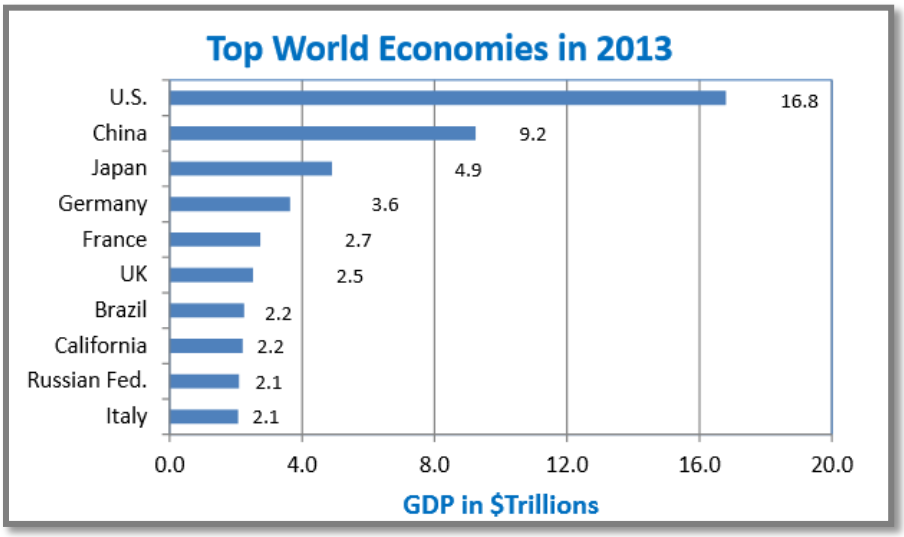
CHAPTER 3.2

ECONOMIC CONTEXT OF FREIGHT

In 2013, California had the eighth largest economy in the world, with the state's gross domestic product (GDP) at $2.2 trillion (see Figure 59).[43] With 12 percent of the United States (US) population, California accounts for 13 percent of the nation's economic output and is leading the nation in economic recovery. The US is the largest economy in the world with a GDP of $16.8 trillion, followed by China at over half of the US total.[44] California's trade is both domestic and global. International trade and investment are major economic engines for the state, broadly benefitting business, communities, consumers, and regional, state, and local governments. The state's economy depends on an efficient, integrated, sustainable multimodal freight infrastructure. California's diversified economy and its prosperity are tied to exports and imports of both goods and services through the state's key gateways (seaports, airports, and border ports of entry) and the highway and rail corridors that connect the gateways to the rest of the state, the nation, and the world.

FIGURE 59. TOP WORLD ECONOMIES - 2013

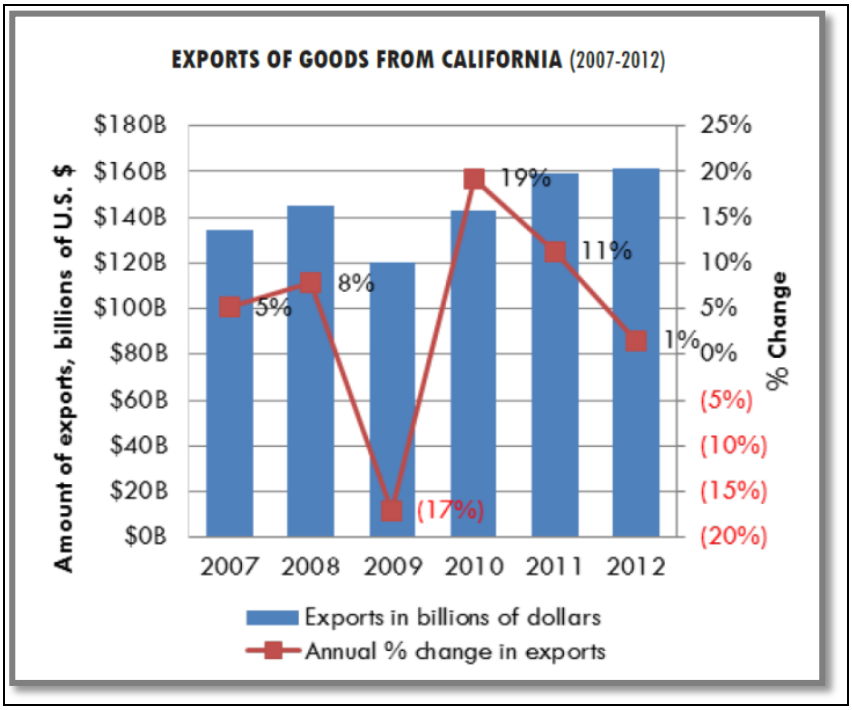


Source: United States Of America (USA) Trade Online, US Census Bureau, Foreign Trade Division

