strong growth in food service and drinking places; employment services; and retail trade, three of the economy's lowest paying sectors.

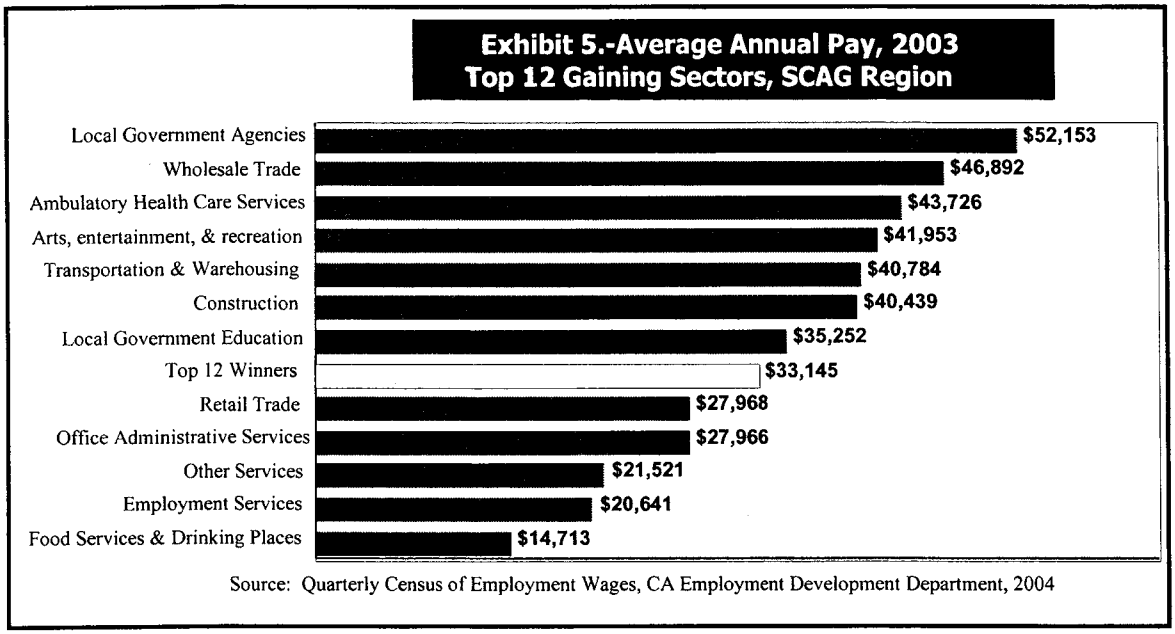


Southern California Losing Sectors That Don't Have To Stay. A second issue of importance in looking at the gaining and losing sectors is that most losing sectors are in fields that do not have to be in Southern California either to directly access its growing population, Hollywood or

the ports. The opposite is true for the growing sectors. In them, firms must stay in the area. Transportation and warehousing, wholesale trade and much of the employment agency activity is directly related to either international trade or serving the region's huge population. Construction and the service sectors need the area's residents. Arts, entertainment and recreation have grown because of Hollywood, theme parks and the increased local population.



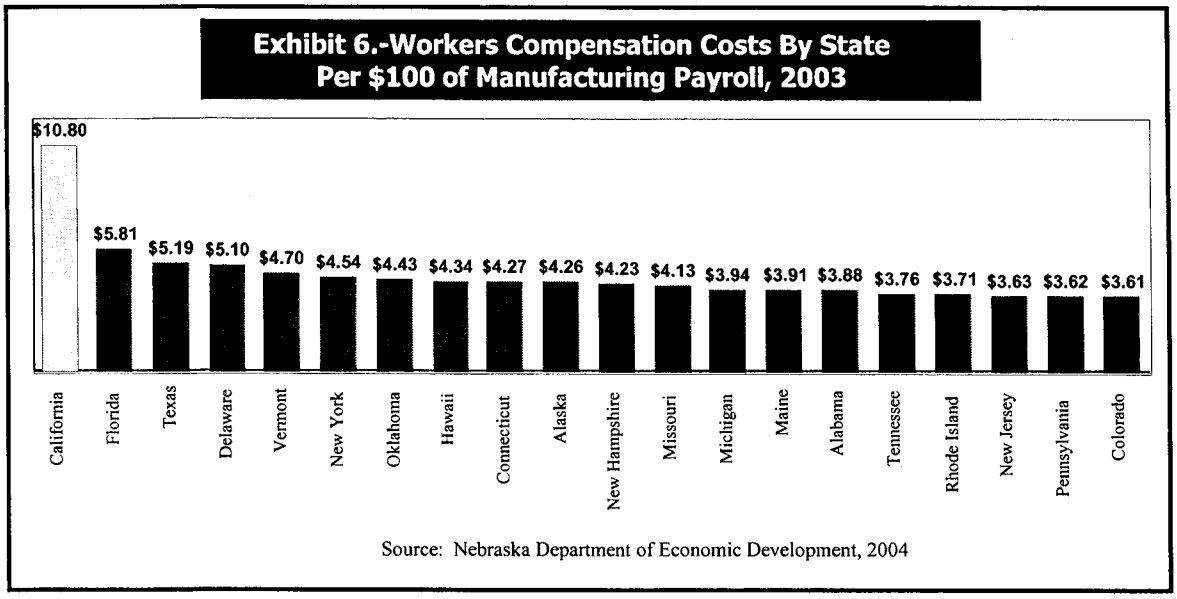
Higher Pay Scales In Shrinking Sectors. For Southern California, the deterioration of its ranking on the basis of per capita income or pay per job is underscored in looking at the 2003 average weekly pay levels in top losing and gaining sectors. Using average annual wages and salaries in 2003, the 12 sectors losing the most jobs had a weighted average pay scale of **$45,165**. Three sectors averaged over $65,000: Department of Defense (*$69,405*), aerospace manufacturing (*$69,263*) and computers and peripheral manufacturing (*$66,906*). Only two sectors averaged under $35,000: accommodation (*$22,653*) shrank due to the 9-11 effect; and textile and apparel manufacturing (*$22,569*) which is moving offshore (*Exhibit 4*).



At the same time, the 12 expanding sectors had weighted average wages and salaries of just **$33,145**. That was $12,020 or 26.6% below the average pay level for the 12 losing sectors. No sector averaged over $65,000. The highest was $52,153 for local government followed by wholesale trade at $46,892 and ambulatory health services (*doctors, dentists, labs*) at $43,726. Five sectors earned less than $30,000 and they included two of the three fastest growing sectors: food and drinking places (*$14,713*) and employment agencies (*$20,641*).

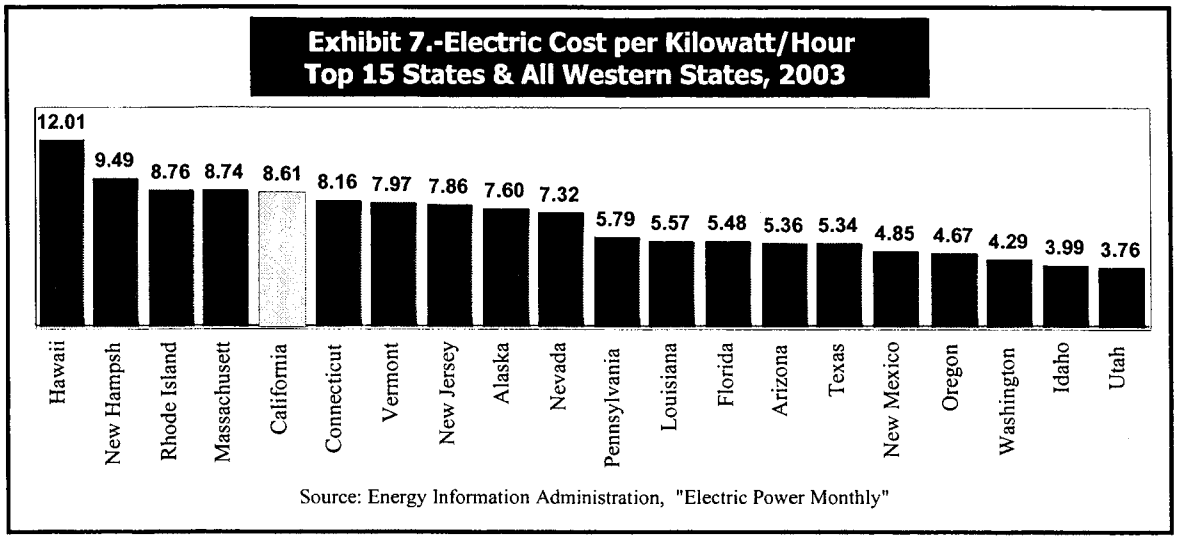
High Cost Environment. Why is Southern California losing high paying sectors that have a choice of where they can locate, while retaining those that need access to its growing population or coastal location? Much of the answer lies in the fact that the region is a very high cost area. Companies with the option to locate anywhere thus tend to either avoid California, put their job growth elsewhere or, in extreme cases, leave the state.

Three important cost categories highlight California's difficulties. The much publicized workers compensation insurance crisis is real. In 2003, the state's manufacturers paid an average of $10.80 per $100 of payroll (*Exhibit 6*). That is 85.9% higher than the $5.81 in second placed Florida. The state's rate is 7-8 times those of such nearby competitive locations as Arizona (*$1.35*), Utah (*$1.64*) and Oregon (*$1.97*).



