

# California Freight Competitiveness

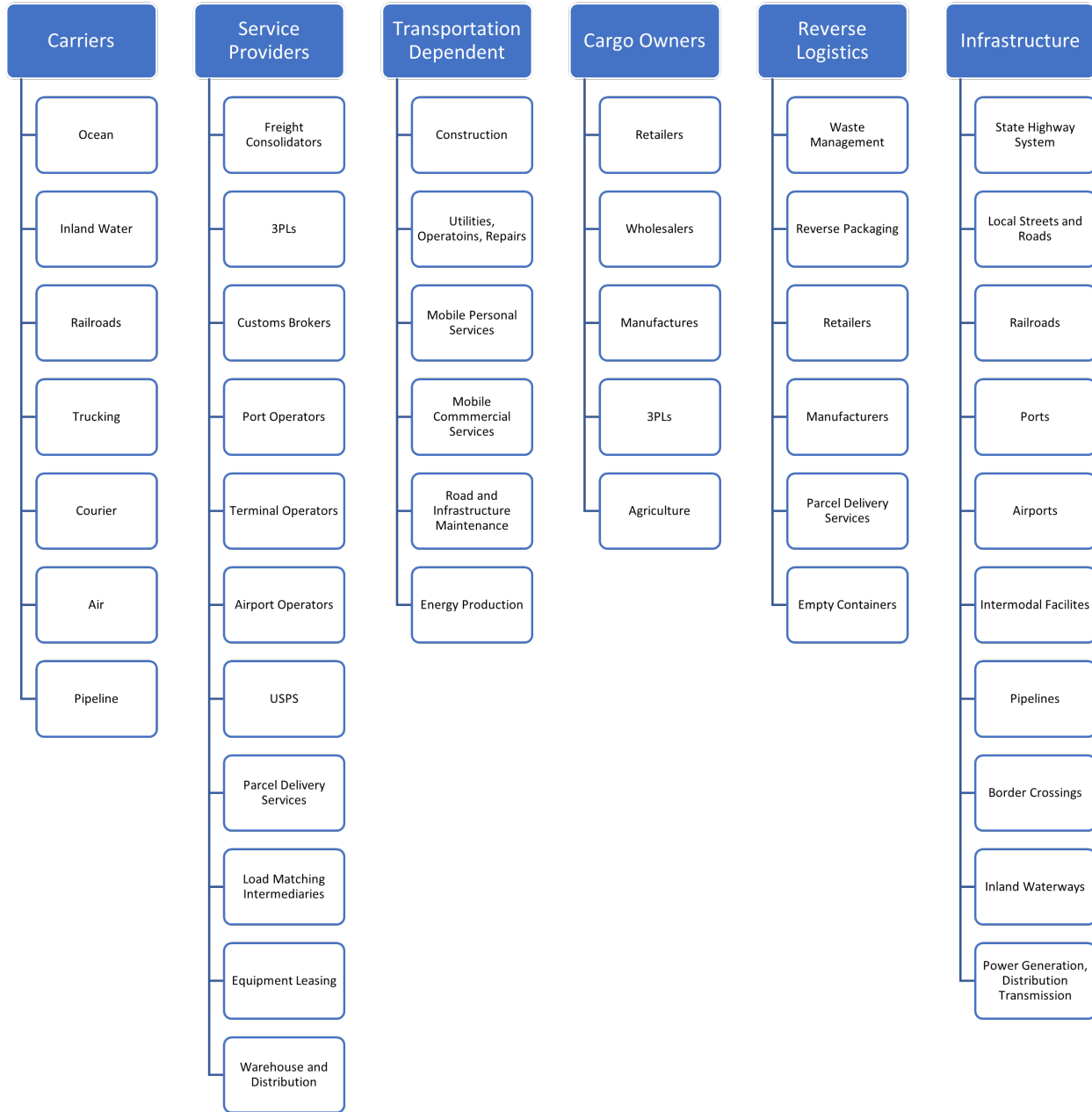
Trade between the United States (U.S.) and other nations is worth approximately \$5.9 trillion per year. China, Canada, and Mexico are the country's largest trading partners and account for nearly \$1.3 trillion worth of imports and exports.<sup>3</sup> California's economy ranks fifth in the world, and the state is a leading competitor for trade. (See **Chapter 4B** for more information). In 2021, California's total value of exports was approximately \$175.12 billion, nearly 10 percent share of the U.S. total.<sup>4</sup>

Increasing statewide competitiveness is a key priority for the State. California can achieve economic growth, environmental sustainability, and community development with a balanced and effective approach. California's competitiveness is vital to both public agencies and private stakeholders. Increasing competitiveness across the state will contribute to local, regional, and state economic development by making California a preferred choice for developers, businesses, and transportation providers. This chapter provides a summary of findings based on information found in **Appendix C**.

The State, its communities, its transportation providers, and its businesses compete in several ways:

- The State of California, and California municipalities, compete for business locations, including production facilities, distribution centers, and offices.
- California producers, manufacturers, distributors, and wholesalers compete for business and market share with their domestic and foreign counterparts elsewhere, and they may also compete for business within their own firms.
- California seaports, airports, and freight transportation providers compete with their counterparts in other states and nations for freight transportation business.

California's economy and the number of jobs continues to grow, especially in the State's well-publicized high-tech, biotechnology, and green technology sectors. However, the growth has not been uniform across the freight transportation and logistics sectors. Other states and regions have had successes in attracting businesses, especially businesses that do not need to locate in California. The freight sector is a complex mix of carriers, service providers, transportation-related industries, cargo owners, reverse logistics and infrastructure.<sup>5</sup> Figure 2.1 below displays each freight sector by enumerated group.



**Figure 2.1:** Freight Sector by Enumerated Group (Source: Metrans Implementation of Action 6 for CSFAP Phase 3 Tracking Economic Competitiveness)

Job losses in commerce, businesses, and jobs to other states or other nations are acutely felt throughout the state and across sectors. Losses of economic activity due to interstate and international competition vary in scope and effect. Losses are highly visible when businesses move away from California or when businesses that might have located in California choose a competing location instead. Other economic losses are less obvious, such as gradual shifts in

business activity away from California. Yet, these less obvious losses can be equally important to California's aggregate economy and affect some communities disproportionately.

The role of freight transportation in economic competitiveness is usually assumed to be a function of freight system capacity, performance, and efficiency. In most discussions of competitiveness, quantitative or qualitative shortfalls in freight capacity, cost, service frequency, transit time, reliability, safety, etc. are presumed to diminish economic competitiveness. The CFMP aims to support long-term competitiveness.