Along with income, population drives demand for goods movement. At the domestic level, California's population grew by 0.9 percent, adding 356,000 residents in 2013 for a total state population of 38,340,000 people as of January 1, 2014.[45] California is home to the second largest consumer market in the US – the Los Angeles-Inland Empire region – the first being the

Greater Hudson Valley region of New York State. While imported consumer goods pass through the state to other parts of the US, most stay within the state and are purchased by California consumers. California has historically received 40 percent or more of the nation's trade with Asian countries, (48.8 percent in 2012 at Port of Long Beach/ Port of Los Angeles), with roughly 60 percent of that cargo destined for the California consumer market, primarily in the Los Angeles Basin.

FIGURE 60. CALIFORNIA EXPORTS 2007 - 2012



Source: United States Of America (USA) Trade Online, US Census Bureau, Foreign Trade Division

California's export merchandise in 2013 totaled $168.0 billion, with Mexico being the largest market ($23.9 billion), followed by Canada ($18.9 billion). The top exports from California in 2013 were computer and electronics equipment ($42.4 billion), transportation equipment ($17.7 billion), machinery (except electrical and that is covered under electronics equipment) ($15.1 billion), miscellaneous manufactured commodities ($14.6 billion), and agricultural products ($13.8 billion). One of California's fastest growing exports is dairy products, with exports in 2012 reaching $1.9 billion.

Globalization of production and trade is dependent on a highly complex network of freight transport. For the state to remain competitive, it must meet the demands for an efficient, reliable, safe, and flexible transportation network. In order to achieve the California Freight Mobility Plan's economic competiveness goal to improve the contribution of the California freight transportation system to economic efficiency, productivity, and competitiveness, the transportation system must be able to sustain, adapt, and keep pace in a highly competitive,

global economy. California's roads, highways, bridges, seaports, rail, and international borders are invaluable assets that are critical to our future. Most of the state's highways and bridges were built in the 1950s and 1960s, at a time of major public investment in California's transportation system. Recent highway investments have focused on system preservation, rehabilitation, and operating improvements rather than capacity expansion.

California is an attractive global gateway because of its geographic position, large population, and robust and vast transportation system. The state must continue to improve this system and marginalize costs in order to stay ahead of increasing competition and support the state's economic growth. Failure to invest will put the state and the rest of the nation, which depends on our gateways, at a competitive disadvantage at a time when production and the supply chain offers greater geographic flexibility. The 40 percent of the nation's trade with Asia that passes through California doesn't have to transit the state. If California fails to maintain the competiveness of its freight system, that 40 percent, and the jobs associated with it, could go to other states or even to Canada or Mexico.

Traffic congestion adds cost for shippers, carriers, and manufacturers, and those costs are ultimately passed on to consumers through higher prices or reduced economic competiveness. In 2005, the Federal Highway Administration reported that delay costs truckers $26.60 per hour.[46] But beyond labor costs, truck operating costs are directly connected to fuel costs and damaged vehicle equipment caused by poor road quality, creating higher insurance costs. Traffic bottlenecks and delay reduce reliability, particularly in California's urban areas. According to a Texas Transportation Institute study, in 2011, congestion in 498 metropolitan areas caused urban Americans to travel 5.5 billion hours more to purchase an extra 2.9 billion gallons of fuel for a congestion cost of $121 billion.[47] This severe congestion also greatly affects the trucking industry.

