can be mitigated by requiring clean truck and locomotive technologies and off-peak operations.

Strategy CA-5-B: Support off-hour delivery/pick-up strategy development

- Most urban truck traffic occurs during the day's busiest and most congested times. Shifting last-mile cargo pick-up and delivery to off-peak hours alleviates congestion within urban boundaries.

6B. Freight Investments

Understanding the context of a region helps assess how California should strategically invest in its freight system. California is one of the largest states in terms of land mass, spans several climate zones, and is host to various economic sectors. Therefore, the freight system is influenced by each region's unique attributes and competitive strengths. As such, the CFMP analyzes California's freight system from seven regional perspectives, highlighting each region's unique context and freight needs. The boundaries of the CFMP regions are conceptualized to align with California freight generally flows to best address the unique context of California's regional communities and economies.[241]

Table 6.1 describes how California's counties are divided among the seven CFMP regions, and **Figure 6.1** is a map that illustrates the borders of the CFMP regions. Each of the following perspectives comprises two sections: 1) a regional narrative; 2) policies and programs.

Table 6.1: The CFMP Freight Investment Strategy Regions by County

CFMP Region	County (CO)	Caltrans District or County
Northern California	Del Norte	All counties in District 1
	Humboldt	
	Lake	
	Mendocino	
	Lassen	All counties in District 2
	Modoc	
	Plumas	
	Shasta	
	Siskiyou	

	Tehama	
	Trinity	
	Butte	A portion of counties in District 3
	Colusa	
	Glenn	
	Nevada	
	Sierra	
	Yuba	
Central Sierra	El Dorado within Tahoe Regional Planning Agency (TRPA) boundary	A portion of counties in District 3
	Placer within the TRPA boundary	
	Inyo	All counties in District 9, except for the eastern portion of Kern County
	Mono	
	Alpine	A portion of counties in District 10
	Amador	
	Calaveras	
	Mariposa	
	Tuolumne	
Bay Area	Alameda	All counties in District 4
	Contra Costa	
	Marin	
	Napa	
	San Francisco	
	San Mateo	
	Santa Clara	
	Solano	
	Sonoma	
Central Valley	El Dorado (minus portion in TRPA boundary)	A portion of counties in District 3

	Placer (minus portion in TRPA boundary)	
	Sacramento	
	Sutter	
	Yolo	
	Fresno	All counties in District 6
	The western portion of Kern County	
	Kings	
	Madera	
	Tulare	
	The eastern portion of Kern County	A portion of District 9
	Merced	A portion of counties in District 10
	San Joaquin	
	Stanislaus	
Central Coast	Monterey	All counties in District 5
	San Benito	
	Santa Barbara	
	San Luis Obispo	
Los Angeles and Inland Empire	Santa Cruz	
	Los Angeles	All counties in District 7
	Ventura	
	Riverside	All counties in District 8
	San Bernardino	
	Orange	The county in District 12
San Diego Border	Imperial	All counties in District 11
	San Diego	

Figure 6.1: Freight Investment Strategy Regions relative to Key Freight Routes in California (Source: Caltrans, 2023)

State Investments and Performance Measures

In California, National Highway Freight Program (NHFP) funds are managed by the California Transportation Commission (CTC) through the Senate Bill 1 (SB1) Trade Corridor Enhancement Program (TCEP).[242] The purpose of TCEP is to provide funding for infrastructure improvements on federally designated Trade Corridors of National and Regional Significance, on California's portion of the National Highway Freight Network, as identified in California Freight Mobility Plan, and along other corridors that have a high volume of freight movement. TCEP supports the goals of the NHFP, the California Freight Mobility Plan (CFMP), and the guiding principles in the California Sustainable Freight Action Plan (CSFAP). In addition to the NHFP formula funds, TCEP includes state funds from the California Trade Corridor Enhancement Account.
Projects receiving TCEP funds address the program's evaluation criteria outlined in the guidelines, clearly describe freight benefits, and show benefits across multiple evaluation criteria. TCEP evaluation criteria includes:

- Freight System Factors: These factors include freight ***throughput***, ***velocity***, and ***reliability***. Projects need to enhance ***throughput*** by increasing the volume of freight through capacity expansion or operational efficiency along freight corridors and at freight gateways and hubs. Projects also need to increase freight ***velocity*** by increasing the safe and smooth flow of traffic moving in the goods movement network. Lastly, projects need to increase freight ***reliability*** by reducing the variability and unpredictability of travel time. If applicable, projects need to describe how these factors relate to the federal Transportation Performance Management (TPM) Third Performance Measure Rule (PM3).
- Transportation System Factors: These factors include freight ***safety***, ***congestion reduction/mitigation***, ***key transportation bottleneck relief***, ***multimodal strategy***, ***interregional benefits***, ***advanced technology***, and ***zero-emission infrastructure***. Projects should increase the ***safety*** of the public, industry workers, and traffic by embracing a Safe Systems Approach. In addition, projects should reduce ***congestion*** or provide ***mitigation strategies*** by reducing daily hours of delay on the system and improving access to freight facilities. Projects should also address federal goals of ***relieving key freight system bottlenecks*** where forecasts of freight traffic growth rates indicate infrastructure or system needs are inadequate to meet future demand; this includes bottlenecks on critical freight corridors and near California's borders. Projects should employ or support ***multimodal strategies*** to increase port and transportation system throughput while reducing truck vehicle miles/hour traveled (VMT/VHT) or truck idling times. Since the freight networks spans across jurisdictions, projects should link regions/corridors to serve statewide or national trade corridor needs and to improve the ***interregional transportation*** network. In addition, projects should employ ***advanced and innovative technology*** and integrate transformative ideas to increase the amplitude of benefits for the state's people, economy, and environment. Lastly, projects should support ***zero-emission freight infrastructure*** to meet various national and state goals.
- Community Impact Factors: These factors include ***air quality impacts***, ***community engagement***, and ***economic impacts***. Projects should reduce local and regional emissions of diesel particulate (PM 10 and PM 2.5), carbon monoxide, nitrogen oxides, greenhouse gases, and other pollutants to minimize ***air quality impacts*** and ensure the benefits of public health. In alignment with the CTC's Racial Equity Statement, projects are evaluated based on their ability to demonstrate meaningful and effective ***community engagement*** and public participation in decision making processes, particularly by disadvantaged or historically impacted and marginalized communities.

Lastly, projects should stimulate local economic activity, enhance trade value, preserve or create jobs, enhance California's freight competitiveness, and positively ***impact the national and state economies***.

The TCEP evaluation criteria assists the CTC in funding projects that provide significant freight benefits while meeting federal and state goals. TCEP-funded projects from the program's three existing cycles will include the following long-term benefits:[243]

- Increase truck throughput
- Increase rail volume
- Increase tons of cargo moved
- Operational efficiencies and travel time improvements
- Safety improvements
- Reduction of greenhouse gas emissions
- Creation of thousands of new jobs

TCEP stipulates a number of measures to foster program transparency and accountability. Projects awarded TCEP funds are required to submit progress, annual, and completion reports on the freight-related performance metrics included in **Table 6.2** below. The CTC has developed a guidance document outlining the process for reporting on all the required SB1 performance metrics.[244] This guidance document is incorporated into the TCEP program by reference in the TCEP guidelines. TTTR is an included optional metric in this reporting due to other modes (i.e. seaport, rail, airport, land ports) and non-NHS roadways being eligible for TCEP. Caltrans and the CTC will coordinate in the future to analyze how TCEP awarded projects are striving to meet our federal TPM performance measures.

Table 6.2: TCEP Performance Targets

	Program				Program Type				
Metric	**ATP**	**SCCP/ LPP**	**TCEP**	**All**	**Local Road**	**HWY Road**	**Transit**	**Rail**	**Port**
Change in Daily Vehicle Miles Travelled	X	X			X	X	X		
Person Hours of Travel Time Saved		X			X	X	X		
Peak Period Travel Time Reliability Index		X				X			
Level of Transit Delay		X					X		
Change in Daily Vehicle Hours of Delay			X		X	X			
Change in Daily Truck Hours of Delay			X		X	X			X
Change in Truck Volume (# of Trucks)			X		X	X			X
Change in Rail Volume			X					X	

Truck Travel Time Reliability Index			X			X			
Velocity			X		X	X		X	X
Number of Fatalities and Rate of Serious Injuries	X	X	X	X	X	X	X		X
Rates of Fatalities and Rate of Serious Injuries	X	X	X	X	X	X	X		X
Air Quality	X	X	X	X	X	X	X	X	X
Cost Effectiveness (Benefit Cost Ratio)	X	X	X	X	X	X	X	X	X
Jobs Created	X	X	X	X	X	X	X	X	X

Source: ***TCEP Program/SB1 Performance Targets, California Transportation Commission.***

Caltrans is an eligible applicant for TCEP funds and uses its own internal framework for prioritizing project nominations. When prioritizing projects, Caltrans is in a significant leadership role to carry out meaningful measures that advance state's goals and priorities. One of the tools that Caltrans uses for this decision-making process is the Caltrans System Investment Strategy (CSIS). The CSIS is envisioned to be an investment framework through a data- and performance-driven approach that guides transportation investments and decisions. This framework includes methodologies and processes for how Caltrans should invest billions of dollars of highly competitive federal and state fund programs that will address transportation deficiencies while also achieving California's CAPTI Guiding Principles. The CAPTI Guiding Principle specific to freight strives to develop "a zero-emission freight transportation system that avoids and mitigates environmental justice impacts, reduces criteria and toxic air pollutants, improves freight's economic competitiveness and efficiency, and integrates multimodal design and planning into infrastructure development on freight corridors."

Caltrans is currently revising the CSIS and is considering freight-specific metrics that reflect the goals from the NHFP, CFMP, CSFAP, and CAPTI. Caltrans is working on the latest CSIS version and will include its regional and local freight partners, including the California Freight Advisory Committee members, in the CSIS development process to build a transparent framework that will help prioritize the state's investment decisions. This will ensure that California will continue to align its freight-related investments with federal and state freight goals and performance metrics.

Another tool that the CTC and Caltrans use to encourage performance measures supporting investment decisions is the RTP development process. Currently, the CTC and Caltrans are in the process of developing new RTP guidelines for California's regional partners.[245] RTPs are prepared by regional agencies to identify a 20-year vision for transportation priorities and investments consistent with federal and state goals and requirements. The latest draft RTP guidelines note that regional agencies should ensure that their RTPs are making progress toward the federal TPM goals established by the State. The federal TPM goal focused on freight is included in the PM3 measure and is discussed in more detail in Chapter 3B. In addition to considering national and state freight goals, RTPs should therefore demonstrate how each region's network of projects is

aiming to meet the California's Truck Travel Time Reliability target established under PM3. This motivates regions to invest in projects that increase freight reliability while decreasing freight congestion. After the adoption of the RTP, these regional freight projects are often considered for state sponsorship on federal or state discretionary funding opportunities. It is crucial for Caltrans to have a screening tool, such as the CSIS, when prioritizing these potential sponsorships to ensure that these freight projects meet federal and state performance goals and metrics during the investment decision process.

Caltrans also utilizes the System Planning process as a tool for performance measures to inform investment decisions. Consistent with federal law and State policy, Caltrans develops corridor plans through its System Planning process to assess how corridors are performing currently and how they may perform in the future, explore why they are performing this way, and propose projects and strategies that achieve corridor goals and objectives. These corridor plans are one tool for Caltrans to meet federal law requiring that a congestion management process shall be developed, established, and implemented as part of the planning process. The Congestion Management Process (CMP) is a systematic approach, collaboratively developed and implemented throughout a region, providing for the safe and effective management and operation of new and existing transportation facilities using demand reduction and operational management strategies. The Caltrans System Planning process is necessary for the CMP approach to be successful, which includes development of performance measures, assessment/evaluation of potential projects and improvement strategies, and performance monitoring. In addition, one key element in the development of corridor plans is the continuous reassessment of performance measures and assumptions to determine if an update of the plan is needed due to changing conditions regarding the infrastructure, funding availability, and policies. While Caltrans corridor plans build upon projects listed in RTPs, they also inform future RTPs with new projects and strategies as shown in **Figure 6.2** below. The performance measures included in Caltrans corridor plans therefore inform future investments.

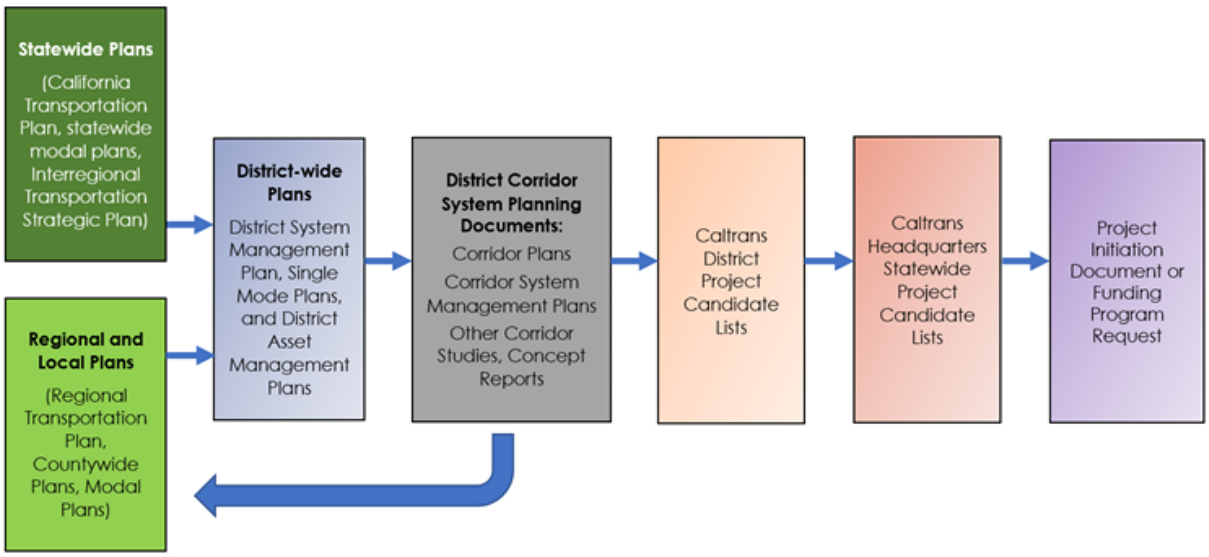

Figure 6.2: Caltrans District System Planning Process

Freight analysis is one component in Caltrans corridor plans, and TTTR is provided as an example freight metric in the "Caltrans Corridor Planning Process Guide." Caltrans Headquarters is currently developing a "Freight Emphasis Area Guide" that will be a supplemental tool for Caltrans staff to utilize when developing a corridor plan. This freight-specific guide will assist Caltrans districts in addressing federal and state freight goals along with PM3.

State Overview and Themes

Home to nearly 40 million people, California is one of the largest economies in the world. As the population grows and businesses continue to thrive, the demand for goods will continue to stretch and challenge the built environment, the natural environment, and our communities. Future freight investments in California should aim to accomplish all the seven goals highlighted throughout the CFMP through solid partnerships among private and public stakeholders, businesses, and advocacy groups.

While most regional freight investment strategies identified in this chapter are authored by the regions and identify the most critical freight priorities in alignment with regional policies, context, and needs, many of those projects of regional importance also align closely with State policies. From the high-level State perspective, development of freight projects is a collaborative effort with our communities, local, regional, and federal partners. As a leader in sustainable freight activities, California strives to evolve and grow its freight industry while simultaneously strengthening communities and reducing any negative externalities that could exacerbate climate change impacts. The State's most critical freight investments should be consistent and aligned with at least one of the following four themes to mitigate our most significant freight challenges.

IMPROVING PORT ACCESS RELIABILITY

Imports from the Pacific Rim are a significant economic engine for California. Logically, some of the busiest maritime port complexes in the nation are located within the state. California hosts one of the nation's largest warehouse and distribution center concentrations, so its transportation network must be reliable, efficient, and cost-effective for operators to ensure continued competitiveness. This is especially critical for California's export-dependent industries. As one of the world's largest exporters of high-value electronic and agricultural goods, California's economic competitiveness depends on the intricate and interdependent roles of the public and private sectors working cohesively to move goods to, through, and from the ports.

BORDER EFFICIENCY

Mexico is California's largest trading partner, and trade will continue to grow as manufacturers' supply chains integrate the unique workforce skillsets, economies, and resources from both sides of the border. This continued growth will also affect the border's infrastructure. Capacity expansion, existing system integration, and efficiency activities must address how they will mitigate impacts on and enhance the surrounding environment and communities.

INTER- AND INTRA-STATE FREIGHT MOVEMENT AND RESILIENCY

California is a large and diverse state and serves as a gateway for goods entering the nation. In addition to California markets, goods traveling within the state make their way on the intra-state transportation network to the rest of the country, Mexico, and Canada. Improving the inter- and intra-state freight network is critical to increasing the state's economic competitiveness. As shown in **Figure 6.1**, critical freight corridors, such as I-5, I-10, I-15, I-80, SR 99, US 101, US 395, and others, connect the largest metropolitan areas within the state and serve as the pillars supporting goods movement between regions and other states. Improvements to these pillars will increase travel reliability, reduce congestion, and enable more volume and value of goods to move into and through the state. With the continued increase in severity and frequency of climate change-related events, California must plan for efficient and cost-effective routes to ensure the resilience of the freight system in the face of such disastrous climate events.

Sustainability and Innovations

As the world's innovation epicenter, California has been at the forefront in numerous sectors to deliver ideas, products, and services that have a tremendous global impact. Innovative practices and technologies continue to be developed within California's freight sector. The California Sustainable Freight Action Plan (CSFAP), Executive Order EO N-19-19, Executive Order EO N-79-20, climate change resilience initiatives, and local and regional policies enhance all aspects of freight and advance the state's people, natural environment, and economy Initiatives such as workforce and community development, environment improvement programs, freight intelligent transportation systems, renewable energy infrastructure, and smart land use decisions are the first of many new norms that complement the State's thriving freight sector. As freight investments continue, each investment decision should strongly consider how a project may integrate transformative ideas to increase the amplitude of benefits for the state's people, economy, and environment; "transformative" meaning of having a quality that catalyzes change in the freight system to make it more sustainable. In alignment with this principle, the following projects may provide added benefits to the freight transportation system and enhance California's economic competitiveness while protecting its community and environmental assets.

ALTERNATIVE FUEL CORRIDORS TO SUPPORT ZERO- AND NEAR-ZERO EMISSION (ZE/NZE) FREIGHT VEHICLES, EQUIPMENT, AND INFRASTRUCTURE

Clean Truck Corridors – Investments in corridor infrastructure that supports corridor deployment of ZE/NZE freight vehicles, specifically for medium- and heavy-duty vehicles, including managed lanes or tolling systems to prioritize "clean" heavy-duty trucks. These corridors should also have adequate access to alternative refueling stations for battery- and hydrogen-power medium- and heavy-duty vehicles.

Los Angeles (LA) County is actively involved in initiatives to promote Clean Truck Corridors and reduce emissions in the goods movement sector. Two notable programs in this regard are Metro's I-710 Zero Emission Truck Program and the ongoing outreach and development of the I-710 Project.

The I-710 Zero Emission Truck Program, led by Metro (the Los Angeles County Metropolitan Transportation Authority), aims to transition the trucking industry towards zero-emission

technologies. The program focuses on deploying and testing electric and hydrogen fuel cell trucks along the I-710 corridor, which is a major goods movement route in LA County.

In addition to Metro's efforts, the Mobile Source Air Pollution Reduction Review Committee (MSRC) has been actively involved in promoting zero-emission goods movement infrastructure. The MSRC is a committee made up of various stakeholders, including government agencies, industry representatives, and environmental organizations, working towards reducing air pollution from mobile sources in the LA region.

Marine Highways - Move goods along waterways between ports and terminals along the Pacific Coast (M-5) and to inland ports (M-580). Modal shift to marine highways can provide VMT reduction benefits. Marine highway efforts should also be paired with zero or low-emission vessels and cargo handling equipment to maximize emissions reductions and take full advantage of the modal shift.

Port Infrastructure and Equipment – Deploy ZE/NZE vehicles, cargo handling equipment, and infrastructure at the ports that help meet State and port emission reduction goals.

Short Line and Other ZE/NZE Rail Projects - Move goods to and from ports and freight facilities to nearby locations or to further inland Class I railroads. Rail projects can help reduce VMT, improve the efficiency of the freight system, and reduce emissions, primarily if ZE/NZE locomotives, cargo handling equipment, and other infrastructure are used.

Truck Parking ZE/NZE Infrastructure – Install ZE/NZE charging and/or plug-in infrastructure at facilities where trucks are parked. Safety Roadside Rest Areas and truck stops may be prime areas for infrastructure investment since it already accommodates geometrics and design standards for Class VIII trucks. These locations are also where drivers tend to park for long periods to meet Hours of Service (HOS) regulations and could plug in or charge their vehicles, making these locations ideal for Vehicle Grid Integration charging technology.

INTELLIGENT TRANSPORTATION SYSTEMS (ITS) AND SOFTWARE SOLUTIONS THAT SUPPORT EFFICIENT FREIGHT MOVEMENT

Border Wait Times – ITS projects near the USA/Mexico border that provide real-time border crossing wait time information to drivers to help make better routing decisions and reduce idling time.

Vehicle and Container Location and Condition Monitoring Systems – These systems provide real-time information about the position of vehicles via location-enabled smart devices and truck OEM onboard hardware. Information can be accessed on the web. Sensors on the vehicle can also provide real-time information about the condition of the cargo shipment, container door-lock status, and adherence to the planned route. U.S. Customs service providers can estimate vehicle arrival times and prepare documentation prior to arrival, thus decreasing truck waiting times. Port gate operators can send estimated arrival updates to trucks in the case of cargo ship delays.

Eco Routing - Dynamic software may assist in determining the eco-friendliest route for truck drivers and fleet operation managers. Routes may be optimized based on minimizing emissions or fuel consumption and can adapt based on real-time, historical, and predicted traffic and environmental data.

Freight Signal Priority (FSP) – ITS technology may enable freight vehicles to receive priority for green lights at signalized intersections under appropriate traffic conditions, which can help reduce emissions and increase throughput. An example of FSP is the San Diego Port Tenants Association's implementation of FSP at roadway intersections near the port, funded by CEC.

Truck Parking Information and Reservation Systems – Traveler information that provides real-time parking availability to truck drivers to reduce time searching for parking and help drivers locate safe parking alternatives. These systems may also be used to reserve truck parking spaces for a specific vehicle at a specific time and to reserve a time to load or unload the freight. These systems contribute to efficiency by maximizing truck loading dock spaces in dense urban areas where parking spaces are limited. These systems also allow truck drivers to find safe parking zones and avoid unsafe or unauthorized zones. This information can be broadcast on dynamic message signs, mobile phone applications, or in-cab. Systems with an application program interface helps to ensure data is easily accessible and allows drivers to make more informed decisions.

Truck Platooning – As mentioned earlier, truck platooning refers to linking two or more trucks in a convoy using technology to link and automate the acceleration and deceleration of the connected trucks. The technology automatically sets and maintains a close distance between each vehicle, allowing fuel savings and increased safety. California has been a leader in platooning deployment and demonstration projects.

Traffic Control and Monitoring Systems - Systems that control and manage traffic flow by providing information to traffic authorities and logistics service providers regarding collisions, congestion, traffic flow speed, and vehicles. Technologies such as "smart" traffic lights, license plate recognition cameras, and speed cameras are included. Such systems can send updates about vehicle arrival time and delays, improving the efficiency of truck, port, terminal, and warehouse operations. The environmental performance of transportation operations is increased by decreasing transport time and vehicle idling.

Weigh-in-Motion (WIM) Systems - Systems that ensure vehicles are not overloaded beyond maximum allowable weights. They are used to determine vehicle weight as they move past sensors. Removing overweight vehicles from roadways increases safety and decreases damage to pavement and structures. WIM systems also improve highway system performance by eliminating or reducing truck stop times at static weight-controlling stations. WIM systems can help reduce the risk of accidents by identifying overweight vehicles and flagging them for enforcement action. Broad application of WIM monitoring can provide a wealth of traffic operations data across a wide area or along an extended corridor.

Railroad Management and Operations - ITS train applications that benefit protection controls for interstate and state networks and improve network capacity, operational flexibility, service availability, travel times, safety, system reliability, and security. Control and dispatch centers can schedule more trains on the same area of track and 'fleet trains' heading in the same direction by spacing them more closely while still providing safe stopping distances. Developments in this area highlight the need for interoperability with road-based ITS technology, particularly at railway crossings.

Rail Crossing Safety Systems - Systems that expand the use of ITS to improve rail crossing safety, including low-cost solutions that augment more traditional treatments for crossings, such as signs, flashing lights, and boom gates. Short-range communications between oncoming trains and

vehicles or roadside installations to warn motor vehicle drivers will likely require integration with other auto and truck-based ITS technologies.