## Competition for Business Locations

The focus of most regional and state competitiveness discussions is competition for locations of new production, distribution, or transportation facilities. These facilities generate jobs, tax revenue, and positive economic impacts within communities. Californians are concerned about the potential loss of businesses and facilities that close due to out-of-state competition or relocation to other states. Although there are many possible variations and combinations, most location decisions fall under the following categories:

- Choosing a location for a new production or distribution facility
- Choosing whether to expand, contract, or close an existing location
- Choosing how much production or distribution activity to allocate among locations

### LOCATION DECISION FACTORS

Key factors commonly considered when deciding locations include:

- Access to target markets
- Workforce availability
- Proximity to suppliers, intellectual capital, and other inputs
- Availability of suitable sites, buildings, or other facilities, with appropriate zoning
- Fit within existing or planned production, supply chain, and distribution networks
- Development timeline (e.g. permitting, construction, environmental documents)
- Land cost and zoning
- Cost of doing business (other than transportation)
- Cost and availability of electric power
- Local regulations and other restrictions
- Freight transportation access, capacity, and reliability
- Freight transportation service and cost

California's consumer population, nearly 40 million in 2021 and direct access to international markets via ports on the Pacific Rim give the state a competitive edge on the first criterion, access to markets. Few businesses have a major presence in the California market without a physical location in California. California also has an advantage in attracting business in its strongest sectors, notably in the technology industries. Access to a skilled labor pool, technology suppliers, investment capital, and research institutions leads new tech businesses to locate in California and existing tech businesses to expand here. California also has strong rail access to markets in the U.S. Midwest and East Coast, which coupled with direct access to the Pacific Rim, makes it competitive for discretionary cargo. However, California's competitiveness declines when location decisions are more flexible and cost factors rise in importance.

Surface transportation infrastructure capacity, such as those on highways, ports, rail lines, or air cargo can be overlooked when businesses are making location decisions. Businesses ordinarily assume that their incremental shipments can be handled through existing infrastructure. Facilities that require or produce large volumes of marine bulk cargo (e.g. export grain elevators) or specialized cargo (e.g. import autos) need specialized terminals with sufficient capacity. Reliability can usually be achieved, but sometimes at a higher cost. If fleet operators must add drivers and equipment, and/or allow extra time to overcome local problems, then costs can increase significantly. Notably, some parts of rural California have limited Surface Transportation Assistance Act (STAA)<sup>6</sup> truck route access, which can reduce the ability of those areas to compete for new facilities.

Freight transportation congestion and its impacts on productivity, cost, and reliability are serious concerns for industry stakeholders. While transportation cost differences may be relatively easy to quantify, reliability differences are not. Reduced reliability requires higher inventory levels, but in most cases the greater concern is the ability to meet corporate and customer requirements consistently. Recurrent congestion reduces productivity and can affect reliability. Non-recurrent delays and congestion are more serious reliability challenges. As California's transportation facilities – highways, arterials, ports, airports, railroads, pipelines operate closer to their capacity, the frequency and severity of non-recurrent congestion tends to rise. In some parts of California, geography and land uses restrict transportation corridors. Often, there are no practical alternatives to congested routes.

Manufacturing plants have flexibility when making location decisions, either within California, other states, or other countries (e.g., Mexico). For example, manufacturing plants that need access to high-tech suppliers or California agricultural products have strong reasons to locate in California. On the other hand, manufacturing plants that use easy-to-transport inputs (e.g. electrical components) or widely available inputs (e.g., paper or basic metals) may take the full list of location factors above into account and choose locations elsewhere. The ability of the facility to locate in a wide variety of locations implies that either goods movement differences are not likely to be critical, or that there are few significant goods movement differences between locations.

Where more generic inputs such as semi-skilled labor, space, or electrical power and its reliability, are a major part of production expenses, the costs of those inputs will have a greater impact on location decisions. In this case, California's higher labor, land, or power costs – or perceptions of higher costs – place the State at a competitive disadvantage.

### **LOCAL MARKET FACILITIES**

Many goods movement and freight-dependent industry facilities must be located close to the market that they serve or the sources on which they rely. California does not need to compete for these local market facilities, although there may be competition between cities and counties within California. In general, businesses shipping common commodities with high transportation costs relative to their value cannot outcompete nearby competition if they have to ship commodities far distances. Concrete batch plants, for example, are distributed throughout the state to serve local markets, and cannot serve California cities from other states. Food and beverage processors, such as wineries, need to be close to agricultural producers, and many are anchored in California.

## Competition for California Products and Producers

California producers and their products compete with producers and products from other states and nations. The extent and nature of that competition depends on commodity type. Some California products are differentiated by source or brand, such as Napa Valley wines or California raisins. Since customers may not see wines or raisins from elsewhere as perfect substitutes, differentiated products can often command a somewhat higher price and have a greater ability to absorb transportation and distribution cost differences without losing market share. Market demand and production volume help some California products dominate their industry and shield them from competition (such as almonds). California products that are not differentiated by source or brand must compete on delivered price and reliability of supply and are more vulnerable to lower-cost production elsewhere. See **Appendix C** for an example case study.

## Competition for Distribution Centers

Distribution centers (DCs) can be national (NDCs, serving the entire nation), regional (RDCs, serving a region within the nation), or local in scope. There may also be separate import distribution centers (IDCs) handling imported goods separately from domestic goods. A state or a sub-region may compete as a potential location for a national, regional, or import DC.

RDCs in the state may also “compete” for coverage with RDCs in other states. Due to the large size of California, it is unlikely that a major retail business would serve the state without at least one RDC in the state. However, the activity level of California’s DCs may be subject to “competition” within the supply chain of various types:

- Competition for existing territory – how much of California, or the Western states, will be served from California DCs, as opposed to DCs elsewhere?
- Competition for expansion – will the firm choose to expand stores or sales in California, thus increasing volume at the California DC, or expand elsewhere?
- Competition for new territory – as a producer, importer, or retail chain expands into new markets, will California DCs serve those markets?

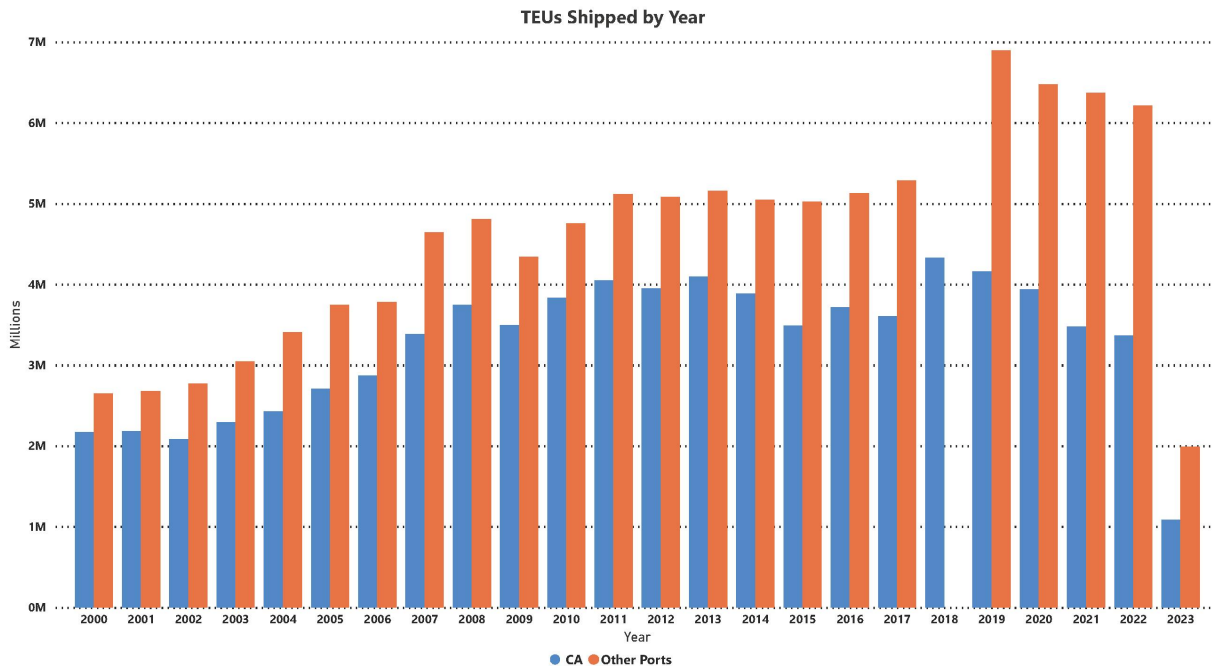
## Competition for California Seaport Business