California's ports are faced with competition from Canada, Mexico, and East Coast and Gulf Coast ports, which have gained substantial import volume and invested heavily in port and landside improvements. The West Coast ports have also made major investments knowing that it is critical to respond to those competitive challenges. Although container volumes in North America have slightly risen, the West Coast ports have seen their proportional share of the total volume drop as compared to their competitors. With the pending opening of the expanded Panama Canal in 2016, discretionary cargo (cargo that could go through another port) could intensify this trend, with larger ships going to the East Coast and Gulf Coast ports in order to eliminate cross-country land transport. By providing closer access to the Mid-West and East Coast markets via these ports shipping costs may be reduced. However, the voyage through the Panama Canal can add many days of travel and it is still uncertain how much trade will shift from West Coast ports to those in the Gulf and Atlantic regions. To remain competitive, it may be necessary to further strengthen California's freight rail connection to the rest of the nation

and address urban freight highway congestion in Southern and Northern California. [The Canal expansion project consists of two new sets of locks, one on the Pacific and one on the Atlantic side of the canal that will support the transition from 5,000 twenty-foot-equivalent-unit (TEU) vessels to 13,000-TEU vessels but cannot accommodate the Post-Panamax vessels of 18,000 TEUs.] Nicaragua is proposing to break ground this year on a 173-mile, inter-ocean canal that would stretch from Punta Gorda on the Caribbean through Lake Nicaragua to the mouth of Brito River on the Pacific. (For more information, refer to the trend sheet in the Appendix on the Nicaraguan Canal.)] Currently, the West Coast is usually the most efficient route for goods exported from China and Japan; however, manufacturers in other parts of Asia may gain efficiencies by accessing East Coast ports via the Suez Canal in Egypt. Canada and Mexico are also `investing in their ports and supporting infrastructure.

FREIGHT GATEWAYS AND REGIONS

California has four key freight gateway regions: the San Diego-Mexico Border region, the Los Angeles - Inland Empire region, the San Francisco Bay Area, and the Sacramento - San Joaquin Valley region. Two other regions in California also play critical roles in the state's economy, but are not major freight gateway regions: the North State Super Region and the Central Coast. For additional information on these two regions, please refer to Appendix H.

SAN DIEGO-MEXICO BORDER

California shares a 130-mile border with Mexico. The California-Mexico international border has six points of entry (POEs): San Ysidro, Otay Mesa, Tecate, Calexico West, Calexico East, and Andrade. The Otay Mesa POE in San Diego County and the Calexico East POE in Imperial County are the two main California-Mexico freight gateways. The Otay Mesa POE is the second busiest commercial POE on the US-Mexico border, based on the number of truck crossings, and the busiest commercial land port in California. In 2012, the Otay Mesa POE handled approximately 1.5 million trucks and close to $35 billion worth of goods in both directions. The Calexico East POE serves nearly all of the international truck traffic crossings in Imperial County with a total trade value of over $12 billion dollars in 2012. The most transported commodities entering the US by truck through California POEs include pulp, paper, or allied products,[48] electrical machinery, equipment, and supplies; and food and farm products. The Southern California Association of Governments (SCAG) reported in their 2012-2035 Regional Transportation Plan and Sustainable Communities Strategy that in 2010, $10.4 billion of trade passed through the international ports of entry between the US and Mexico in Imperial County alone.

Trade with Mexico supports approximately six million US jobs. Mexico is California's largest export market at $62.3 billion in total trade. According to the US Chamber of Commerce,[49] US trade in goods and services with Canada and Mexico rose from $337 billion in 1993 to $1.182 trillion in 2011. Mexico and Canada make up the two largest markets for US exports, purchasing

nearly one-third of all US merchandise. Economic trade through California border gateways has strained the State Highway System, which carries the majority of freight by truck. Border transportation infrastructure needs improvement to handle current and projected growth in bi-national trade. Poor border infrastructure and border crossing delays generate economic, health, and environmental impacts. For additional information on border crossing delays and their impact, see Chapter 3.7.

Los Angeles-Inland Empire (Los Angeles Basin)

The Los Angeles Basin includes Los Angeles, Riverside, San Bernardino, Orange, and Ventura counties, home to over 18 million people.[50] This region is the largest manufacturing center of any metropolitan area in the nation. The Los Angeles Basin is the nation's premier international gateway, supporting international trade through its seaports, international airports, and international land border crossings. These facilities are the critical link between the US economy and the Pacific Rim. A world-class transportation system and access to a large consumer market, both within the region and in nearby Western states, has made this region a logical location for national and regional distribution of a wide variety of products. Growth in logistics-based businesses has created a new and diverse source of employment and economic growth.