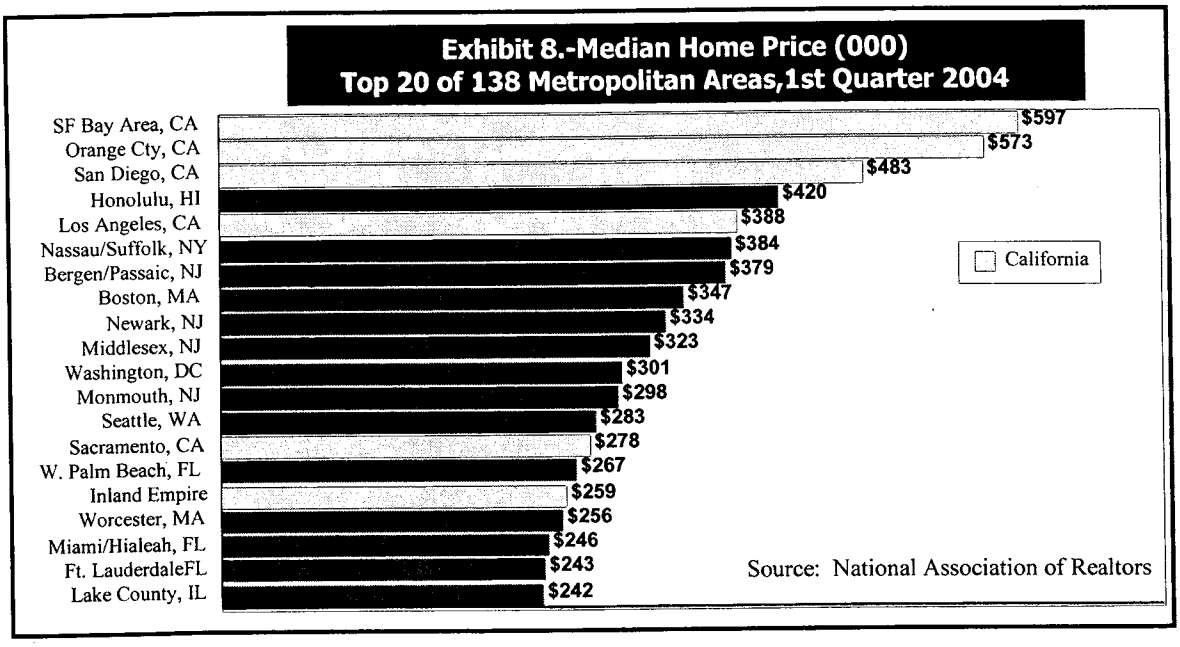
A second issue is that of electrical costs. Since the energy crisis, California's rates have become among the most expensive in the nation. In 2003, the average price per kilowatt hour for the state's industrial users was 8.61 cents, down from 10.83 cents in 2002. However, California still ranked fifth highest behind Hawaii (*12.01*), New Hampshire (*9.49*), Rhode Island (*8.76*) and Massachusetts (*8.74*). In the western states where California must directly compete, the state's industrial rates were the highest in the region. Nevada was the next at 7.32 cents per kilowatt hour or 15.0% less. Arizona was next at 5.36 cents or 37.7% less. The least expensive power in the west was in Utah at 3.76 cents per kilowatt hour or 56.3% below California.

Another issue of concern to companies is the median price of housing in California. This is the case as it is becoming increasingly difficult for workers to afford homes in the state. In some counties, this even applies to executives, professionals and high technology specialists.



The problem is seen in that of the 138 metropolitan housing markets in the United States, four of the five highest median prices were in California in first quarter 2004. The top three were in the state: San Francisco Bay Area (*$597,000*), Orange County (*$573,000*) and San Diego County

(*$483,000*). Los Angeles ranked fifth (*$388,000*) after Honolulu (*$$420,000*). Significantly, even the ostensibly "affordable" Inland Empire (*$259,000*) was 16th highest of the 138 markets.



In a capitalistic economy, relative costs like these have meant that California is at a disadvantage in attempting to grow, lure or hold firms that can locate anywhere. This is particularly true in sectors where intense competitive pressures on the supply side or the cyclical performance of demand have squeezed profit margins. That has applied to the manufacturing sector in recent years. It has occurred in the technology group, first, with the dot.com bust and the lack of corporate investment, now, with the rise of low cost Asian competitors. In the early 1990's, it was definitely a factor in the demise of the state's once thriving aerospace and defense sectors.

It also means that local companies are increasingly putting their expansions outside the state. And, in the worst cases, companies have left the state. Recently, this has occurred with printing and the plastics firms both of which use a lot of electricity. It certainly applied to aerospace in the early 1990's.

While these factors have tended to stymied the sectors of California's economy in which geographic competition is important, they have had much less impact on those sectors that must locate in the midst of the state's huge and growing population, or near its ports and studios. Here, California is a bit like a monopoly. Firms that need access to these assets have no choice but to adapt to its high cost environment. They have thus propelled the state's growth. Unfortunately, the pay scales in the largest of these growing sectors have been relatively low compared to the pay scales in the largest of the shrinking sectors. This is the reason for the falling per capita income and average pay per job in the SCAG region.

Path To Prosperity: The Entrepreneurial-Education Approach. Historically, California has always been a high priced location. And, throughout its history, mature companies with tight profit margins have tended to flee to other locations. However, mature companies are generally not the ones that create jobs in America. That has been the role of smaller entrepreneurial firms. California has built the sixth largest economy on earth (*current exchange rates*) largely because its wide-open attitudes have drawn a population of risk takers from across the country and around the world. This has created a culture that nurtures experimentation and has proven to be a spawning ground for entrepreneurship. The companies they start have tended to ignore the state's high cost difficulties during their periods of formation and maturation.

When the state's risk taking culture is connected to the ideas and research flowing from California's extraordinarily successful higher education system and its wealth of well-educated people, the mix has created entirely new industries that have propelled its economy. This was the original genesis of its success in aeronautics, aerospace and defense. More recently, it has applied to the computer, software and bio-technical revolutions.

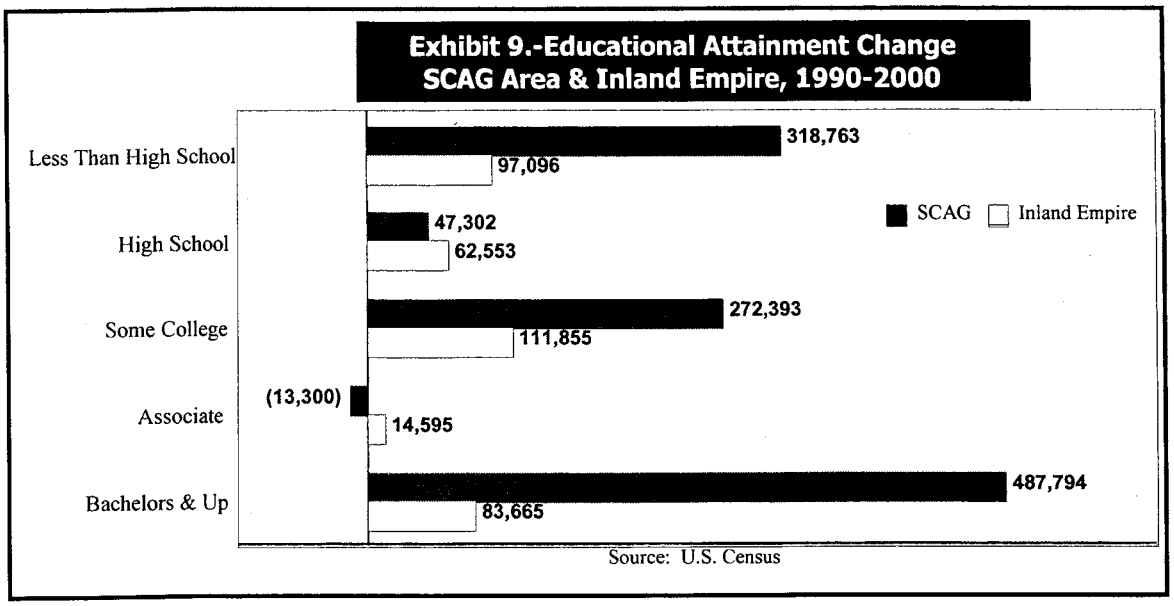
Today, this framework largely remains intact, though it is fraying due to the budget crisis and the cutbacks in funding for the University of California and California State University systems. There is no question that investment in these systems is among the state's most important long term economic policies. So also is investment in the K-12, regional occupational programs and community college systems since increasingly the sectors that can propel the state's economy require better educated workers at all levels of service, production and management.

Put simply, as long as California lures entrepreneurs, nurtures ideas and produces well-educated workers, its future will be intact … to a point.

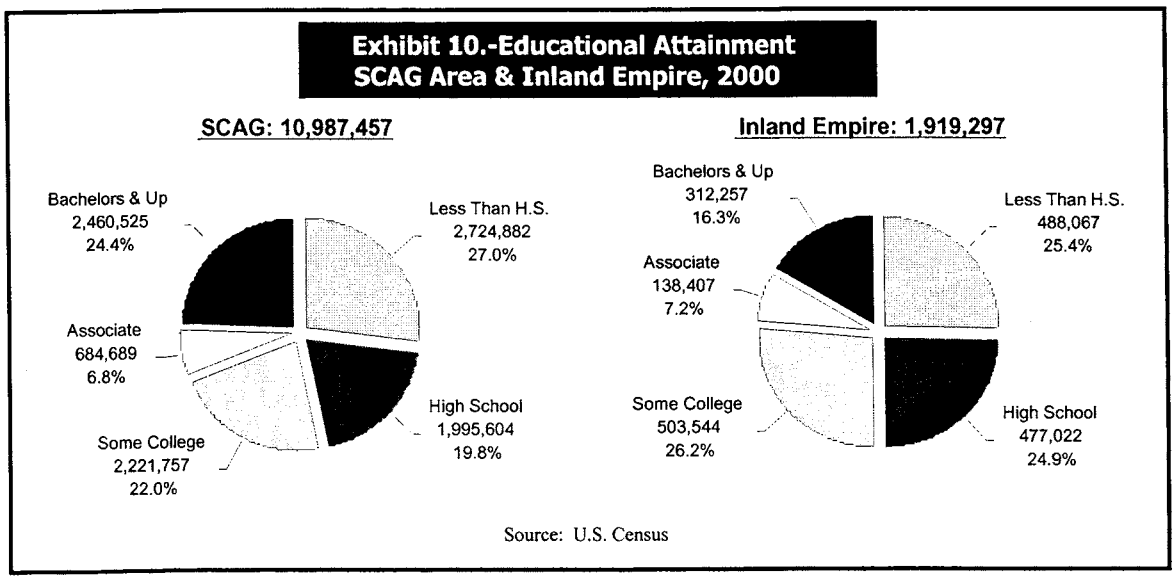
Path To Prosperity: Challenge of the Marginally Educated. Unfortunately, this approach to economic development will not attack a more insidious problem affecting California. That is the state's huge and rising number of poorly educated adult workers and the continuing flow of marginally educated young people into the labor force. Historically, this group has been impervious to education based strategies. Rather, they have chosen to achieve upward social mobility through work experience and on-the-job learning. This life strategy has been the most successful for workers employed in organizations with "job ladders" up which they could move over time. However, the long term demise of California's manufacturing sector has removed the principal source of such opportunities. This is the most likely reason for the decline in Southern California's per capita income and average pay per job. If another such vertically organized work environment is not created, California will likely see its economy increasingly divide into a world of well-educated haves and marginally-educated have-nots, a brutal future for the Golden State.