California has 12 deep water port complexes that each specialize in a different mix of major cargo types, commodities, and service territories. California also has numerous private terminals that handle liquid and dry bulk commodities. California container ports compete with other U.S. and North American ports in two ways:

- California ports compete for discretionary container traffic that moves by rail to inland U.S. destination or truck to other regions through any of its ports. For example, Los Angeles and Long Beach compete with various U.S. and Canadian ports for Asian imports to Midwestern consumer markets.<sup>7</sup>
- California port cities compete with other regions for the location of import DCs and their inbound trade flows. For example, Riverside County might compete with Georgia for a new import DC that would bring in goods through either Los Angeles/Long Beach or Savannah.

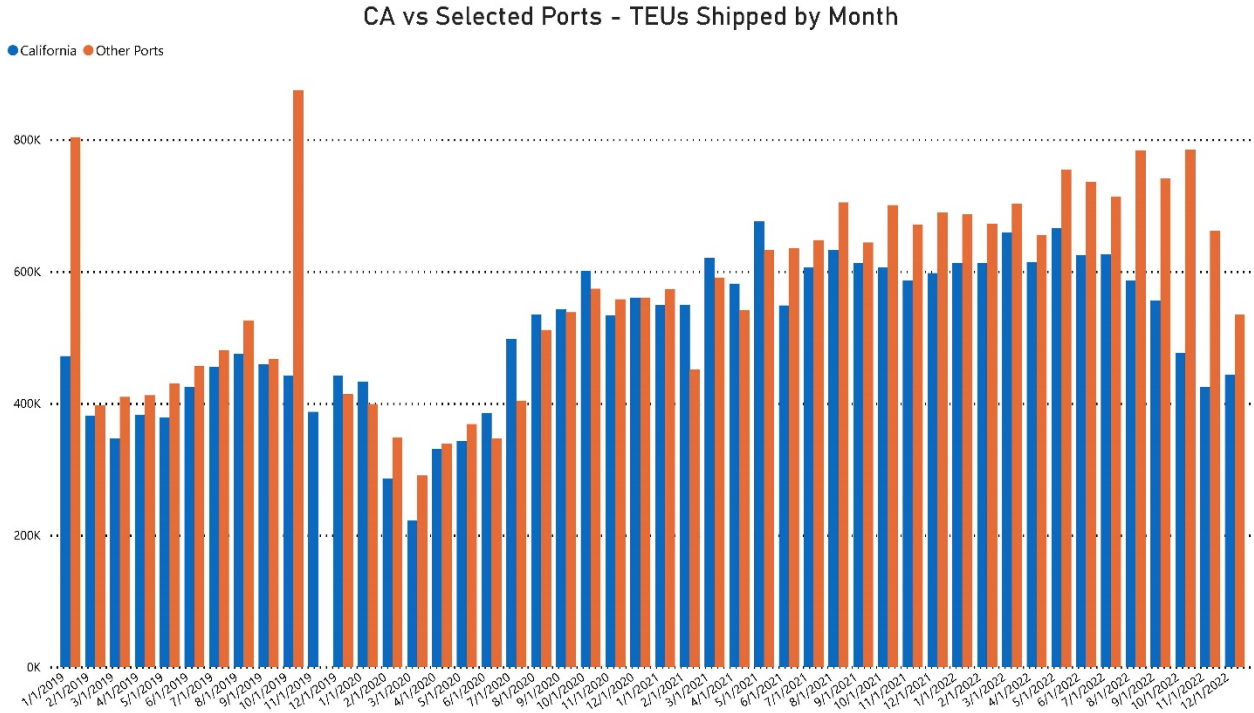
If businesses choose to send discretionary cargo to other ports, economic activity and employment at California ports and in the transportation, sector would be at risk. If import DCs locate or expand outside of California, economic activity and employment at California DCs are also at risk, due to competition with other regions.

From 2000 through 2010, California ports combined had a 46.7 to 49.2 percent share of the loaded U.S. import container trade. From 2010 to 2017, the Atlantic, Gulf, and Pacific Northwest port share rose from 52.9 to 57.7 percent. California's market share declined within those seven years despite an increase in loaded containers (TEUs or twenty-foot equivalent units). This apparent loss of market share, shown graphically in **Figure 2.2**, has prompted concerns over the competitiveness of California's container ports.<sup>8</sup>



**Figure 2.2:** Shift in Coastal Import Shares (Source: U.S. Maritime Administration 2000-2017, PMSA West Coast Trade Reports 2018-2023, U.S. Waterborne Container Trade by U.S. Customs Ports (series) \*\*Note: Incomplete data sets for years 2018 and 2023

For more than two years during the period from 2019 to 2022, the world's global supply chain encountered issues caused by the change in consumer behavior fueled by the COVID-19 pandemic. **Figure 2.3** shows the TEUs handled from 2019 to May 2022 by major ports in California (port of Los Angeles (POLA), port of Long Beach (POLB), port of Oakland) and representatives of ports in the Atlantic/ Pacific Northwest/ Gulf ports (namely Charleston, Houston, Savannah, Seattle, Tacoma, and ports in New York, New Jersey, and Virginia). During the pandemic period, TEUs handle for California ports hit their lowest amount in March 2020 after the first low peak in March 2019. However, the annual TEUs of the three ports combined in 2020 was slightly higher (1.6 percent) than that of 2019. This number increased nearly 13 percent in 2021.



**Figure 2.3:** Total TEUs Shipped by California and Selected Atlantic/Pacific NW/Gulf Sea Ports from January 2019 to December 2022 (Source: Monthly Container Port TEUs dot.gov)

Since 2006 the total inland point intermodal (IPI) (inbound and outbound) containers through the POLA/POLB peaked at 43 percent of total POLA/POLB volume, the IPI share has declined significantly, by 31 percent (to 30 percent in 2018). In absolute terms, although total POLA/POLB volumes have increased from 15.76 million TEU to 17.5 million TEU between 2006 and 2018, the IPI volume have decreased by 1.6 million TEU.

In addition, while the total TEUs and import TEUs handled by these three major ports in California from 2019 to 2020 declined only roughly 0.3 million, which equaled to 1.5 percent and 2.5 percent, respectively; the corresponding tonnages of all California ports went down approximately 11 percent and 14.5 percent.