Northern California

SECTION 1. REGIONAL OVERVIEW

The Northern California Region (NCR) abuts Oregon's southern border and northwestern Nevada. The region follows the northern boundaries of the Sacramento Valley and Bay Area Regions and follows the western edge of the North Pacific coastline. The NCR includes Del Norte, Humboldt, Lake, Mendocino (Caltrans District 1), Lassen, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity (Caltrans District 2), and Colusa, Butte, Glenn, Nevada, Sierra, Yuba Counties (Caltrans District 3), and is comprised of approximately 28 percent of the state's total land area.[246] Much of the land is publicly owned by the Federal and State government.
The NCR supports national, State, and regional economies and the quality of life of the people living there. The dense forests that cover Northern California are national, State, and regional assets that draw tourists to the region, provide the timber needed for construction and add dollars to the economies. California's top five timber producers--Humboldt, Mendocino, Shasta, Siskiyou, and Del Norte Counties--are all located within this region. Together in 2020, these five counties produced 750.4 million board feet of timber valued at $210.6 million.[247] Even though the region is still the State's largest timber producer, logging has decreased significantly from peak production several decades ago. This area also produces wine, grapes, orchard fruits, dairy, and cattle for feeding the global population.

Tourism is a significant economic generator for the NCR. Travel spending benefits this region through direct impacts (employment and earnings linked to travel expenses made by the traveler at the establishment), indirect impacts (employment and earnings linked with the industries that supply goods and services (e.g., hotels, car rentals, ski resorts), and induced impacts (employment and earnings linked to the purchase of food, lodging, and transportation for the travelers and the travel industry employees). It is important to note that the direct travel impacts of recreation and tourism in the NCR benefit the state and local economies. During the summer season, traffic volumes climb nearly 25 to 50 percent on many regional highways, impacting trucking on rural freight highways. National and international travelers to the state partake in the natural beauty of the federal and state parks in the region to swim, hike, camp, and engage in a multitude of winter-related outdoor activities. These attractions create additional traffic (e.g., trailers, recreational vehicles) that can impede freight trucks on priority freight routes.

Table 6.3: Northern California Regional Overview

Counties (CO)	Distinguishing Characteristics
Butte (BUT)	According to the Butte County General Plan 2030, the county generates most of its economic vitality through agriculture directly through crop revenue and indirectly through industrial, manufacturing, transportation, warehousing, and on-to-sale sector jobs like construction, wholesale, and retail. The county produces rice, walnuts, prunes and plums. According to the USDA, the 2017 Census of Agriculture, BUT CO is one of the largest producers of walnuts, almonds, and plums in the nation.

Colusa (COL)	Agriculture (ranching and farming) and recreation are primary economic drivers, and rice and almonds are the main crops. The county's transportation network provides access to camping, fishing, boating, and bird watching at East Park Reservoir. It also provides access to the Mendocino Off-Highway Vehicle (OHV) Corridor that connects Fouts Springs/ Davis Flat OHV Staging Area and the Middle Creek OHV Staging Area. Many visitors en route to Mendocino National Forest travel through the county.
Del Norte (DN)	DN Co's primary economic drivers are commercial fishing, tourism, agriculture, and the Pelican Bay State Prison. Cattle, milk, and nursery products are the county's primary commodities. Crescent City is the county's only incorporated city and is home to the Crescent City Harbor. The county's topography comprises a coastline, rugged mountainous terrain, and redwood forests. Two major rivers, the Smith and the Kamath, flow through the county and empty into the Pacific Ocean. The Yurok Tribe, Resighini Rancheria, Tolowa Dee-ni' Nation, and Elk Valley Rancheria are the four federally recognized tribes in the area. Four Native American Reservations and Rancherias reside in the county: Elk Valley Rancheria, Resighini Rancheria, Smith River Rancheria and the Yurok Tribe.
Glenn	Glenn County, located approximately 75 miles north of Sacramento, is one of the smallest California counties. The Grindstone Indian Rancheria, the county's only federally recognized Tribal government, is located southwest near the city of Orland. Travel in the county is primarily automobile-oriented due to the rural nature of the local communities, low development densities, and limited options for using non-auto modes of travel. The county's largest industries are agriculture, forestry, fishing and hunting, retail trade, health care, and social assistance.
Humboldt (HUM)	HUM CO's mild summer and proximity to the Pacific Ocean, redwood forests, and hiking and biking trails make it an ideal tourist location--especially for those trying to escape the summer heat. The county has the longest California coastline and is home to the Port of Humboldt Bay. Natural resources industries, including lumber, forestry products, and agriculture, are vital to the county's economy. This county is the state's largest timber supplier, producing 227 million board feet valued at $77 million, equating to 21.8 percent of the county's agricultural value and 24.2 percent of the state's total timber value in 2020[248]. Other top commodities include cattle and calves, milk products, and nursery products. Commercial fishing is another industry that supports the regional economy. Eureka has over 200 commercial fishing vessels listed as the home port, approximately 130 commercial fishing boats are berthed at the Eureka Public Marina, and annually over 500 ships from other West Coast ports utilize the harbor.[249] Eight Native American Reservations and Rancherias reside in the county: Bear River Band of Rohnerville Rancheria, Big Lagoon Rancheria, Blue Lake Rancheria, Hoopa Valley Tribe, Karuk Tribe, Trinidad Rancheria, Wiyot Tribe, and the Yurok Tribe. The nearest designated metropolitan area is located more than 150 miles away. All goods traveling through the county moves by trucks utilizing the SHS and local roads.
Lake (LAK)	LAK CO is situated within the Pacific Coastal Mountain Range between Mendocino and Sonoma Counties to the west and Glenn, Colusa, Yolo, and Napa Counties to the east and south. The county consists mainly of mountainous terrain, Clear Lake (the state's largest freshwater lake), and resource lands (surrounding the lake). LAK CO hosts the world's largest complex of geothermal power plants and has the state's cleanest air. Agriculture plays a significant role in its economy, as Lake is California's largest supplier of premium fresh pears. Other commodities include wine grapes, wine, English walnuts, cattle, and calves. Six Native American Reservations and Rancherias reside in the county: Big Valley Rancheria, Lower Lake Rancheria, Middletown Rancheria, Elem Rancheria, Habematolel Pomo of Upper lake and Robinson Rancheria.
Lassen (LAS)	Government agencies manage approximately 63 percent of the county's land. Diverse natural settings include Lassen Volcanic National Park, Lassen National Forest, Sierra Nevada mountains, high desert areas, and several lakes. Eagle Lake is the second-largest natural lake in California. Hay (primarily alfalfa) and livestock have long been the principal agricultural commodities, while some logging operations remain.
Mendocino (MEN)	MEN CO is known for its distinctive coastline and forest lands. Its primary commodities are wine, grapes, timber (44 percent of the county's agricultural value), Bartlett pears, cattle,

	and calves. In 2020, the county ranked second in the State for timber production producing 114 million board feet valued at $48 million.[250] The county consistently maintained a median household income of roughly $20,000 less than the State's rate, and the county's poverty rate consistently remained higher than the statewide average between 2016 and 2020.[251] Ten Native American Reservations and Rancherias reside in the county: Hopland Reservation, Cahto Tribe-Laytonville Rancheria, Manchester-Point Arena Rancheria, Coyote Valley Rancheria, Pinoleville Reservation, Potter Valley Rancheria, Redwood Valley Rancheria, Round Valley Rancheria, Scotts Valley Rancheria and Sherwood Valley Rancheria.
Nevada (NEV)	NEV CO is located in the Sierra Nevada foothills and is known for its rich gold mining history and cultural, agricultural, recreational, and tourist activities. The balance of technology, manufacturing, agriculture, tourism, timber, education, healthcare, construction, retail, and many other sectors work together to create a thriving economy. Western NEV CO represents one of the four most highly regarded Digital Media technology clusters in the U.S., along with Portland, Seattle, and Boston. NEV CO is the only one located in a rural area.SR 20 and 49 are the county's key interregional corridors and are used to transport fruit and vegetables, field crops, nursery products, livestock, apiary, honey, wool products, high-tech and manufactured products, and timber. They connect to I-80, SR 70, SR 99, and U.S. 101.
Modoc (MOD)	Approximately 90 percent of the land in Modoc is National Forest and wilderness. This county has a combination of high desert terrain, spectacular mountain ranges, green fertile valleys, wetlands, crystal clear lakes and streams, the Warner Mountain Wilderness area, and Lava Beds National Monument. The principal crop is alfalfa hay.
Plumas (PLU)	PLU CO boasts 100-plus lakes, over 1,000 miles of rivers and streams, and over a million acres of National Forest, providing outdoor adventure opportunities year-round. Top commodities include timber (44 percent of the county's agriculture value), livestock, alfalfa, and meadow hay. The county is the state's second-largest timber producer. In 2021, it produced 220.7 million board feet of timber valued at $22 million.
Sierra (SIE)	Divided by the Pacific Crest, this rural county's most prominent industries involve construction and wood products. Crops grown in this county include alfalfa hay, barley, Christmas trees, forestry, timber, hay, grass hay, meadow oats, and rye.
Shasta (SHA)	Recreation is SHA CO's primary economic activity, with the top tourist attractions being Shasta Lake, Lassen Volcanic National Park, Whiskeytown National Recreation Area, and the Sundial Bridge. Main commerce includes timber (33 percent of the county's agriculture value), cattle, hay, nursery stock, and wild rice. In 2021, the county was ranked sixth in the state for timber production and produced 141.6 million board feet valued at $30 million.[252]
Siskiyou (SIS)	SIS CO is located in the Shasta Cascade Region and is home to Mount Shasta (the 5th highest peak in the State). Federal and state agencies manage more than 60 percent of the land. Tourism plays a significant role in the county's economy and employment. "The SIS CO Visitors Bureau estimates that the county provides opportunities and services for nearly 400,000 people annually."[253] The county's agriculture consists primarily of grazing livestock and field crops. Strawberry plants are its top commodity, followed by timber, hay, steers and heifers, raspberry plants, and wheat. In the Butte Valley, additional crops such as garlic, carrots, potatoes, and mint are grown; in the Shasta Valley, orchard fruit such as apples and peaches are also found. In 2021, the county ranked fourth in the state for timber production and produced 184.6 million board feet valued at $37 million.[254]
Tehama (TEH)	I-5 and the Sacramento River bisect TEH CO. Walnuts, by far, are the primary commodity, followed by olive products, almonds, and prunes. Other regional commodities include honey and bee products, milk, timber, and livestock. Many of this area's goods are shipped internationally to over 50 countries.
Trinity (TRI)	TRI CO's rugged topography is comprised of the Trinity Alps, South Fork Mountain, and other ridges of the Klamath Mountains and Coastal Range. The county is carved by the deep canyons and valleys of the Trinity, Van Duzen, and Eel Rivers. This county is extraordinarily rural and has no incorporated cities or towns. Most people, goods, and commodities that enter and leave the county utilize the SHS. The county's economy and employment rely on natural resources, mining, construction, manufacturing, trade, transportation, and utilities.

	The top commodities include forest products as well as cattle and calves. Over 70 percent of the land in Trinity County is owned by the Federal government and is not subject to property taxes.
Yuba (YUB)	Home to Beale Air Force Base, YUB CO's leading industries involves steel and wood product manufacturing and publications. Agricultural production for the county includes walnuts, almonds, timber, fruit, nuts, cattle, calves, and milk. Rice has the highest crop value, followed by walnuts.

Primary Truck Routes

Interstate Routes (I)

I-5

Interstate-5 is a principal north-south freight corridor that spans the West Coast, originating at the nation's busiest international border crossing at San Ysidro (San Diego, CA), and culminating at Blaine, Washington, near the Canadian border. This critical interstate is designated as part of the federal nation network, National Highway System (NHS), Interstate System, Surface Transportation Assistance Act (STAA), National Scenic Byway, Intermodal Corridor of Economic Significance, and the California Freeway and Expressway System. Furthermore, I-5 connects major population centers of the western United States (e.g., Cities of San Diego, Santa Ana, Anaheim, Los Angeles, Sacramento, Portland, and Seattle) and serves as a nexus of international trade with the Pacific Rim, North America, and Latin America. I-5 also plays a significant role in the NCR as it is the region's only interstate route and provides critical access to the NCR rural freight highways (SRs 3, 20, 32, 36, 44, 89, 96, 97, 99, 151, 162, 263, 265, 273, and 299).

United States Highways (U.S.)

U.S. 97

United States Highway 97 is a major north-south interregional corridor that begins at its junction with I-5 (near the City of Weed, CA) and proceeds north through central Oregon, Washington, and the Canadian Province of British Columbia. At the British Columbia/Yukon Territory Border, U.S. 97 becomes SR 1 and terminates in Anchorage, Alaska. Truckers utilize this corridor as an alternative to I-5 (especially when I-5 is closed due to weather events) due to fewer grades, which allow trucks to consume less fuel and achieve faster travel times to many destinations in Oregon. Trucks represent 11 percent of the total Annual Average Daily Traffic (AADT) at the southern end of the route and 28 percent at its northern end. Total truck volumes in 2017 ranged from 989 to 1166 trucks daily, with the majority being larger (5+ axle) trucks.

U.S. 101

United States Highway 101 is a major north-south national, inter-/intra-regional freight corridor linking California's North Coast, Oregon, Washington, and all of California's coastal cities. Its proximity to two of the nation's largest metropolitan areas (Los Angeles and the Bay Area) makes it an essential corridor for national and international goods movement, commerce, trade, and other critical industrial activities. This route is part of the NHS and the California Freeway and Expressway System. It is the primary interregional corridor for goods movement between the NCR and the Bay Area. This corridor is a vital lifeline for rural Northern California communities because it serves as the region's primary freight, recreation, and emergency evacuation route. U.S. 101 serves the Port of Humboldt (via SR 255) and trucking operations that serve residents and businesses. It is utilized to transport agriculture, lumber, and other goods produced in the corridor

to market or the Port of Humboldt for shipment out of the region. Except for a five-mile gap (HUM/MEN County line to Richardson Grove State Park), U.S. 101 is a National Network (STAA) route that provides accessorily for industry-standard STAA trucks. Because of this gap, truckers must unload their cargo in the Bay Area (approximately 150 miles south of Eureka) and transfer it from the single industry-standard freight trucks to multiple California legal trucks to move cargo into and through the NCR. A project is currently being assessed to see if this gap can be closed.

U.S. 199

United States Highway 199 is a critical east-west rural highway for the interregional movement of goods (primarily forest-related products), recreational travel, and the interstate movement of goods between California (U.S. 101 north of Crescent City) and Oregon (I-5 at Grants Pass). This corridor traverses the Jedediah Smith Redwoods State Park, is part of the Redwood National and State Park System and follows the wild and scenic Smith River. U.S. 199 is designated as a Forest Service Scenic Byway through the Smith River National Recreational Area (most of the length of this route).

U.S. 395

United States Highway 395 is a principal north-south freight corridor that originates in San Bernardino County and continues to the California/Oregon State Line. U.S. 395 is a critical Northern California freight connector between SR 36 in Susanville and Reno, NV. It is part of the SR 299/44/36/U.S. 97 corridor between the Pacific Coast (Port of Humboldt) and Reno, NV. U.S.395, south of Susanville, provides access to the Sierra Army Depot, the nation's largest military storage facility.

State Routes (SR)

SR 20 Corridor (SR 29/53/49/I-80)

The State Route 20 Corridor is a critical east-west interregional freight corridor, beginning at the Pacific Coast near Fort Bragg, continuing eastward across the northern Central Valley, and connecting with I-80 in the Sierras. This route connects four important interregional corridors; I-5 (upper Central Valley), U.S. 101 (California's North Coast), SR 99 (entire Central Valley), and SR 70 (western Sierra). This critical corridor also serves recreational travel from the Sierra Nevada Mountains to the North Coast, and it is the "crossroads" or "hub" for agricultural and goods movement in the North Central Valley and through the Yuba City/ Marysville urbanized areas (for connections to SR 99 and 70). The route also serves as a main street through various communities, including Marysville, Yuba City, Colusa, and others, and an interregional route for forcing the agricultural goods movement. It is also an essential regional corridor serving Mendocino and Lake Counties' rural communities. Its closest east-west strategic interregional corridor is 100 miles north on I-5 (SR 44 in Redding) or 50 miles south (I-80 in Sacramento).

SR 44

State Route 44 traverses northcentral California through the northern Sacramento Valley. It begins at the junctions of SRs 273 and 299, serves as a major east-west connector through the city of Redding, connects to SR 89 near the Sierra Nevada Mountain Range (SNMR), and ends at SR 36 (LAS CO). SR 44 is a part of the SR 299/44/36/U.S. 395 corridor between the Pacific Coast (Port of Humboldt) and Reno, NV.

SR 45

State Route 45 is a north-south route. It originates at SR 113 in Yolo and spans north to SR 32 in Glenn County. SR 45 is a main street in the communities of Grimes and Princeton and intersects with SR 20 through Colusa. While most of SR 45 is designated California Legal Truck Route, the segment between SR 20 and the community of Princeton is a Terminal Access STAA route.

SR 49

State Route 49 is a north-south interregional route that serves many historic California Gold Rush mining communities. This rural highway begins at Oakhurst (Madera County). It continues northwest through Tuolumne, Calaveras, Amador, El Dorado, Placer, Nevada, Yuba, Sierra, and Plumas Counties, where it ends at its junction with SR 70 (in Vinton). The route is a main street throughout the Sierra Nevada Foothills and is an essential last-mile connector for local goods movement. SR 49 is a federally designated Critical Rural Freight Corridor (23 U.S.C. 167(g)) and is vital to the state, regional, and local economies. It is estimated, on average, between $5.5 to $7.6 million worth of commerce annually travels over the Donner Pass every hour[255]. Both SR 20 and SR 49 are designated to handle STAA oversize and CA Legal Trucks. They are the only "Emergency Detour Routes" when I-80, between Emigrant Gap and Colfax, is closed due to major collisions, wildfires, and construction. The emergency events significantly increased the truck freight traffic on SR 20/SR 49. Caltrans District 3 Traffic Management Center reports that between 2004 and 2021, there were 218 closures of I-80, where truck traffic and passenger vehicles were rerouted onto SR 20 and SR 49.

SR 70

State Route 70 is a rural minor arterial highway that originates at SR 99 (Sutter County near Catlett Road in Marysville) and ends at U.S. 395 (Hallelujah Junction). This route crosses SR 49, 89, 149, 191, 284, and U.S. 395 and serves the long-distance movement of people and goods. It is also the primary east-west route over the SNMR when Interstate 80 is closed. Sections of SR 70 also are main streets through Marysville and Yuba City.

SR 89

State Route 89 is a north-south interregional mountain highway beginning at I-5 (Mount Shasta) and ending at U.S. 395 (near Coleville). This 243-mile-long corridor provides access, a major thoroughfare for many small communities in northeastern California, and access to tourists and service providers (hotels, resorts, parks, restaurants) to major recreational attractions and resource areas. Tahoe Basin industries depend on this route to provide access for the delivery of goods and services. This corridor provides lifeline access to Sierra and Alpine Counties and linkages between I-5 and SR 36, 44, 70, and 299. Portions of SR 89 in Siskiyou and Shasta Counties are an essential detour when I-5 is closed through the Sacramento River Canyon.

SR 99

State Route 99 is a critical north-south interregional freight corridor and a vital highway for California's economy. This corridor serves as a significant farm-to-market route for most agricultural products from the Central Valley. Most of the commercial and personal travel between the cities within the Central Valley uses SR 99. This route also serves as the main access route for smaller urban areas to urban services available in the larger urbanized areas.

SR 149

State Route 149 is an essential connector between SR 70 and SR 99 in BUT CO and is a designated Terminal Access STAA route.

SR 197

State Route 197 is a north-south two-lane minor arterial that serves regional and interregional traffic and provides for local access and the movement of goods between the U.S. 101 (at Fort Dick) and U.S. 199 (near Hiouchi). This route allows for the movement of extra-legal loads and is ultimately expected to be designated as an STAA truck route between U.S. 101 and the SR 197/ U.S. 199 junction.

SR 255 (Arcata to Samoa Peninsula)

State Route 255 is a vital intermodal route that connects the Port of Humboldt Bay to U.S. 101.

SR 267

State Route 267 is a north-south route that begins at I-80 in the town of Truckee and continues south into the Tahoe Basin and intersects with SR 28. Only the portion of from I-80 to the Nevada/Placer County line is within the NCR. SR 267 is a California Legal truck route.

SR 299

State Route 299 is a major east-west interregional freight corridor connecting the Port of Humboldt (via SR 255 and U.S. 101) and other Northern California industries to two major north-south corridors (U.S. 101 and I-5). It is also part of the corridor that connects the Pacific Coast to Reno, NV (via SR 299/44/36/U.S. 395). The route serves a variety of traffic, including local (intra-regional), recreational, commuter, and commercial. It is classified as a National Forest Scenic Byway and part of the California Freeway and Expressway System (U.S. 101 to I-5). It is heavily utilized for recreational access to and along the Trinity River. This critical freight corridor provides for the interregional movement of goods (commerce, timber, nursery, greenhouse products, dairy products, cattle, hay, pasture and range, wine grapes, forest products, colony of bees, strawberries, rice, alfalfa, livestock, potatoes, and vegetables). It links rural communities and small urban areas across the northern part of the state to national and international markets.

Freight Rail

Class I Railroads

Two Class I railroads, UPRR and BNSF, provide freight rail services within the NCR. The main UPRR route runs north and south through Caltrans District 2 and the center of Redding, paralleling the I-5 corridor. It connects service with east-west corridors in Seattle, Portland, Oakland, and Los Angeles. It also operates multiple rail lines that converge on the Sacramento area in District 3. These rail lines include connections to locations outside the District 3 boundaries, some of which include Redding, Keddie, Truckee, Stockton, and San Francisco.

BNSF has a route (using some UPRR-trackage rights) in District 2 that serves as a primary unit and manifests (mixed car/cargo) freight. Major regional commodities moved by rail include tomato products, olives, rice, cheese, frozen foods, beer, wine, wheat, some stone, petroleum products, lumber products, and chemicals.

Short Line Railroads

The North Coast Railroad Authority (NCRA) owns the Northwestern Pacific (NWP) Railroad short line (which partially parallels U.S. 101) from Korbel (Humboldt County) to Healdsburg (Sonoma County). It has an operating easement from Healdsburg to Lombard (Napa County). Senate Bill 1029 (2018) began the process of transferring the southern operating easement to the Sonoma-Marin Area Rail Transit; and railbanking of the northern portion of the right-of-way. A proposal for an east-west connection from the Port of Humboldt Bay to the national rail system is being considered. Other rail services in the region include:

- Service in Tehama County, provided by the California Northern Railroad (CFNR) and UPRR, is focused on heavy or bulky freight materials produced locally and shipped regionally.
- Rail tracks from Lassen County transport lumber products and perlite to Oregon.
- Several rail spurs in Shasta County exist for freight loading/unloading.
- Central Oregon and Pacific Railroad (CORP) is a Class II railroad out of Eugene, Oregon, that interfaces with the UPRR at Black Butte and Montague in California. Lumber and related products are its primary carload business.
- Although the Skunk Train between Fort Bragg and Willits is exclusively passenger service, it could resume freight service in the future. There is also discussion of the railroad being replaced by a recreational trail instead.
- The California Northern Railroad has short line rail lines connecting West Sacramento and Woodland and the Port of West Sacramento to counties north.
- Sierra Northern Railway operates within the Sacramento/Yolo County region.
- The Sacramento Valley Railroad operates within the Sacramento region.

Seaports

Maritime facilities exist in all three coastal counties of Del Norte, Humboldt, and Mendocino. The once-bustling Port of Humboldt Bay is California's northernmost deep-water shipping port and the only port between San Francisco (225 nautical miles south) and Coos Bay, Oregon (156 nautical miles north). Over the years, logging restrictions, natural events, and competition have dramatically lowered the port's activity levels. Canada and China are the Port's main trading partners.

Marine transport is constrained due to channel depths in the North Bay Channel of Humboldt Bay, which affects the navigability of the Bay for deep-draft vessels common on the Pacific Ocean shipping lanes. Harbor deepening projects will allow the Port to accommodate large Panamax vessels. Forest products dominate exports and imports, but petroleum products are also imported. Approximately 90 percent of Humboldt County's gasoline and diesel, as well as about 70 percent used by Del Norte, Trinity, and Mendocino Counties, is imported into Humboldt Bay, and over half of the fresh oysters consumed in California are grown in the bay. The Port also serves cruise ships, Navy vessels, the U.S. Coast Guard, and commercial fishing. The long-term economic well-being of the Port of Humboldt depends to a considerable extent upon market competitiveness and efficient connections to inland areas by truck transportation. The challenge of a drastically-reduced timber industry, competition from other seaports, continued expense of dredging, and deteriorating infrastructure makes it difficult for Humboldt Bay to reclaim a thriving status. Businesses that entice imports and create wanted exports will increase

demand for port services. Truck and port rail access will also need attention if these businesses are revived.