The value of two-way trade coming through the Los Angeles Customs District (LACD) was $403.5 billion in 2012, a record high that enabled the LACD to overtake the New York-New Jersey Customs District and regain its top ranking in 2012.[51] With a gain of 4.3 percent, two-way trade through the LACD grew somewhat faster than the US as a whole. Total LACD two-way trade value was forecast to increase by 2.4 percent in 2013 to $413 billion, with a 4.7 percent gain to $433 billion expected in 2014.[52]

The Ports of Los Angeles (POLA) and Long Beach (POLB) are the two largest container ports in North America in number of containers shipped, with the Port of Oakland being the nation's fifth largest container port. While taking in significant international import volumes, these ports – particularly Oakland – are also gateways for California global agricultural exports. Despite the recession, POLA and POLB retained their status as the nation's largest container ports, with the number of TEUs edging up from 14.0 million in 2011 to 14.1 million in 2012.

Economic growth in the Inland Empire areas of Riverside and San Bernardino counties was consistent throughout 2012 as a result of job growth, particularly over the second half of the year. The outlook for the regional economy has improved due to gains in the labor market, along with gains in housing, construction, and manufacturing. This increase in activity, along with substantial growth in e-commerce, will positively impact the Inland Empire warehouse and distribution system network. Recently, logistics – the analysis and coordination of an organization's supply chain from raw materials to final product – has been the region's fastest

growing job sector. The manufacturing sector has shown only minimal growth. Construction, one of the Inland Empire's job creators, is up, but not to pre-recession levels.

San Francisco Bay Area

The San Francisco Bay Area (Bay Area) is home to approximately 7.3 million people. Goods movement-dependent industries account for $490 billion in total output (50 percent of total regional output) and provide over 1.2 million jobs (28 percent of total regional employment). The large difference between the shares of industrial output and shares of employment provided by goods movement-dependent industries in the Bay Area is due to two factors: 1) manufacturing in the Bay Area has shifted increasingly toward high-value products that do not use labor-intensive production processes (such as biotechnology products); and 2) many high-tech product manufacturers have shifted their production activities offshore but have kept their value-added-design-and-development activities in the Bay Area.

Major manufacturing industries in the Bay Area include biotechnology, electronic and precision instruments, wine production, and petroleum refining and chemical production. These industries rely on expedited delivery services, reliable trucking, and air cargo (with the exception of petroleum refining and chemical production), all of which place major demands on transportation system performance. Petroleum and chemical products contribute significantly to the regional economy and are in the process of shifting their transportation mode from water to rail due to the reduction in oil shipments via marine vessels from Alaska and increases in oil shipments for continental US and Canada oil production areas.

Neither the transportation and warehousing sectors nor the wholesale trade sectors have high concentrations relative to national averages, even in the Bay Area sub-regions where goods movement hubs are located, such as the Port of Oakland and Oakland International Airport. To the extent that goods movement industries, particularly value-added services (services that complement and enhance warehousing, transportation, and logistics) and warehousing, can provide good-paying jobs to replace lost manufacturing jobs, the region may not be realizing the full economic benefits of its goods movement gateway and hub status in terms of regional job diversity, particularly in the area of blue-collar jobs.

The Port of Oakland has three core businesses: operation of Oakland International Airport, commercial real estate, and operation of the Port of Oakland. The Port of Oakland is the only California container port that handles more exports than imports. In 2010, the Port of Oakland commissioned an economic study that revealed that the Port and its partners provided almost 73,565 jobs in the region through direct, indirect, and induced employment. Nearly one in five direct jobs created by the Port is held by an Oakland resident, and the jobs associated with the Port paid 10 percent above the regional average. The Port paid over $56 million in taxes, which had a multiplier effect on the economy of over $230 million. Transportation sectors (truck, rail,

and "other") were responsible for creating more than 76 percent of the 10,900 direct jobs, with warehousing and storage, government, and construction industries making up the rest. The indirect and induced jobs are mostly in the services sector and government.