The faster growth on the Atlantic and Gulf Coasts may be explained by the following:

- Strong growth in the Transatlantic/ European and Caribbean/South American trades
- Increased use of Suez Canal routings from Southeast Asia, driven in part by a shift of manufacturing and sourcing from China to countries in Southeast Asia and the Indian subcontinent (tariff implications)
- Increased adoption of “three corner”<sup>9</sup> and “four corner”<sup>10</sup> logistics strategies by large importers
- A reduction in Southern California imports transloading
- Rate increases on rail intermodal service, leading ocean carriers to replace some rail movements from Southern California with truck or rail movements from other ports
- Rising costs of locating and operating distribution and manufacturing facilities in California versus aggressive economic development efforts from other states

- New Panama Canal locks permitting larger, more efficient vessels on route to the Gulf and Atlantic Coasts
- Increased cost at California ports due to “clean truck” and vessel requirements, Pier Pass/Off-Peak fees, and drayage costs increases from port and highway congestion
- Concerns over West Coast labor relations stability after the lengthy 2014-2015 dispute and accompanying shipping disruption

Of these factors, only the last two are specific to California ports; the other factors are shifts in trade patterns in the economic context in which California ports must compete. There is no publicly available information on relative costs at different container ports. The fees that marine terminal operators charge their ocean carrier customers are negotiated and embodied in confidential contracts. The rents that port authorities charge marine terminal operators are also negotiated and confidential.

**Table 2.1** provides a key perspective on the relative growth of California's container port volumes. In the rapid growth era of 1990-2007, Southern California ports outperformed the nation. Much of the cargo and share growth in that period was attributable to the rapid expansion of rail intermodal container movements through San Pedro Bay in response to the introduction of double-stack rail cars. This period also saw an increase in the practice of import transloading: bringing in international containers of imported merchandise and transferring the goods to domestic containers or trailers in Southern California. Finally, this period also saw dramatic growth in U.S. imports from China, with Southern California as the leading gateway. The Port of Oakland did not benefit as much from the expansion of intermodal traffic or transloading, and Northern California TEU totals did not grow as fast.

The U.S. container ports were hit hard by the recession, with Southern California losing 24 percent of its 2007 peak volume by 2009. Following the recession, the Southern California ports rebounded slightly faster than the nation. Oakland's volume dropped by 14 percent during the recession but did not grow as quickly after partial recovery in 2010. The labor-management issues in late 2014 and early 2015 hampered recovery for all U.S. West Coast ports.

**Table 2.1:** Container Port Cargo Growth Rates by Volume, 1990-2017

Compound Average Growth Rate (CAGR)	1990-2007	2007-2009	2009-2017
United States	6.4%	-6.1%	4.4%
California	7.9%	-8.4%	4.3%
Northern California	8.9%	-8.9%	4.6%
Southern California	3.8%	-5.0%	2.1%
Pacific Northwest	3.6%	-8.1%	1.4%
British Columbia	11.7%	-1.3%	7.1%

*Source: American Association of Port Authorities*

**Tables 2.2 and 2.3** below provide some perspective about the relative growth of California's container port volume during the 2018-2020 period. The total tonnage handled in all California



ports declined 11 percent, dropping from 38,483,803,160 tons in 2018 to 34,265,551,950 tons in 2020 while the whole U.S. water ports' tonnage declined 13 percent in the same period (**Table 2.2**). The loaded imports in all California ports declined almost 15 percent while the whole U.S. import tonnage declined nearly 21 percent (**Table 2.3**).

**Table 2.2:** Percent Change of Total Shipment by Ports, 2018-2020

Percent Change of Total Shipment within the period	Total		
	2018-2019	2019-2020	2018-2020
United States*	-5.0%	-8.4%	-13.0%
California	-1.9%	-9.2%	-11.0%
Oakland** – Northern California	-1.8%	-1.6%	-3.3%
Los Angeles/Long Beach** – Southern California	-3.3%	2.1%	-1.3%
Sea/Tac** – Pacific Northwest	-0.6%	-12.0%	-12.6%
Vancouver** – British Columbia	0.1%	2.0%	2.1%
Savannah** - East Coast	5.7%	1.8%	7.6%
Virginia** – East Coast	2.9%	-4.3%	-1.5%

*Source: \*FAF 5.4 includes all water ports, volume in tons; \*\* Port websites, include only seaports, volume in TEUs.*

**Table 2.3:** Percent Change of Imports by Ports, 2018-2020

Percent Change of Total Shipment within the period	Total		
	2018-2019	2019-2020	2018-2020
United States*	-7.2%	-14.8%	-20.9%
California	-2.0%	-12.7%	-14.5%
Oakland** – Northern California	-1.5%	1.9%	0.3%
Los Angeles/Long Beach** – Southern California	-5.7%	3.7%	-2.2%
Sea/Tac** – Pacific Northwest	-5.7%	-8.4%	-13.7%
Vancouver** – British Columbia	-2.2%	6.5%	4.1%
Savannah** - East Coast	5.2%	4.4%	9.8%
Virginia** – East Coast	2.9%	-3.6%	-0.9%

*Source: \*FAF 5.4 includes all water ports, volume in tons; \*\* Port websites, include only seaports, volume in TEUs.*

Comparing between Northern and Southern California major ports, the Port of Oakland decreased 3.3 percent in the total TEUs handled (from 2,546,399 TEUs in 2018 to 2,461,262 in 2020) and increased 0.3 percent in the loaded imports (from 1,184,568 TEUs to 1,118,226 TEUs), while the POLA/POLB dropped 1.3 percent in total (from 17,549,771.50 TEUs to 17,326,715.95) and 2.2 percent in the loaded imports (from 9,224,034.85 TEUs to 9,021,061.25 TEUs).

The impacts of COVID 19 to large ports of California seem to be more severe than that to ports located in East Coast. As shown in **Table 2.2**, the Virginia port's volume dropped only 1.5 percent for total TEUs and 0.9 percent for total imports. The Savannah port's volume even increased by 7.6 percent and 9.8 percent, respectively.

During the recovering time in 2021, the POLA/POLB ports in Southern California soared and handled a total of 20,061,977 TEUs, including more than 10 million TEUs in imports. These numbers counted for more than 15 percent and 13.9 percent increases in California total volume and import volume towards the previous year. When compared with the growth experienced by Savannah and Virginia with 18.6 percent and 27.8 percent respectively, those experienced by California ports were significantly lower. According to the John McCown Container Reports<sup>11</sup>, the shift from California ports to other ports was due to avoid congestion in West Coast ports.

### **CALIFORNIA'S EFFORTS TO GREEN PORTS**

California Ports have taken significant measures to reduce emissions related to port operations by utilizing Zero Emissions technologies and implemented comprehensive environmental mitigation plans. These technologies and plans have led to cleaner air and reductions in health risks posed by air pollution on portside communities. This commitment to being outstanding environmental stewards has enabled California ports to be the most environmentally friendly in the world<sup>12</sup>. California and Japan signed a letter of intent in March 2023 to support port decarbonization and the development of green shipping corridors. This letter was signed by dignitaries from both the Ministry of Land, Infrastructure, Transport and Tourism of Japan (MLIT), and "calls for deepening cooperation, information-sharing, and discussion of best practices between the governments of California and Japan to support the development of green shipping corridors, expand offshore wind, and cut planet-warming pollution at ports in Japan and California."<sup>13</sup> CalSTA will support the development of green shipping corridors, port decarbonization, and the deployment of zero emission transportation through the \$1.2 billion Port and Freight Infrastructure Program. In addition, the partnership will provide an opportunity for all parties to share best practices on critical efforts to cut port related pollution, including strategies for offshore wind development and zero-emission fuels and infrastructure.