In Del Norte County, the City of Crescent City owns and maintains a harbor with a commercial fishing fleet and public-access docks. The Crescent City Harbor cannot accommodate large container ships, but it is the only "harbor of refuge" between Humboldt Bay and Coos Bay. Surges destroyed most docks at Crescent City Harbor from the 2011 Japan tsunami. A tidal gauge was installed in the Crescent City boat basin in 1934. Since its installation, Crescent City has been hit by 34 tsunamis, large and small. In Mendocino County, maritime services for commercial fishing, the U.S. Coast Guard, and private vessels are provided by Noyo and Point Arena Harbors.

Air Cargo

Fifty public-use airports are spread throughout the NCR, but only three are scheduled for commercial airports – Redding Regional Airport, Jack McNamara, and Arcata. The closest international airports are Sacramento International Airport in California, Rogue Valley International-Medford Airport in Oregon, and the Reno-Tahoe International Airport in Nevada. Virtually all airports move light cargo and/or serve as delivery transfer locations. The NCR airports play an essential role by handling cargo like mail and parcels for remote rural communities. Rural airports connect smaller communities to larger global markets and perform vital functions, especially in emergencies (e.g., critical medicine, organ transport, and disaster response).

Airports

Redding Regional Airport handles most of the regional cargo and is at the center of airfreight and package movement activity. Federal Express (FedEx), United Parcel Service (UPS), and United States Postal Service (USPS) serve this airport using heavy and light trucks, air freight, and charter air services. Jack McNamara Field/Del Norte County Airport is served by FedEx and SkyWest, making it a vital cargo hub for the area.

Humboldt County Public Works runs Murray Field and Redwood Coast Airports. In 2013, Murray Field, Humboldt County's main cargo airport and sole base of FedEx air cargo operations, transported over 860 metric tons of cargo. The Redwood Coast (formerly known as the Arcata-Eureka Airport) is classified by FAA as a primary commercial service airport and designated as an international Port of Entry. This airport captures only cargo transported on passenger airline flights. Total air cargo handled at Murray Field and California Redwood Coast-Humboldt County Airport is down by 32 percent in the last decade – a loss of an average of 1,599 pounds of cargo a day. Air cargo at the airports peaked in 2007, with an average of 5,100 pounds per day. By 2016 that number had fallen to an average of 3,400 pounds per day.[256]

Ukiah Airport provides recreational flying, pilot training, charter, fuel, maintenance, corporate, small business, air freight (scheduled FedEx and UPS flights), and courier services.

SECTION 2. POLICIES, PROGRAMS, AND MAJOR FREIGHT INFRASTRUCTURE INVESTMENTS

The seventeen NCR counties have common transportation, growth, and land use issues and can benefit from well-formulated and unified strategies. Trucks are the primary freight mode, and small communities are scattered across large expanses, undeveloped forests, foothills, mountains, and coastal lands. Haulers must travel further distances, consume more fuel, and incur higher transport costs to move goods into or out of this region. Further, truckers have

difficulty finding parking and other services as many of these rural communities are separated by 100 miles or more, and many do not offer any services.

State highways connect California's communities to each other and to major population centers. Therefore, it is common for a single state highway to serve as a community's primary freight route, main street, and emergency evacuation route. However, many of these freight corridors do not have parallel and connecting routes that can serve as alternative passages for trucking. Many alternate options are local roads and highways that cannot carry larger vehicles. In 1982, Congress passed the STAA of 1982 that established national standards for truck widths and lengths and linked those standards to the designation of the National Network. However, many rural freight corridors either have not been updated to meet the national standards or have segments (network gaps) that have not been upgraded. Ensuring that all main freight highways are upgraded to national standards, allowing access to industry-standard freight trucks, will enhance regional livelihood and increase the NCR's competitiveness. The non-STAA highways and highway segments cause chokepoints, preventing freight industry-standard trucks from accessing the region. Truckers must make more trips using smaller California Legal trucks not equipped with clean technologies to move the same amount of goods. Simply put, with STAA access, manufacturers and industries could transport more goods and utilize clean technologies while making fewer trips (reducing VMT).

The NCR is also an essential thoroughfare for freight, with trucks being the primary mode due to their flexibility and ability to serve as the "first and last mile" for other modes. Finding stable funding to maintain roadways that handle heavy trucks and equipment is critical. Several projects to ease horizontal and vertical roadway alignments--allowing for STAA access--and expanded trade opportunities within and beyond the state are planned or underway.

Like many regions in California, the NCR is heavily impacted by wildfires. In addition to supporting freight movement, the rural freight highways act as regional and local evacuation routes and access routes for CalFire and Forest Service trucks to quickly reach areas to combat wildfires and stage firefighter camps. With new State regulations, controlled burns will be more frequent, requiring more CalFire and Forest Service access. Prescribed forest thinning will likely increase logging activity and associated logging vehicle traffic within this region. Power and water utility trucks also require rapid access to their facilities during the fire season. It is anticipated that climate change will result in longer fire seasons, requiring larger firefighting equipment to use outdated rural highways that may be unable to accommodate.

To support the region's freight vision, below is a list of strategies that the region is working to implement:

- Focus freight planning and funding efforts on the critical freight backbone network for the region (e.g., SR 99 Tehama Expressway, Lake Britton Bridge (SR 89), Pit River Bridge (I-5 over Shasta Lake), Whiskey Creek Rehab (includes Shasta Divide Climbing and Bike Lane), Strategic Interregional Corridor Opening to STAA (299-44-36-395) projects).
- Fund near-term projects and develop actions to support those longer-term priority projects that are characterized as not fitting the short-term criteria but are highly important to this region and cannot be funded under traditional funding programs.
- Encourage regional partners to pursue Project Approval and Environmental Document (PAED) on priority projects in preparation for competitive funding programs.

- Improve passing opportunities (e.g., truck climbing lanes) or physical restrictions like narrow and winding roadways, substandard vertical and horizontal road alignments, freight bottlenecks, and weight restrictions where feasible and practical.
- Address significant conflicts between local and interregional travel ("Main Streets" as highways).
- Asset Management.
- Improve deteriorated roadways.
- Improve truck parking and service opportunities.
- Complete the California Freeway and Expressway System on critical rural freight routes.
- Upgrade key supporting routes that serve as alternatives or redundant options to the State Freight Network by bringing them to the facility concept.
- Develop strategies at select locations to allow the passage of industry-standard STAA trucks, thereby opening the entire priority interregional corridor for STAA access (e.g., U.S. 101 Corridor, SR 20 through Marysville, SR 44 Corridor (SR 299/44/36/U.S. 395)).
- Identify and provide improved detours that can be utilized during road closures and inclement weather (e.g., detours around the Siskiyou Mountains and Sacramento River Canyon, I-80 to SR 20/49).
- Remove gaps in the transportation system (e.g., complete I-5 to 6-lanes within the Redding/Anderson area) to accommodate freight flows.
- Expand the use of Intelligent Transportation Systems (ITS) to enhance early warning and real-time information for pre-trip and in-route traveling.
- Encourage truck climbing lanes were feasible and practical.
- Improve the freight transportation system to accommodate emergency response vehicles.
- Incorporate wider shoulders on key freight routes for added cyclist and pedestrian safety.

Central Sierra Region

SECTION 1. REGIONAL OVERVIEW

The Central Sierra Region (CSR) is comprised of the TRPA boundaries within Placer and El Dorado (Caltrans District 3), Inyo and Mono Counties (District 9), and Alpine, Amador, Calaveras, Mariposa, and Tuolumne Counties (District 10).

The Sierra Nevada's western slope encompasses some of California's oldest transportation routes. Many highway alignments follow corridors developed during the Gold Rush that were subsequently developed as private toll roads until the establishment of the SHS in the early twentieth century. Many of these original routes provided access to markets for the various primary extractive industries in the region—mining and quarrying, logging, and to a lesser extent, farming and ranching. After World War I, trucking displaced rail as the primary transport mode of these goods. With time, the region shifted from a shipper of goods to a receiver. Although some extractive mineral operations remain in operation, gold mining essentially ceased with the executive order to close the mines during World War II. Logging declined as global markets expanded in the 1980s. Although farming and ranching continued, there has been little impetus or opportunity to increase or preserve market share relative to other agricultural regions. During the period following the 1970s, population growth in the region increased primarily due to migration from other areas, which may contribute to the region's above-average median age compared to the State's.

Tourism and recreation were components of the local economy as far back as the nineteenth century. Yosemite Valley businesses aligned with tourism have boomed since World War II. The CSR's travel industry comprises of retail and services, including lodging establishments, gas stations, retail stores, restaurants, and other businesses supporting recreation and tourism. Income from tourism benefits the region directly (employment and earnings linked to spending from travelers at establishments), indirect impacts (employment and earnings linked with the industries that supply goods and services (e.g., hotels, car rentals, ski resorts), and induced impacts (employment and earnings linked to the purchase of food, lodging, and transportation for the travelers and the travel industry employees). It is important to note that the direct travel impacts of recreation and tourism in CSR benefit the state and local economies. For example, in 2018, approximately $357 million in state and local taxes were generated by direct travel spending (e.g., fuel, food, services, and lodging). Please see **Table 6.4** for direct travel impacts by county in 2018.

Table 6.4: Direct Travel Impacts by County (2018)

	Spending			Tax Revenue		
County	**Total**	**Destination ($Millions)**	**Employment (Jobs)**	**Local (Mil, USD)**	**State**	**Total**
Alpine	35	35	271	1	1	2
Amador	150	143	2,137	5	7	12
Calaveras	205	196	2,752	5	9	15
El Dorado *	1,040	986	12,392	44	46	90
Inyo	246	242	2,462	10	9	19
Mariposa	473	470	4,122	21	14	35
Mono	608	605	5,608	36	19	55
Placer *	1,413	1,328	14,487	44	64	109
Tuolumne	264	254	2,396	9	12	20
Total	4,434	4,259	46,627	175	181	357

**Represents the entire county*
Source: Dean Runyan Associates, Inc. (2019). 2010-2018 California Travel Impacts, Sacramento, CA: State of California

The travel industry relies on freight moved by trucks along the SHS to provide fuel to the gas stations, produce to the stores, and supplies to the hotels. A reliable and connected freight transportation system is critical to supporting this region.

While tourism is a significant economic generator, it has also shaped regional land use and demographics over the decades. Travelers captivated by the region's beauty perceive this area to be more affordable and offer a better quality of life for the elderly than the highly populated urban areas. Affluent city dwellers relocate to the CSR with the expectation that they will have the same access to goods and services that they had in urban areas. They usually discover that access to medical services and other goods and services are significantly

diminished in these rural areas – forcing these often-elderly drivers to maneuver local rural highways for lengthy trips to access critical services.

Table 6.5 below describes the distinguishing characteristics of each county in the Central Sierra region.

Table 6.5: Central Sierra Regional Overview

County	Distinguishing Characteristics
Tahoe Basin (Basin) Counties	The Basin is located in the SNMR, along the eastern portion of California in ED and PLA Counties and is centered by Lake Tahoe. It comprises 71 shoreline miles (42 miles in CA and 29 in Nevada). The Basin relies heavily on tourism, which often peaks in the summer and winter due to the large number of resorts and outdoor activities in the area. Planning and land use operations are handled jointly by the State of California, the State of Nevada, TRPA, the Tahoe Transportation District (TTD), and other special interest groups focusing on watershed protection and environmental and animal preservation.
Alpine (ALP)	ALP CO is located in the Sierra Nevada Mountains in eastern California. It is approximately 30 miles south of South Lake Tahoe, 85 miles south of Reno, Nevada, and 120 miles east of Sacramento. Recreation and tourism comprise a large part of the economy and employment. The County's rugged terrain and remote location make it an ideal recreational space. Roughly 95% of the County's land is publicly owned and designated wilderness areas or open spaces, making it a prime location for fishing, skiing, hiking, hunting, and bicycling.[257] However, the harsh winter weather and heavy snowfall often result in winter road closures.
Amador (AMA)	AMA CO is located approximately 35 miles southeast of Sacramento on the western slope of the SNMR. The county has a diverse topography with elevations in the Foothills at around 250 feet to approximately 9,000 feet above sea level in the mountainous regions. Amador's economy was hit hard by the last economic recession, resulting in about 3.5% of its population (1,350 residents) moving out of the county between 2010 and 2013.[258] Like Alpine County, Amador's economy relies heavily on recreation and tourism. Amador's economy is also supported by the Mule State Prison, wineries in the Shenandoah Valley, and mineral resources industries near Ione.
Calaveras (CAL)	Tourist attractions in the CAL CO include gold-panning, wine tasting, skiing, camping, hiking, fishing, cavern-exploring, and bicycling. According to the Calaveras Visitors Bureau, over a million visitors visit the county annually, and tourism supports 2,400 jobs in the county and contributes nearly $6 million in state and local taxes[259]. Future employment growth is expected to occur in sectors such as construction, leisure and hospitality, education and healthcare, and government services.
Mariposa (MPA)	MPA CO's primary industries include recreation associated with Yosemite National Park and government services. The leisure and government sectors employ nearly 4,000 people, and more than half work in or around Yosemite, either maintaining the park or serving the millions of tourists annually.
Tuolumne (TUO)	TUO CO is a destination for tourism. Most travelers use the state highways to access the county. State Park destinations include Columbia State Park, Railtown 189, and Yosemite National Park. "According to Yosemite National Park, in 2015, approximately 1.2 million visitors were using the Big Oak Flat Entrance to Yosemite along SR 120. The TUO CO's Visitors Bureau estimates that county visitors added approximately $205 million to the local economy in 2014[260]."
Inyo (INY)	INY CO, located in the easternmost portion of central California, spans the southeastern length of the SNMR between Bishop and north of Walker Pass. It borders the State of Nevada (east), Mono (north), and San Bernardino and Kern Counties (south). It comprises the low

	desert of Death Valley, the high desert of the Owens Valley, and the dramatic escarpment of the eastern High Sierra, including Mt. Whitney (14,495 feet). The City of Bishop is the only incorporated city. Other major communities within the county include Big Pine, Independence, Lone Pine, and Shoshone.[261] Domestic and international tourism is the major economic activity. The region hosts over 13 million visitors annually. Although development is limited since much of the land is publicly owned (2 percent private ownership), in 2018, agriculture production was $21,499,000. Other natural resource-related industries, including renewable energy and mining, depend on the highway system for production and maintenance access.
Mono (MNO)	In 2007, MNO CO's estimated population was 13,985 persons (7,650 persons (54 percent) in Mammoth Lakes and 6,425 persons (46 percent) in the unincorporated portion of the County).[262] MNO CO is home to the Mammoth Mountain Ski Area, which attracts hundreds of thousands of visitors annually. The county is also a popular destination for summer recreation destinations including the eastern entrance to Yosemite National Park, Inyo National Forest, and Mono Lake. Development is limited due to much of the land being public (7 percent private ownership). In 2018, agriculture production was $32,347,000. Other natural resource-related industries, including renewable energy and mining, also rely on the highway system for production and maintenance access.
Source: Caltrans, 2019	

TRUCK ROUTES

United States Highway (U.S.)

U.S. 6

United States Highway 6 is an interregional route that links California with other economic hubs in the western U.S. It provides access to commercial, residential, agricultural, and recreational lands and is the main street for the communities of Chalfant and Benton. This route is part of the Strategic Highway Corridor Network (STRAHNET), a network of highways providing the military with continuity and emergency capabilities for defense. Most freight on U.S. 6 flows between Southern California, northern Nevada, and Idaho. The Eastern Sierra Corridor Freight Study (2019) estimates that the AADTT traffic will grow from 37% to 58% by 2040. During inclement weather conditions, U.S. 6 serves as a detour for U.S. 395.

U.S. 50

United States Highway 50 is an east-west highway from its junction with I-80 (Yolo County) through Sacramento County and into the State of Nevada (via El Dorado County). Within the Tahoe Basin, US 50 serves as the main commercial thoroughfare for South Lake Tahoe and Meyers communities. The route is heavily congested during the summer and winter peak tourism months. Tahoe Basin industries depend on this route to provide access for the delivery of goods and services.

U.S. 395

United States Highway 395 is a principal north-south freight corridor beginning in San Bernardino County and continues to the California/Oregon State Line. This corridor consistently provides a high level of service and lifeline accessibility for rural communities and interregional and interstate movement of people, goods, and recreational travel along the eastern slope of the SNMR in both INY and MNO Counties. Approximately 60 percent of the AADT is attributed to recreational activities, and 20 percent is attributed to goods movement. The Eastern Sierra Corridor Freight Study (2019) estimates that the AADT for truck and five or more axle truck

categories to grow from 37% - 59% by 2040. U.S. 395 is also the main street for many rural communities in the Eastern Sierra, including Lone Pine, Bishop, and Bridgeport. It also provides critical links to U.S. 6 and I-80 to the north and SR 14 to the south.

State Routes (SR)

SR 49

State Route 49 is a north-south interregional route that serves historic California Gold Rush mining communities. This rural highway begins at Oakhurst (MAD CO) and generally continues northwest through the counties of TUO, CAL, AMA, ED, PLA, NEV, YUB, SIE, and PLU before ending at its junction with SR 70 in Vinton. SR 49 is the main street through the Sierra Nevada foothills and is an important "last mile" connector for the local goods movement.

SR 88

State Route 88 is an east-west Trans-Sierra route connecting Stockton, CA, to the State of Nevada. It is an essential route for importing alfalfa from Nevada to California dairies. The route is the southernmost year-round highway until SR 58 over Tehachapi Pass in Kern County. Although SR 88 is an STAA route to the City of Jackson, it is an alternative route during intermittent winter closures of I-80 and U.S. 50.

SR 89

State Route 89 is a north-south interregional mountain highway that begins at I-5 in Mount Shasta and ends at U.S. 395 near Coleville (MNO CO). This 243-mile-long corridor provides access and serves as a major thoroughfare for many small communities in northeastern California and provides access to major recreational attractions and resource areas. Tahoe Basin industries are dependent on this route to provide access for the delivery of goods and services. This route provides lifeline access to Sierra and Alpine Counties and provides a linkage between I-5 and routes SR 36, 44, 70, and 299. During the winter, portions of SR 89 are closed between Lassen National Park and Monitor Pass.

SR 120

State Route 120 is an east-west highway that connects I-5 east of the Bay Area to U.S. 6 north of Bishop. This route was the first highway to connect to Yosemite National Park, and it is one of the original state highways constructed prior to World War I. Although it is a critical truck freight route into TUO CO, the park restricts freight crossing Tioga Pass.

SR 267

State Route 267 is an east-west, 11-mile-long, undivided two-lane mountain highway that connects I-80 in Truckee (NEV CO) to the North Shore of Lake Tahoe in Kings Beach (PLA CO). This corridor provides access to recreational, residential, commercial, and industrial uses. Recreational sites include the Northstar California ski and year-round resort and the Martis Creek Lake recreation area. Facilities along the SR 267 corridor include the Truckee Tahoe Airport and the town's primary administrative offices.

Freight Rail

Historically, there were several logging railroads in Mother Lode. Currently, one Class III short line serves Tuolumne County from Stanislaus County, paralleling the Stanislaus River. The Sierra Railroad provides recreational and freight services between Oakdale and Standard irregularly.

Air Cargo

Bishop Eastern Sierra Regional Airport received commercial designation in Fall 2020 and provides commercial service both in the summer and winter.

SECTION 2. CORRIDOR STRATEGIES

In the state's densely populated urbanized areas, manufacturers and industries are located near large highways and interstates, and freight providers have modal choices (shipping, rail, air cargo). However, rural CSR communities are isolated from each other and the rest of the state by miles and mountains, rely heavily on trucks for moving freight, and do not have direct connections to major freeways, interstates, or major population centers. For example, of the seven counties (Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, Tuolumne) and partial counties of Tahoe Basin (El Dorado and Placer) that comprise this region, only Placer County has direct access to an interstate route (I-80).

Furthermore, many CSR highways were constructed decades ago, during the interwar period (1918 to 1939), and have rarely been upgraded to current design standards. Subsequently, these routes have truck weight and length restrictions because they have not been upgraded to accommodate STAA freight industry standard trucks. These restrictions limit accessibility to this region to smaller non-standard trucks and result in more freight trips, vehicle miles traveled, increased emissions, and greater transportation and product costs. Highways with STAA segment gaps have choke points that prevent freight industry standard tucks from accessing the region. As a result, truckers must make more trips using smaller California Legal trucks not equipped with clean technologies to move the same amount of goods. Simply put, with complete STAA access, manufacturers and industries could move more goods and utilize clean technologies with fewer trips while decreasing VMT.

A vital transportation system consideration is providing an efficient modern truck connection between the cities and towns of the region with the larger freight hubs and providing a continuous STAA route and a connection for last-mile service. A secondary consideration is to develop an interconnected network by providing a north-south connection along SR 49 consistent with its inclusion in the National Highway System.

For the routes that may have zero-emission or near-zero-emission trucks, accessibility to charging stations remains a challenge. Millions of visitors are drawn to the CSR to view the beauty of the rugged mountains, hike mountain trails, and fish rivers and lakes. The same geographic features that make this area a tourist favorite make it difficult to move freight and maintain the transportation system. The steep and unpredictable terrain creates challenges for developing surface roads, which often follow narrow, winding, steep river valleys and mountain passes unsuitable for large truck transport. During winter, these mountainous highways are susceptible to closures due to landslides, slippages, flooding, and snow cutting off rural communities from the rest of the state. Truck drivers that serve this region must travel further distances, consume more fuel, and incur greater transport costs. Truck drivers have difficulty finding parking due to

narrow highway shoulders, few turnouts, and lack or limited services offered by these isolated communities.

The CSR is heavily impacted by wildfires, which requires regional highways to support freight movement, act as evacuation routes, and provide access to CalFire and Forest Service so they can combat wildfires and stage firefighter camps quickly. Prescribed forest thinning will likely increase logging activity in the Central Sierra with associated logging vehicle traffic. Power and water utility trucks also require rapid access to their facilities during fire season. With climate change, fire seasons are getting longer, causing more frequent demand for larger firefighting equipment. The increased demand makes highway improvements for freight traffic even more critical.

Trucking Strategies

To support the region's freight vision, below is a list of strategies that the region is working to implement:

- Improve passing opportunities or physical restrictions on narrow, winding roadways and substandard vertical and horizontal road alignments.
- Address significant conflicts between local and interregional travel ("Main Streets" as highways).
- Implement or update Intelligent Transportation Systems (ITS).
- Improve deteriorated roadways.
- Improve truck parking and service opportunities.
- Upgrade freight corridors to accommodate STAA trucks.
- Complete the California Freeway and Expressway System.
- Upgrade highways to four-lanes where feasible and practical.
- Encourage truck climbing lanes were feasible and practical.
- Improve the freight transportation system to accommodate emergency response vehicles and evacuation routes.

Bay Area

SECTION 1. REGIONAL OVERVIEW

The San Francisco Bay Area Region (Bay Area) is home to approximately 7.8 million people. A significant share of the regional economy is associated with goods movement-dependent industries. This includes industries that produce goods for sale or for whom transportation access to markets is a critical aspect of their business operations, such as the construction industry. The regional goods movement infrastructure includes the nation's ninth busiest container port (PofOAK) and several specialized seaports, two of the Western U.S.'s most active air cargo airports (SFO and OAK), major rail lines and rail terminals, and highways that carry some of the highest volumes of trucks in California.

Economics of Goods Movement in the Bay Area

In the Bay Area, goods movement-dependent industries account for $487 billion in total output (50 percent of total regional output) and provide almost 1.1 million jobs (32 percent of total regional employment).[263] The significant difference between the shares of industrial output and shares of the employment supplied by goods movement-dependent industries in the region is

that manufacturing is increasingly shifting toward high-value products that do not use labor-intensive production processes, such as biotechnology products and that 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.

The Port of Oakland has three core businesses: 1) operation and management of the seaport, 2) OAK (airport), and 3) commercial real estate along the waterfront (Jack London Square). The PofOAK maintains the highest export ratio of any West Coast port and generally retains a 50/50 balance of import and export container volume throughput. In 2017, the PofOAK commissioned an economic study that revealed the port and its partners supported 84,144 jobs, including 42,401 direct jobs, in the region and was tied to nearly 1,010,697 jobs nationwide through direct, indirect, and induced employment. An Oakland resident holds approximately one in five direct jobs created by the port. The PofOAK generated over $698 million in state and local taxes in 2017, and $117.6 billion of economic activity in California was associated with the imports and exports moving through the seaport and airport.[264]

Local Goods Movement System

The Bay Area goods movement system consists of interconnected infrastructure components, including highways, rail lines and terminals, airports, seaports, warehouses, and distribution facilities. While the system is often described in terms of its modal components, it must function as an integrated whole with efficient intermodal connections.