San Joaquin Valley

Despite the recent national economic downturn, which hit the San Joaquin Valley particularly hard, the Valley's population has grown by more than 20 percent over the last 10 years, gaining nearly 700,000 residents since 2000 (ranking it as the sixth-fastest-growing region in the US). The current population is nearly 4 million, accounting for about 11 percent of the total statewide population. (Fresno, Kern, and San Joaquin counties combined account for over 50 percent of the population.) By 2040, the Valley's population is expected to more than double, to a total of nearly 8 million.

According to the US Bureau of Labor Statistics, the GDP for goods movement-dependent industries in the Valley's eight-county region in 2010 was approximately $56 billion. This is an increase of about 6 percent from 2009. The industries contributing the most to regional GDP include wholesale and retail trade ($14 billion, or 26 percent of the total), agriculture ($13 billion, or 24 percent of the total), and manufacturing ($12 billion, or 21 percent of the total).

In 2010, approximately 1.2 million people in the Valley were employed across all sectors. Of this total, over 44 percent (564,000 jobs) were associated with goods movement-dependent industries, including agriculture (187,000), wholesale and retail trade (170,000), manufacturing (102,000), and transportation and utilities (48,000). By 2040, goods movement-dependent jobs are expected to increase by over 45 percent (nearly 250,000 jobs). This growth will be led by industries such as transportation and warehousing, wholesale, and retail trade.

The Valley is home to more than 100,000 firms across all sectors, with over 30,000 in goods movement-dependent industries. The majority of businesses (between 80 and 90 percent) are small, with fewer than 20 employees. The largest goods movement-dependent Valley businesses are food growers and producers (including raw fruits and vegetables, nuts, milk and other dairy products), food processors and packagers, oil refineries and mineral mining operations, and trucking, and warehousing and distribution services.

The Valley produces a very large share of California's exports, especially agricultural products, with Canada as the leading destination. In 2010, Canada took in 20.8 percent of California's fresh fruits and nut exports and 64.9 percent of the state's exported edible vegetables and seeds. According to recent statistics from the California Department of Food and Agriculture, the Valley accounts for over half the value of the state's agricultural commodities, underscoring the region's importance in the export market. The Valley has seen an increase in new distribution and production facilities in recent years partly due to relatively inexpensive land,

available labor, and the relocation of many transloading, warehousing, and distribution facilities from the Bay Area due to competition for scarce land.

Sacramento Region

As of January 2013, the six counties that make up the Sacramento Region – El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba – had a population of just over 2.3 million people. In this region, manufacturing employment has been hovering just above 50,000 jobs. Long-term forecasts indicate that manufacturing's share of the regional employment market will continue to shrink. By contrast, jobs within the logistics sector are expected to increase. The logistics sector comprises a variety of industry groups that involve the shipping, receiving, processing, and storage of goods. In 2012, most of the resource-intensive, goods-producing industries were housed in Sacramento County with 47,500 goods-producing jobs.[53] Placer County will add another 7,000 jobs between 2012 and 2032, for a total of 24,000. El Dorado, the fastest growing county in the region, is expected to grow by more than 60 percent over a twenty-year period and reach a total of nearly 8,000 goods producing jobs.[54]

Employment in the wholesale sector accounts for 45 percent of the logistics sector total, with truck transportation the next largest group with more than 6,000 employees or approximately 11 percent. Logistics employment in Sacramento County is a relatively low share of the total, due to the higher share of government and office sector employment in Sacramento County. Logistics employment in Yolo County has a much higher share of employment, reflecting the concentration of logistics activity in West Sacramento, Woodland, and adjacent areas.

TABLE 35. COUNTY RANK BY GROSS VALUE OF AGRICULTURAL PRODUCTION (WITHOUT TIMBER) - 2012

County	Gross Value (x1,000)	State Rank
Yolo	$645,767	21
Sutter	$527,004	23
Sacramento	$460,651	25
Yuba	$207,904	31
El Dorado	$40,067	46
Total	**$**1881393	

Source: California Department of Food and Agricultural, 2013 Report

In 2012, the Sacramento Area Council of Governments (SACOG) region, produced some $1.8 billion worth of agricultural products, all of which traveled by truck over rural roads to shipping, processing or packing points. In Sacramento County, the top five crops were wine grapes, milk, poultry, corn (field) and pears (Bartlett) which produced nearly $460 million in crops and livestock in 2012. Wine grapes alone accounted for over $149 million in gross value. For the same year, Yolo County's top crops were tomatoes (processing), wine grapes, rice, alfalfa hay,

walnuts, and almonds. Sutter County's top crops include milling rice, English walnuts, plums, clingstone peaches and tomatoes (processing). El Dorado County top crops were apples, wine grapes, and cattle and calves.