### **Competition for California Air Cargo Business**

As with the State's seaports, the competitive position of California's cargo airports is largely determined by their geographic position relative to major markets. Because both domestic and international air cargo tend to be time-sensitive, shippers commonly choose airports based on the combination of ground and air transit time. Direct competition for air cargo business is largely regional:

- Oakland (OAK) and San Francisco (SFO) compete for Bay Area air cargo, with OAK prevalent in domestic and SFO in international. FedEx has major capacity at OAK. San Jose (SJC) has a smaller air cargo business.
- Sacramento (SMF) and Mather (MHR) compete for air cargo business in the Sacramento area. UPS and FedEx serve SMF while DHL and UPS serve MHR. Amazon has a fulfillment center near SMF.

- LAX and Ontario (ONT) compete for air cargo in Southern California with LAX having the dominant share. UPS has a major facility at ONT. San Diego (SAN) competes for the southern portion of the market.
- The numerous other California airports (Stockton, Merced, Fresno, etc.) are served by feeder connections to the major airports. Stockton (SCK) has recently added service by Amazon.

California airports compete with other states for hub status and for transfer/interchange freight. Hub airports host a larger number of feeder flights to and from regional airports, as well as a full schedule of flights serving other major airports and markets. The competition for West Coast hub status is primarily within California; the nearest alternatives are Portland and Las Vegas. The size of the Northern and Southern California markets, however, will keep major air cargo hub locations within the state. Major hubs may also compete for air cargo transfer/transshipment business between foreign and domestic carriers.

Air cargo is increasingly dominated by the integrated carriers such as FedEx, UPS, and DHL. To use these carriers, the customer tenders the shipment locally, and the carrier chooses the routing and the airports. California airports therefore compete mostly for the business of the integrated carriers rather than for the underlying customer choices.

Except for the air cargo transloading segment, which stays on the airport footprint, California's airports are not in close competition with those in other states. Goods movement mobility within the state is unlikely to affect the competitive position of California airports either nationally or internationally.

## California's Cost Difference

### TRUCKING COSTS

U.S. marginal trucking costs per mile are computed by the American Transportation Research Institute (ATRI).<sup>14</sup> As of 2021, ATRI estimates that the average U.S. marginal trucking cost per mile is \$1.855. The average marginal cost percentage data in **Table 2.4** indicates that fuel accounts for 22 percent of motor carrier costs, while driver wages and benefits are 43 percent. The average semi-truck's fuel economy is about 6.8 mpg. California has relatively high diesel fuel prices, and the recent State diesel fuel tax increase of \$0.12 per gallon adds approximately \$0.02 per mile to trucking costs.

**Table 2.4:** Cost Comparison Chart

Motor Carrier Costs	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Vehicle-Based (Percentages)</b>									
Fuel Costs	35	39	38	34	26	21	22	24	24
Truck/Trailer Lease or Purchase	11	11	10	13	15	16	16	15	16
Repair & Maintenance	9	8	9	9	10	10	10	9	9
Truck Insurance Premiums	4	4	4	4	5	5	4	5	4
Permits and Licenses	2	1	2	1	1	1	1	1	1

<b>Tires</b>	2	3	2	3	3	2	2	2	2
<b>Tolls</b>	1	1	1	1	1	2	2	2	2
<b>Driver-Based (Percentages)</b>									
<b>Driver Wages</b>	27	26	26	27	32	33	33	33	32
<b>Driver Benefits</b>	9	7	8	8	8	10	10	10	10
<b>TOTAL</b>	100	100	100	100	100	100	100	100	100
<b>Source: ATRI, 2020</b>									

Motor carriers within California are concerned about highway and facility congestion that reduces driver productivity, vehicle productivity, and effective capacity. This issue has received the most attention in connection with port container drayage, where longer times spent at terminals and on congested highways to-and-from terminals reduce the number and length of the trips a driver can make within Hours of Service (HOS) limits. These issues are not unique to California or to port drayage. Busy Pacific Northwest and East Coast ports have similar problems, and urban congestion affects all trucks. When in competition with less congested regions and ports such as Savannah or Charleston, however, these higher costs place California at a disadvantage. The higher cost of port drayage in California is likely to be a significant factor when choosing the location for import distribution facilities or export-oriented businesses, partially offsetting the State's advantage with close access to Asian markets.

Reducing freight and supply chain congestion and increasing reliability is a long-term effort. The State is investing in freight transportation improvements through implementation of the Road Repair and Accountability Act of 2017, also known as Senate Bill (SB) 1. SB 1 provides stable, long-term funding for both state and local transportation infrastructure. In 2017, SB 1 was projected to average of \$5.4 billion per year from 2017 to 2027 for a strategic mix of state and local transportation projects, depending on tax and fee revenue. It was also estimated in 2017 that it would add \$300 million per year to improve trade corridors, and \$250 million per year is available to increase throughput on congested corridors. So far SB 1 has funded over \$16 billion for transportation projects throughout California<sup>15</sup>. The current State Budget (2022-2023) invests almost \$15 billion over the next four-year period in transportation infrastructure, in which, \$7.7 billion is to improve transit and rail, \$4.2 billion to complete high-speed rail construction in the Central Valley, \$1.2 billion to support goods movement and port. The Federal Infrastructure Investment and Jobs Act (IIJA) will increase California's federal road and transit funding by \$2.2 billion annually over the next five years bringing California's total federal funding to \$38 billion over that period.<sup>16</sup>

**RAILROAD COSTS**

California is served by two Class 1 railroads: BNSF and UPRR. The two railroads have extensive networks across Western states, with connection to other railroads at Midwestern gateways and Canada and Mexico. Their rates and services would not ordinarily effect competitiveness with other states For California's short line railroads, these predominately operate within the state. Similar to Class 1 railroads, short line rates are under confidential, negotiated contracts rather than under published tariffs. It is important for the State to continue to support short line rail operations, as their operations reduces the number of trucks on the roadway. Caltrans efforts to support multi-modal freight mobility include the development of the California Sustainable Action Plan, the State Rail Plan, and Short Line Rail Plan.

Railroad operating costs may be slightly higher in California than in other states. There has been a series of CARB actions designed to reduce emissions from both line-haul and yard operations driven by federal requirements. These include increased use of low-sulphur fuel; low-emission, high-efficiency road locomotives; and hybrid and other low-emission switching locomotives. Some of these costs have been offset by grants, such as those under the Carl Moyer program. Recently, the railroads have been acquiring low-emission locomotives for use across their systems. Over time, higher capital costs will likely be offset by lower operating costs.

### **OCEAN SHIPPING COSTS**

The ocean shipping rates paid by customers include the cost of vessel operations, the cost of terminal operations, fees assessed by ports, canal tolls, and ocean carrier overhead. All West Coast port terminals in North America are covered by the same basic labor contract, and many are operated by the same firms. The ports' own charges tend to be highly competitive. Vessels calling North American ports do incur higher costs for low-sulphur fuel and cold-ironing. Almost all relevant rates and fees are contained in confidential, negotiated contracts. Assembling a quantitative comparison from available data is currently not possible.