Global Gateways

Bay Area global gateways include the major maritime facilities at the Port of Oakland, the smaller ports of Richmond, Benicia, San Francisco, and Redwood City, and the San Francisco, Oakland, and San Jose international airports, which handle international as well as domestic air cargo.

The PofOAK expects continued growth in exports. On the import side, the PofOAK faces significant obstacles to growth and landside challenges that must be addressed, including impacts on nearby neighborhoods. While the PofOAK is "Big Ship Ready," the sudden surge in larger post-Panamax ships may create unintended consequences for portside and landside operations.

OAK and SFO currently do not face significant capacity constraints or issues, though local access routes can be improved. One of the critical needs at OAK is building a dike in the airport area that is used for air cargo movements to prevent runway flooding, which could grow more critical in the future due to climate change impacts. Likewise, SFO faces vulnerabilities from sea level rise. Norman Y. Mineta San Jose International Airport (SJC) does not face present capacity constraints but is locked into a limited land footprint without expansion opportunities, should the need arise. The most significant immediate need facing the region's airports is improved roadway access. All three airports experience significant peak-hour congestion and reliability issues on the major truck routes leading to the airports (U.S. 101 and I-880) and on local access routes. The Bay Area also features numerous General Aviation airport facilities that significantly contribute to the region's economic well-being.

Interregional and Intraregional Corridors

The inter- and intraregional corridors consist of primary highways and rail lines that serve to connect the global gateways of the central Bay Area to the rest of the State and other domestic markets. This network provides primary access to major facilities, such as the PofOAK and the international airports of San Francisco, Oakland, and San Jose, rail yards, distribution centers, and warehouse/industrial districts. Key interregional and intraregional truck corridors in the Bay Area include I-80, 580, 880, 38, and 680, U.S. 101, and limited segments of SR 92 (San Mateo Bridge), 152, 4, 12, and 37. Most of these corridors carry between 5,000 and 15,000 trucks per day on average, performing both long-haul and short-haul truck moves. However, on average, key segments of I-880 and I-580/238 connecting the PofOAK to the San Joaquin Valley carry between 15,000 and 37,000 trucks per day.

Traffic congestion is one of the most prominent issues in the Bay Area. Truck delays increase the costs of goods movement and can result in increased truck emissions. Congestion is particularly problematic for truckers because it impacts on-time performance, and, in some cases, shippers may be penalized for the poor reliability of service. Freeway interchange, auxiliary lanes, corridor capacity enhancement, and operations improvement projects have been identified in these major freight corridors to help address these issues.

Two Class I rail carriers, UPRR and BNSF Railway, operate in the region. The UPRR maintains and manages the Martinez, Niles, Coast, Oakland, Warm Springs, and Tracy Subdivisions. At the same time, BNSF operates the Stockton Subdivision. Many passenger rail services also operate on these lines, including Amtrak (Capitol Corridor, San Joaquin, California Zephyr, and Coast Starlight), Caltrain, and the Altamont Commuter Express.

Local Streets and Roads

The local freight system is vital to regional and local goods movement. Local streets are last-mile connectors that provide critical connections between major freight facilities and interregional and intraregional corridors. They are increasingly important with the growing use of e-commerce and the shift towards a knowledge-based economy. Major arterial truck routes often are used as alternatives to congested freeways for city-to-city truck movements. Farm-to-market roads in the region's rural parts are also vital to the local goods movement system and serve critical economic functions. The key issues with local streets and roads include connectivity gaps, modal conflicts, land use conflicts, and truck parking issues.

Environmental and Community Issues

Port of Oakland

Queuing and congestion lead to many air quality and health impacts for neighborhoods nearby the Port. Emissions, noise, and light from port operations can adversely affect the health and wellbeing of residents. The PofOAK contributed about 29 percent of the pollution to the West Oakland community, with the rest being contributed by other local sources in and around West Oakland. This suggests that solutions that address local pollution sources and port-related emission reduction strategies will be important to implement. In addition, the operational and grade crossing issues discussed previously also generate a variety of secondary issues for the Port and the nearby West Oakland community. Over the past decade, through the PofOAK's Seaport Air Quality 2020 and Beyond Plan (the successor to the Maritime Air Quality Improvement Program), diesel particulate matter has been reduced by 81 percent. Truck diesel emissions are down 98 percent, and ship emissions dropped 78 percent. Further, AB 617 (2017) directs air regulators to identify communities with a high cumulative pollution exposure burden and to work with communities to develop solutions. The Bay Area Air Quality Management District (BAAQMD) prepared the West Oakland Community Action Plan[265] in 2019, which lays out a series of measures to be implemented over the next five years by state, regional, and local agencies to reduce pollution in the community.

Rail System

The rail system also has a significant impact on communities. At-grade crossings introduce safety concerns (risk of derailment, emergency response time) and traffic delay issues to the overall transportation system. Crossing safety and traffic delay (including buses) are related to roadway traffic volumes and the number of trains using the route. Train horn regulation also creates noise impacts on adjacent communities. Targeted safety improvements have been identified, such as grade crossing improvements at Jack London Square in Oakland, Emeryville, and Berkeley, the establishment of Railroad Quiet Zones in Fremont, and the quiet zone exploration in Richmond to mitigate these impacts.

Major Trends Influencing Goods Movement in the Bay Area

In recent years the Bay Area has planned for compact development in Priority Development Areas adjacent to transit. This can create redevelopment pressure in older industrial centers, leading to conflicts between goods movement and passenger transportation modes on congested roadways and rail lines. As land values have risen, much of the region's distribution network for serving consumer demands has moved to the northern San Joaquin Valley and northern Nevada. This is exacerbating congestion and safety conditions on the region's interregional highways.

Along with the region's concern over housing affordability comes an overarching concern about equity in land use and transportation decisions. Within the region, there is a need to address environmental justice issues while reducing pollutant emissions. The region's major goods movement corridors and facilities tend to be concentrated in close proximity to communities that are disproportionally low-income and/or communities of color and where environmental justice concerns are significant. Continued investment in goods movement in these corridors must minimize impacts on these communities. At a broader level, the region continues to pursue strategies to address climate change and environmental sustainability goals as a core

component of its transportation plans. This will require new approaches and new technologies for goods movement.

SECTION 2. POLICIES, PROGRAMS, AND MAJOR FREIGHT INFRASTRUCTURE INVESTMENTS

Goods Movement Planning in the Bay Area

In 2016, MTC adopted the San Francisco Bay Area Goods Movement Plan, which identifies five key goals:

- Reduce environmental and community impacts and improve the quality of life in communities most affected by goods movement.
- Provide safe, reliable, efficient, and well-maintained freight movement facilities.
- Promote innovative technology strategies to improve efficiency.
- Preserve and strengthen a multi-modal system that supports freight movement and coordinates with passenger transportation systems and local land use decisions.
- Increase economic growth and prosperity.

MTC adopted a near-term (10 year) goods movement investment strategy to implement the plan in 2018. The investment strategy identified three main focus areas to achieve regional goods movement goals: Roadways, Railways, and Community Protection. The investment strategy was designed to help the region in the following ways:

1. **Deliver projects that can improve mobility and economic vitality**. The strategy will help implement projects and programs crucial to achieving the performance targets in MTC's Regional Transportation Plan/Sustainable Communities Strategy, Plan Bay Area 2050, including reducing delays on the regional freight network, increasing middle-wage jobs, and reducing per capita GHG emissions.

2. **Address community and environmental concerns of freight**. This strategy also sets forth a commitment to reduce the impacts of pollution on communities, mitigate emissions from existing technologies, and adopt cleaner technologies. The BAAQMD would lead these efforts in coordination with MTC, Alameda County Transportation Commission (ACTC), PofOAK, and public health and environmental groups.

3. **Enable the region to coordinate and compete for state and federal fund sources**. Over the past couple of years, three new major state and federal funding programs with a direct nexus to freight have been initiated. These include the NHFP, Nationally Significant Multimodal Freight and Highway Project (INFRA), and the SB 1 TCEP. Staff estimates that the region may receive over $1 billion in funding over the next ten years from these funding sources alone.

MTC is in the process of developing an updated goods movement investment strategy, which will incorporate new fund sources such as the Port and Freight Infrastructure Program.

Example Freight Infrastructure Investments

Port of Oakland

Access to and from the Port presents significant challenges. The most significant constraint, aside from long wait times at container terminal gates, is the impact of at-grade railroad crossings in

the Port, specifically on Maritime Street, where both at-grade crossings can simultaneously be blocked by one train and result in significant truck queues. The Global Opportunities at the Port of Oakland (GoPort) program of projects will reduce emissions from idling trucks, increase port operational efficiency, and provide significantly improved truck and rail access. The proposed grade separation and roadway reconfiguration of 7th Street from Maritime Street to Navy Roadway would eliminate the at-grade crossing of Maritime Street near 7th Street and improve operations. A third gateway to the Port, Adeline Street, features a structurally obsolete bridge with grades that are not safe for trucks to traverse. Further, expanded intermodal rail terminal capacity and improvements on the rail mainlines accessing the Port, increased nearby transload warehousing capacity, and other improvements are proposed as part of the Oakland Army Base Redevelopment Project that still needs additional funding.

Equipment and non-equipment-based emission reduction projects have been identified for the PofOAK. The projects include upgrades to ZE/NZE equipment, port electrical grid improvements, facility upgrades, emission reductions, and extended gate hours/days. The Green Power Microgrid (GPMG) project would enable the PofOAK to support a high number of electric vehicles by increasing the renewable energy mix available to the Port and surrounding communities. By increasing the current ZEV capacity at Port from 50 pieces of equipment to approximately 1,000, this would optimize the grid through load shifting and demand management, as well as distributing power during periods of excess solar generation, providing back-up renewable shore power, modernizing grid connections, and significantly increasing the ability to support grid-connected refrigerated containers, while improving air quality and health outcomes in neighboring communities.

Mainline Rail

The region's most constrained segment is the UPRR Martinez Subdivision between Richmond and Oakland. Adding more trains to this network segment may result in unstable operating conditions, seriously degrading Amtrak's Capitol Corridor's on-time performance and intermodal and unit trains moving to and from the PofOAK. In Solano County, there are several locations where switching operations that are necessary to access industrial customers have to take place on the mainline due to insufficient industrial spurs and leads. This has the effect of reducing capacity and increasing travel times for both passenger and freight trains.

The Industrial Parkway, Shinn, and new wye connections at Lathrop and Stockton junctions are all expected to improve system connectivity. Likewise, targeted operational improvements such as the City of Hercules Third Track, upgrade of the waterside drill track to 3 mainlines between Port and Bancroft, and track improvements to the Coast Subdivision will improve system capacity and operations.

Central Valley

The Sacramento-San Joaquin River Valley and its networks of surrounding gateway passes and connecting routes make up the Central Valley Corridor (Valley), which has long been acknowledged as a critical goods movement corridor in California. This vast corridor is served by portions of Caltrans Districts 3, 6, 9, and 10. The region includes over half the State's geography (33 of 58 counties), is the fastest growing (twice the state average rate), and in 2019 became the second most populous region in California, surpassing the San Francisco Bay Area.[266] Past planning efforts created a logical, cohesive, integrated goods movement system in the Central Valley.

There are three general types of freight movements in the region, the global export of agricultural goods and products, the regional import of finished goods from major urban and manufacturing centers into the cities and towns, and the interstate and international transport from other regions through the Valley. Although the dominant transport modes are trucking, rail, maritime, and air transport, all have their roles within the region. The pattern is further complicated by the relocation of warehousing and distribution centers from the urban areas along the Coast into the Valley to take advantage of lower property values and wages, and by the local freight movements from farms to processing centers and local markets.

I-5, SR 99, and BNSF/UPRR rail mainlines provide the backbone for goods movement to major gateways in Southern California, the Bay Area, and out of the state. In addition, the region features an extensive cross-valley connector system, including routes such as SR 20, I-80, SR 120, SR 4, I-205, SR 165, SR 198, SR 41, SR 46, SR 58, SR 132, SR 108, and others, as well as a system of inland waterway/ports and short-haul rail. The Central and Southern Valley reported that goods movement-dependent industries (including agriculture/dairy/ranching/forestry, food processing, construction, energy production, and transportation/logistics) accounted for more than 564,000 jobs and $56 billion in economic output in 2010, with over 463 million tons of goods moved into, out of, and within the region. This is expected to grow to more than 800 million tons by 2040. The corridor includes the three largest agriculture-producing counties in the nation the region is becoming a significant logistics hub with expanding mega-distribution centers and new manufacturing/processing facilities.[267]

Projects to enhance goods movement in the Central Valley Corridor may also benefit regions outside the Central Valley. Approximately half of all 5-axle plus trucks moving through the Valley on I-5 (approximately 6,000 daily) originate from or travel to destinations outside the region.[268] Although heavy trucks comprise about 11 percent of volumes on I-5, many gateway and cross-valley connector routes have greater than 30 percent of truck volumes.[269]

Sustainable technologies, programs, and policies in the Central Valley Corridor have the most significant potential to advance a number of targets in the CSFAP:

- Improve system efficiency, i.e., truck platooning, load matching, increase diversion of freight from truck to more efficient modes such as rail, shorter routes, etc.
- Transition to low- and zero-emission technology, i.e., hydrogen, electric, etc.
- Increase competitiveness and economic growth, lower export shipping costs for agriculture and other products to improve the state economy while improving disadvantaged communities' jobs/housing balance.

The Central Valley region Freight Investment Strategy is comprised of two parts due to the large size of its geographical area — 1) the Northern Central Valley and then 2) the Mid and Southern Central Valley. Each part has two sections — 1) a regional overview narrative and 2) a description of policies, programs, and major freight infrastructure investments.

SECTION 1. REGIONAL OVERVIEW

North Central Valley (Sacramento Region)

The Sacramento Region is a crossroads for freight moving into and out of California. The Northern Central Valley region includes the interior coastal range to the west, flat agricultural land across the valley, foothills, river canyons, and the Sierra Nevada Mountains. The region, located north of

San Joaquin County and northeast of the Bay Area, covers the counties of El Dorado, Placer, Sacramento, Sutter, and Yolo. The region has a diverse range of industrial uses, with distribution and warehousing representing nearly 80 percent of the total industrial inventory between the Bay Area, Monterey, and San Joaquin regions. The region is also home to the J.R. Davis Rail Yard in Roseville, the largest intermodal rail facility on the West Coast. Like San Joaquin County, I-5 and SR 99 are the critical north-south truck routes throughout the SACOG region. I-80 is the key east-west truck route between the bay area and interstate freight to the east.

Highways

Trucks are the primary mode, hauling approximately 68 percent of all regional commodity tons moving through the region and over 95 percent of all goods with an origin or a destination within the region.

The region is home to the northernmost freeway hub for freight movement within the State within the Sacramento region, where corridors such as I-5, I-80, US 50, SR 51, and SR 99 intersect. Within District 3, priority freight corridors include I-5, I-80, SR 49, US 50, and SR 70 that provide interregional and intraregional routes. Additionally, the following corridors are part of the truck network within Caltrans District 3. Routes include SR 12, SR 16, SR 20, SR 29, SR 45, SR 49, US 50, SR 51, SR 65, SR 70, I-80, SR 84, SR 89, SR 99, SR 104, SR 113, SR 128, SR 153, SR 160, SR 174, SR 193, SR 220, SR 244, SR 267, SR 275, and I-505. These corridors vary from Main Streets, highways, and freeways that have direct or indirect impacts to communities and movement of people and goods.

During the winter months, approximately $5.5 to $7.6 million-dollar value per ton per hour are lost when trucks are delayed on I-80 from passing over Donner Pass between Sacramento and Reno.[270]

SACOG's Rural-Urban Connection Strategy (RUCS) effort also noted that agricultural commodity processing is largely performed by large-scale processors in the San Joaquin Valley, and these commodities travel almost exclusively by truck. The lack of processing capacity requires small and medium-sized farming and ranching operations to drive longer distances to markets and has been identified by SACOG as an issue that affects local growers' ability to offer a greater diversity of products in the marketplace. Developing a new infrastructure of processing facilities to serve the region's local marketplace has been recommended by SACOG as a strategy that could increase and extend the market viability of these value-added products and reduce truck VMT.

The 2015 Caltrans District 3 Goods Movement Study found that bottlenecks are concentrated around the U.S. 50/SR 99 Interchange in East Sacramento, on I-5 in downtown Sacramento, on I-5 south of I-80, at the junction of U.S. 50 and SR 16, at the junction of I-80 and SR 99, and along SR 99 in Elk Grove.[271] These bottleneck locations are all within a 15-mile radius of downtown Sacramento.

California Trucking Association and other outreach participants in the Goods Movement Study indicated that interchanges at I-80/Mace, I-80/U.S.50, and I-80/SR 51 are the worst freight bottleneck locations in the Sacramento area.

Building upon analysis from the Caltrans District 3 Goods Movement Study, the 2020 Placer Sacramento Gateway Plan (PSGP) further identified congestion and bottleneck locations on

sections of US 50, SR 51, I-80, Business 80, and SR 65 in the Sacramento/Placer County regions. The PSGP highlighted bottleneck areas along the study area where travelers can experience up to 15 minutes of additional travel time on a typical weekday due to freeway delay alone. Major corridor bottlenecks include eastbound and westbound Business 80 in Sacramento, westbound I-80 near Citrus heights, and the I-80/SR 65 interchange area near Roseville and Rocklin.

Major Road Truck Network

After 2012, SACOG began to inventory and map the region's goods movement network and trucking routes. This effort identified the STAA routes, California legal routes, and local restricted or recommended routes. These routes were mapped with the intensity of trucking in the region, measured in trucks per acre. The study found that STAA trucks and 48-foot and longer semi-trailers were using secondary highways and arterials in the region--despite their lack of ability to handle the dimensions of the longer vehicles. Often, industries are located in areas where longer STAA trucks do not have access to complete STAA routes/networks—areas such as the east side of Woodland, West Sacramento, North Sacramento, the Richards Boulevard area, South Sacramento, and Galt.

Air Cargo

Sacramento International Airport and Sacramento Mather Airport are among the top ten air cargo carrying airports in the state. Sacramento International Airport is one of the top 10 cargo airports in California, carrying more than 200 million pounds of freight each year. With nearby Amazon and Walmart distribution centers, demand for air cargo facilities is only growing in Sacramento. Air cargo at Sacramento International Airport is expected to grow 1.9% annually, adding another 100 million pounds of freight by 2040. Air cargo at SMF has grown 71% over the past decade and is expected to continue to grow as Amazon and FedEx locate regional facilities near the airport. The Amazon Fulfillment Center located near SMF, is expected to increase employment in the coming years due to the increase in online shopping and will use the corridor for their freight and shipping needs, although smaller personal vehicles and vans are occasionally employed for goods movement instead of semi-trucks. Sacramento Mather Airport (MHR) is approximately 14 miles east of downtown Sacramento south of U.S. 50 and is Sacramento County's designated airport to capture regional air cargo growth. MHR handled 836,000 metric tons of cargo in 2021, a 1086% increase from 2018. This is attributed to increase in e-commerce. United Parcel Service operates a 20,000-square-foot facility at MHR. The airport has 66 acres of existing and designated land for additional warehouse, office, auto parking, and trucking operations areas.

Inland Ports

Port of West Sacramento

This inland bulk port is located 4.7 miles west of downtown Sacramento near U.S. 50 in Yolo County. The Sacramento Deep Water Ship Channel (DWSC) runs 43 miles from Antioch (in Contra Costa County) near the mouth of the Sacramento River, ending at the harbor of West Sacramento. The Port can accommodate five ships at berth simultaneously. North Terminal cargo facilities are currently leased and operated by SSA Marine. There are over 300 acres of vacant, developable property surrounding the North Terminal that is currently managed by the Port.

Rail

Four freight railroad systems operate in the Region:

- **UPRR**, the largest Class I freight railroad in the U.S., it operates 3,267 miles of track in California. The J. R. Davis Yard, located in the City of Roseville in Placer County, is the largest classification yard on the West Coast. Approximately 98 percent of all UPRR traffic in Northern California is moved through this yard.
- **BNSF Railway**, the largest Class I intermodal container carrier in North America and the largest grain-hauling railroad in the U.S. In California, BNSF operates over 2,130 miles of track—1,155 miles of which are owned by BNSF with 975 miles of through trackage rights.
- **Sierra Northern Railway (SERA)**, the Class III regional railroad operates between Woodland and the Port of West Sacramento and interchanges with BNSF and UPRR. Typical commodities hauled include wood products, bulk commodities, agricultural and food products, as well as chemicals and steel.
- **California Northern Railroad (CFNR)**, the Class III short-line railroad operates two lines on tracks in District 3: between Davis in Yolo County and Tehama in Tehama County (District 2), and between Wyo and Hamilton City in Glenn County. CFNR carries mostly food-related commodities along with some stone, petroleum products, and chemicals.

According to the FAF database, rail tonnages traveling through the region are expected to grow from just over 30 million annual tons in 2011 to nearly 48 million tons by 2035 (approximately two percent per year).[272]

PART 1. SECTION 2: POLICIES, PROGRAMS, AND MAJOR FREIGHT INFRASTRUCTURE INVESTMENTS

Regional Policies and Programs

SACOG looks to grow its multibillion-dollar agricultural economy; and recognizes growth depends on rural roads, highways, and freeways, as trucks are the main form of transportation for agriculture in the region. The RUCS project seeks to better understand how trucks and other traffic are utilizing designated trucking routes and other roads in the region to guide strategic investments in the area and better plan for maintenance and upgrades.

SACOG's MTP/SCS invests nearly $2 billion of the Plan's road capacity budget in projects that will primarily be carried out by Caltrans for state highway investments. The investment focus is on new managed lanes, auxiliary lanes, and interchanges along the freeway system. Collectively, these investments serve travel between activity centers and accommodate trucks for inter-regional goods movement. Freight movement through the Sacramento region is predominately through trucks that carry goods from agricultural areas and port which are reliant on the highway network. Fixing bottlenecks along trucking corridors is important for effective movement of goods throughout the region and for traffic management. The MTP/SCS includes the following freight supportive policies and are consistent with California Sustainable Freight Action Plan Principles:

- SACOG should continue to inform local governments and businesses about a regional strategy for siting industry and warehousing with good freight access.
- Consider strategies to green the system, such as quieter pavements, cleaner vehicles, and lower energy equipment where cost effective, and consider regional funding contributions to help cover the incremental cost.

- SACOG should study, consult with, and help coordinate local agency activities to provide for smoother freight movement through and throughout the region.
- SACOG intends to preserve some capacity on major freeways within the region for freight and other interregional traffic by providing additional capacity for local and regional traffic on major arterials that provide alternative routes or running parallel to the major freeways.
    - An example of this effort is the Baseline/Riego Road connection from Roseville along the I-80 corridor and SR 99 in Sutter County. This roadway provides an east west connection to help divert around the Sacramento Core

SACOG also programs Federal and State funding for freight supportive projects in the Metropolitan Transportation Improvement Program (MTIP) and State Transportation Improvement Program (STIP) through regional funding rounds. SACOG assists project sponsors to objectively assess their funding applications against a variety of project selection criteria using SACOG's Project Performance Assessment (PPA) tool to analyze transportation investments at the project level. The tool specifically analyzes the following freight supportive metrics based on the project characteristics and footprint.

- Improve Goods Movement, including Farm-To-Market Travel, in and through the Region
    - Does the project serve, or connect to, a corridor used by goods movement? Indicator: Commercial VMT/ Total VMT
    - Does the project serve a facility that is congested for freight and goods movement travel? Indicator: Commercial Congested VMT(CVMT)/Commercial VMT
    - Does the project serve an area with freight-dependent jobs? Indicator: Percent of jobs in freight-dependent industries

Example Freight Infrastructure Investments

A SACOG inventory of STAA routes around the Port found that the network was not complete. Ensuring there is a complete network of access roads to and from the Port for STAA trucks is important to facilitate the continued growth of Port activities.

SR 99 and I-5

SR 99 and I-5 are two north-south corridors that cross through the mega-region. Coordinating improvements to SR 99 and I-5 could better support truck flows. This may include safety improvements and targeted capacity improvements, as well as conceptual strategies such as truck-only toll lanes to allow for smoother speeds and truck platooning. Simultaneously, facilitating truck movement between SR 99 and I-5 would help reduce congestion throughout the mega-region, as SR 99 was not originally designed to Interstate standards and passes through several major urban areas.

I-80 Corridor

I-80 is the east-west corridor that crosses the mega-region and supports year-round national freight movement across the Sierra Nevada Mountains to and from the east. Investments could include truck climbing lanes, truck parking, electric charging or hydrogen fueling locations, and investments to SR65 and SR20 to divert a significant number of trucks away from the congestion

on I-80 near I-5 and US50 in downtown Sacramento.