The heaviest use of rural roads for goods movement is usually during the harvest season from mid-summer through fall. Agricultural products tend to move in bulk, with truckloads approaching the 80,000 pound gross vehicle weight limit. The heaviest products tend to be liquids (fluid milk, fruit juices, wine) and field crops (tomatoes, rice, corn). Inbound chemical fertilizers, pesticides, and animal feed are also very heavy. Many of the rural roads, particularly in the Delta Region, have very tight turns and narrow shoulders due to rivers, canals, and other waterways. Full-size 53-foot trailers may not be able to access agriculture production areas, requiring the use of more, smaller trucks, thus increasing total truck vehicle miles traveled, associated traffic congestion, and air pollutants.

Central California Coast

Since the rate of growth or decline of the population impacts the volume of goods shipments required for consumption by local residents, population trends are a key driver of freight demand in a region. The population of the five-county Central Coast region (Counties of Santa Barbara, San Benito, San Luis Obispo, Santa Cruz, and Monterey) was approximately 1.4 million in 2010. The population of the Central California Coast region grew by 5.1 percent from the years 2000 to 2010, or by nearly 70,000 people, which is about one-half the rate of the state's overall population growth. By 2040, the population of the region is expected to grow approximately 30 percent above 2010's levels.

Gross Regional Domestic Product (GRDP) is one way to measure the size of regional economic production, as it takes regional production, investment, and spending into account. Santa Barbara and Monterey counties are the largest economic engines in the Central Coast region at about $17.7 billion and $16.0 billion, respectively. The five-county Central Coast regional GRP was nearly $54 billion in 2009.

The region's key freight-dependent industries, agriculture, manufacturing, and truck transportation/warehousing are critical to the region in terms of jobs and contributions to the regional economy. They also are critical to one another. With the region's Salinas Valley and other intensively farmed areas serving as nationally significant producers of row crops (often produced on a year-round basis) that are highly perishable and have a high value, reliable trucking is particularly important so that crops are quickly and reliably transported to their final destinations from neighborhood supermarkets and local restaurants to locations throughout the state and the nation.

Overall, the region experienced a positive growth trajectory from 2001 to 2009, expanding from about $48 billion in 2001 to $53.8 billion in 2009. The region's population and economic trends

will impact freight demand in several ways. For example, there is a connection between gross regional domestic product (GRDP) and freight volumes on regional roads. In 1980 through 2004, freight volumes have followed GRDP growth in the US and are anticipated to continue this trend. As a result of this anticipated increase in regional GRDP, additional freight tonnage moving to, from, and within the Central Coast region is expected.

TABLE 36. CALIFORNIA'S TOP 10 AGRICULTURAL EXPORT MARKETS, 2011

Rank	Country	Export Value (millions)	Leading Exports
1	Canada	3,049	Wine, Lettuce, Strawberries
2	European Union	2,214	Almonds, Wine, Pistachios
3	China/Hong Kong	1,382	Almonds, Pistachios, Walnuts
4	Japan	1,415	Rice, Almonds, Beef and Products
5	Mexico	661	Dairy and Products, Processed Tomatoes, Table Grapes
6	South Korea	577	Oranges and Products, Rice, Beef and Products
7	India	360	Almonds, Cotton, Oranges and Products
8	United Arab Emirates	341	Almonds, Walnuts, Hay
9	Turkey	321	Walnuts, Almonds, Processed Tomatoes
10	Taiwan	249	Beef and Products, Almonds, Rice