From 1990-2000, the dimension of the problem can be seen in the fact that of the 1,112,952 adults aged 25 and over added in the SCAG area, 318,763 were people who did not have a high school diploma (*28.6% of gain*). Another 47,302 people stopped their educations at high school and 272,363 had taken some college classes but not achieved an associate of arts or higher degree (*28.7% of gain*). Together, they represented **57.4%** of the increase in the region's population (*Exhibit 9*).

Note: The picture was more difficult in the Inland Empire, SCAG's fastest growing area,. Some 26.3% of the growth in adults was among people who had not finished high school (*97,096*). Another 62,553 stopped their educations with a high school diploma (*16.9% of gain*) while some 111,855 took college courses but did not receive a degree (*30.3% of gain*). Together, that represented **73.4%** of the population.



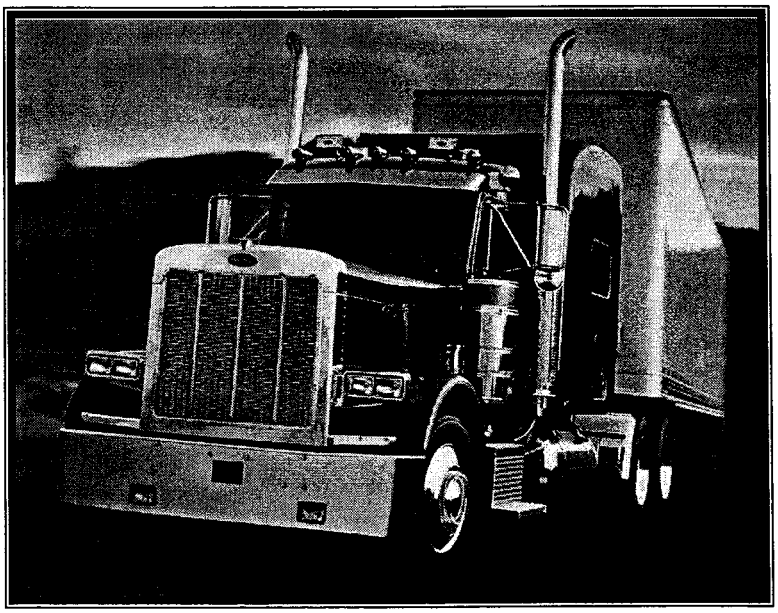
By the 2000 Census, these trends meant that there were 4.7 million adults in the SCAG area with no college experience (*46.8%*). Including those who tried some college classes but achieved no degree, there were 6.9 million (*68.8%*). In the Inland Empire, 965,089 adults had no college experience (*50.3%*). Adding those with some college classes but no degree took the number to 1.46 million (*76.5%*).



Even assuming that some college experience is sufficient education for today's job market, these data mean that nearly **one of two people** in the entire SCAG region and exactly that share in fast growing inland region **are not well prepared for the modern economy**. These are the workers in need of a workforce environment that replaces manufacturing and provides "skill ladders" up which they can move with increasing levels of experience and on-the-job learning. Unless that environment can be provided, these workers and California face a difficult future.

Logistics Group

Fortunately for Southern California, the opportunity exists to encourage a group of sectors that has begun to provide large numbers of blue collar workers with access to the type of "skill ladder" circumstances that have traditionally only been found in manufacturing. This is the logistics group made up of the variety of sectors involved in receiving, processing, storing and moving goods (*Exhibit 11*). Altogether, the group included 38,706 firms in 2003 employing 548,278 workers. Their average annual wage and salary level was $45,314. That year, they represented 9.3% of the SCAG area's employment. This was more than construction (5.7%) but less than manufacturing (*14.7%*). The sectors involved include:

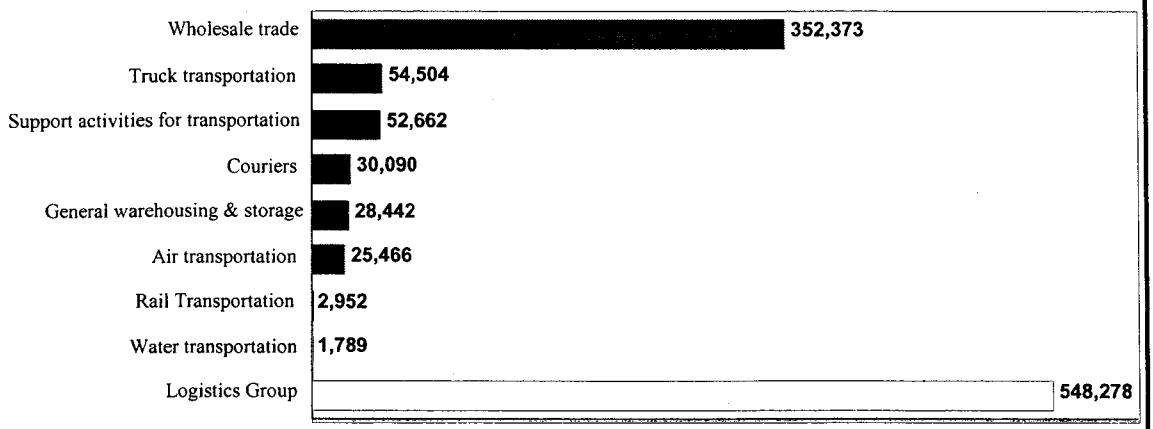


- **Wholesale Trade** (***352,373 workers, NAICS 42***). These establishments engage in buying, selling, storing and transporting goods that ultimately will be used by other firms. They may be a subsidiary of a retail or production company (*e.g, Walmart; Toyota Motor Parts*). They may be a dedicated third party logistics firm that contracts to handle the movement and storage of merchandise for a single company (*3PL*). They may be involved with the products of many companies. In Southern California, many of these operations are involved in international trade. They normally handle durable (*NAICS 421*) or non-durable (*NAICS 422*) goods from warehouses. However, merchant wholesalers (*NAICS 423 & 424*) generally operate from offices and do not actually manage the storage of goods.
- **Truck Transportation** (***54,504 workers, NAICS 484***). These firms move goods within a region or across the country. They include companies that move full container loads of merchandise (*e.g., JB Hunt Transport Inc., Schneider National Inc.*). Other collect partial container loads throughout an area, move them to cross-docks where they are transferred into full containers bound for a single location (*e.g., Yellow Freight Systems; Roadway Express*). These containers are then either moved cross-country or to intermodal rail yards where they are transported cross-country. Once at their destination, the process is reversed.

- **Support Services For Transportation** (*52,662 workers, NAICS 488*). This eclectic group includes operations involved in such ancillary transportation functions as freight forwarding (*management of shipments across several modes of transportation*), the loading and unloading of ships and rail cars, motor vehicle towing, air traffic control or packaging and labeling services.

- **Non-Local Couriers** (*30,090 workers, NAICS 492110*). These companies generally move packages between metropolitan areas and around the world (*UPS; Federal Express*). They generally pick up packages and take them to a facility where they move "across a dock" into fully loaded rail or air cargo containers. These firms may be integrated with their own air cargo arm.

Exhibit 11.-Wage & Salary Employment, Logistics Group By Sector, SCAG Region, 2003



Source: Quarterly Census of Employment Wages, CA Employment Development Department, 2004

- **General Warehousing & Storage** (*28,442 workers, NAICS 493*). These are third party warehousing and storage operations that strictly hold general merchandise (*e.g., U.S. Logistics Corp.*), refrigerated products (*e.g., Amerigold Logistics*) or farm products (*e.g., Osram Sylvania Inc.*). This may also be the way the warehousing branch of a major retailer self-classifies an operation.

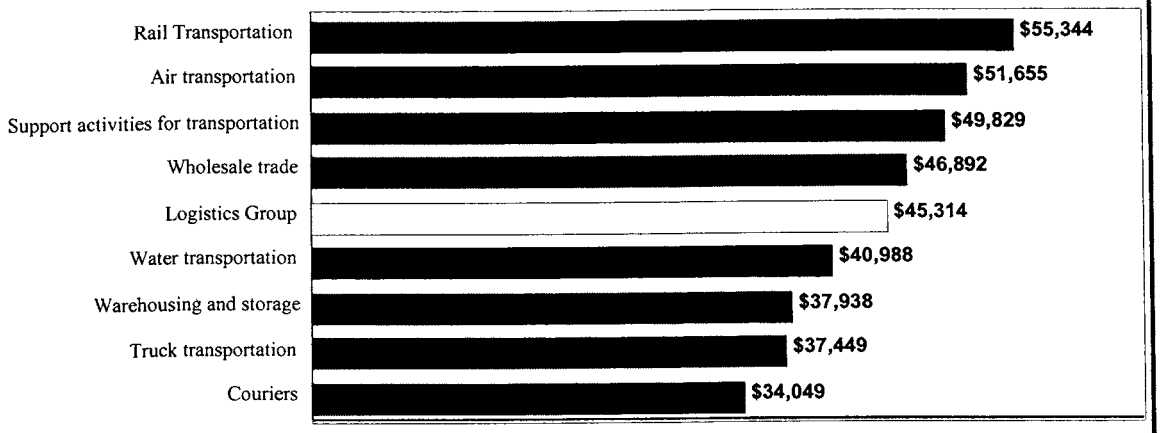
- **Air Transportation** (*25,466 workers, NAICS 481*). These operations include passenger airlines (*e.g., JetBlue Airways*), cargo airlines (*e.g., DHL Airways*) and companies integrating both activities (*e.g., Korean Air*). Los Angeles International Airport (*LAX*) has cross-docks that allow air cargo shipments to be assembled into air cargo containers headed for specific destinations. A similar facility is in the planning stages for Ontario International Airport (*ONT*).

- **Rail Transportation** (*2,952 workers, NAICS 482*). These entities move goods long distances by rail. Southern California is served by Burlington Northern Santa Fe Railway (*BNSF*) and Union Pacific Southern Pacific Railroad (*UPSP*). These firms operate intermodal yards to which trucking firms either bring or pick-up containers moving in and out of the Southland by rail. Most of this work is outsourced to contractors who operate from within the yards.