SR 65 Corridor

The SR 65 corridor is a north-west corridor that connects the Roseville/Rocklin areas of Placer County to the Yuba County near Marysville. This section of the route transitions from a freeway to a highway and main street that interacts with freight truck traffic. This is illustrated as the corridor's transitions from an urban to rural setting as it transitions to the north. Further investments into the corridor should focus on increasing truck throughput and reducing delay.

Port of West Sacramento Unit Train Landing Track

The Port of West Sacramento works with UPRR, Sierra Northern Railroads, and Cemex to support unit trains to increase competitiveness and rail transport ability. The track improvements needed for unit train service to the Port require the construction of a $1.8M unit train landing track along Industrial Blvd. There are over 300 acres of vacant, developable property surrounding the North Terminal that currently is managed by the Port of West Sacramento. The Port is experiencing some growth after a decade of financial troubles, investments with lower than expected return, and challenging projects. The current strategy includes attracting green industries, deepening the channel to 35 feet along its entire length, and reinitiating the Marine Highway project--establishing a marine highway from the Port of Oakland to West Sacramento that can divert a significant number of trucks off I-580.

Mid and Southern Central Valley

Highways

SR 132

The SR 132 corridor is the primary east/west highway and freight corridor between the City of Modesto and I-580. The route serves Beard's Tract, an industrial area east of Modesto, but does not conform to STAA standards. SR 132 is a major truck connector route along its western portion between I-5 and SR 99. The route is utilized to transport agricultural goods produced in Stanislaus County, such as nuts, vegetables, and fruits, to the Bay Area, PofOAK, and domestic and international markets. Approximately 8.2 million tons of freight use the SR 132 Corridor annually.

SR 108/120

Existing SR 108/120 is a vital east-west interregional corridor connecting the Central Valley's heart to the Sierra Nevada mountains to the Nevada border. It begins from the backbone of the state near SR 99 and traverses through Stanislaus County and the Cities of Modesto, Riverbank, and Oakdale. It continues as SR 120 through the rural counties of Tuolumne, Mariposa, and Mono to the Nevada border.

The corridor combining SR 108 and SR 120 is an important freight corridor route into Tuolumne County. Throughout much of Stanislaus County, it is a two-lane conventional highway traversing the core of downtown Modesto, Riverbank, and Oakdale. Travelers would benefit if the route bypassed the three cities. The North County Corridor (NCC) Project is an integrated freeway/expressway project that would relieve traffic congestion and improve east-west freight mobility in Stanislaus County and the cities of Oakdale, Riverbank, and Modesto. The project will relocate SR 108 on a new alignment (while the existing SR 108 would be relinquished to the

respective public agency as a local roadway) and will connect SR 108 near the City of Modesto to SR 120 near the City of Oakdale. The enhanced connectivity would generate substantial travel time savings, improve safety, reduce emissions, reduce vehicle operating costs, and overall improve quality of life for communities in the region. Implementation of NCC would support efficient movement of goods by providing a new west-east transportation facility that will reduce the number of conflict areas with non-motorized traffic, increase the average operating speeds, and improve travel time reliability. The project would also improve goods movement efficiency at a regional level, which would strengthen the agricultural and general economy of Stanislaus County.

SR 58

Highway 58 is a vital connection between the San Joaquin (SJ) Valley and Southern California/Southern United States via I-15 and I-40. It has seen a significant increase in truck traffic since 2011 of approximately 4,000 trucks per day. SR 58 plays a crucial role in transporting freight from SJ Valley's agriculture industry and distribution centers to Southern California and the Southern United States, especially during the closure of I-5's Tejon Pass due to extreme weather conditions.

The planned intermodal freight terminals in Mojave and Barstow will rely on SR 58 as the east-west corridor for transporting cargo containers delivered by rail from the Long Beach/Los Angeles Ports. The UPRR track through Tehachapi Grade faces limitations, causing congestion in freight rail and increasing reliance on SR 58 freight movement for transporting goods from the SJ Valley. Kern County's multi-rail-truck tonnage is predicted to rise significantly by 2040. The highway requires a safety truck-passing-lane project in the Tehachapi Grade, and by 2023, most of SR 58 will have four lanes, except for a seven-mile segment near Bakersfield.

Crows Landing Road

Crows Landing Road is more than 20 miles long, passing through a rural residential area and providing access to and from I-5 and SR 99 to several medium and large farms and dairy and food processing firms. Both the I-5 and SR 99 interchanges are grade-separated.

Mitchell Road

Mitchell Road is approximately 4.8 miles long, bridging SR 99 and SR 132 and providing access to the Modesto City-County Airport and nearby industrial land uses, including several distribution warehouses and food processing firms. South of the airport area, Mitchell Road passes through residential and commercial land uses In the City of Ceres. The road is generally two lanes in each direction with a center turn lane. Mitchell Road provides direct access for trucks with origins or destinations south of Modesto to reach the airport industrial zone from SR 99.

Air Cargo

Stockton Municipal Airport and Lathrop Intermodal Yard

Complicating the truck traffic at the Roth Road and Lathrop Intermodal Yard is the movement of airfreight associated with Amazon at the Stockton Municipal Airport that employs Airport Way to move parcels and packages to or from their fulfillment centers in Tracy and Patterson. Currently, Amazon runs three daily round-trip flights through Stockton Municipal Airport.

Ports

Port of Stockton

The Port of Stockton is the largest bulk shipping port on the West Coast. A record volume of goods moved in and out of the Port in 2017, and only slowed down with the imposition of tariffs. Efforts have been underway to diversify the Port's cargo handling to include shipping containers as part of the re-implementation of the M-580 marine highway.

Port of Oakland

The Port of Oakland, the largest container port near the region, is responsible for loading and offloading 99 percent of all containerized goods moving through Northern California. It is unclear what the volume of imports arriving at the Port circulate within the Bay Area and the number that move out into the hinterland or move interstate. However, there is increasing growth in trucking companies, transloading, and warehousing in San Joaquin and Stanislaus in the communities of Tracy, Lathrop, Stockton, and Patterson. Many of the projects improving interchanges, grade separations, or last-mile connectors on routes such as I-5, I-205, I-580, SR 120, and SR 99 reflect this change. An example of this is the City of Manteca's proposed McKinley Avenue interchange project on SR 120, which should enhance truck access from SR 120 to Roth Road to nearby warehousing.

Rail

Major Lines, Facilities and Planned Improvements

Within the context of the northern San Joaquin Valley, the major rail freight facilities are located in Stockton and Modesto. There are three facilities associated with the BNSF: the Mormon Yard located in Stockton, the Mariposa Intermodal Yard located southeast of Stockton, and the Beard's Tract/ Valley lift facility in Empire, east of Modesto. There are two additional facilities associated with the UPRR: the Stockton Yard and the Lathrop Intermodal Yard. A planned expansion of the Lathrop Intermodal Yard has led to plans for several operational improvements and upgrades at Roth Road beginning at the ramp with I-5, with STAA improvements at the intersection with Airport Road, and a grade separation. Efforts are underway to address a rail bottleneck at the Stockton Tower Interlink where the two Class I railroads intersect.

Southern Gateways/Connectors

The I-5 Tejon Pass gateway connects the two largest CFMP regions in the state and is the primary highway corridor between Southern California and the Bay Area. It has the highest percent trucks for Caltrans high-volume truck count locations - with 10,000+ trucks per day and 10 percent-plus trucks - seeing more than 13,000 trucks daily, comprising 30 percent of all traffic. By comparison, the SR 710 at SR 405 in Southern California saw 16,000 trucks, comprising 28 percent of the traffic.[273]

Southern California and San Diego are the top origins and destinations for Central Valley goods. The two regions make up 56 percent of California's population, 87 percent of containerized port traffic in California, and more than 30 percent of national container traffic.[274,275] Still, while there are out-of-state rail services in the Central Valley, there are almost no rail freight services between the Central Valley and Southern California.

SR 58 runs through the Tehachapi Pass and connects I-15/I-40 (near Barstow) to I-5 in the Central Valley. SR 58 has experienced an almost four thousand-trucks-per-day increase since 2011 and has 25 percent more truck traffic than I-80 over Donner Pass. A safety truck-passing-lane project is needed on eastbound SR 58 near SR 223. By 2022, the entirety of SR 58 will be four lanes except for a seven-mile segment between I-5 and the west edge of Bakersfield at Stockdale Highway. In addition, the SR 58/14 corridor provides for important freight transport resiliency when I-5's Tejon Pass is closed due to severe climate conditions.

As freight related cost in the Inland Empire increase, the South-Central Valley is experiencing spillover growth from Southern California. Amazon has built fulfillment centers in Fresno and Bakersfield, and Walmart is building a grocery distribution center in Shafter. With more than 12 square miles of vacant industrial land in the Shafter/BFL International Airport, Delano and Tejon Ranch, the region is poised to receive additional mega distribution centers.

Throughout the South Central Valley, numerous cross-valley connectors on the STAA truck network connect to additional gateways, including but not limited to SRs 152, 33, 180, 168, 41, 43, 46, 145, 198, 65, 137, 269, 58, 119, 184, 223, 166, 14, 395 and major local roads serving regional traffic, such as Avenue 7/West Nees Avenue, 6th/Corcoran Avenue, 7th Standard Road, Stockdale Highway, others. These routes provide necessary last-mile connectors to major agriculture and other resource development areas and connections to neighboring regions. For example, SR 46 provides an essential connection for Salinas Valley produce to Delano's UPRR refrigerated intermodal facility.

The Kern Area Regional Goods Movement Operation (KARGO) study objective is to present a complete understanding of existing conditions as well as project future circulation conditions in the study area. Latest regional plans, general plans, circulation plans, list of projects, existing and future land use projections, available data for traffic counts, origin-destination data, congestion/speed data, and collision history data. Public and industry stakeholders are consulted to get information about existing issues and needs related to traffic circulation, along with anticipated projects and programs that might address these issues or exacerbate current conditions. Both existing and future circulation conditions are assessed to identify transportation needs in the study area.

The TradePort California project (formerly the California Inland Port System project) is an integrated clean energy and logistics system being developed and implemented under direction from the Fresno Council of Governments (Fresno COG). The project aims to leverage California's economy and unique geography by creating a system of sustainable inland ports in the Central Valley built on an integrated infrastructure and investment platform. This approach is aimed at creating substantial economic development opportunities through leveraging public and private investments. The project seeks to increase efficiency and reduce congestion at the San Pedro Bay Port Complex. The core principles of the project include creating a more efficient national supply chain system, reducing greenhouse gas emissions and air pollutant emissions, and increasing economic competitiveness and opportunity in the Central Valley.

Tehachapi Pass Gateway

The Tehachapi Pass gateway, located on SR 58, is thirty miles northwest of Tejon Pass, along the Sierras. The pass features the only BNSF/UPRR corridor connecting the Central Valley and Southern California. Nearly all rail freight shipments on this route connect to out-of-state destinations in the Midwest. In this connecting corridor, Rio Tinto -- a borax mining operation --

has daily BNSF unit train service to/from the POLA. If a rail freight shuttle from the Central Valley could connect to this service in Mojave, at a competitive rate, the potential for a diversion of Central Valley truck freight – one of the largest movements within the State -- to rail might be possible. Potential emission savings and wear and tear on roadways could be leveraged as a state incentive for the project, similar to a state-subsidized, container unit train service in Norfolk, VA.

In addition, the early operating segment of the High-Speed Rail Project may free up capacity on the BNSF mainline between Merced and Bakersfield, providing an opportunity for containerized freight shuttle services from Merced, with possible stops at container loading ramps in Fresno and Shafter connecting to the Rio-Tinto unit train in Mojave. Fresno has the only intermodal container rail yard operating in the South-Central Valley; however, Delano has the UPRR Cold Connect (refrigerated unit train service) operating between California and New York exporting produce to the East Coast via rail.

The Mojave Inland Port will occupy 400 acres of open land owned outright by Pioneer Partners in the unincorporated area of Mojave in east Kern County, abutting the Mojave Air & Space Port. The property is bounded on the northwest and northeast sides by California Highways 14 and 58, and by United Street and Rosewood Boulevard on the west and south sides, respectively. The property has a contiguous connection with the Mojave Air & Space Port. UPRR Lone Pine Branch bisects the Mojave Inland Port property in a southwest/northeast alignment. The property is already zoned by Kern County, and the Project has received county planning approval for specific use as an inland port. The Mojave Inland Port will have an annual throughput capacity of 2.6 million TEU's. This is the largest such site available for intermodal freight expansion in California, and it is the only site in California directly served by rail, road, and air.

PART 2. SECTION 2. MID AND SOUTHERN CENTRAL VALLEY CORRIDOR POLICIES, PROGRAMS, INFRASTRUCTURE INVESTMENTS

Corridor-wide system components

SJCOG I-205, I-5, SR120 & SR99 Congested Corridor Plan (CCP) - a comprehensive multi-modal corridor study that will assess conditions along the I-205, I-5, State Route 120, and State Route 99 corridor, including parallel passenger rail, bus transit, and bicycle and pedestrian facilities. The plan will identify improvements that will help improve safety, congestion, accessibility, economic development, and air quality.

There are two studies under development that further supports goods movement, including:

- SJCOG Truck Planning Study (Under Development) – Studies the existing STAA route network and recommends new routes for jurisdiction consideration.
- Alternative Fuels Vision Plan (Under Development) - Addresses the needs of multiple classes of alternative fuel vehicles and will identify clean fueling infrastructure opportunities along major freight corridors and other regionally significant roadways.

A megaregion working group of MTC, SACOG, and SJCOG were assembled to identify projects, known as the "Megaregion Dozen," of megaregion significance between 6 counties of the Sacramento County area, San Joaquin County, and nine counties of the San Francisco Bay Area. The "Megaregion Dozen" is a package of projects that guide and advance the transportation investment principles and strategies that the working group approved. The

guiding principles helped narrow to four regional projects that advance the following investments and strategies:1) Interregional Functionality, 2) Improved Policy Alignment, 3) Persuasive Leverage, and 4) Strategic Investment.

The San Joaquin Valley Regional Planning Agencies, led by Kern COG, completed the I-5 Freight Zero Emissions Route Operations (ZERO) Pilot Study. Sponsored by eight COGs of San Joaquin Valley and other state partners, this study outlines the current and future conditions, issues and challenges, and exploratory analyses of solutions to freight operation problems in the San Joaquin Valley (SJV). The SJV is a key trade and transportation gateway, vital for the local economy, and accompanied by sustainability concerns relating to the movement of goods. Transportation and goods movement have many harmful externalities, which will be exacerbated by the significant growth expected to occur in the coming years. This work addresses these concerns in planning through small-scale and long-term large-scale conceptual pilot studies. Paired with an analysis of different technological solutions, these pilot studies serve as the next step in proposing problem-specific technology and other solutions that will help improve sustainability in the SJV.

The 2017 I-5/99 Goods Movement Study looked at several region-wide programs along the backbone of the South-Central Valley corridor and identified the following investment areas:

- Shovel-ready projects,
- Connector projects,
- ITS – technological improvements, and
- A truck-platooning demonstration project.

These investment areas were further broken down into project types with benefits and applicability throughout the Central Valley Corridor region.

The list has been modified to include the entire 5-district region.

1. *Roadway pavement and bridge maintenance.
2. *Overweight/oversize policy to allow heavier/longer trucks on I-5 in both directions between San Joaquin and Kern counties.
3. *Truck-only toll Lanes on I-5 between the I-5 and the I-205 junction in San Joaquin County and the I-5 and SR 99 junction in Kern County.
4. *Truck climbing lanes at steep locations such as Altamont, Pacheco, and Tehachapi passes.
5. Capital projects for bottlenecks congestion relief.
6. *Operational projects for bottlenecks congestion relief.
7. Connector, capital, and operational projects for improved accessibility.
8. Interchange reconfiguration program for key freight access interchanges with inadequate designs.
9. *Capital projects for safety hotspot alleviation.
10. *Operational projects for safety hotspot alleviation.
11. *Container depot service near Stockton for the PofOAK and in Shafter for POLB/POLA.
12. *Short-haul rail/unit train service between the SJV and the PofOAK.
13. *Short-haul rail/unit train service between SJV and POLB/POLA.
14. *Caltrans truck parking information system on I-5.
15. *Truck platooning – Pilot on I-5.

16. Neighboring region/out-of-state STAA connector corridor capital, operational, safety improvements (i.e., I-80, SR 58, SR 89/44/395/14 Central Valley bypass, others).
17. *Transition to low- and zero-emission technology -- RNG, hydrogen, electric, etc.

Over half of the 17 project types above are sustainable freight projects (indicated by an *). It is important to note that in disadvantaged communities, one of the primary strategies to improve the communities is to provide diverse economic opportunities and improve the jobs/housing balance within the region.

Central Coast Region

SECTION 1: CORRIDOR OVERVIEW

The Central Coast region includes Santa Barbara, San Luis Obispo, Monterey, San Benito, and Santa Cruz counties. The region is known for its fresh produce and wine grape production. The region is home to major industries in agriculture, manufacturing, food processing, and other freight-related business clusters.

U.S. 101 is the primary freight transportation route and economic asset for the Central Coast region and serves a vital function along the central coast as an alternate route to I-5 during weather-related closures at the Grapevine in Southern California. Routes that provide east-west interregional connectivity include SR 166, SR 41/SR 46, and SR 156/SR 152. Similar to U.S. 101, these routes are high-volume truck routes and critical to freight goods movement.

The Central Coast Region also has two Class III Short Lines, the privately-owned Santa Maria Valley Railroad (SMVRR) and the Santa Cruz Branch Rail Line. The SMVRR system consists of 14 miles of main line track interchanging with the UPRR railroad in Guadalupe and serves the City of Santa Maria and Santa Maria Valley. The Santa Cruz Branch Rail Line is owned by Santa Cruz County Regional Transportation Commission (SCCRTC) for freight and excursion passenger service. Freight service on the Santa Cruz Branch Line operates near Watsonville, connecting to the UPRR main line in Pajaro. In general, railroads in the region tend to move goods such as agricultural products, lumber, coal, construction materials, fertilizer, and steel.

In 2013, goods movement-dependent industries accounted for approximately 33 percent of the jobs in the region. Goods movement-dependent industries accounted for more than $13 billion of the $52.4 billion gross regional product (GRP). These industries are highly reliant on U.S. 101 for local shipments as well as to provide a connection to surrounding regions that allow goods to travel throughout the United States and the world.[276] **Figure 6.3** shows more freight-related statistics.

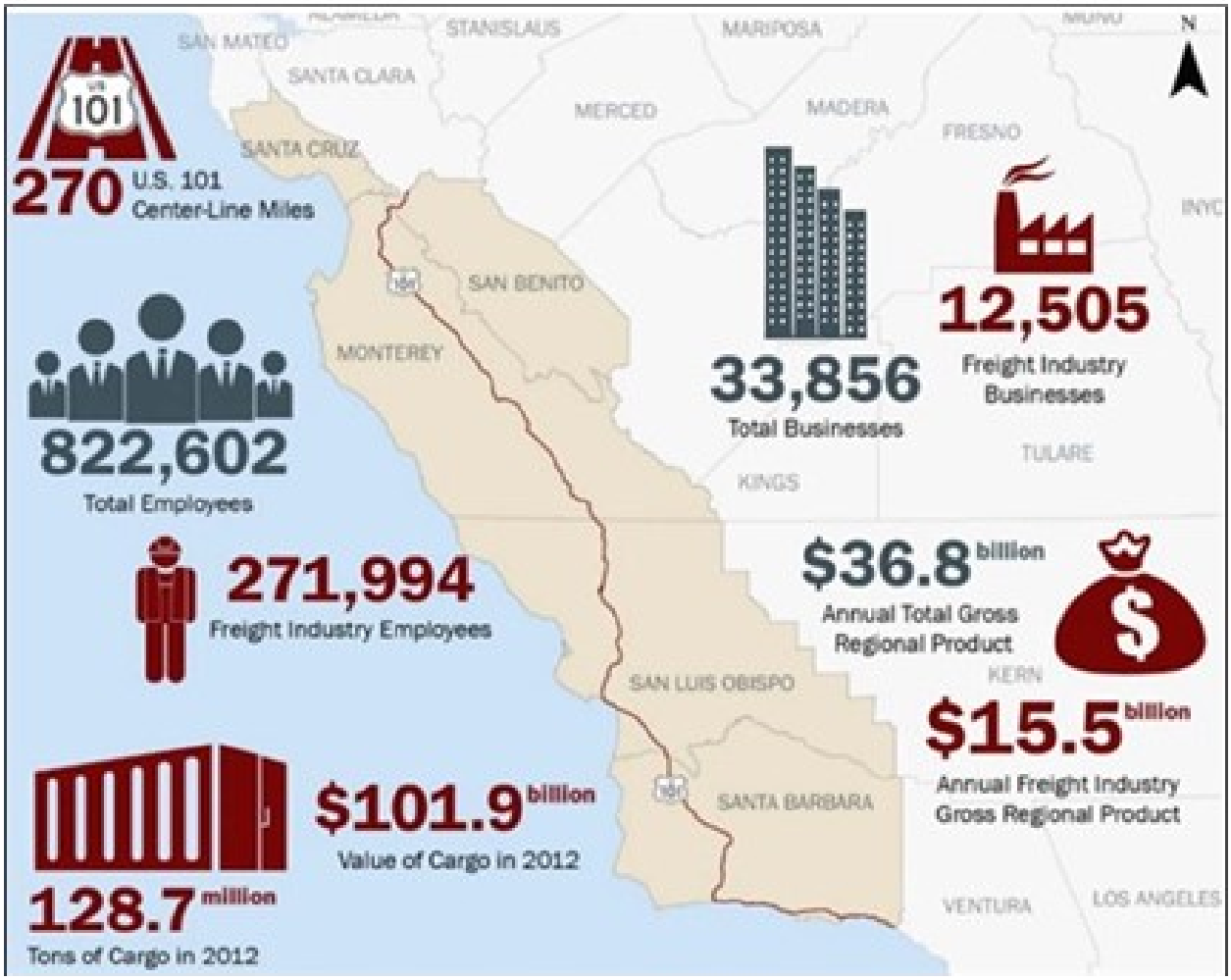

Figure 6.3: Freight-Related Statistics, U.S. 101 Central Coast California (Source: U.S. DOT Bureau of Transportation Statistics using the following data set years—employees (2013); cargo tons/value (2012); businesses (2011); gross regional product (2009))

Table 6.6 summarizes key socio-economic and infrastructure characteristics in the corridor that drive the movement of goods.

Table 6.6: Central Coast California Summary Economic Profile by County

Description	Monterey	San Benito	Santa Cruz	San Luis Obispo	Santa Barbara
Population (2020)	**438,500**	**64,507**	**270,353**	**282,231**	**448,096**
Population (2035)	495,086	81,332	308,582	315,636	507,482
Goods Movement Dependent Industry Employment (2013)	96,170	8,978a	40,410b	46,242c	80,194
Total GRP (2009)	$16,016	No Data	$9,122	$9,577	$17,732
Key Industries	Agriculture (salad, wine), retail, manufacturing (including food products)	Retail, manufacturing (including food products), agriculture	Retail, construction, manufacturing (including food products), agriculture	Retail, construction, manufacturing (includes food products)	Retail, manufacturing (including food products), agriculture
Key Trading Partners	San Joaquin Valley, Southern California, San Francisco Bay Area	San Francisco Bay Area	San Francisco Bay Area	San Joaquin Valley, Southern California, San Francisco Bay Area	San Joaquin Valley, Southern California, San Francisco Bay Area
Major Connecting Roads to U.S. 101	SR 156	SR 152 (some truck restrictions) SR 129 SR 156	SR 17/I-880 SR 1/SR 129	SR 46 SR 41 SR 1 SR 166	SR 135 SR 154 SR 246 SR 1

Source: US Bureau of Economic Analysis, RTP-MTP/SCS for each MPO, Central Coast California Commodity Flow Study. Population projections based off 2000 or 2010 Census figures. U.S. Census QuickFacts

AGRICULTURE

The agriculture industry accounts for over 60 million tons of freight per year in the region. The Central Coast is notable for producing over 80 percent of the nation's lettuce, leading to its reputation as the "Salad Bowl of the World". It is also a major producer of broccoli, strawberries, and other specialty vegetables and fruits. Wine production is also prevalent in the Central Coast.

Data Axle USA data shows high concentrations of agriculture businesses along the U.S. 101 corridor, with key clusters located around Salinas, south of Watsonville, Soledad, Paso Robles,

and Santa Maria. Apart from U.S. 101, SRs 41/46, 152/156, and 166 are major interregional connecting routes between the Central Coast and the Central Valley that support these businesses. Therefore, their conditions must continue to be maintained or improved to ensure efficient delivery of goods to market.