Source: California Agricultural Resource Directory, 2010 to 2011

North State Super Region

The North State Super Region (NSSR) is a partnership representing the sixteen northern California Regional Transportation Agencies. Partner counties include Del Norte, Siskiyou, Modoc, Humboldt, Trinity, Shasta, Lassen, Mendocino, Tehama, Glenn, Lake, Colusa, Butte, Plumas, Sierra, and Nevada. This region contains 26 percent of California's total land area and 37 percent of California's state and federal roads.[55] The primary focus of the NSSR is to support economic development, access to goods and services, and efficient goods movement through strategic transportation network investments. As of January 2013, the population of the NSSR was just over 1.1 million, roughly 2.5 percent of the state's population. North State's county populations vary considerably. The most populous counties are Butte, Shasta, and Humboldt. Together, these three counties house more than half of the North State's population, mostly concentrated in small urban areas. If the populations of the next three most populous counties are added, the top six counties account for about three-fourths of the North State's population.

In general, the North State is more dependent than the state as a whole on resource-based industries, such as agriculture, timber, fishing, and nature-related tourism. This reliance on resource-based industries suppresses the income levels of the region because the dominant industries are not highly value-added [North State Transportation for Economic Development Study (NSTEDS), 2013]. The lower regional economic benefits from the extraction of resources without processing or otherwise adding value to those resources restricts the value of those resources to the local economy as few additional jobs are created beyond those required to extract and transport the resources.

Due to a combination of overharvesting and restrictions on production, the counties that rely on the timber and fishing industries need to attract new industries to reverse declining incomes and a corresponding rise in poverty. Reliance on the extraction of natural resources has not been a viable regional economic development strategy in recent years. However, value-added agriculture has proven to be a viable option to generate more revenue from the region's production.

Areas with institutes of higher learning, such as Butte and Humboldt counties, have fared better than other North State counties. These counties are better positioned to attract new, diverse industries because they can provide training opportunities through their universities, as well as a better-educated workforce for technical, professional, and managerial positions. College towns also often offer a wider array of cultural and quality-of-life amenities that can help to attract residents and new industry. Growth in Chico provides an example of such development. Tourism continues to be a viable economic development strategy for many North State counties, despite seasonal limitations. Visitors spend roughly $2.4 billion per year in the North State, and tourism accounts for nearly 33,000 jobs.

Agricultural and food products account for $7 billion in value to the North State, representing nearly 57 percent of all commodity values in the region. This group includes several types of commodities: tree nuts; canned, pickled, and dried fruits and vegetables; flour and malt; beer; wine; and other alcoholic products; grains; fruit; and other crop farming products.

Wood products account for $1.5 billion in North State production, which is second to the $7 billion produced by agriculture and related industries. This commodity group includes the following products: dimension lumber and preserved wood products; logs and roundwood; wood windows, doors, and millwork; forest, timber, and forest nursery products; paperboard containers; and miscellaneous wood products.

As reported in NSTEDS, the North State has experienced employment losses in many existing industries, such as wood products, construction, and retail trade. These findings are consistent with trends in the timber harvest, housing prices, and retail sales. However, several burgeoning sectors show promise at the state and national level. For example, crop production is growing

faster in the North State than in the nation and agricultural support is also growing. Value-added agricultural production, such as canning, processing, and brewing, is a promising opportunity for the North State.

In 2011, California timber production by the top five counties totaled $183.3 million. All of these counties are in rural Northern California: Humboldt, Shasta, Lassen, Siskiyou, and Mendocino. Most of these areas are accessible only by highway. Demand from China is the major reason for increased log exports. In the second quarter of 2013, China imported 349 million board feet of West Coast logs, compared to 243 million board feet earlier in the year. At West Coast ports, 65 percent of outgoing logs and 35 percent of outgoing lumber were destined for China. Total US log exports in the first half of 2013 increased by more than 20 percent compared to the same period in 2012; at the same time, the value increased by more than 27 percent.