- **Water Transportation** (*1,789 workers, NAICS 483*). These are the shipping lines that operate out of the ports of Los Angeles and Long Beach (*e.g., American President Lines*). Primarily, they are involved in the movement of containers between Southern California and the Far East.

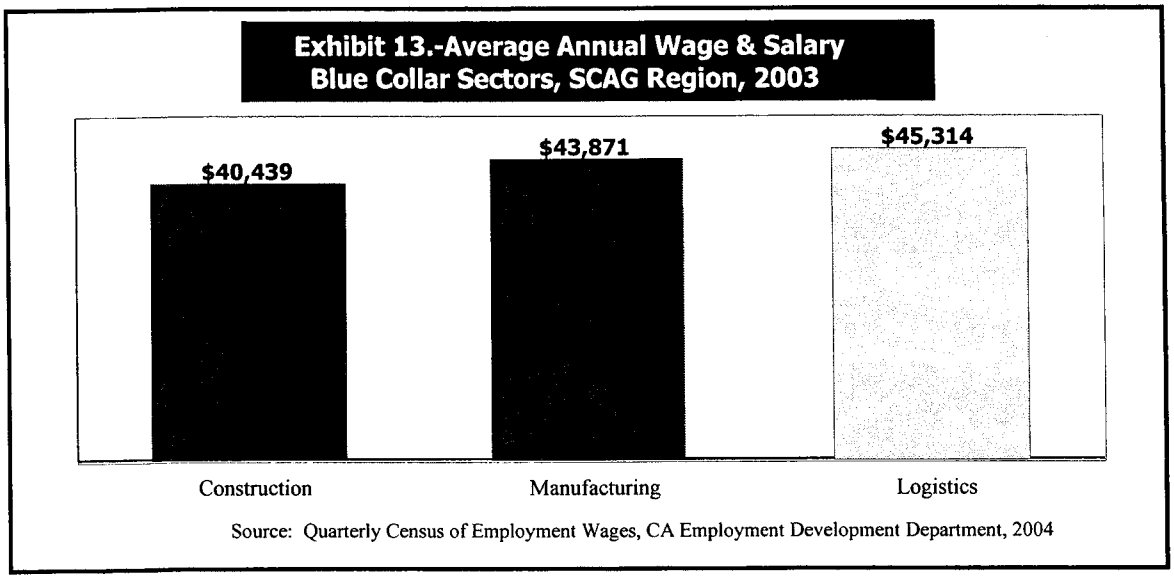
Logistics: Strong Average Annual Pay. Within these sectors, the average annual wage and salary levels in 2003 were relatively strong (*Exhibit 12*). The highest pay was in the rail transportation (*$55,344*), air transportation (*$51,655*) and support services for transportation (*$49,829*) sectors. The lowest was in the couriers (*$34,049*), truck transportation (*$37,449*) and warehousing and storage (*$37,938*) sectors. Significantly, the weighted average for the group was $45,314.

Exhibit 12.-Annual Average Wages & Salaries, Logistics Group By Sector, SCAG Region, 2003



Source: Quarterly Census of Employment Wages, CA Employment Development Department, 2004

Importantly, annual average pay within the logistics group was higher than either the construction (*$40,439*) or manufacturing (*$43,871*) industries. In addition, two of the three largest segments of the logistics group respectively paid more than the two other blue collar sectors: wholesale trade (*$46,892*) and support activities for transportation (*$49,829*).



Logistics: Defined Skill Ladders. Within the sub-sectors that make up the logistics group, there are a wide variety of opportunities for workers to increase their incomes with job experience and on-the-job learning. Below four sub-sectors are used to illustrate this point (*Exhibit 14*): trucking/couriers; freight arranging; wholesale furniture and wholesale chemicals. They were chosen as they are representative of the types of firms within the logistics group. In each case, eight levels of training and/or experience are shown plus the number of occupational types, amount of employment and share of jobs in the category. In addition, the average pay for all occupations in the range is given plus the pay for the highest and lowest paying occupations.

Exhibit 14.-Skill & Pay Ranges, Four Sample Logistics Sectors, 2003

Trucking & Couriers	Job Types	Jobs	Share	Low Pay	Avg. Annual Pay	High Pay
Work Experience, Plus a Bachelor's or Higher	10	7,000	3.9%	$57,541	$98,297	$159,003
Bachelor's Degree	7	1,100	0.6%	$48,454	$59,214	$63,133
Work Experience	8	6,100	3.4%	$34,807	$51,182	$83,440
Associate Degree	0	NA	NA	NA	NA	NA
Post-Secondary Vocational Education	4	1,800	1.0%	$25,796	$34,142	$40,398
Long-Term On-the-Job Training	7	6,500	3.6%	$34,080	$39,381	$69,104
Moderate-Term On-the-Job Training	9	15,600	8.7%	$26,427	$34,804	$54,771
Short-Term On-the-Job Training	38	140,700	78.7%	$16,785	$31,012	$39,035
Total	**83**	**178,800**	**100.0%**			
Freight Arranging	**Job Types**	**Jobs**	**Share**	**Low Pay**	**Avg. Annual Pay**	**High Pay**
Work Experience, Plus a Bachelor's or Higher	9	5,000	13.6%	$57,541	$99,626	$159,003
Bachelor's Degree	10	2,100	5.7%	$48,454	$64,291	$86,346
Work Experience	5	1,100	3.0%	$39,169	$54,425	$83,440
Associate Degree		NA	NA	NA	NA	NA
Post-Secondary Vocational Education	3	1,300	3.5%	$25,796	$35,687	$40,398
Long-Term On-the-Job Training	5	700	1.9%	$34,080	$43,152	$69,104
Moderate-Term On-the-Job Training	4	6,100	16.5%	$33,230	$41,612	$48,468
Short-Term On-the-Job Training	17	20,600	55.8%	$21,732	$30,515	$37,128
Total	**53**	**36,900**	**100.0%**			
Wholesale Furniture	**Job Types**	**Jobs**	**Share**	**Low Pay**	**Avg. Annual Pay**	**High Pay**
Work Experience, Plus a Bachelor's or Higher	8	2,700	8.2%	$57,541	$100,837	$159,003
Bachelor's Degree	8	1,500	4.6%	$26,841	$51,038	$63,133
Work Experience	6	1,700	5.2%	$20,865	$42,215	$83,440
Associate Degree		NA	NA	NA	NA	NA
Post-Secondary Vocational Education	2	800	2.4%	$31,679	$38,218	$40,398

Long-Term On-the-Job Training	8	1,900	5.8%	$19,325	$40,093	$69,104
Moderate-Term On-the-Job Training	8	6,900	21.0%	$17,699	$43,610	$54,745
Short-Term On-the-Job Training	21	17,400	52.9%	$18,699	$25,066	$39,035
Total	**61**	**32,900**	**100.0%**			
Wholesale Chemical	**Job Types**	**Jobs**	**Share**	**Low Pay**	**Avg. Annual Pay**	**High Pay**
Work Experience, Plus a Bachelor's or Higher	5	1,500	8.3%	$57,541	$105,921	$159,003
Bachelor's Degree	6	800	4.4%	$48,454	$59,082	$80,737
Work Experience	5	800	4.4%	$29,188	$46,632	$56,871
Associate Degree	2	300	1.7%	$38,165	$41,706	$48,789
Post-Secondary Vocational Education	2	400	2.2%	$31,679	$36,039	$40,398
Long-Term On-the-Job Training	3	1,000	5.6%	$34,080	$51,715	$69,104
Moderate-Term On-the-Job Training	8	6,100	33.9%	$22,396	$51,015	$74,041
Short-Term On-the-Job Training	16	7,100	39.4%	$18,699	$26,962	$39,035
Total	**47**	**18,000**	**100.0%**			

Source: CA Employment Development Department, CA Staffing Patterns by Sectors, CA Occupational Employment Statistics, 2003

For workers with limited educations, there are several significant facts shown by these data:

- **Most Jobs Require Experience Not Schooling.** The vast majority of jobs require short, moderate or long term on-the-job learn, not degrees. This means the logistics group provides upwardly mobile opportunities to the large and growing number of marginally educated workers in Southern California. Among the four sectors studied, the shares of jobs in these categories were: trucking & couriers (*91.1%*); freight arranging (*74.3%*); wholesale furniture (*79.6%*); wholesale chemical (*78.9%*).
- **No Minimum Wage Work.** In each case, the occupations that required the lowest level of experience or training (*short term on-the-job training*) offer entry level workers relatively low pay levels, but in no case are they minimum wage jobs:
  - trucking & couriers paid $16,785 (*$8.07 an hour*)
  - freight arranging paid $21,732 (*$10.45 an hour*)
  - wholesale furniture paid $18,699 (*$8.99 an hour*)
  - wholesale chemical $18,699 (*$8.99 an hour*)
- **Proceeding Up Skill Ladder To Average Pay Levels Yields Healthy Incomes.** When workers stick with firms in these sectors, they can proceed up to average pay levels that are relatively strong, even if they never get out of the lowest category of work. Thus, the average lowest grade annual pay levels are:
  - trucking & couriers paid $31,012 (*$14.91 an hour*)
  - freight arranging paid $30,515 (*$14.67 an hour*)
  - wholesale furniture paid $25,066 (*$12.05 an hour*)
  - wholesale chemical paid $26,962 (*$12.96 an hour*)
- **Longer Experience Gives Higher Incomes.** For workers with ambition, the positions in for the *moderate* and *long* term, on-the-job training offers higher average pay levels:
  - trucking & couriers go up to averages of $34,804 (*moderate*) and $39,381 (*long*)
  - freight arranging goes up to averages of $41,612 (*moderate*) and $43,152 (*long*)
  - wholesale furniture goes up to averages of $43,610 (*moderate*) and $40,093 (*long*)

- wholesale chemical reaches averages of $51,015 (*moderate*) and $51,715 (*long*)

Logistics: Information Technology Reason For High Pay Scales. It has been common wisdom that the warehousing and distribution sector is one that does not pay well. Certainly, this was true in earlier times when the sector was labor intensive and used a minimum of capital equipment. As the data show, this is no longer valid. The shift has occurred because of the advent of "just-in-time" inventory control systems in the nation's manufacturers and retailers and the adoption of robotics and information technology by the logistics industry. The result is a logistics group that has become one of the most capital and information intensive parts of the U.S. economy. As often happens, worker pay has risen with efficiency.