MANUFACTURING

Manufacturing is a diverse industry in the region, with key manufacturing clusters in Santa Cruz, Paso Robles, San Luis Obispo, Santa Maria, and Santa Barbara. Food manufacturing, which includes wine production, is an essential component of manufacturing in the region. The key food manufacturing clusters are also located along the U.S. 101 corridor.

TRANSPORTATION AND WAREHOUSING

Throughout the region, freight transportation is conducted mainly through trucking and rail, with connections to other modes in neighboring regions. Transportation and warehousing businesses are concentrated in areas that generally overlap agriculture and manufacturing clusters. Key clusters are in the Salinas Valley, Watsonville, northern U.S. 101, Paso Robles, San Luis Obispo, Santa Maria, and Santa Barbara. Truck connections include U.S. 101, SR 166, SR 41/SR 46, and SR 152/SR 156.

FREIGHT RAIL

Along the Central Coast Region, UPRR owns and operates the Class I rail system from Santa Barbara in the south, through Salinas, and continuing north into the Bay Area. Approximately four percent of all shipments, measured by both tons and value, move by rail. Total freight rail outflow and inflow range upwards of 750 thousand tons within Caltrans District 5.

There is no east-to-west freight rail route connection between Caltrans Districts 5 (Central Coast) and 6 (Central Valley) and are no plans for a connection, which means there is absolute reliance on trucks for goods movement between these regions. With the Central Coast region's agricultural sector growing, the Central Valley expanding its mega-distributions centers, and population growth occurring throughout both regions, we can anticipate significant truck volume increases on the SR 166, SR 41/SR 46, and SR 152/SR 156 east-west corridors.

GOODS MOVEMENT FLOWS

Transporting goods in, out, and through the Central Coast region is heavily dependent on trucking. According to the Central Coast California Commercial Flow Study (2012), approximately 82 percent of shipments by tonnage and 76 percentage of shipments by value move by truck. The region imports higher priced consumer goods and specialty products while exporting relatively lower value agricultural products and some manufactured goods, mostly tied to the agricultural industry. In the Central Coast region, freight is projected to grow 3.3 percent a year by value between 2012 and 2040. More information can be found in **Figure 6.4.**

By value, inbound shipments to the study region represented accounting for approximately 64 percent of the total value of goods in 2012. Outbound shipments accounted for approximately 35 percent, with intraregional shipments accounting for one percent. 2040 projections show that over 68 percent of the total value of goods moved in the region will come through inbound

shipments, 31 percent through outbound shipments, and approximately one percent in intraregional trade.

Domestic shipments are the dominant type of movement by both value and weight. By weight in 2012, imports and exports combined only accounted for five percent of shipments. By value, imports and exports accounted for less than four percent of shipments. The dominance of domestic shipments is projected to continue in 2040.

Figures 6.5 and 6.6 show the mode split for shipments into, out of, and within the study region in 2012. Measured by value, trucking was the dominant mode in 2012, accounting for 74 percent of total shipments. Multiple Modes and Mail was the second highest mode, accounting for 13.3 percent of shipments. This reflects the use of multimodal and parcel services to carry higher value, lower weight shipments, as well as a continuing trend towards containerization (for intermodal truck-rail shipping). This also is seen in the lower share of goods moved by carload rail (only 1.8 percent), which typically carries lower value, bulk goods such as construction material, minerals, or waste/scrap.

In the Central Coast region, electronics (9.7 percent), machinery (9.4 percent), and mixed freight (7.6 percent) comprised the top three commodities moved by value and accounted for 27 percent of all shipments, which represents a solid consumer base, and high-tech and defense sector in the region. Commodities directly related to agriculture include other agricultural products (6.1 percent) and other foodstuffs (5.8 percent).

Figure 6.4: Central Coast Agriculture Production (Source: Data from ESRI Business Analyst; mapped by Cambridge Systematics, 2019)

TRENDS

Over the next several decades, the Central Coast region can expect to see significant trends that hinder freight movement. Challenges to freight movement include population increases, changes in consumer demand (e-commerce shopping), and a substantial increase in goods movement flow.

Population trends are a key driver of freight demand in any region since the rate of growth or decline of the population impacts the volume of goods shipments required for consumption by local residents. The population of the five-county Central Coast region of California was approximately 1.5 million in 2020 (2020 Census). In total, the population of the five-county region grew by 5.4 percent from 2010 to 2020, or by about 77,000 people. By 2040, the population of the region is expected to grow approximately 30 percent above 2010's levels, leading to an increase the number of trucks on the roads.[277]

Not only is the volume of goods increasing, but also the frequency of demand. The growth rate in demand for consumer products is related to population growth and income growth for families. For example, San Luis Obispo County's median household income increased from $57,365 in 2010 to $77,948 in 2020 (2020 census), at a 35 percent increase over ten years. While median household incomes vary county by county, increases are trending upwards throughout the entire Central Coast region. This is an important trend to monitor and analyze moving forward as the growth in online e-commerce shopping is increasing the demand for freight shipments of parcels and other personal deliveries at a higher rate than population growth alone would suggest. These types of deliveries to local residences and businesses often place additional demand on transportation infrastructure that is not commonly used by freight, including local roads and neighborhood streets, all interconnected to the state highway system.

Figure 6.5: Central Coast California Regional Freight Flows by Direction of Movement, 2012 & 2040 (Source: AMBAG, "U.S. 101 Central Coast California Freight Strategy," 2016; data from Federal Highway Administration, Freight Analysis Framework 3, 2012. Additional analysis by Cambridge Systematics, 2012)

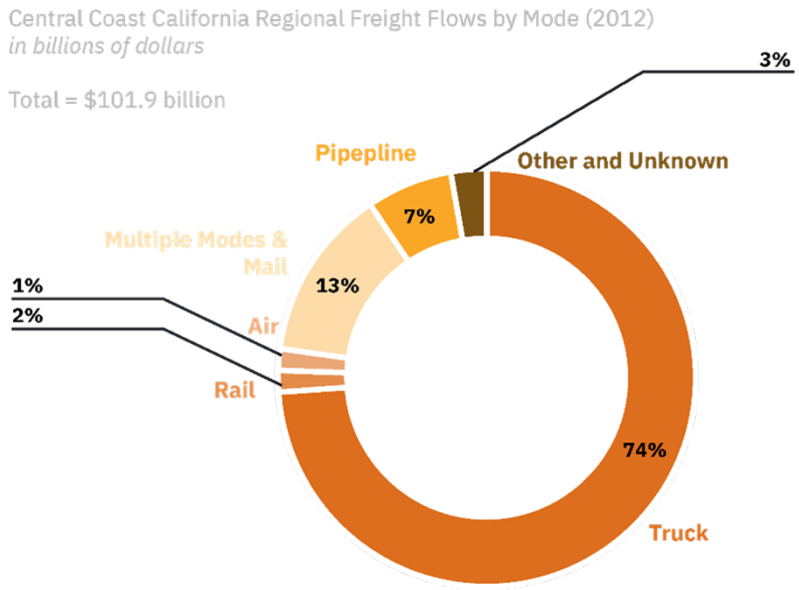

Figure 6.6: Figure 6.5: Central Coast California Regional Freight Flows by Mode, 2012 (Source: AMBAG, "U.S. 101 Central Coast California Freight Strategy," 2016)

The increase in goods movement flow as noted previously is also a factor in transportation infrastructure challenges and needs in the Central Coast region. In 2012, freight tonnage flowed primarily inbound and outbound at 62 and 60 million tons. The Central Coast region is trending to double tonnage by 2040 to a total approximate sum of 209 million tons, again by a near balanced outbound and inbound goods movement flow. At a nearly 63 percent increase in tonnage goods movement flow, the Central Coast region's transportation infrastructure is expected to be significantly impacted. Freight flows predominately by truck through the U.S. 101 which goes north to the Bay Area (Caltrans District 4) and south to the greater Los Angeles area (Caltrans District 7). SR 166, SR 41/SR 46, SR 156/SR 152 are east-west interregional connectors that are high-volume truck routes and critical to freight goods movement, connecting the Central Coast to the Central Valley (Caltrans Districts 6 and 10).

SECTION 2: POLICIES, PROGRAMS AND MAJOR FREIGHT INFRASTRUCTURE INVESTMENTS

The policies that are proposed within the Central Coast region strategize to increase the accessibility and mobility of people and freight while reducing truck delays, enhance the integration and connectivity of the transportation system across and between modes, and identify and construct projects to improve freight movement, including rail and highway projects, and projects to improve ground access to airports and rail terminals in the region. The Central Coast region plans to regularly collect and update information on freight and goods movement and facility needs for all freight corridors. Policies also include consideration of freight and goods movement in the design and planning of all projects, creating plans for intermodal connectivity, and striving to reduce and mitigate environmental, social, health, and economic impacts from goods movement operations.

The Central Coast has many broad long-term needs for the freight infrastructure system that will help the region to support the Plan's vision. Below are a number of regional freight needs:

- Congestion relief and freeway conversion on U.S. 101. This corridor, U.S. 101, is the primary artery running north-south through the region and provides direct connectivity to major markets and intermodal facilities in the Los Angeles and San Francisco Bay Area regions. U.S. 101 also serves as the main north-south corridor for the state during I-5 closures.
- Improved east-west connections between U.S. 101 and I-5 in the Central Valley along SR 166, SR 41/SR 46, SR 156/SR 152, including improvements such as 4-lane divided expressway conversions and installing truck climbing and passing lanes to improve driver safety. Additionally, SR 25 is important in connecting more remote agricultural areas of southern San Benito County and will provide greater connectivity U.S. 101 for goods movement. The expressway conversion are critical improvements for the region. **Figure 6.7** identifies these key freight routes.
- Improve at-grade highway interchanges and intersections. Some highway interchanges and at-grade intersections present challenges for trucks along the U.S. 101 Corridor. Highway interchanges, especially with SR 156 and SR 41/SR 46, are some of the most congested locations on U.S. 101. Additionally, at-grade intersections present challenges for safety of the traveling public (not just for trucks). As volumes increase on U.S. 101, the importance of freeway conversion becomes even more critical.
- Addressing truck parking issues. A lack of legal and safe truck parking has been identified in numerous plans as a challenge for commercial vehicle movements along the U.S. 101 Corridor and connected routes, such as SR 46.
- Ramp metering on U.S. 101 and key east-west routes in or adjacent to urban locations, emphasizing on-ramps that are particularly congested during peak harvest season times, such as US 101/SR 156.
- Seek to add additional electronic changeable message signs along U.S. 101 and key east-west routes. Signs would be integrated with Caltrans District 5 Traffic Management Center. Closely linked with the need for CMS is the addition of Closed-Circuit Television (CCTV) monitoring cameras along U.S. 101 and key east-west intersecting routes to fill gaps in the existing CCTV network.
- Continued improvement to freight rail infrastructure including the development of truck-to-rail facilities near agricultural harvesting and/or packaging areas.
- At the local level, support expansion of the number of jurisdictions and municipalities with designated truck routes and improve truck route education amongst drivers to better guide truck movement to and from U.S. 101.
- Employ wayfinding tools to help truck drivers find fueling stations, parking locations, key freight origins and destinations, or other truck related infrastructure located in local municipalities.
- Truck driver training and labor policy improvements to alleviate the truck driver shortage.
- Agricultural worker housing and improved labor policies to reduce VMT associated with transportation of agricultural workers to and from the crop locations.
- Improve freight data availability. Caltrans truck counts are the only reliable source of information for truck movements in the California Central Coast, and they do not contain the detail needed to fully understand the movements of goods. Specifically, there is a need for regular surveys of freight movement on intersecting truck routes that go to and from I- 5. Also, additional data is needed on seasonality trends.
- Improve the alternative fueling infrastructure for freight vehicles, including electric charging and hydrogen fueling infrastructure.

- The Central Coast MPOs and Caltrans District 5 are currently compiling the California Central Coast Sustainable Freight Study which will be completed in 2025. This document will further illustrate key Central Coast freight policies, programs, and investments for the region, and will be consistent with all related State and regional plans.

Figure 6.7: Central Coast Key Highway Freight Routes (Source: AMBAG data, prepared by Cambridge Systematics, 2012

Los Angeles/Inland Empire

SECTION 1. CORRIDOR OVERVIEW

Goods movement is essential to support the economy and quality of life in the Los Angeles/Inland Empire Trade Corridor. Comprising the counties of Los Angeles, Orange, Riverside, San Bernardino, and Ventura, the region's extensive goods movement system is a multimodal, coordinated network that includes deep-water marine ports, Class I rail lines, interstate highways, state routes and local connector roads, air cargo facilities, intermodal facilities, and industrial warehouse and distribution clusters, as shown in **Figure 6.8**. As of 2019, over 1 billion tons of goods valued at over $1.9 trillion moved across the region's transportation system—serving local, state, national, and international consumer markets[278]. The Ports of Long Beach and Los Angeles represent the largest container-based port complex in the U.S. for both imports and exports that feed directly into the region's major freight corridor/routes.

The industries and businesses in this region are world leaders in commerce and represent a major exchange point for international trade as businesses from across the globe trade via its seaport, airport, and highway facilities. Goods movement is woven into the fabric of life in the Corridor, but still faces serious challenges that require considerable collaboration and investment to remain a cornerstone of the local, regional, state, and national economy.

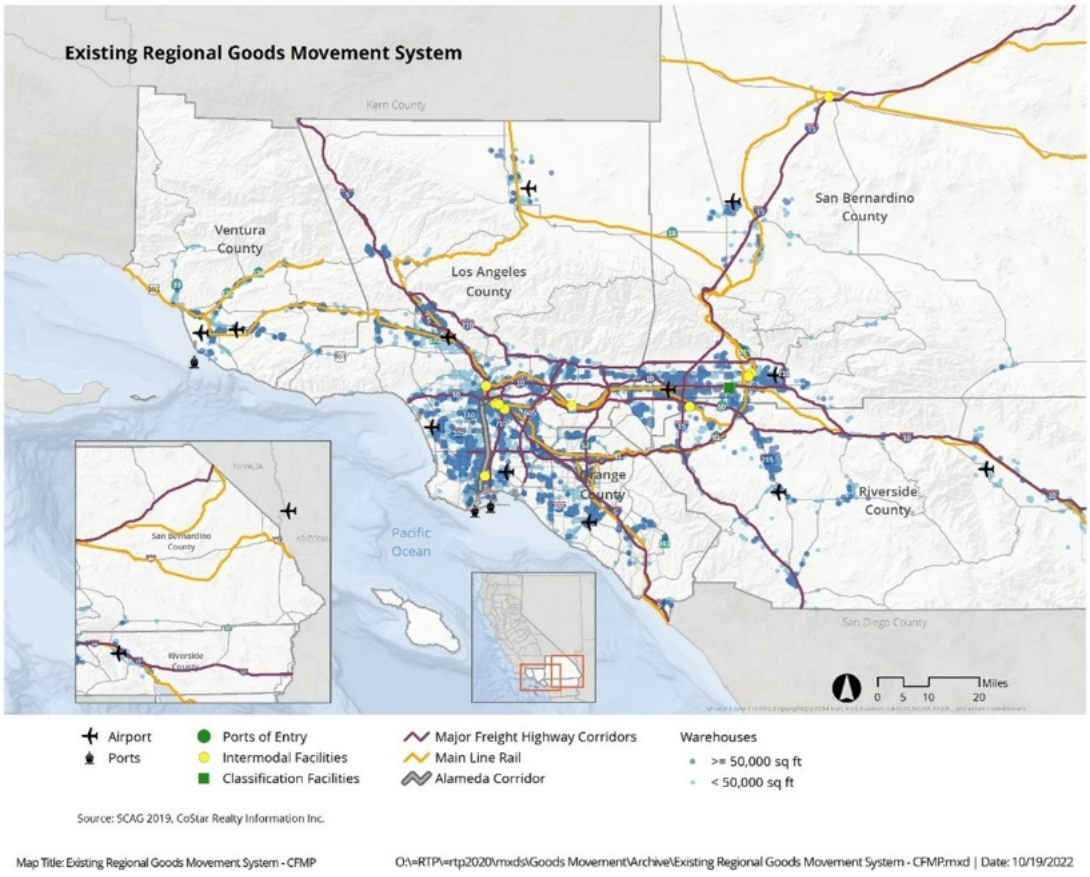

Figure 6.8: Existing Regional Goods Movement System (Map by SCAG, 2019; data from CoStar)

The Los Angeles/Inland Empire Trade Corridor partner agencies which includes the Southern California Association of Governments (SCAG), six county transportation commissions, the Ports of Los Angeles, Long Beach, and Hueneme, Caltrans Districts 7, 8, and 12, among others, have established a vision for a regional goods movement system that is consistent with the CFMP vision and goals, as well as with the CSFAP principles. Additionally, the vision is a critical component of SCAG's current 2020-2045 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), or Connect SoCal, and serves as the foundation of the Corridor's Freight Investment Strategy.

INVESTMENT THAT TARGETS KEY INDUSTRIES TO SUPPORT AND SUSTAIN THE ECONOMY

In 2021, goods movement-dependent industries (manufacturing, construction, retail trade, wholesale trade, and transportation and warehousing) employed close to 2.4 million people in the SCAG region reflecting 29 percent of all employees[279]. In 2019, the goods movement-dependent industries contributed over $401 billion to Gross Domestic Product (GDP) by county, reflecting over 30 percent of all industries[280]. Additionally, trade through Southern California's container ports supported 2.7 million jobs throughout the U.S.[281]. The Corridor Freight Investment Strategy ensures that local and regional businesses have access to transportation services and facilities necessary to support growth by targeting investments in key corridors where these industries are located. The Los Angeles/Inland Empire Freight Investment Strategy promotes improvements in logistics system efficiency aimed to contain rising costs of goods and services. This freight investment strategy also ensures that the region will continue to be a leading trade gateway for imports and exports to the Pacific Rim by supporting improvements in marine terminals, intermodal terminals, railroad mainlines, roadway access routes to the seaports and airports, and industrial warehouse and distribution facilities.

ADDRESSING GROWTH THROUGH MULTIMODAL SOLUTIONS, FREIGHT SYSTEM EFFICIENCY, SAFETY AND OPERATIONAL IMPROVEMENTS

The Los Angeles/Inland Empire Freight Investment Strategy includes projects and initiatives to promote the fluid movement of goods consistent with user expectations for a world-class transportation system that emphasizes multimodal solutions. The Los Angeles/Inland Empire Freight Investment Strategy supports rail mainline investments so that the regional rail system can accommodate the projected annualized two percent growth rate in freight cargo volumes and anticipated increased passenger rail service, without increasing delay[282]. The strategy also includes investments in highway and local access and connector improvements that reduce truck vehicle hours traveled (VHT).

The Los Angeles/Inland Empire Freight Investment Strategy also includes creative approaches to shared use corridors through increased separation of passenger and freight activities where possible, leading to a safer, more efficient transportation system. SCAG recently led an Integrated Passenger and Freight Rail Forecast identifying rail capacity improvements for both freight and passenger rail services throughout the LA basin. Another example includes truck climbing and other operational improvements that provide room for heavy duty trucks to operate, thus reducing conflicts between fast- and slow-moving vehicle and enhancing overall operational safety.

In addition, truck parking is a critical issue facing the Los Angeles/Inland Empire region. Per the recently completed California Statewide Truck Parking Study, corridors where parking demand is higher than current supply include the following for the Los Angeles/Inland Empire region – the I-

5 Santa Clarita, San Fernando Valley, West Covina, and San Pedro Bay corridors in District 7; the I-15 (Mountain Pass, Baker, Victorville), I-40 (Needles, Ludlow) Inland Empire, and I-10 (Beaumont, Coachella Valley, Blythe) corridors in District 8; and the I-5, SR-55, SR-57, and SR-91 corridors in District 12.

EXPANDING THE GOODS MOVEMENT SYSTEM WHILE PROVIDING FOR A HEALTHY ENVIRONMENT AND LIVABLE COMMUNITIES

The Los Angeles/Inland Empire Freight Investment Strategy includes a strong commitment to reduced emissions from transportation sources by establishing a roadmap for the broad deployment of zero-emission and near zero-emission (ZE/NZE) transportation technologies. The development of a world-class ZE/NZE freight transportation system is necessary to maintain economic growth in the region, to sustain quality of life, and to meet federal and State air quality requirements.

The region has already made substantial progress on air quality, reducing 8-hour ozone levels by 40 percent since 1990 and particulate matter (PM) 2.5 emissions by over 50 percent, all while the population has increased by 20 percent[283]. Despite these achievements, further progress is necessary to promote environmental sustainability and improve air quality.

The Los Angeles/Inland Empire Freight Investment Strategy sets forth an aggressive technology development and deployment program to achieve this objective. The Los Angeles/Inland Empire Freight Investment Strategy also includes efforts to mitigate neighborhood and community impacts to the maximum extent possible. The region has a rich history of working with various partners and stakeholders to lead the State's advancements towards ZE/NZE initiatives including:

- San Pedro Bay Ports Clean Air Action Plan (CAAP): The CAAP, updated in 2017, identifies strategies to reduce pollution from every source – ships, trucks, trains, harbor craft (such as tugs and workboats), and cargo-handling equipment (such as cranes and yard tractors). Since 2005, these strategies have resulted in emission reductions exceeding 88 percent for particulate matter, 64 percent for nitrogen oxides, and 98 percent for sulfur oxides.
- Clean Truck Program: This is a strategy in the CAAP to help reduce pollution from on-road drayage trucks, which mandates that any new truck registered within the Port Drayage Truck Registry after October 1, 2018 must be a model year 2014 or newer. Trucks must also be compliant with CARB Drayage Truck Regulation and Truck and Bus Regulation. Clean Truck Fund (CTF) Rate is a key component of the Port's efforts to transition to a zero-emissions truck fleet by 2035, as established in the CAAP. The CTF Rate is expected to generate approximately $90 million in the first year, or $45 million per Port. On March 24, 2022, the Board of Harbor Commissioners approved a three-year CTF Rate Spending Plan, allocating 100% of the fund for zero-emission trucks in the first year.
- CAAP Technology Advancement Program (TAP): The TAP is a key component of the CAAP that provides grant funds to defray the cost of testing new and emerging clean technologies, with the goal of accelerating their entry into the market so the entire industry has cleaner vehicles and equipment for moving cargo. Applicants for the TAP funding must show their projects have a high probability of reducing emissions of key pollutants and are likely to earn verification from the California Air Resources Board (CARB) confirming the technology achieves its stated pollution control goals. Projects

must also show a strong business case for their commercial success. TAP's benefits include:

  - Identifying promising clean technology.
  - Helping to fund demonstration projects.
  - Accelerating government approval and market availability to industry.

- The Pacific Ports Clean Air Collaborative (PPCAC): The PPCAC has been working with numerous global stakeholders with the goal to share information, collaborate on common air and environmental issues, and work jointly to develop and evaluate potential port policies and mitigation measures[284].
- The Regional ZE Collaborative: The Collaborative comprising numerous stakeholders has been focused on efforts to share information and to jointly seek grant funding for supporting research and demonstration of ZE technologies.
- Last Mile Freight Program (LMFP): The LMFP is being led by SCAG in partnership with the Mobile Source Air Pollution Reduction Review Committee (MSRC) to commercially deploy zero-emission and near zero-emission (ZE/NZE) vehicles, equipment, and supporting infrastructure. A total of $16,751,000 has been approved for Phase 1 project implementation. 27 total projects selected in Phase 1 with 19 MOUs completed by Nov 2022.
- Supporting Infrastructure for Zero-Emission Medium & Heavy-Duty Trucks: SCAG is planning a study to help envision a regional network of zero emission charging and fueling infrastructure. This study will create a phased blueprint and action plan towards realizing this goal and answer key questions about how stations in the region may operate to serve different truck markets and business functions.
- I-10 Multi-State Truck Parking Availability Systems Pilot Project: This project involves California, Arizona, New Mexico, and Texas, and is one of the CSFAP's identified pilot projects. The project's intent is to provide real-time truck parking availability information from SRRAs to the trucking industry that would result in better planning and scheduling of shipments, improvements to safety, mobility, and reduction of emissions along the I-10 corridor.
- SR-60 Freight Corridor Priority Investment: Regionally significant truck lanes project developed through interagency cooperation and internal coordination, spanning about 38 miles across three counties (LA, RIV, and SBD) which aims to provide improvements along the corridor including: operational improvements between ports and distribution centers, addressing supply chain issues, providing congestion relief, and reducing GHG emissions and noise pollution[285].
- Other examples include: Port of Los Angeles Freight Advanced Traveler Information System (FRATIS) for optimizing truck movements, Drayage Freight and Logistics Exchange (DrayFLEX) which entails an enhancement of FRATIS, Port of Los Angeles Eco-Drive which is a connected (vehicle-to-infrastructure) demonstration project, Port of Los Angeles Port Optimizer™ serving as an information portal to digitize maritime shipping data for cargo owners and supply chain stakeholders, Port of Los Angeles/Long Beach VirtualPort System to improve roadway vehicular traffic and incident management within the Ports and their surrounding area.