FIGURE 61. STATE ROUTE 299, REDDING TO ARCATA

Source: Caltrans

Agricultural, Food, and Beverages

The world's food supply chain has become increasingly global and connected. California is one of only five agricultural regions in world that has a Mediterranean climate. In 2012, California remained the number-one state in cash farm receipts, with 11.3 percent of the US total. California continues to lead the rest of the nation as the country's largest agricultural producer and exporter and "leads all other states in farm income."[56] The state's agricultural sector produces more than 350 commodities, more agricultural variety than any other state. In 2012, California's farmers and ranchers exported about 25 percent of the state's agricultural production. In dollar terms, California's agricultural exports reached a record-breaking $18.18 billion for 2012. California agricultural exports are in high demand globally, particularly in Asia, Europe, Mexico, and Canada.[57] The state produces nearly half of US-grown fruits, nuts and vegetables and leads the nation in milk production.[58] California almonds were the leading export in 2012 with $3.39 billion in international sales; dairy products were second at $1.31 billion in sales.[59] The top 10 agricultural commodities for 2012 were almonds, dairy products, wine, pistachios, table grapes, rice, oranges and related products, processed tomatoes, and cotton.

California is the world's fourth-leading wine producer after France, Italy and Spain. In 2013, the US became the leading wine-consuming nation at 215 million cases (Wine Institute, 2014).[60] Based on the US Department of Agriculture statistics, Napa County holds the honors for the nation's highest price-per-ton of wine grapes, with an average of $3,389 per ton paid in 2011. Though having a lower ton price than the Napa Valley, the San Joaquin Valley produces most of the nation's wine grapes and wine. Ninety percent of the US wine exports are from California, with revenues reaching $1.55 billion in 2013.

Information Technology and Electronics

Stephen Levy, Director of the Center for Continuing Study of the California Economy said that "California's job growth is largely fueled by the three T's – tech, trade and tourism." The Bay Area, particularly the South Bay portion of the San Francisco Bay Area known as "Silicon Valley", has been home to the world's largest technology corporations and startups. Manufacturing is California's most export-intensive activity. In 2011, manufacturing exports represented 9.4 percent ($120 billion in goods) of California's GDP, and computers and electronic products constituted 29.3 percent of the state's total manufacturing exports.[61] In the San Jose-Sunnyvale-Santa Clara area as well as portions of Alameda and San Mateo counties, technology jobs contributed nearly 29 percent of the jobs in those areas.[62] In 2010, California was first in employment for computer systems and design, Internet and telecommunications, research and development, and engineering services employment.

Electronic Commerce (E-Commerce)

Electronic commerce, also known as e-commerce, has changed the retail industry. Nationally, a number of major e-commerce retailers are developing mega fulfillment centers of more than 2 million square feet near large population centers – especially in California's Inland Empire. Fulfillment centers are differentiated from traditional distribution centers by specialized features including greater building depth, with wider column spacing to accommodate a new generation of warehouse management systems. They also have a need for a higher density of truck and trailer parking, and trailer stalls. Truck and trailer density for some of the newest fulfillment centers, particularly those on regional highways and facilities on local and urban roads, can be three times that of traditional warehouses and distribution centers. As e-commerce continues to increase, companies will be placing greater demand on the distribution infrastructure. One freight aspect of e-commerce is likely to become more challenging over time: delivery vehicle access in dense urban settings. The increasing numbers of delivery vehicles serving dense urban neighborhoods are beginning to create traffic congestion issues and conflicts with expanding transit services and bicycle networks. Urban street designs must address this issue.

E-commerce replaces paper with digital documents throughout the supply chain. The benefits include standardization of letters of instruction, commercial invoices, bills of landing, certificates, etc., with electronic data interchange. It is taking the paper out of the supply chain. Other benefits include lower costs, faster supply chain transit, greater accuracy, regulatory compliance, increased security and environmental friendliness. However, along with the benefits, comes the expectation that order fulfillment and delivery time will decrease, putting greater strain on already-congested highways and local roads and further challenging pavement maintenance efforts, particularly on roadways not designed for frequent truck traffic.

Conclusion

International and domestic trade is an economic driver for both the state and the nation. It is highly dependent on the availability of an integrated, efficient, reliable, safe, and flexible transportation network. Trade creates jobs (direct, induced, indirect, and related jobs), fuels economic growth, creates personal and business income, and generates revenue that contributes to federal, state, and local taxes. Throughout the entire supply chain, jobs are created in manufacturing, retailing, wholesaling, construction, transportation, and warehousing sectors. In a globally competitive environment, addressing freight infrastructure and operations needs must be a priority for California to achieve the CFMP goal of contributing to the state's economic competitiveness. But such efforts must be judicious, balancing economic goals with the goals of safety, security, community, and environmental stewardship.