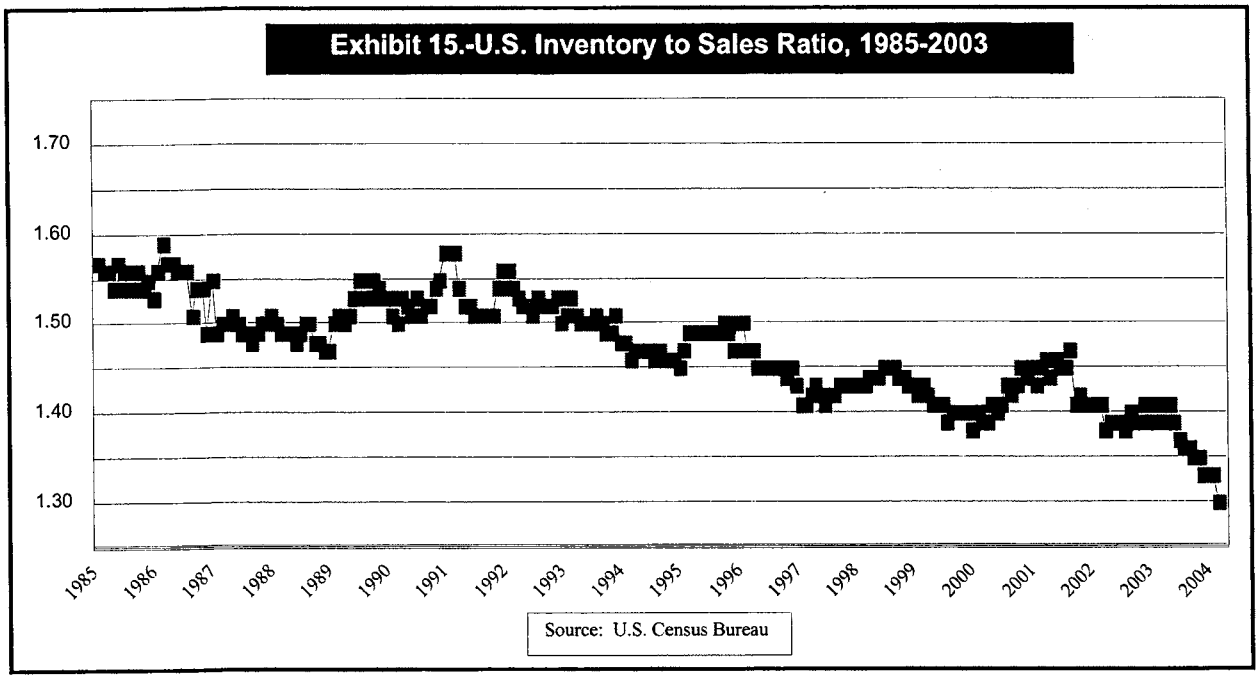
An examination of how the logistics now operates shows how it has been affected by technology:

- In 2004, most of the goods and parts used by retailers and manufacturers are bar coded. When they are sold or used, laser scanners tell corporate computers that these items have left inventory. These systems are programmed to only order new supplies after inventories have reached pre-determined low levels. This "just-in-time" process lowers the risks of firms buying items they will never use. It also reduces their costs since at any given time less inventory is being held and financed.
- At the other end of the ordering process, logistics firms usually receive their orders through the internet or e-mail connections. They also provide systems that allow their customers to track the location of their merchandise. The office staffs of logistics companies must therefore be computer literate.
- Once received, orders are normally transmitted to the warehouse floor via computer terminals. Floor supervisors must therefore be computer savvy. Since modern warehouses range up to 1.3 million square feet of space (*30 acres*), supervisors often maintain contact with their staffs by a personal digital assistant, technology that warehouse workers must master. The orders to pick-up merchandise ultimately are put into a paper format including bar codes that the staff must attach to the merchandise.

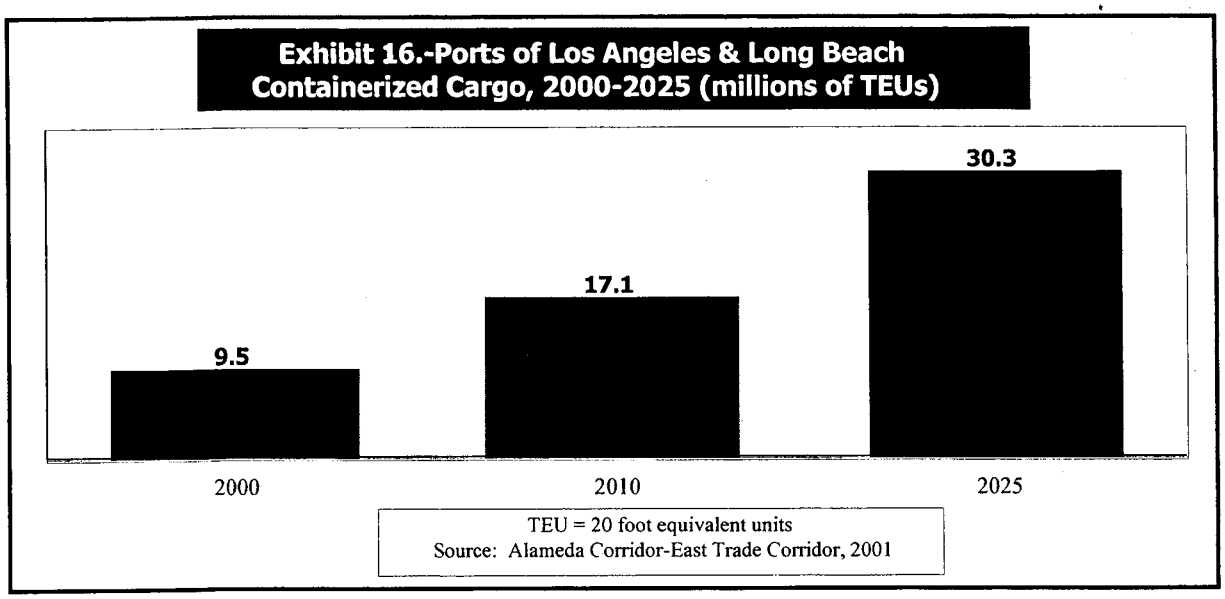
- Most of the staff in today's modern warehouses move merchandise from storage racks on to conveyor belts using fork lifts capable of reaching up to 40-foot heights. In the process, bar codes are placed on to the orders so that laser scanners can route them along the conveyors to the appropriate shipping bays. In the most sophisticated warehouses, robotic equipment is now performing these "picking" tasks.
- When shipments are placed into containers, global positioning satellite (*GPS*) chips are often attached to them so that they can be tracked around the world. When shipments are packed loosely into trucks, the vehicles themselves are often equipped with this technology. The companies thus need their staffs be trained in using this tracking software.
- As drivers move shipments, they maintain frequent communicate with their offices using web-based systems in the cabs of their trucks. Those drivers making numerous deliveries likely have a GPS system on board to help them follow routes that minimize travel time and distance. Again, the staff must be trained in the use of these systems. In addition, the routes they travel have been planned by office workers who must be knowledgeable in the use of geographic information systems software (*GIS*).
- With more an more merchandise entering Southern California's warehouses from Asia, product quality has become an supply chain management issue. As a result, firms are hiring an increasing number of workers to open shipments and randomly test whether they meet product quality standards. This requires workers able to use a variety of sophisticated measuring tools.
- A growing number of firms are including manufacturing or assembly operations within their warehousing facilities. This is adding to the types of jobs available within them.

It is this information and capital intensive world that has allowed the nation's goods to flow at the speed that they do now. The sector's pay scales have risen as a result.

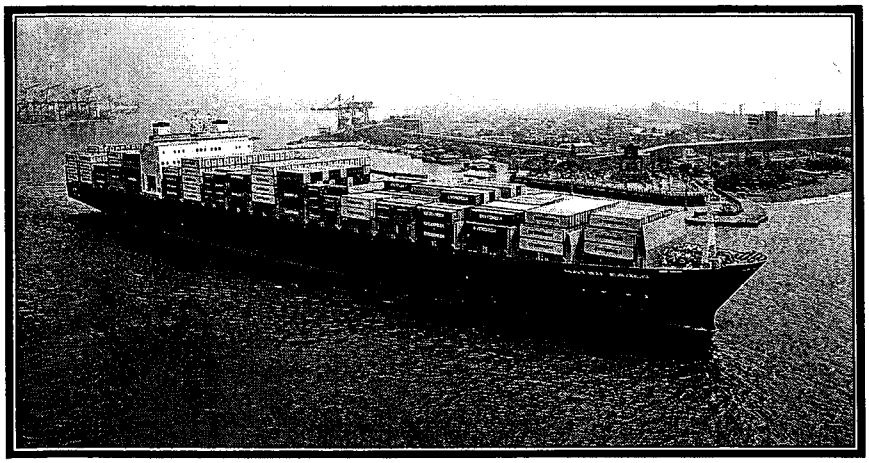
Logistics: Powerful Long Term Potential In Southern California. Meanwhile, the growth of employment in the logistics sector should not be a short term phenomenon. Earlier, it was shown that the logistics group was among the few non-population related parts of Southern California's economy to provide significant job growth from 1990-1993. Thus, wholesale trade plus transportation/warehousing added 71,133 jobs in this period (*Exhibit 3 earlier*). In the recovery phase from 1993-2003, they were responsible for 95,133 new jobs. This occurred as trade with Asia soared and just-in-time systems caused the level of inventory held by U.S. companies per dollar of sales fall to the lowest level in U.S. history (*Exhibit 15*). At the same time, just-in-time systems have led to the creation of a series of large goods holding and processing areas in the United States. Given the importance of Asian trade, Southern California is one of these centers.



- **International Trade.** Looking ahead, it is clear that the volume of international trade expected to arrive in Southern California will continue to set all time records. The Chinese economy is expected to continue its rapid growth with India joining it. The Japanese appear to be emerging from its long period of economic malaise. Smaller Asian countries like Korea, Malaysia and Singapore are again surging. At the same time, the technology of sea borne containerized traffic is changing with the advent of huge "post-Panamax" super-cargo ships. These container ships are too wide to go through the Panama Canal. They require so much water depth that the only West Coast ports from Alaska to Chile able to handle them are Los Angeles and Long Beach and Seattle-Tacoma harbors.