### **AIR CARGO COSTS**

The air cargo industry is dominated by the integrated carriers, FedEx, DHL, and UPS, and trailed by smaller air freight forwarders and airlines offering belly cargo space on passenger flights. Air cargo operations in California have similar costs as in other states, and California customers likely face similar rates for air cargo service.

### **LAND COSTS**

California ranks first in a national study<sup>17</sup> of total land valuation according to the U.S. Bureau of Economic Analysis. The study estimated the combined value of all land in the country and found that California accounts for 17 percent of the total value of the land in the 48 contiguous states. High land values can be attractive for investors but can discourage development of facilities which could locate less expensively elsewhere. Commercial and industrial land prices are driven up by the value of land in residential development. In California, residential land values as a percentage of total property values have increased substantially over the last 40 years.

### **ENERGY AND UTILITY COSTS**

The price of petroleum gas, water, diesel, natural gas, and electricity affect California's competitiveness for business locations and freight movement. Energy and utility costs including electricity and water, can be prominent factors in facility operating costs and impacts the decision-making processes for facility locations. These factors become more important for facilities that use electric power for lighting, climate control, and production equipment, and water for processing. These costs also affect the cost of living for employees.

California's average commercial, industrial, and residential electric power rates are high compared with most other states. According to the U.S. Energy Information Agency (EIA), in 2020, California had the third highest average commercial electricity rates, the fifth highest average industrial electricity rates, and the sixth highest average residential electricity rates. California's average commercial electricity rates over the course of a year study were 60 percent higher, average industrial electricity rates were 85 percent higher, and average

residential electricity rates were 50 percent higher than the average of all other states in the nation for this period.<sup>18</sup>

The higher industrial electric power rates combined with near-zero emissions equipment mandates at port terminals may lead to higher costs for terminal operators. Diesel fuel prices are an especially important factor in freight transportation, as the freight industry still heavily depends on diesel-powered trucks and rail locomotives. Compared with other states, California's average diesel fuel prices are usually among the two highest states including Hawaii. In September 2022, for example, the average diesel fuel price in California was \$0.96 higher than the average for the rest of the West Coast area and \$1.15 higher than the average for all U.S. It was 18.6 percent and 23 percent differences, respectively<sup>19</sup>. As of the end of October 2022, diesel price in California exceeded that in Hawaii and was the highest in the nation.

Average natural gas prices for transportation, building heating, and industrial process use are also higher in California than in other states. The U.S. EIA reports that for the 12 months ending in July 2022, California's average residential natural gas rates were 48 percent higher than the average for other states. In the same period, California's average natural gas rates for commercial customers were 19.8 percent higher than the average for the rest of the U.S., while industrial natural gas customers in California paid an average natural gas rate 37.9 percent higher than the average for the rest of the country.

**COMPARATIVE DISTRIBUTION CENTER COSTS**

The combined impact of these various cost factors is evident in total operating costs for distribution centers or other industrial facilities. **Table 2.5** compares the cost factors for potential distribution center locations. Warehouse operating costs were scaled to a hypothetical 750,000 sq. ft. facility employing 200 nonexempt workers and shipping over-the-road to the nearest intermodal and port city.<sup>20</sup> As **Table 2.5** indicates, California locations had the highest annual combined costs. The estimate for Los Angeles, for example, was 37 percent higher than in Houston, Texas and 86 percent higher than Savannah, Georgia, and a company would save \$7.85 million or \$13.4 million annually by choosing Houston or Savannah, respectively, over Los Angeles.

**Table 2.5:** California Distribution Centers & Operation Costs

Rank	Distribution Warehouse Location	Total Annual Operation Costs
1	Inland Empire, CA	\$29,386,566
2	Los Angeles, CA	\$28,902,383
3	Houston, TX	\$21,043,771
4	Chicago, IL	\$21,038,260
5	Northern NJ	\$19,937,350
6	Southern NJ	\$18,557,013
7	Columbus, OH	\$18,408,177
8	Memphis, TN	\$18,066,690

9	Atlanta, GA	\$17,595,703
10	Mobile, AL	\$17,510,626
11	Lehigh Valley, PA	\$17,351,260
12	Louisville, KY	\$17,166,370
13	Nashville, TN	\$17,142,284
14	Jacksonville, FL	\$16,448,396
15	Charlotte, NC	\$16,299,580
16	Charleston, SC	\$16,290,374
17	Norfolk, VA	\$16,049,615
18	Greenville/ Spartanburg, SC	\$15,739,906
19	Savannah, GA	\$15,492,178
20	Dillon, SC	\$15,357,480

*Source: Comparative Distribution Warehousing Costs in Port and Intermodal-Proximate Cities, 2021 Boyd Company, Inc. Data of 2017 was used in the study.*

## Perceptions of California’s Business Climate

As a part of the CFMP 2023 outreach and engagement efforts (**Appendix H**), many of the freight industry stakeholders contacted perceive an “anti- business” attitude in California, and see that attitude manifest in environmental regulations, high taxes and fees, and opposition to facility development. Opinions and concerns over California’s friendliness to business are evident in state rankings on the ease of doing business, or as places to start a business. Examples include the following:

- WalletHub, a personal finance company, used a variety of statistics to rank states as places to start a business. Although California ranked 8<sup>th</sup> overall, it lagged behind states such as Texas and Georgia, which are making strong efforts to attract firms. California ranked 46<sup>th</sup> in business costs.<sup>21</sup>
- USA Today placed California 13<sup>th</sup> among the best states in which to do business.<sup>22</sup>
- A 2022 CNBC poll placed California 29<sup>th</sup> among “America’s Top States for Business.”<sup>23</sup> California was ranked: 16<sup>th</sup> on workforce, 25<sup>th</sup> on infrastructure, 48<sup>th</sup> on cost of doing business, 17<sup>th</sup> on the economy, 26<sup>th</sup> on quality of life, and 1<sup>st</sup> on technology.
- A 2018 ranking by Area Development did not list California among the Top 20 States for Doing Business.<sup>24</sup>
- A 2009 study by the Public Policy Institute of California<sup>25</sup> found that California typically ranks highly on productivity, but poorly in terms of taxes and costs.

California may be viewed as a magnet for high-tech research and product development, with superlative access to venture capital and expertise, however, for wholesaler seeking to build distribution center and warehousing developments, access to markets, cost, and reliability are key factors for these types of investments.

## COMPETITIVE ECONOMIC DEVELOPMENT

Industry outreach efforts have revealed opportunities for California's economic development efforts and the linkage of those efforts to goods movement, logistics, and freight transportation infrastructure. In fiscal year 2016, California ranked 48th out of 50 states for state spending on economic development and related functions, as compiled by the Council for Community and Economic Research. Higher spending by the Southeast states is noteworthy and paralleled with strong economic development in that region.

Examples of aggressive economic development initiatives are described in **Appendix C** and include such examples as Georgia's economic development efforts with the Port of Savannah and Canada's Asia Pacific Gateway initiative. These initiatives attract cargo flows, manufacturing plants, distribution centers, and jobs away from California.