KEY GOODS MOVEMENT FUNCTIONS IN THE ECONOMY

Goods movement is what economists refer to as a derived demand – the demand for goods movement is an outgrowth of overall economic activity. The goods movement system supports regional industries and global supply chains that trade in international, domestic, and local markets. To understand what drives demand for goods movement in the region, it is useful to think of four major functions supported by goods movement.

Provides Access to International Gateways

Southern California is the nation's premier international gateway for imports and exports. The nation's largest port complex, a large regional consumer market, and a vast supply of warehouse and distribution facilities have made it one of the nation's largest centers for distribution of imported consumer products, while also serving as the largest container-based export market. The importance of the region's gateways in connecting consumer goods manufactured in Asia with U.S. markets has been well-documented, and the overall importance of the system in supporting the flows of containerized goods continues to grow. In 2021, goods valued over $552 billion moved through the Los Angeles Customs District[286]. Nationwide, the POLA-POLB container volumes generate 2.7 million jobs and originate from or are destined for every region and congressional district in the U.S.[287]. Combined, the region's three seaports (Port of Los Angeles, Port of Long Beach, and Port of Hueneme) and two international airports (Los Angeles International and Ontario International) make significant contributions to the regional and state economy.

National and Regional Benefits to Rural Communities and U.S. Exports

While the POLA-POLB is widely acknowledged as the dominant U.S. port for containerized imports, it also serves as a leading export gateway, supporting goods produced in California and exported from states across the continental U.S., thereby connecting rural areas to global markets. This is notable for top agricultural product exports including frozen meat, cotton, fruit, nuts, soybeans, and hay. When combining product items such as frozen beef and pork, bales of cotton, pistachios, almonds, grapes, oranges, lemons, limes, soybeans, alfalfa, and other varieties of hay, the POLA-POLB exported 6.2 million metric tons with a value of $9.4 billion in 2021[288]. Out of these top agricultural exports frozen beef and pork, cotton, and pistachios constitute nearly 70% of the value, while alfalfa and other hay, soybeans, cotton, and frozen beef and pork constitute over 90% of the metric tons[289].

This ranked fourth against other major commodity category exports across the Los Angeles District, only trailing machinery and parts ($16.1 billion), electric machinery and components ($16 billion), and Optical, Photographic, and Medical or Surgical Instruments ($9.8 billion)[290]. Agricultural product exports support the economies of rural communities within many states in the U.S., notably California, the Southwest, Southeast, and Midwest regions, as well as the Northwest and Northeast.

Supports Regional Manufacturing Activities

Even at the height of the Great Recession (2007-2009), the U.S. remained the world's largest manufacturing economy, and Southern California continued to be a critical manufacturing hub[291]. The Southern California region is the second largest manufacturing center in the country, trailing only the State of California as a whole. In 2019, manufacturing activities contributed approximately $134.7 billion to the region's GDP by county with regional manufacturers trading

in both international and domestic markets[292]. The region's manufacturing sector is highly diverse with computer and electronic products, chemicals, transportation equipment, fabricated metal products, processed food, and machinery manufacturing. Higher-value, time-sensitive products, like computers and electronics, rely heavily on the region's truck and air cargo systems while bulk and heavy-weight products that are less time sensitive, such as chemicals and fabricated metals, generally use a mix of trucking and rail to move products. **Figure 6.9** shows the manufacturing firms in the region at a region-level scale.

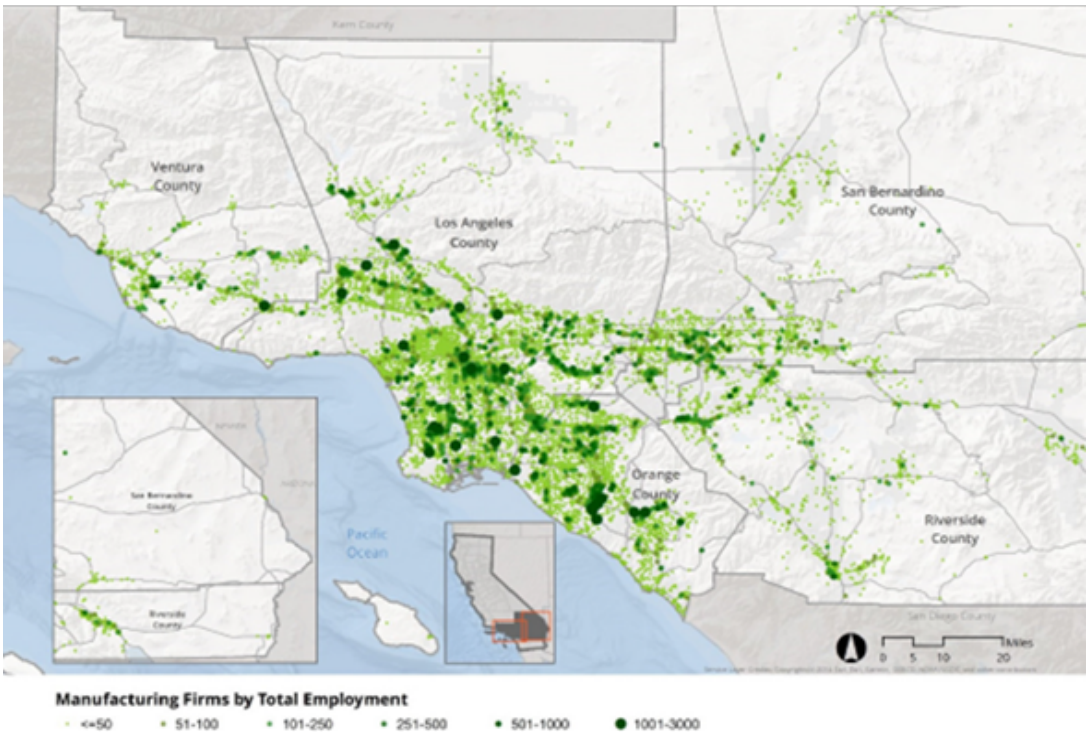

Figure 6.9: Manufacturing Firms in the Region (Source: Map by SCAG; data from InfoGroup, 2011)

Serves the Needs of Local Businesses and Residents

Like most metropolitan areas of a large size, a substantial majority of the region's goods movement activity is associated with local pickup and delivery, construction, utility, agriculture, and other services. Virtually all of this local activity takes place using trucks. As the region's population continues to grow, particularly on the eastern ends where land is less scarce, the demands for consumer products distributed through the region's large wholesale and retail trade sector will continue to fuel growth in local distribution and service trucking. Another component of the local distribution and service function is the movement of materials and equipment to/from construction sites. In 2021, construction-related activities employed over 376,000 people in the region[293]. It also contributed about $50 billion to GDP in 2019.[294]

Supports A Thriving Logistics Industry

In the Los Angeles/Inland Empire region, the logistics industry (which includes transportation, warehousing, distribution, and logistics services) has become an important component of the

economy. Collectively, these industries rely on all components of the region's transportation system – maritime shipping and air freight (for international supply chains), trucking and rail (for intra-regional, inter-regional and inter-state shipments and drayage moves), and industrial warehousing and distribution (to support both international trade and local delivery of consumer goods). In 2021, transportation and warehousing activities provided nearly 300,000 jobs in the region and accounted for $45 billion of GDP in 2019[295][296].

THE GOODS MOVEMENT SYSTEM

The goods movement system in the Los Angeles/Inland Empire region is a complex series of interconnected infrastructure components that must operate as an integrated whole to serve the goods movement functions from a user perspective. Highways and Connectors play an important role within this system. They provide not only access to ports, but also create connections between ports, warehouses and intermodal facilities generally located within the Inland Empire. The end-to-end performance of this system drives costs, throughput, velocity, and goods movement reliability. International trade and e-commerce recently expanded the need for more fulfillment, sortation, and local distribution centers closer to major urban centers. Consumers now expect digital orders to be delivered within a day or less and return policies, increasing trip patterns across the system exponentially. The variety of modal alternatives, access to key goods movement centers, connections to markets and suppliers, and the quality of intermodal connections make Southern California an attractive center for goods movement activities. Local transportation sales tax measures have made significant improvements to highway networks which are critical for making these connections and distributing goods throughout Southern California and the nation

The region's goods movement system, including many elements that share throughput with passenger traffic, is owned and operated by a mix of public and private sector entities. Understanding the interactions among the diverse mix of owners, operators, and users is critical to how the goods movement system functions.

Seaports

The region is home to three deep-water ports: POLA-POLB: (San Pedro Bay Ports) and the Port of Hueneme in Ventura County. The POLA-POLB are the two largest container ports by volume in the U.S. Combined, in 2021, the San Pedro Bay Ports were the world's ninth busiest container port[297]. The Port of Hueneme has developed a competitive focus on automotive and fresh fruit products, with $11.4 billion in total trade in 2021[298].

Containerized trade between the U.S. and Asia constitutes most international cargo transiting the SCAG region, with approximately 31 percent of all containers in the U.S. moving through the San Pedro Bay Ports[299]. About 40 percent of all U.S. imports and 25 percent of all U.S. exports move through the POLA-POLB[300]. Despite some modest shifts recently in container volumes to other U.S., Canadian and Mexican ports, the San Pedro Bay Ports witnessed an all-time containerized cargo high during 2021 with a throughput of 20.1 million twenty-foot equivalent units (TEUs), and $400 billion in trade value[301]. Total container capacity is projected to increase to over 36 million TEUs by 2045[302].

Imports, which constitute most containers that move through the San Pedro Bay Ports, may be local or discretionary. Local containerized traffic is that which is ultimately consumed in a geographical area local to the San Pedro Bay Ports (Southern California, Southern Nevada,

Arizona, New Mexico, and southern portions of Utah and Colorado). Discretionary containerized traffic moves to/from the POLA-POLB via rail, directly via on-dock and off-dock railyards, or indirectly via transload facilities. Recent analysis indicates that local traffic carrying containerized imports accounts for approximately 35 percent of San Pedro Bay Ports' total import-related traffic. The other 65 percent is assumed to be discretionary traffic, routed through the San Pedro Bay Ports for economic reasons[303]. The San Pedro Bay Ports have long worked with regional and state transportation planning organizations to identify and promote projects that will alleviate congestion to and from port areas and improve air quality in the region. The POLB also serves as a national strategic seaport in the National Port Readiness Network and would be expected to move military/supplies for national emergencies and/or humanitarian efforts.

The Port of Long Beach is known internationally as an industry leader in advancing cleaner cargo movement. In order to tackle greenhouse gases and criteria pollutants, the Port of Long Beach has set a goal of all zero-emissions cargo-handling equipment by 2030 and a zero-emissions drayage truck fleet by 2035. About 17% of the cargo-handling equipment at the Port is electric powered, the largest such fleet in the United States[304]. Announced in late 2022, heavy-duty electric trucks servicing San Pedro Bay port terminals can charge for free at the Port of Long Beach. These chargers are the first two public charging stations in the nation for the heavy-duty freight vehicles.

Airports

There are eight airports that provide air cargo services in the region. Collectively, these airports handled more than 3.6 million tons of air cargo in 2021[305]. Los Angeles International Airport (LAX) and Ontario International Airport (ONT) handled most of the region's international and domestic air cargo during 2021, including international goods valued at $139.2 billion[306]. LAX ranked 3rd in the U.S. for import trade value during 2021[307], while ONT ranked 9th in all cargo landed weight in 2021 per the FAA[308]. Most of the remaining air cargo moves through San Bernardino International Airport (SBD), which is ranked 37th and growing rapidly[309], and March Inland Port Airport (MIPA), ranked 87th[310]. In addition, Hollywood Burbank Airport (BUR), Long Beach (LGB), John Wayne (SNA), and Palm Springs International Airport (PSP) are also located in the region and handle air cargo, but are not in the top 100.

Air cargo handled at the region's airports is served by a mix of commercial passenger carriers (often, referred to as "belly cargo"), integrated carriers (such as Federal Express (FedEx) and United Parcel Service (UPS)) which provide integrated air and truck service, and air cargo carriers. Both LAX and ONT provide all three of these types of air cargo carriage. In 2020, SBD was named by Amazon Air as their new western hub, as it was recognized after it became a node in the UPS air network in late 2017 and FedEx Express opened a facility in 2018[311]. Air cargo can be broken down by freight or mail with most freight products and components including high-value and/or time-sensitive shipments. Air cargo tonnage for international and domestic cargo is forecast to grow by over 140 percent to 7.8 million tons by 2045[312].

Rail

Critical to the growth of the economy, the BNSF Railway Company (BNSF) and Union Pacific Railroad Company (UPRR), the region's two Class I railroads, carry international and domestic cargo to and from distant parts of the country. The BNSF mainline operates on the Transcontinental Line (Cajon and San Bernardino Subdivisions). The UPRR operates on the Coast

Line, Saugus Line through Santa Clarita, Alhambra and LA Subdivisions, and Yuma Subdivision to El Paso.

Both railroads operate on the Alameda Corridor that connects directly to the San Pedro Bay Ports as well as on the Alameda Corridor-East designated by Congress and the State of California. The San Pedro Bay Ports also provide several on-dock rail terminals along with seven intermodal terminals operated by BNSF and UPRR outside of the POLA-POLB. Within the Los Angeles/Inland Empire region, there are three Class III railroads: Pacific Harbor Line (PHL), Los Angeles Junction Railway (LAJ) and the Ventura County Railroad (VCRR) that provide short-haul services. PHL provides rail transportation, maintenance, and dispatching services within the San Pedro Bay Ports area. The LAJ provides industrial switching services in the Cities of Vernon, Maywood, Bell and Commerce. The LAJ also provides connection to both UPRR and BNSF. The VCRR extends for just over 12 miles on four branches serving the industrial areas of south Oxnard, the Port of Hueneme and U.S. Naval Base Ventura County Port of Hueneme Division and connects with the UPRR Coast Maine Line in downtown Oxnard. Both UPRR and BNSF move container, automobile, liquid bulk, dry bulk, and break-bulk cargo inbound and outbound from the POLA-POLB. In addition to these intermodal terminals, there are railyards in the region that serve carload traffic of various types. UPRR also has a large carload freight classification yard at West Colton (at the east end of the Alhambra Subdivision). A large UPRR auto unloading terminal is located at Mira Loma (midway between Pomona and West Riverside on the Los Angeles Subdivision). BNSF also has an automobile facility located at the City of San Bernardino off of the San Bernardino Subdivision line. Both BNSF and UPRR continue to invest in their existing facilities and capacity. In 2022, BNSF announced plans to invest more than $1.5 billion to construct a state-of-the-art master-planned rail facility – Barstow International Gateway. It will be an approximately 4,500-acre new integrated rail facility on the west side of Barstow, consisting of a rail yard, intermodal facility and warehouses for transloading freight from international containers to domestic containers[313].

The Alameda Corridor eliminated all at-grade crossings between the Ports and the intermodal railyards located on Washington Boulevard (BNSF Hobart Yard and UPRR's East Los Angeles). To transition from the Alameda Corridor to the Alhambra Subdivision, the UPRR utilizes trackage rights over Metrolink's East Bank Line, which runs parallel to the Los Angeles River on the east side of downtown Los Angeles. There are no grade crossings on the East Bank line. The UPRR Los Angeles Subdivision terminates at West Riverside Junction where it joins the BNSF San Bernardino Subdivision. The BNSF San Bernardino Subdivision continues north of Colton Crossing and transitions to the BNSF Cajon Subdivision. The Cajon line continues north to Barstow and Daggett, and then east toward Needles, California and beyond. UPRR trains exercise trackage rights over the BNSF Subdivision from West Riverside Junction to San Bernardino, and over the Cajon Subdivision from San Bernardino to Daggett, which is a short distance east of Barstow. The UPRR Alhambra Subdivision and the BNSF San Bernardino Subdivision cross at Colton Crossing in San Bernardino County. East of Colton Crossing, the UPRR Yuma Subdivision passes through the Palm Springs area, Indio, and to Arizona and beyond. UPRR also operates on the Coast Mainline, which serves as a connection between the City of Oxnard and all major West Coast destinations. As the only intercity freight rail provider in the city, this line provides an important link for the delivery of goods out of Oxnard[314].

The LOSSAN (Los Angeles – San Diego – San Luis Obispo) rail corridor provides connections for freight and passenger rail running north/south through the region and connecting into the San Diego/Imperial Counties Border region to the south as well as connecting to the Central Coast

Region to the north. The corridor is the second busiest intercity rail corridor in the nation, playing a critical role in the movement of people and goods within the Southern California region. The state is prioritizing and coordinating with partner agencies the need to resolve coastal infrastructure resilience issues along the entire coastline corridor. This is becoming increasingly more important due to the number of extreme weather events unfolding along the corridor. In 2023, a portion of the LOSSAN rail corridor through Orange County was closed due to debris on the tracks from a landslide, cutting off service to Southern Orange County and San Diego County.

Since 2012, the region has been able to construct seven roadway grade separation crossings along the BNSF corridor between Fullerton and Yorba Linda through the Orange County Bridges Grade Separations Program. The grade separations were funded by Orange County Transportation Authority through Measure M2, a half cent sales tax for transportation, and state and federal transportation funding. These projects highlight the important benefits of a local transportation sales tax measure. Measure M2 provides funding for additional rail infrastructure improvements along the LOSSAN corridor in addition to grade separations, such as passing siding projects and other safety improvements.

Various shared-use agreements via trackage rights exist for both passenger and freight rail service, with the predominant mainline operations being owned and operated by freight rail operators. Growth in freight rail traffic is projected to grow at an annualized two percent rate in freight volumes over the next few decades[315].

Highways and Connectors

By 2045, the POLA-POLB is projected to handle over 36 million TEUs, which will generate close to 120,000 truck trips/day (from 68,000 in 2018) and further strain the nation's most important freight gateway[316]. Additionally, 35 percent of all U.S. waterborne containers move by rail on the Alameda Corridor (part of the U.S. Department of Transportation – DOT designated National Multi-Modal Freight Network), or by truck on the I-710, I-110, and SR 47, all of which are important NHFN/ routes. The I-710 alone moves about 15 percent of all U.S. waterborne containers. The I-710 freeway offers direct access to the San Pedro Bay Port complex, as well as to points north and to almost every major east-west highway corridor, acting as a primary access route to the Gateway Cities subregion and Inland Empire[317]. There are three bridges connecting the freeway system to Terminal Island: Vincent Thomas Bridge on the west, Commodore Schuyler F. Heim Bridge on the north, and the Long Beach International Gateway Bridge on the east. The primary access route to the Port of Hueneme (the third international seaport in the SCAG region) is US 101, which connects to SR 126, SR 232, SR 118, and I-405, while secondary access to Highway 101 is possible via Ventura Road, a 4-lane roadway located east of The Port's main gate. As specified by the Port of Hueneme, the primary corridors for trucks are Rice Avenue and Hueneme Road, while Victoria Avenue and Ventura Road are identified as the contingency corridors. The Port access roads have been designated "Highways of National Significance" since they also serve the U.S. Naval Base.

Two of the largest air cargo facilities at LAX are the Imperial Cargo Complex and the Century Cargo Complex. These facilities are located along West Century Boulevard and Imperial Highway, which, along with La Cienega Boulevard (connecting Century Boulevard and Imperial Highway), were identified by the Los Angeles Department of Transportation as the major arterial truck routes serving air cargo at LAX. Major freeway connections are provided by I-405 and I-105.

Sections of I-5, I-10, I-15, I-110, I-605, I-710, SR 57, SR 60, SR 91, which carry the highest volumes of truck traffic in the region, averaged more than 25,000 trucks per day in 2016[318]. Other major components of the regional highway network also serve significant numbers of trucks. These include I-215, I-405, I-210, and SR 74. More than 20,000 trucks per day travel on some sections, such as SR 58 and I-40, among others, that reflect 50 percent of total traffic carrying agricultural goods. These roads carry a mix of cargo loads, including local, domestic, and international. The arterial roadway system also plays a critical role in goods movement, providing first and last-mile connections to regional ports, manufacturing facilities, intermodal terminals, warehousing and distribution centers, and retail outlets.

Industrial Warehouse and Distribution Space

Since the completed Industrial Warehouse Study, the Los Angeles/Inland Empire region has witnessed continued growth in warehousing, distribution, cold storage, and truck terminal facilities, with the square footage of facility space at 1.6 billion[319]. The mix of building sizes remains skewed to larger footprints with every two out of three buildings being greater than 50,000 square feet.[320] Industrial warehouse and distribution facilities have witnessed sustained growth in construction, with occupancy rates and market rent per square foot near all- time highs near 98% and $16 respectively, and vacancy rates remaining near historic lows close to 2%[321]. The majority of the growth continues to occur in the Inland Empire as the counties of Riverside and San Bernardino have the most developable land zoned for industrial uses.

The regional industrial warehouse and distribution centers are connection points for all modes of transportation and provide necessary services to stock inventory, transload and interchange transitional cargo, fulfill orders, and perform value-added services such as just-in-time delivery, among others. Many of the region's warehouse and distribution facilities are clustered along key goods movement highway corridors such as:

- I-405 provides access to clusters of air cargo facilities where sorting and consolidation/de-consolidation activities occur near LAX;
- I-710 provides access to logistics service providers, truck terminals, and transload facilities serving the goods movement industry near the San Pedro Bay Ports and provide connections to the warehouse concentrations in Downtown Los Angeles and East Los Angeles and intermodal rail yards. Approximately 15 percent of the region's warehousing space is located within a five-mile corridor along I-710[322];
- I-5 and SR-57 provide access to warehouse clusters in the Gateway Cities subregion and in areas in northern Orange County (such as warehousing clusters in Anaheim); and
- East-west corridors, including SR 60 and I-10, provide access to major warehouse clusters in the San Gabriel Valley (especially in the City of Industry) and the Inland Empire (including major concentrations in Ontario, Fontana, Mira Loma, Moreno Valley, SR 91, and I-215); SR 60 is a primary access route to many of these locations with over 50 percent of the region's warehouse space located in a corridor within five miles of the highway[323].

SECTION 2. POLICIES, PROGRAMS, AND MAJOR FREIGHT INFRASTRUCTURE INVESTMENTS

Key regional policies, programs, and major freight infrastructure investments that support California's vision and goals are organized as follows:

- Roadway access to major goods movement facilities.
- Freight corridor system.
- Off-dock and near-dock intermodal yard projects.
- Mainline rail.
- On-dock rail.
- Rail access improvements to Port of Long Beach and Port of Los Angeles.
- Rail-highway grade separations (particularly on the Alameda Corridor-East).
- Bottleneck relief projects.
- Truck parking mitigation.
- Last-mile delivery strategies.
- Technology and other goods movement initiatives.
- Zero-Emission Truck Program

The CFMP 2023 goals are closely tied with one another, as each goal's expected benefits will lead to cumulative improvements across the region. Economic competitiveness is a product of speed and throughput, which is directly connected with congestion relief, safety and security, infrastructure preservation, and technology adoption. Environmental stewardship continues to play an important role for all goods movement in the Los Angeles/Inland Empire region as all stakeholders remain committed to a cooperative, close working relationship with the Governor of California and its State agencies. The region is the largest within the State and U.S. serving the needs of millions of households, business establishments, and government and non-profit organizations. This Regional Investment Strategy provides a range of thoughtful and carefully considered policies, programs, and freight infrastructure investments ranging from supporting the testing and deployment of the newest ZE/NZE technologies for vehicles, equipment and infrastructure, to planning, developing and building critical freight components to garner operational efficiencies and increase the throughput of goods movement throughout Southern California and the rest of the U.S.

The policies, programs, and freight infrastructure investments provide for operations, maintenance, and preservation of the system. Through the alignment of the region's vision, SCAG's RTP/SCS, POLA-POLB CAAP and TAP, among other plans and programs, including countless coordinated engagements with county transportation commissions and member agencies, the region's policies, programs, and freight investments are strongly aligned with those of the CFMP, and will support the objectives within, and principles of the CSFAP.

SCAG is currently in the development process for the 2024 Connect SoCal Update (Regional Transportation Plan/Sustainable Communities Strategy). Connect SoCal 2020 also includes a Goods Movement technical report with a vision supporting a world-class, coordinated Southern California goods movement system that accommodates growth in the throughput of freight to the region and nation in ways that support the region's economic vitality, attainment of clean air standards, and quality of life for its communities. Connect SoCal promotes this vision by:

- Maintaining the long-term economic competitiveness of the region
- Promoting local and regional job creation and retention
- Increasing freight and passenger mobility
- Improving safety of goods movement activities
- Mitigating environmental impacts of goods movement operations

SCAG has established a Last Mile Freight Program (LMFP) where the agency is directly supporting the Accelerated Electrification Key Connection through managing the implementation of zero-

and near-zero emission vehicles, equipment, and supporting infrastructure throughout the region. Currently, Phase 1 of the LMFP is working with major established companies, newer technology innovators, and smaller independent owner-operators. Phase 2 of the LMFP is still under development with the intent of coordinating with both public and private sector stakeholders to deploy broader innovative technologies currently being demonstrated by leading last mile delivery companies, particularly in e-commerce use-cases.