Combined, these two developments have led SCAG to forecast that from 2000-2010 the number of standardized cargo containers (*TEU=twenty-foot equivalent units*) moving through Southern California's ports will rise from 9.5 million in 2000 to 17.1 million in 2010, a gain of 80.6% (*Exhibit 16*). By 2025, the volume is anticipated to reach 30.3 million containers, more than triple the 2000 level. This will put an incredible strain on the companies, workers and infrastructure that must off-load, move, unload, store and distribute this cargo. Commensurate with this growth, the amount of employment supplied by firms in the largely blue collar logistics sector must rise dramatically.

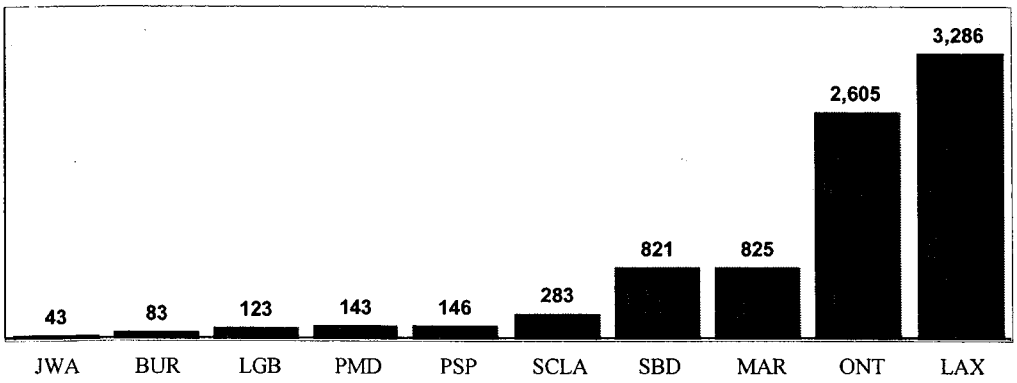


- **E-Commerce.** Another aspect of the logistics sector's growth is the increasing importance of e-commerce. In 2001, Forester Research, a specialist in technology issues, indicated that on-line sales represented $51.3 billion or 2.4% of the $2,160 billion in U.S. retail sales. In 2002, this jumped by 41% to $72.1 billion. That represented 3.2% of the nation's $2,250 billion in total retail trade. Initially, many e-commerce firms failed because they could not reliably get products to their customers. Today, the key to success is their ability to deliver goods through efficient supply chain management systems. That is virtually the same challenge faced by wholesalers delivering inventories to businesses using just-in-time inventory systems though these firms have the added complexity of needing to reach nearly every home in America, if not much of the world.

Given the level of international trade and entrepreneurship in Southern California, the provision of logistics for e-commerce firms is an important aspect of the area's warehousing sector and one that will grow along with this accelerating phenomena. Its im-

portance can be implied from the region's air cargo figures. In 2002, Federal Express (*525,078 tons*) and UPS (*383,078 tons*) represented 37.1% of all air freight moving through LAX and ONT. An increasing share of this activity was undoubtedly related to e-commerce.

Exhibit 17.-Air Cargo Tonnage By SCAG Area Airport 2030 Constrained Demand (1,000s tons)

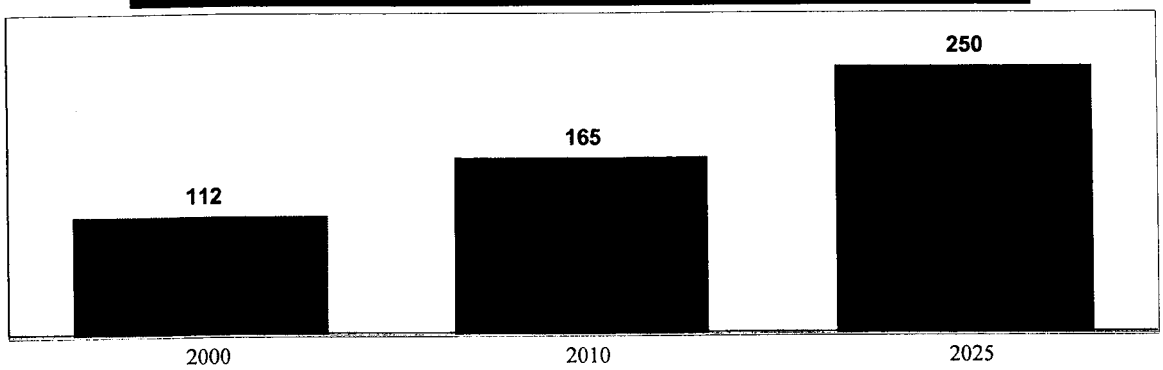


Source: SCAG Aviation Task Force Memorandum, Michael Armstrong, 2003

- **Air Cargo.** Certainly, the growth of all forms of air cargo is another aspect of the anticipated increase in Southern California's logistics sector. In 2002, this activity totaled 2.6 million tons. By 2030, SCAG forecasts that this will more than triple to 8.4 million tons. This will occur because of the need for very high speed delivery among small, high value items like computer parts and pharmaceuticals. There will thus be an enormous expansion in the air cargo moving through Southland's airports. Here, it is interesting to note that in 2002, LAX handled 1.9 million tons of air cargo or 71% of the region's total. In 2030, the spread of logistics activities will see it handling 3.3 million tons or only 39% of the region's total (*Exhibit 17*).

- **Railroads.** Another sign of the enormous strength of Southern California's logistics sector is the growth of railroad activity. In 2000, an average of 112 freight trains per day left the Los Angeles area to move through Orange County and the Inland Empire before moving on to points east. By 2010, SCAG forecasts that this will rise to 165 a day, an increase of 47.3%. By 2025, the level is expected to have more than doubled to 250, an increase of 123.2% (*Exhibit 18*). To handle this volume, there will have to be a significant increase in the amount of track available to UPSP and BNSF railroads. Importantly, this forecast does not include allowance for shuttle trains moving unsorted containers between the harbors and the inland area (*see below*).

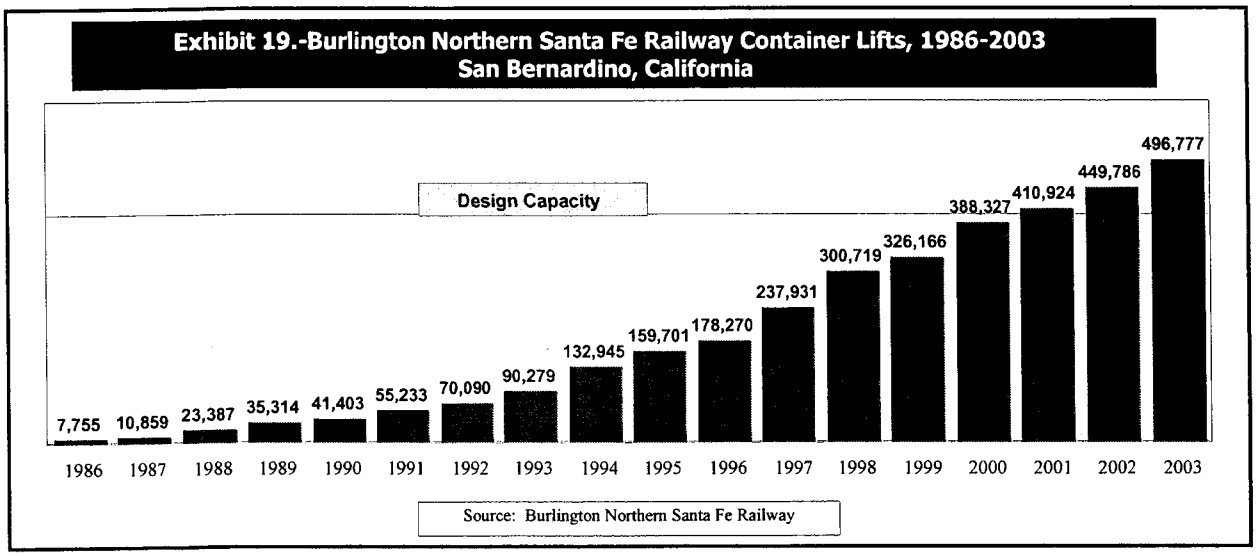
Exhibit 18.-Los Angeles-Inland Empire Railroad Forecast Average Daily Freight Trains, 2000-2025



Sources: Orange County Gateway Study, 1999; Alameda Corridor-East Trade Corridor Study, 2001

Another aspect of the railroad business is the growth that has occurred in the volume of intermodal lifts at the region's rail yards. These are the facilities where containers are transferred by trains and trucks. Perhaps the most telling example of how aggressive the volume of cargo being handled in Southern California has become is what has occurred at BNSF's expanded intermodal facility in San Bernardino. When this expansion opened in 1996 with 178,270 containers lifts, the railroad indicated that it expected the yard to reach its 400,000 lift design capacity in 2006. It fact, volume surpassed that level in 2001 even though the facility handles no international freight (*Exhibit 19*).

Looking ahead, BNSF and UPSP indicate that they will need at least one new intermodal yard a piece to keep up with the expanded volume of containers they anticipate handling in the near future. In addition, with international trade at the ports growing dramatically, it is clear that the speed at which containers need to be moved to processing centers must accelerate. The Alameda Corridor will help. However, the intermodal yards in Commerce-Vernon are too cramped to keep up. This means that unsorted, loaded containers will need to be shipped inland by rail for processing. This will require yet another intermodal facility, one located in the Inland Empire and dedicated to handling this aspect of international trade. It would have the added benefit of removing trucks from the freeways between Los Angeles County and the Inland Empire since that is how many of the containers containing goods bound for storage in the inland region are currently moved.



Logistics: Significant Issues. Like any major change in the economy, the growth of the logistics industry will bring significant long term issues:

- **Land Hog.** Logistics facilities require massive amounts of land. This is the case as the technology involved in the efficient movement of massive amounts of cargo through the ports, intermodal rail yards and warehouses require very big facilities. For the ports, it means obtaining huge cranes and finding the space to temporarily hold very large numbers of containers before they can be shipped away. For the railroads, it means building several large new intermodal facilities for processing containers between trains and trucks. For the warehouses, it means finding room for the gigantic facilities implied by their technologies. For instance, today's largest warehouses run to 1.3 million square feet of floor space with 40-foot ceilings. That means 60 acres of land, assuming 50% coverage. Meanwhile, in recent years, the average logistics facility has created one new job for every 2,200 square feet of space. That is more than twice the ratio of one job per 1,000 square feet in manufacturing and seven times the one job per 300 square feet in office.