## IMPLICATIONS FOR COMPETITIVENESS AND POTENTIAL IMPROVEMENTS

Competitiveness is a matter of degree rather than a dichotomy. California's competitiveness varies depending on the type of decision being made, the industry sector and products involved, and the location within California.

- California is highly competitive in sectors where its resources, products, markets, and capabilities are difficult to match elsewhere. Examples include unique agricultural products and high-technology research and development. While freight mobility is a minor factor in some of these sectors, mobility needs must also be considered due to the time-sensitivity or high-volume movement of these goods.
- California is much less competitive for businesses or functions that can be readily located elsewhere and that are vulnerable to high transportation, labor, land, or utility costs. Distribution is one such sector, and distribution centers that do not need to be near California markets or ports are increasingly likely to locate elsewhere. Freight mobility can be a significant factor in such sectors.

California is currently attracting and will continue to attract business activity tied to specific state industry clusters, such as the high-tech or green energy sectors. California is in a unique or advantageous competitive position in those cases. The State is also experiencing and will continue to experience "organic" growth in businesses and establishments serving the population. For the most part, businesses seeking to serve California customers will continue to have a physical presence in the State.

Some of the perceived losses of economic activity and market share are resultant of exogenous logistics developments and strategies. Wider Panama Canal locks have reduced the cost of shipping from Asia to the East Coast compared to the West Coast, and port market shares have shifted in response. As import volumes grow and import supply chains mature, importers have established multiple import routes and facilities, again reducing California's market share.

The measures and initiatives that can improve California's competitiveness through increased capacity efficiency, reliability, and efficiency are the same as those that can improve performance for California's own needs. For example, public agencies might improve the state's competitiveness on trucking costs by:

- Increasing capacity efficiency on state highways and local roads to reduce congestion



- Deploying ITS technologies to reduce congestion and trucking costs
- Providing greater financial assistance to ease emissions limits, clean truck requirements, and clean fuel taxes (alignment to State objectives)
- Reducing truck driver time spent at marine terminals and other freight facilities
- Improving truck driver training to increase the supply of drivers
- Increasing the supply of truck parking in public locations

The State's competitiveness is affected by several non-transportation factors identified through the CFMP industry focus groups. These factors include the following:

- Workforce availability and cost of living
- Land and development costs and uncertainty
- Environmental regulations
- Lack of linkage between goods movement and economic development efforts

Increased competitiveness in these areas will require policy initiatives and actions outside of the freight transportation sphere.

## Freight Carrier Industry Workforce

### WORKFORCE

America's workforce is experiencing significant changes as "baby boomers", people born between 1944 and 1964, continue to retire, and with many retiring early. Seventy million people are estimated to retire in the U.S. within the next decade, which will have massive impacts on industries and economy throughout the country. As companies address the issue of an aging workforce, some companies are implementing retention and succession planning, as well as additional incentive strategies, such as job-sharing, flextime, telecommuting, and part-time work. All levels of employment are undergoing constant change and face great challenges and opportunities as new technologies are developed and are applied throughout the freight industry. Freight modal, supply chain, and logistics industries will need to implement more transitional training to reskill displaced workers.

### TRUCKING

Truck driver employment falls into following categories: Delivery Driver, Driver, Line Haul Driver, Log Truck Driver, Over the Road Driver (OTR Driver), Production Truck Driver, Road Driver, Semi Truck Driver, and Tractor Trailer Operator. In 2021, the California workforce consisted of 179,450 Heavy and Tractor-Trailer truck drivers. Most of those drivers work in the Los Angeles-Long Beach-Glendale Metropolitan Division and the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA), with 49,540 and 38,240 employed respectively. Between the years of 2016 and 2026, the U.S. Department of Labor projects 18,200 annual job openings for Heavy and Tractor-Trailer truck drivers. With stricter enforcement of HOS regulation, the industry will need more drivers and trucks to do the same amount of work due to the need for breaks and limited HOS flexibility.

Drivers are either paid a salary, paid hourly, or paid by the mile. Drivers specializing in heavy hauling or hauling low boys (low deck semi-trailers with a drop-in deck height), household moving services, cattle, hazardous materials, or refrigerated units are often paid more. For trucking companies that are unionized, employees are typically represented by the International Brotherhood of Teamsters Union. As of May 2021, California's median yearly wage for a Heavy

and Tractor-Trailer truck driver was \$49,030.<sup>26</sup> Variability and differences in local minimum wage laws creates monitoring and compliance challenges since drivers may be subjected to multiple minimum wages during a single trip.

According to the Heavy-Duty Trucking (HDT) Fact Book<sup>27</sup> 2022 the average driver turnover rate at large truckload carriers (those with more than \$30 million in annual revenue) was slowing: it fell from 90 percent in 2020 to 89 percent in 2021 then to 78 percent at current. A carrier with 100 drivers and an 87 percent turnover rate could spend nearly \$500,000 on recruitment and replacement annually. Carriers are focusing on truck driver development, not just recruitment, to gain greater control over the stability and quality of their workforce and capacity, while reducing driver turnover rates.

At the same time, trucking firms are raising driver pay – sometimes multiple times in a year. In the U.S., the average age of a commercial truck driver is 55. Currently, there are roughly 78,000 unfilled truck driving jobs, four percent decrease from a record 81,258 in 2021. However, this improvement is expected to be temporary, and these numbers will continue to climb. The current long-haul driver shortage is due to an 18-year low U.S. employment rate of 3.9 percent (as of September 2022), as well as higher-paying employment alternatives to truck driving form a barrier to recruitment. According to the U.S. Bureau of Labor and Statistics (BLS), the economy added on average 216,000 non-farm jobs a month in 2022. However, employment in transportation and warehousing only increased by 8,200. Driver shortage and turnover is a function of California's high cost of living, insurance costs, regulations, lack of experienced drivers, and interested but unqualified persons. Many trucking companies are actively recruiting military veterans, and many truck driving schools are also actively recruiting veterans to get training for their commercial driver's license using the Servicemen's Readjustment Act of 1944 (also known informally as the GI Bill) or other veteran's educational benefits. Formal education is not a requirement for seeking and obtaining a truck driver position. However, important skills and knowledge are necessary.

Lastly, truck parking availability also contribute to truck driver demand. Due to state and federal HOS regulations, truck drivers spend a significant amount of time searching for authorized parking, thereby reducing the productivity of the trip. By increased truck parking, there will be greater truck driver efficiency that may reduce the demand for truck drivers.

## **RAIL**

The railroad industry's response to the aging workforce is to actively recruit military veterans for both Class I and short line railroads. Veterans transition favorably to rail positions because they respond well to a chain of command, have experience working in teams, can either bring a unique skill set or modify their skill sets to meet rail industry needs, and importantly, have been well-trained for safety. According to the American Association of Railroads (AAR), nearly 20 percent of current U.S. railroad employees are veterans.<sup>28</sup> Sacramento City College and San Diego City College (SDCC) offer Railroad Operations associate degrees and certificate programs, SDCC offers an apprenticeship program in Railroad and Light Rail Operations, and apprenticeship programs and web-based training are offered by various organizations, such as the International Union of Operating Engineers and the Teamsters Apprenticeship Fund for Southern California.