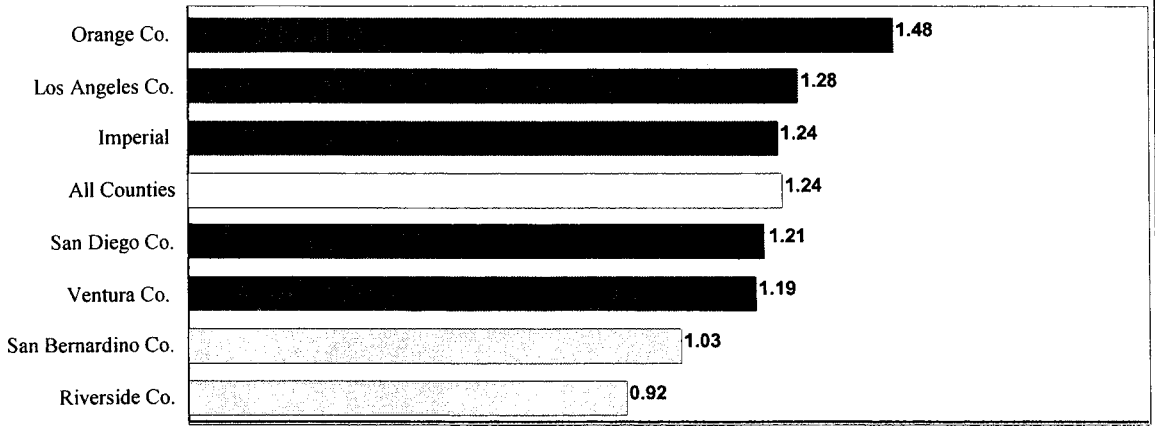
- **Inland Locations.** Within in Southern California, a significant percentage of the new logistics facilities will have to be located in the Inland Empire. This is the case because much of the region's available unused industrially zoned land is located in the inland area. Even there, the recent industrial "hot zone" from Rancho Cucamonga to Corona. west of the I-15 freeway, is running out of space. This means a huge share of the facilities will have to be built from Fontana to Banning along the I-10 freeway, in the Moreno Valley-Perris area along the I-215 freeway or in the Victor Valley area of the High Desert along the I-15 freeway. Other areas with space include the Santa Clarita and Lancaster/Palmdale portions of Los Angeles County

  Building major logistics facilities in the Inland Empire will have the advantage of putting companies that pay relatively well and have defined skill ladders in the Southern California area that has the largest share of marginally educated workers (*Exhibits 9-10 earlier*). It is also the place with an average of 1.04 ratio of wage and salary jobs per occupied dwelling. That is far below the 1.24 average for Southern California and indicates that

large numbers of commuters must daily drive from the area to jobs in coastal counties (*Exhibit 20*).

On the other hand, locating these facilities in the Inland Empire will mean that a good deal of its available land will be absorbed by giant facilities with a relatively low number of jobs per acre. It also means the area will host at least two additional intermodal rail facilities, one for BNSF and one for UPSP.

Exhibit 20.-Jobs Housing Balance, Southern California Counties
Wage & Salary Jobs vs. Occupied Dwelling Units, 2002



Sources: CA Employment Development Department, CA Department of Finance, Dataquick

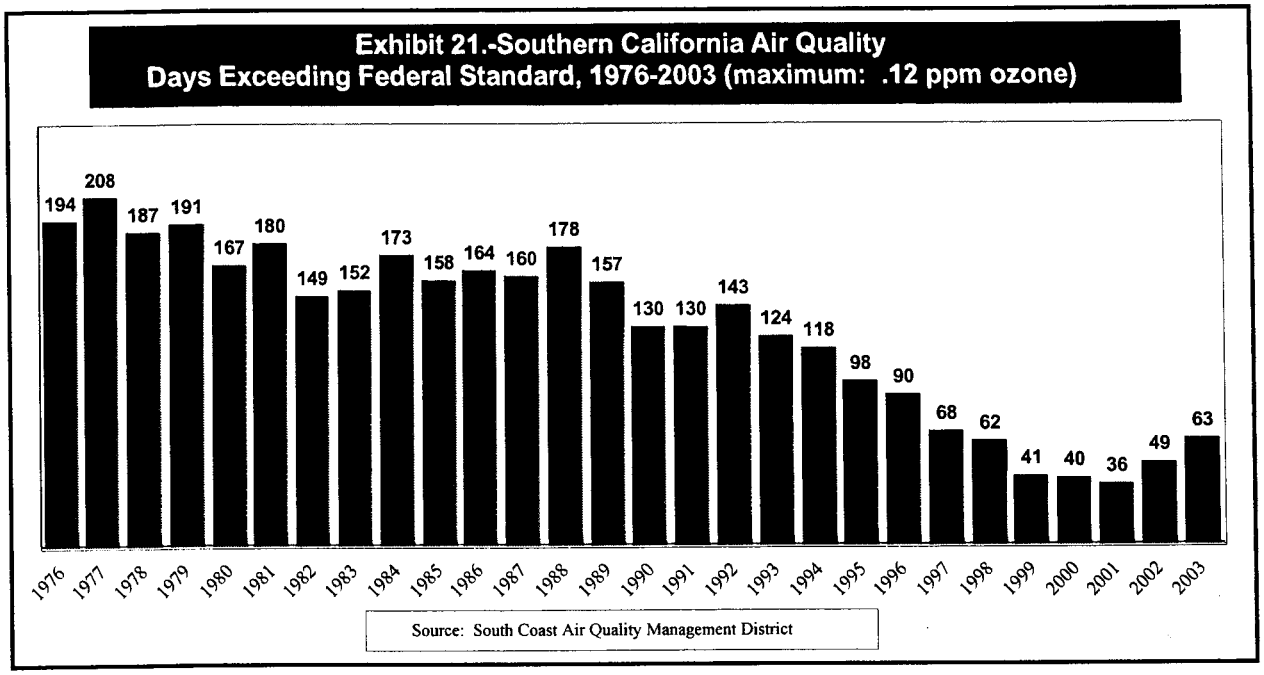
- **Truck Traffic & Freeway Financing.** The rapid growth of the logistics sector means that the number of trip miles driven by 18-wheel trucks along Southern California's already overcrowded freeways and arterial roads will increase dramatically. Given the lack of right of ways as well as the lack of funding for transportation facilities, the dramatically increased truck volume will help to slow the region's transportation system to a crawl. This difficulty will particularly impact the inland region since that is where much of the future growth of the logistics sector will have to be concentrated.

- **Rail Traffic & Financing.** Forecasts made for SCAG indicate that the dramatic growth expected in the number of trains running daily along the tracks of UPSP and BNSF railroads mean that in about 2012, Southern California's rail system will reach capacity. The only way that the railroads will be able to expand is if either their corporate owners or the federal government fund a significant increase in track capacity.

  However, even if that funding is found, it is a fact that most of the arterial roads that cross railroad tracks in the San Gabriel Valley, Orange County and the Inland Empire do so at-grade. As a result, the increase in rail volume will essentially cut the cities located along these tracks in half. Currently, there is no source of funds in place to build grade separations and alleviate this problem.

- **Air Quality & Diesel**. In recent years, Southern California has managed to significantly lower the number of days in which it is not in compliance with the federal air quality ozone standard of 0.12 parts per million (*Exhibit 21*). However, recently the

trend has begun to move back up. One of the primary uncontrolled source of emissions are the fumes from diesel engines. As the logistics industry increases in importance, the contribution to this problem by trucks, trains and ships will likely grow.



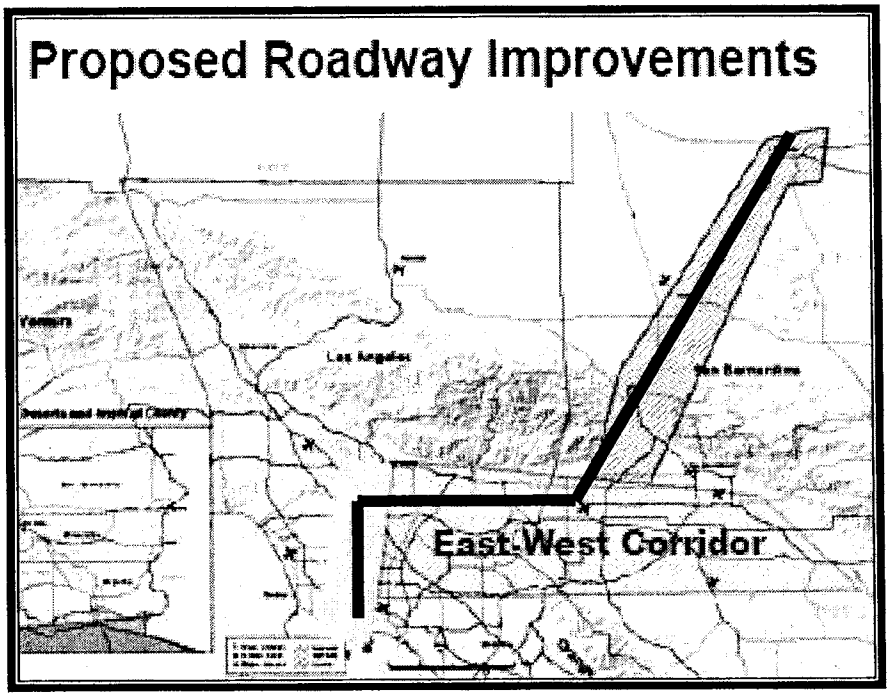
- **Shuttle Trains & Financing.** A special rail difficulty is the issue of using shuttle trains to move full international container shipments from the ports of Los Angeles and Long Beach to an inland intermodal facility for processing. In particular, this would be used for merchandise that is bound for inland warehouses. These trains would have the advantage of freeing space and capacity in the ports and the nearby intermodal yards. As indicated earlier, it would also help remove truck traffic that is currently moving this merchandise from Los Angeles County to the Inland Empire.