The Class I and short line railroads provide railroad careers that tend to be relatively stable. Railroad employees are also among the best-paid workers in American industry. However, some

short line railroads find it difficult to recruit employees due to the requirement for multiple skills and lower wages than Class I railroads. America's major freight railroads supports 1.5 million jobs, nearly \$274 billion in output, and \$88 billion in wages across the U.S. economy.<sup>29</sup>

Currently, California is home to 8,270 freight railroad employees, with an average wage and benefits package of \$123,680 per employee.<sup>30</sup> According to AAR, in 2020, there were approximately 165,000 freight railroad employees in the U.S., and the average U.S. Class I freight railroad employee earned \$135,700 (including fringe benefits). Approximately 82 percent of Class I rail employees and more than half of non-Class I rail employees are unionized under one of more than a dozen labor unions. Labor relations in the rail industry are subject to the Railway Labor Act (RLA). Under the RLA, labor contracts do not expire. Rather, they remain in effect until modified by the parties involved through a complex negotiation process which can take years to conclude.

## MARITIME

Maritime careers include shipping and transportation, navigation, engineers, offshore operations, technology, shipbuilding and repair, port and marine terminal operations, clerical, and others. In the ocean shipping industry, two primary organizations represent labor and cargo carriers on the West Coast ports. Labor is represented by the International Longshore and Warehouse Union (ILWU). Domestic carriers, international carriers, and stevedores that operate in California, Oregon, and Washington are represented by the Pacific Maritime Association (PMA). Members of the PMA hire workers represented by the ILWU. PMA members employ longshore, clerk, and foreman workers along with thousands of "casual" workers, who typically work part-time.

The terms of employment are governed by labor contracts that are periodically negotiated between the two organizations, and the results are applied to all U.S. West Coast ports. Similar processes and organizations are found in the country's other maritime regions. When agreements cannot be reached, as happened in 2002 on the West Coast, strikes or lockouts can occur, which may severely disrupt the entire freight movement system and sometimes have lasting impacts as shippers permanently redirect their products to ports in other regions or countries. Tens of thousands of trucking, railroad, warehouse, and support workers may be temporarily out of work because strikes and lockouts stop the flow of goods that other sectors handle. The 2002 dispute was estimated to cost the U.S. economy \$1 billion per day.

As of November 2022, PMA members employed 15,656 registered union workers at 29 West Coast ports in California, Oregon, and Washington, and thousands more workers who typically worked part-time. Since the signing of the 2002 agreement that brought the widespread use of technology to the West Coast, the registered workforce has increased by 36 percent<sup>31</sup>.

The Maritime Administration nationally provides limited funding to six state maritime academies. One such academy, the California Maritime Academy (Academy), is part of the California State University System and is the only Maritime Academy on the West Coast. The Academy prepares students for careers in international business and logistics, marine engineering technology, global studies and maritime affairs, marine transportation, mechanical engineering, and facilities engineering technology. The nation's maritime academies educate young men and women for service in the American merchant marine, the U.S. Armed Forces, and in the nation's intermodal

transportation system. Located in Vallejo, the Academy's enrollment is currently at approximately 925 students (as of June 2022).

## AIR CARGO

In the aeronautics industry, the Federal Aviation Administration (FAA) increased the retirement age from the previous mandatory retirement at 55 years old to 65 years old for scheduled pilots. The FAA also instituted a new rule requiring scheduled pilots to get a minimum amount of uninterrupted rest – at least 10 hours between shifts. This will impact the movement of belly cargo, but the rule does not apply to cargo pilots. Many cargo pilots are pushing to be included in this regulation; however, the FAA has not yet applied this to the cargo industry and is still considering the matter. Consensus across the industry (pilots, air traffic controllers, airport managers, etc.) appears to be that the rate of retirement may hinder the development and operations of aviation activity. The FAA uses the Veterans Recruitment Appointment (VRA) program, which acts as a hiring authority to expedite the hires of veterans.

The air cargo pilot employment falls into at least three different categories: Airline Pilots, Copilots, and Flight Engineers. The definition includes, "Pilot and navigate the flight of fixed-wing, multi-engine aircraft, usually on scheduled air carrier routes, for the transport of passengers and cargo. Requires Federal Air Transport Pilot certificate and rating for specific aircraft type used. Includes regional, national, and international airline pilots and flight instructors of airline pilots." In 2021, the annual mean wage for California airline pilots, copilots, and flight engineers was \$227,870. The mean wage across the U.S. was \$220,180.<sup>32</sup> The projected annual job openings between 2021 and 2031 is 1,800 jobs within California, and 7,700 jobs across the U.S. As of 2021, there were 8,070 airline pilots in California and 87,600 in the U.S.

California's freight industry needs to increase efficiency to remain economically competitive, and to improve environmental sustainability while retaining high paying jobs and educating/increasing training for the freight industry workforce so that the industry can successfully transition for continued success going forward.

## Freight Dependent and Support Industry Workforce

Freight plays a significant role in supporting California's \$3.4 trillion economy. Technology and the use of artificial intelligence (AI) can increase productivity, cut operation costs, and increase a customer's experience and satisfaction. All industries rely on safe and efficient movement of goods, whether by road, sea, rail, or air. There are some industries, however, where this movement is essential to the sector's competitiveness and ability to operate. According to the Southern California Association of Governments (SCAG), "goods movement-dependent industries are defined as industries that operate frequent inbound and outbound freight vehicle trips and costs associated with goods movement, and the also have sizable impact on their business expenses. Key industries include construction, manufacturing, wholesale trade, retail trade, and transportation and warehousing."<sup>33</sup> Altogether, these industries employed roughly 5.3 million Californians in 2022, which grew compared to 2018 employment figures. The California agriculture industry is also heavily reliant on efficient and dependable freight transportation. These industries rely upon agriculture products, raw materials, semi-finished and finished products to warehouse, and processing distribution centers before they are moved to final locations to be consumed.

## CONSTRUCTION

The construction industry was hardest hit during the Great Recession. The industry has rebounded in recent years as the economy continues to grow. As of September 2022, the California construction industry employed 930,100 people and its GDP was valued at roughly \$92 billion.<sup>34</sup>

The passage of SB 1 in 2018 helped secure additional funding for local and regional transportation projects, which in turn helps the construction industry. The State will need to ensure that funding continues to keep pace with the level of maintenance required and that the freight transportation system continues to operate.

## TRANSPORTATION AND WAREHOUSING

The transportation and warehousing sectors currently employ 783,000 Californians<sup>35</sup>. The warehousing jobs that make up this sector rely on freight movement to receive and ship goods to and from the warehouses and storage facilities. Warehousing is meant to act as a storage facility and intermediary between the various links in a supply chain. Warehousing incorporates diverse purposes, such as storage, bulk storage, and transloading. Warehouses can also be distribution centers, where functions such as sorting, palletizing, pick and packing, labelling, assembly, and wrapping of goods occur before shipment to retailers or consumers directly. Warehousing relies on efficient, reliable, and resilient transportation to ensure prompt delivery and pick-up of goods. Efficient goods movement ensures that warehouse capacity is neither over-filled nor empty, otherwise it will result in monetary losses by the warehouse operators, and it will negatively disrupt downstream operations.



# 3

## Chapter 3: Existing Freight System Conditions & Performance-Based Needs Assessment