  However, a location needs to be identified for yet another intermodal rail yard in the inland area. In addition, track capacity and grade separations are already issues for the railroads and this would add to their difficulties. Importantly, the railroad indicate that the handling cost of loading and unloading containers is such that it is not profitable for them to process shipments unless they are moving beyond the Rocky Mountains. If a shuttle train is to be a success, a cash flow would have to be found to change these economics.

Logistics: Strategies For Success. Southern California's leaders have begun developing a variety of strategies that would allow policy makers to encourage the logistics group while mitigating the worst of its difficulties. This is important given the ability of firms in these sectors to provide a growing base of good paying jobs in the skill ladder environment needed by the area's numerous marginally educated workers. Successful implementation would allow the region to begin dealing with its loss of standing on the basis of both per capita income and payroll per job:

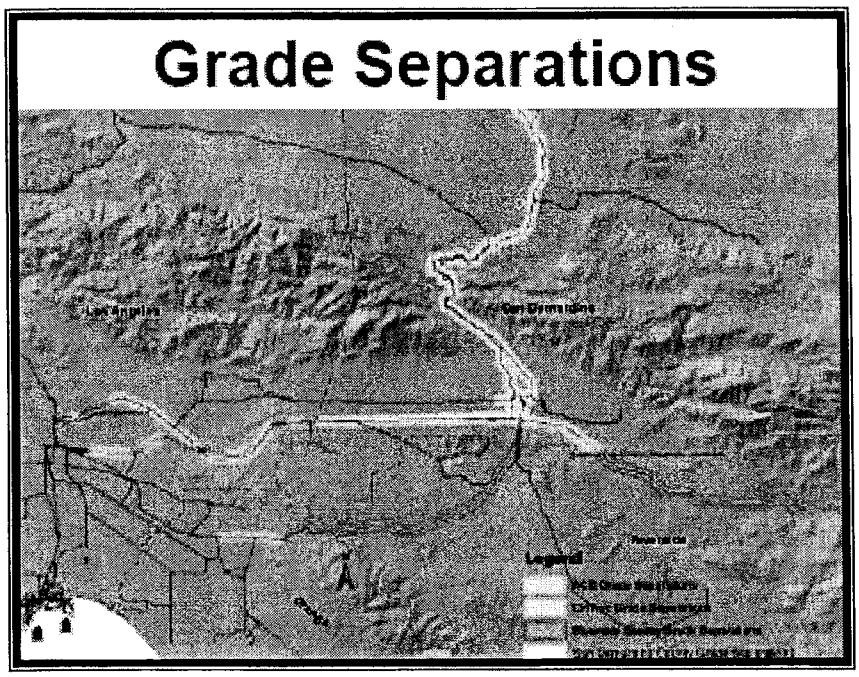
- **Operation Jump-Start.** Several of the problems facing the growth of the logistics group flow from the lack of funding for the transportation infrastructure needed to

both permit the sector to grow and to offset the congestion that its growth implies. Here, SCAG's Operation Jump-Start outlines a route for dealing with these issues. It represents a strategy for providing transportation companies with benefits that will increase the speed and lower the cost of moving goods in exchange for them providing a cash flow to privately finance key parts of Southern California's infrastructure:

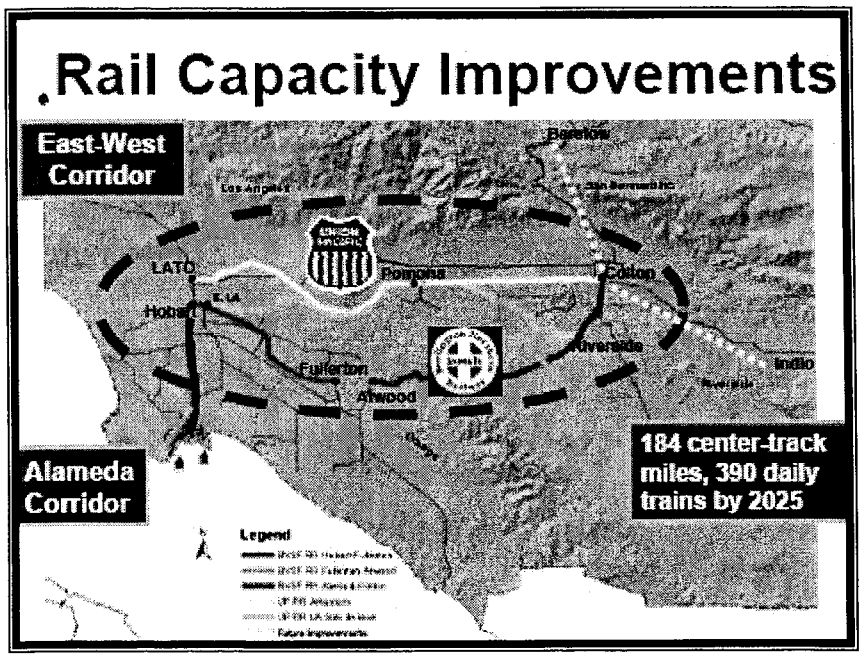


- **Dedicated Truck Lanes.** To decrease congestion, increase safety and lower the amount of pollution from idling trucks, dedicated truck lanes would be added to the I-15 freeway from the Victor Valley to the SR-60 in Ontario, along the SR-60 from there to the I-710 and along the I-710 to the harbors. The 141.8 miles of additional lanes would be financed with a truck toll of $0.56 per mile to cover construction and maintenance. The $16.5 billion raised would finance the project through tax exempt bonds. Heavy trucks isolated from competition with other vehicles would allowing triple trailering to be an option.

- **Expanded Railroad Track & Grade Separations.** To expand the capacity of the rail system, additional tracks would be laid on the UPSP and BNSF routes from Los Angeles through the San Gabriel Valley, Orange County and urbanized Inland Empire. In addition, grade separations would be built along the major arterials along this route to eliminate delays on surface streets and the noise of whistling trains. These projects would be funded by a $5.39 fee per container that would cover the $1.2 billion cost of building the additional rail capacity and $2.2 billion cost of overpasses and underpasses across the tracks. Tax exempt finance would be authorized to undertake these efforts.



Together, these projects would ensure that international cargo could move through the Inland Empire at high speed without all of the delays and vehicle traffic disruptions inherent in the current over-burdened system.



- **High Speed Maglev System.** While not directly related to the movement of goods, SCAG's strategy also provides for a $6.2 billion privately funded high-speed Maglev train system to initially connect LAX to ONT. Ultimately the system would bind together the main population centers in Southern California. It would benefit the logistics sectors by decreasing the amount of automobile traffic and increasing the efficiency of Southern California's transportation system.

- **Shuttle Trains-Inland Port.** Currently, international cargo that is bound for warehouses in Southern California is off-loaded near downtown Los Angeles. Much of it is hauled by truck along the SR-60 and I-10 freeways to the growing base of warehouses in the Inland Empire. The Alameda Corridor Transit Authority has begun investigating the feasibility of an "inland port" (*intermodal rail yard for international cargo*) in either the Devore, Victor Valley or San Gorgonio Pass areas of the inland area to speed the flow of this merchandise while removing it from these congested freeway corridors. Their strategy would require the building of the expanded rail capacity outlined with Operation Jump-Start as shuttle trains would be used to move the cargo to this new facility. The current difficulty with this approach is finding a financing source for the added cost of handling these containers.
- **Additional Intermodal Rail Yards.** As with other aspects of Southern California's goods handling infrastructure, the region's intermodal rail yards near downtown Los Angeles and in San Bernardino are reaching their absolute capacity. This is leading to time delays in moving both domestic and international containers between trains and trucks. Both BNSF and UPSP are investigating the building of new facilities. Due to its large swaths of land along the main lines of both companies, the Inland Empire would be the location of these yards. The locations under consideration are in the city of San Bernardino, near Southern California Logistics Airport in Victorville and in San Gorgonio Pass.
- **Expanded Air Cargo Capacity.** Every forecast of air cargo usage indicates that LAX cannot begin to handle the long term volume anticipated for Southern California. With the demise of the El Toro airport proposal, most of the region's additional capacity is being developed in the Inland Empire. Los Angeles World Airways has just picked a developer for a one million square foot air cargo cross-dock facility for ONT. Hillwood (*a Perot Company*) is working with the Inland Valley Development Agency to build a 240,000 square foot air cargo facility at San Bernardino International Airport (*former Norton Air Force Base*). Southern California Logistics Airport (*former George Air Force Base*) already provides two hour turnaround time for dedicated air cargo carriers. March Air Reserve Base is being developed as a joint use facility that will also handle dedicated air cargo carriers.

Should these strategies be brought to fruition, Southern California would benefit in several ways. During the construction phases, a very large number of blue jobs would be created. These jobs plus the strong multiplier impacts of construction spending would buoy the region's economy. Once the projects are completed, the efficiency and competitiveness of the Southland's economy would be enhanced while the most negative aspects of congestion and idling vehicles would be mitigated. Importantly, this expanded infrastructure backbone would unleash the potential strength of the logistics sectors, offering Southern California's marginally educated workers a growing path towards on-the-job learning and higher standards of living. Ultimately, these strategies thus offer the region a way to address the recent declines in its relative prosperity.

Summary

In the late 1950's, President Dwight Eisenhower recognized the close connection between transportation infrastructure, economic efficiency and the standard of living. He therefore launched the building of the Interstate Freeway. It is hard to imagine the performance of today's U.S. economy had that conservative President not convinced the Congress to move forward with the investment in this extraordinary system. In the 1960's, Governor Pat Brown saw the connection between infrastructure and economic growth and undertook the building of the California State Water Project. Again, it is hard to imagine the performance of California's economy had that moderate Governor not made the investment in this mammoth project.

In the 2000's, Southern California faces infrastructure challenges that rival those efforts. If the area's economic power is to be unleashed, its economy must be freed of the constraints imposed by lack of truck, rail and airport infrastructure. Investment in these projects would have the beneficial effect of allowing the region's logistics sector to accelerate, providing a growing base of good paying jobs which its marginally educated workers can learn via on-the-job experience and learning. This would appear to be the only route that the region has available to helping those workers achieve growing standards of living while simultaneously correcting the recent deep slide in Southern California's relative prosperity vis-à-vis other major parts of the country. Importantly, it would do so while helping to mitigate the environmental difficulties caused by the inevitable increase in truck and rail traffic congestion and idling diesel engines.