SCAG continues to initiate and coordinate multi-modal studies and programs with respect to rail operations and curb space management, while also working with local communities throughout the region. SCAG has recently completed the Integrated Passenger & Freight Rail Forecast and Curb Space Management Study, and the agency is also working on curb-related efforts through its Sustainable Communities Program (SCP) Smart Cities and Mobility Innovations projects. These efforts are critical to better understand rail capacity needs for both mid- and long-term growth expectations, and to further assess impacts of e-commerce and last-mile deliveries as part of the holistic curb environment. SCAG has also recently completed the Goods Movement Communities Opportunities Assessment, which directly engaged numerous local jurisdictions collectively throughout the region to discuss key freight issues and challenges.

SCAG is planning a study to help envision a regional network of zero emission charging and fueling infrastructure. This study will create a phased blueprint and action plan towards realizing this goal and answer key questions about how stations in the region may operate to serve different truck markets and business functions. Though convened by SCAG, this study will be guided by a Technical Advisory Committee of key stakeholders, who will ultimately be instrumental in implementing this plan. Details related to the quantity, distribution and characteristics of charging and fueling stations will be quantified to the extent possible to help visualize and plan for infrastructure needs and investments. Study findings and products will also feed into the Electric Truck Research and Utilization Center (eTRUC) Project, funded by the California Energy Commission (CEC) Research Hub for Electric Technologies in Truck Applications (RHETTA) Program and led by EPRI. The regional prioritization of electric trucking station locations will feed into the prioritization of infrastructure locations for this project and simultaneously SCAG will also do additional work to plan priority fueling locations for hydrogen fuel cell trucks. While SCAG remains technology neutral, this study will provide projections of the demand for each technology and show how it can be met in a holistic fashion.

San Diego - Imperial Counties Border

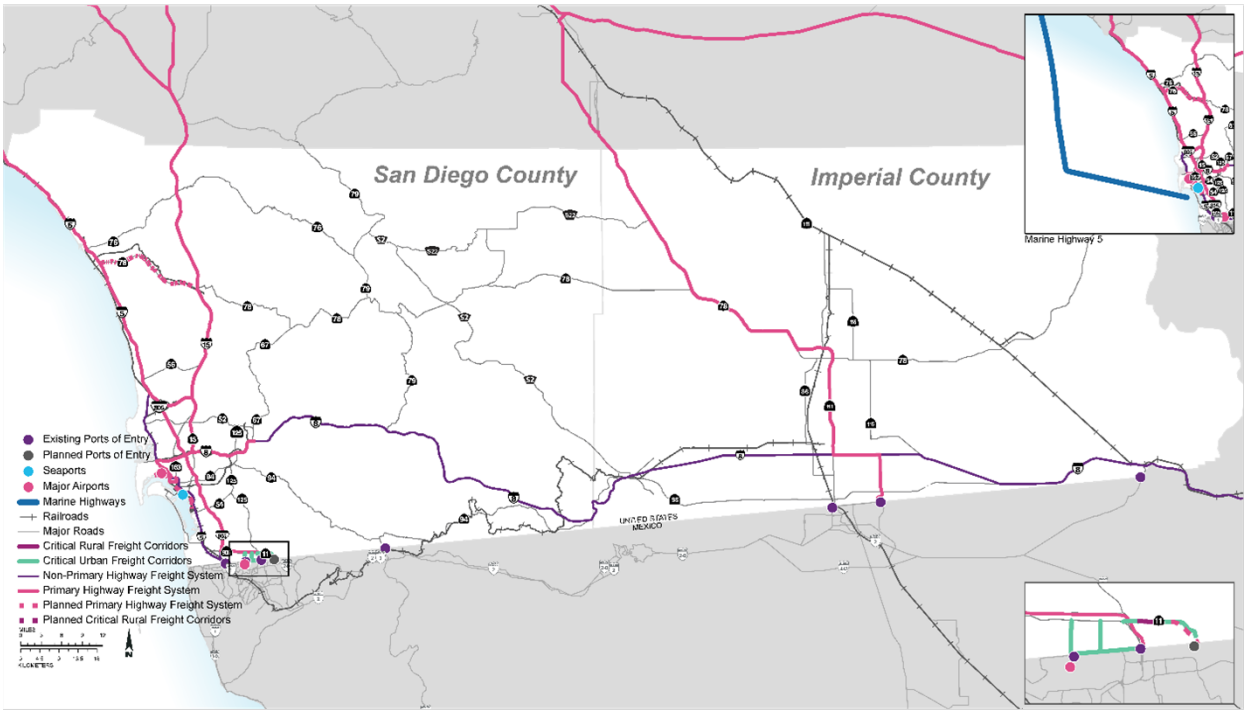

Figure 6.10: San Diego – Imperial County Map (Source: SANDAG 2021 Freight Gateway Study Update)

SECTION 1. CORRIDOR OVERVIEW

Situated between major production, trade, and population centers, San Diego and Imperial Counties depend on an integrated transportation network to effectively move people and goods within and through the region to the rest of the nation and around the world, as shown in **Figure 6.10**. Due to the interdependent nature of its binational economies, the Border Corridor's globally competitive business environment hosts a manufacturing sector that is one of the world's strongest cross-border supply chains, with a combined gross domestic product of approximately $253 billion for San Diego and Imperial Counties in 2018. [324]

The Border Corridor connects some of the largest supply chains in the nation by bridging the major goods movement hubs in Southern California – the California-Baja California border region, the Ports of San Diego, Los Angeles, and Long Beach, and the Inland Empire distribution centers. For these connections to thrive, the freight transportation system in this Border Corridor includes interstate and state highways, Class I freight rail operations, short line railroads (most freight operations occur on tracks shared with passenger rail services), airport cargo systems, the Port of San Diego (with two working marine terminals), and the Otay Mesa, Tecate, and Calexico East commercial border crossings, which are described in detail below.

ROADS/HIGHWAYS

Most freight in the Border Corridor is transported by truck. Congested freeways and highways slow the freight movement at significant freight hubs, including POEs and the Port of San Diego. Major east-west routes include I-8 (from coastal San Diego to the Arizona border), SR 52, SR 54, SR 76, SR 78, SR 94, SR 98, and SR 905. Major north-south routes include I-5 (the United States/Mexico Border north through San Diego County, up the entire West Coast to the Canadian Border), I-15 (a northeast route that continues to the Canadian Border with Montana), I-805, SR 86, SR 111, and SR 125. Routes primarily connecting POEs are I-5, I-805, SR 7, SR 11 (for future connection to the planned Otay Mesa East POE), SR 188, and SR 905.

The Imperial County freight highway network provides an interregional connection for shipping and logistics that handles approximately 97 percent of total commodity flows across the county. There are four major north-south corridors handling freight within the county: Forrester Road, from I-8 to SR 78/86 in Westmorland; SR 7 from the Calexico East Port of Entry to I-8 Freeway; SR 111 from the Calexico West Port of Entry to SR 86 in Riverside County; and SR 86, from SR 111 to Riverside County where it connects with I-10. Additionally, there are two major east-west corridors for trucks: I-8 freeway which originates in San Diego County through Imperial to the California/Arizona Border; and SR 98 which parallels I-8 through most of the southern part of the county. The Imperial freight highway system facilitates the movement of goods from the international border with Mexico and $2 billion in agricultural products from Imperial County through to Coachella Valley in Riverside County with connections west to the Los Angeles/Long Beach Seaports and other key distribution centers throughout California.

LAND PORTS OF ENTRY

The Border Corridor shares a 140-mile international border with seven POEs, including six traditional POEs – (1) San Ysidro, (2) Otay Mesa, (3) Tecate, (4) Calexico West, (5) Calexico East, and (6) Andrade – and one hybrid POE, (7) the Cross Border Xpress, which is a privately facility for direct access between San Diego and Tijuana International Airport. A new POE, Otay Mesa East, is under development and several POEs are undergoing expansion and improvement. As of 2021, the three land Ports of Entry (POEs) in the California-Baja California, Mexico Border region

that handle commercial vehicles facilitate more than $74.5 billion dollars in cross-border trade annually, including over $27 billion dollars' worth of goods crossing southbound.[325]

In San Diego County, Otay Mesa and Tecate handle 99 percent (by value) of all border commercial shipments. The Otay Mesa POE is a multi-modal land POE which processes commercial vehicles, passenger vehicles, and pedestrians. Otay Mesa is the busiest commercial facility on the California-Baja California, Mexico international border handling the second-highest volume of trucks with more than 1 million trucks passing North in 2021, and the third highest dollar value of bilateral trade among all U.S.-Mexico land POEs at $53.5 billion in 2021.[326] Construction of the new Otay Mesa East POE is ongoing and expected to be completed and begin operations in 2024. The new POE features integrated operations through a regional border management system designed to inform travelers and provide fast, predicable border crossings with reliable information on current border wait times. The new POE integrates innovative technology and features, such as a border wait time detection system, advanced traveler alert systems, and variable tolling systems for revenue collection and demand management, with meeting the 20-minute average wait time goal.

In Imperial County, the Calexico East POE is the principal gateway for trade by truck in Imperial Valley and the second busiest commercial POE on the California-Baja California border. In 2021, Calexico East processed $7.8 billion in exports and $11.5 billion in imports, ranking seventh among the U.S.-Mexico commercial border crossings in terms of trade value carried by trucks.[327] In the same year, the POE processed more than 435,000 trucks northbound into the U.S.[328]

MARITIME

San Diego Bay is a natural, deep-water harbor located approximately 96 nautical miles southeast of the Port of Los Angeles and less than 20 miles north of the United States-Mexico International Border. Location, deep-water berths, and proximity to highways and rail earned the Port a designation as one of 17 "strategic ports" by the U.S. DOT, Maritime Administration. San Diego serves one of the largest U.S. Navy fleets and is home to the only major shipyard on the west coast of the U.S.

The Port of San Diego's maritime facilities includes two cruise ship terminals and two cargo terminals: Tenth Avenue Marine Terminal (TAMT) and National City Marine Terminal (NCMT). In 2017, the two terminals handled about 1.5 million short tons of cargo. Built in the 1950s, the TAMT is a general cargo terminal that supports cool-frozen food storage, break bulk, dry-liquid bulk, small container operations, and construction materials. The NCMT is the Port's roll-on and roll-off facility and a primary maritime POE for imported automobiles and lumber, with the capacity to handle 500,000 motor vehicles for distribution by rail and truck throughout the nation. The Port plays an important economic role as a key employer for the region. Indirectly, the Port accounts for 70,000 jobs in San Diego County (about one in 30), with an overall economic impact of $9.4 billion.

The Port's maritime capacity at TAMT is growing due to the U.S. DOT Transportation Investments Generating Economic Recovery (TIGER) grant project awarded to the Port in 2015 and was completed in 2020. This project served to modernize TAMT by supporting modern, clean, and efficient technology while increasing cargo operations. The port already added two break bulk liner services from Europe and a bulk service from Mexico because of that grant project, and additional liner services are likely. At NCMT, the National City Balanced Plan will restructure the terminal layout and surrounding area in order to increase community amenities and increase

efficiencies in the marine terminal. Challenges for the marine terminals include optimizing their limited terminal space and deploying cutting-edge ZE/NZE infrastructure and equipment to meet State environmental requirements. Growth in maritime volumes must be complemented by enhanced terminal capabilities, such as additional on-dock rail and improved highway access. The Port's proximity to the Community of Portside Environmental Justice Neighborhoods (Portside Community) necessitates context-sensitive community improvements to support Port access projects.

In October 2021, the Port of San Diego adopted the Maritime Clean Air Strategy (MCAS), a policy document to help identify future projects and initiatives to improve health through cleaner air for all who live, work, and play on and around San Diego Bay while also supporting efficient and modern maritime operations. The MCAS includes a goal of 100 percent of cargo trucks calling on the Port's marine terminals being zero emissions (ZE) vehicles by 2030, 100 percent of cargo handling equipment being ZE by 2030, facilitating the implementation of the first all-electric tugboat in the United States by 2026, and contributing to the San Diego Air Pollution Control District's purchase and installation of new portable air filtration devices at participating Portside Community residences.

In October 2022, the United States Department of Transportation announced an award of $5.5 million in America's Marine Highway Grant funds for infrastructure upgrades at the Port of San Diego that will be deployed to handle cargo on the proposed service. The West Coast M-5 Coastal Connector service will use a barge to move building materials, including lumber, as well as containers and general cargo along a U.S. West Coast north/south route to strengthen supply chain resiliency and help address regional supply chain delays.

RAIL

BNSF Railway and UPRR, two Class I railroads, operate in the Border Corridor. BNSF serves the Port of San Diego providing primarily automobile rail service north and south along the LOSSAN corridor, interfacing in Los Angeles with a primary California freight rail corridor for BNSF – the Transcontinental (Transcon) Route – eastward to Chicago, Memphis, and Kansas City. UPRR serves the Imperial Valley near Plaster City, moving commodity, bulk, and mixed cargo eastward to Salt Lake City, Dallas, and Chicago. In addition, the Border region has one operating short line railroad. – The San Diego and Imperial Valley Railroad (SDIV) operates freight service on the La Mesa Branch between Downtown San Diego and El Cajon as well as the South Line between Downtown San Diego and the San Ysidro border crossing and freight rail yard. While accounting for only a small portion of total crossborder trade, approximately $171.5 million of goods passed through San Diego's rail crossing in 2021. These rail imports consist primarily of agricultural goods and raw materials like stone, iron, and steel.

The Baja California Railroad (BJRR) owns the rights to operate limited service between the Mexican border at San Ysidro/Tijuana through Mexico to Division (near the Mexican border at Tecate, BC). The section between Tijuana and Tecate is owned by the Mexican government. BJRR also has operating rights from Division and on to Plaster City in the western part of Imperial County. The section between Division and Plaster City is owned by MTS but currently closed. SANDAG, Caltrans, and MTS are studying the feasibility of rehabilitating this railroad and reinstating service.

The Border Corridor's rail operators handled commodities such as motor vehicles, lumber, chemicals, petroleum, agricultural products, cement, and aggregate. Freight capacity is

constrained by limited track capacity and track sharing with passenger operations, including Amtrak, Metrolink, COASTER, SPRINTER, and the San Diego MTS Trolley.

Double-tracking the Los Angeles-San Diego-San Luis Obispo (LOSSAN) Corridor, the primary north-south route for BNSF Railway, is underway and will provide expanded service potential for freight and passenger rail service. Although there are projects planned to increase mainline throughput, carload capacity is limited primarily by the capacity of the rail yards. The BNSF San Diego rail yard has an estimated manifest cargo capacity of around 1.75 million tons per year, while auto handling capacity is estimated at 500 thousand tons per year. The capacity of cross-border rail movement through the San Ysidro Rail POE is estimated at about 1.6 million tons per year.

Proposed rail improvements in San Diego County could improve the performance of the network in the short term. Proposed projects include finalizing the double tracking along the LOSSAN corridor, stabilizing and ultimately moving trains off the Del Mar Bluffs via a new alignment, realigning curves around Miramar Hill, separating at-grade crossings, safety improvements, bridge replacements and other resiliency projects. In addition, NCTD and BNSF developed the Freight Pathing Study (2020) that identified opportunities and projects that would enable more freight service during the mid-day commute along the LOSSAN corridor.

Imperial County is served by rail connections from Mexico, Riverside County, and Arizona. Commodity flows by rail account for about 3% of total commodity flows in the county. The UPRR owns and operates a line originating at the Calexico West POE, extending north to El Centro and ultimately connecting with other UPRR tracks at Niland, heading north to Riverside County and southeast to Arizona (Sunset Line). UPRR also owns and operates the section between Plaster City and El Centro. That section is in service and connects with other UPRR lines at El Centro. At the Calexico West POE, the rail line processed $136 million in trade with Mexico in 2018. Currently, at the Calexico West POE/UPRR Rail Yard CBP staff is scheduled from 3:00am to 11:00am. The peak period of rail border travel occurs between 4:00am and 6:00am Monday through Friday.

AIR CARGO

Owned and operated by the San Diego County Regional Airport Authority, San Diego International Airport (SDIA) is the busiest single-runway airport in the nation and second in the world behind Gatwick Airport near London. SDIA is one of three commercial airports, along with McClellan–Palomar and Imperial County airports, within the region. SDIA, which processes most of the Border Corridor's air cargo, handled more than 171,000 metric tons of air cargo in 2016. In 2021, SDIA handled approximately 146,547 metric tons and is projected to handle 335,400 metric tons in 2050, which equates to an average increase of approximately 1.8% per year.[329] Four all-cargo airlines serve SDIA: BAX Global, DHL, Federal Express (FedEx), and United Parcel Service (UPS). Currently, air cargo capacity at SDIA is constrained by limited infrastructure and missing first and last-mile connections. Opportunities to leverage growth through the border-adjacent Tijuana International Airport, including the proposed Matrix air cargo and logistics park, could help alleviate some demand in the San Diego region.

The Imperial County Airport provides air service for private, commercial passenger, and freight transportation. Freight is transported through the courier services of FedEx and UPS. At the

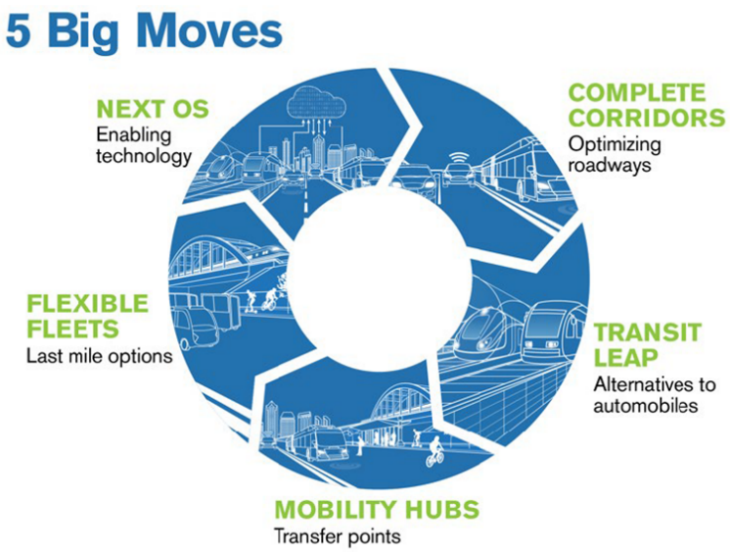

Figure 6.11: 5 Big Moves (Source: SANDAG 2021 Regional Plan)

Imperial County Airport, there are daily scheduled airline flights, air cargo, military operations, and Department of Homeland Security aircraft, as well as several business jets and private general aviation flights. The Calexico International Airport also facilitates cross-border and international travel, with U.S. Customs and Border Protection (CBP) Inspection Officers based at the airport. The Holtville Airstrip is closed to civil aircraft operations but has future economic development potential for a future regional air cargo and passenger facility.

PIPELINE (PETROLEUM)

In the San Diego region, Kinder Morgan Energy Partners (a private company) is the key provider of bulk freight transport by pipeline. The pipeline network runs between Orange, California and the Kinder Morgan Terminal in San Diego (Mission Valley). The 66-acre terminal has capacity to distribute significant amounts of petroleum products by truck on the I-5, I-8, I-805, I-15 freeways. While the volume of petroleum products shipped by pipeline in the region is projected to increase, improved truck access to this pipeline terminal could ensure efficient delivery of petroleum products throughout the region.

Imperial County has a major petroleum products pipeline, which consists of a 20" diameter petroleum products pipeline from the Los Angeles Basin to Yuma, Arizona. Also, from this main pipeline, a 10" pipeline extends southwest from a connection at Niland to a petroleum products terminal in the City of Imperial. This pipeline provides aviation fuel to the El Centro Naval Air Facility via another extension.

SECTION 2. POLICIES, PROGRAMS, AND MAJOR FREIGHT INFRASTRUCTURE INVESTMENTS

The San Diego Association of Governments (SANDAG) 2021 Regional Plan will be implemented through five key strategies for mobility, known collectively as the 5 Big Moves, shown in **Figure 6.11**. There are hubs for freight mobility and freight activity centers in various parts of the county that are the origin and terminus of freight throughout the day (Complete Corridors, Mobility Hubs). Nearly all rail tracks are shared by freight rail and passenger trains (Transit Leap). Staging,

parking, truck services, and curb and sidewalk management will continue to be required for freight and package pick-up and delivery (Mobility Hubs, Flexible Fleets). Future support for freight movement within and through the county will require supportive technologies to optimize movements, create efficiencies, and improve safety (Next OS).

The plan provides an overview of goods movement in the region, includes forecasts out to 2050, and identifies the improvements needed to accommodate forecast growth. Roadway improvements, such as freight signal prioritization (FSP), dynamic truck parking, and near-zero/zero-emission infrastructure will reduce emissions and improve quality of life in communities adjacent to freight routes. The new Otay Mesa East Port of Entry will facilitate the flow of cross-border commercial vehicles, and variable tolling and a border wait time system will provide reliable crossing times. Improvements to railroads, air cargo facilities, and marine cargo terminals will bolster the multimodal freight system and increase transportation choices for the diverse goods moving through the region. Finally, the Next OS digital network will support truck routing, permitting, parking availability, and many other aspects of the San Diego region's transportation system.

The 2021 Regional Plan recognizes that the negative impacts of goods movement have historically been disproportionately borne by socioeconomically disadvantaged and marginalized communities. Disentangling these externalities and environmentally vulnerable populations will require a concerted and focused effort from the region's planning entities. To address these impacts, California Assembly Bill 805 (Gonzalez Fletcher, 2017) calls for SANDAG to include transportation strategies in its regional plans to reduce pollution exposure in the region's disadvantaged communities. Recent goods movement strategies developed and implemented by SANDAG, such as developing a border wait time system to assist in managing demand at our regional border crossings, have therefore focused on providing sustainable and innovative freight solutions that reduce emissions in local disadvantaged communities while still promoting trade.

In addition to the communities through which the goods movement network runs, there are also important equity considerations regarding the employees who operate these systems. As freight companies look to advance operational efficiency through the adoption of automation, the workforce and skills required to operate vehicles and conduct warehouse operations will change. It is crucial that programs be put in place to support upskilling workers if and when automation becomes the industry norm. As policies and programs are adopted to support communities impacted by freight operations, consideration also must be given to how the region will continue to accommodate necessary goods movement operations to keep food on the table and products on the shelves for the county's residents. Additionally, policies must consider the impacts of decisions on the ability for goods movement businesses, both small and large, to maintain the jobs that are essential for the supply chain to continue to function efficiently.

The California – Baja California Border Corridor is one of the most important and dynamic economic zones in North America. In 2019, more than 1.4 million trucks crossed from Baja California into California – representing over $39.5 billion in goods (2021 BMP; 5-47). By 2040, border crossing volumes are expected to increase significantly to an estimated 3.4 million trucks crossing annually (2021 BMP; ES-2). While the crossings are a critical element of the bi-national region's economic integration and competitiveness, growing demand has led to greater congestion at border crossings and increased delay and unreliable crossing times for cars,

trucks, and pedestrians at California-Baja California POEs. Currently, travelers crossing the border between Tijuana and San Diego experience average wait times of 1.5 - 2 hours for passenger vehicles, and 1 - 2 hours for commercial vehicles**.** These delays and uncertainty at the border have the potential to reduce economic competitiveness and attractiveness of California to businesses, which can translate into lower levels of economic activity and growth.

Cross-border collaboration is central to solving challenges of congestion and delay at POEs through coordinated project delivery and transportation priorities. In 2021, Caltrans District 11, in partnership with the SANDAG Service Bureau and Secretaría de Infraestructura, Desarrollo Urbano y Reordenación Territorial del Estado de Baja California (SIDURT Baja California), completed the California-Baja California Border Master Plan (BMP) update. The 2021 update includes 183 POE and related transportation projects representing an investment of $13.5 billion ($2015 USD) for the Border Region over the next 20 years. The 2021 BMP includes ten POE projects—four planned for the construction of new POEs and six for the improvement and modernization of existing POEs.

The 2021 BMP proposes new concepts and innovations designed to improve how people and goods get around the Border Corridor. Goods movements strategies outlined in the plan will facilitate efficient crossings and processing of freight and commercial vehicles through (1) the implementation of unified cargo processing at all POEs that improve processing times and (2) the development of an appointment/arrival window system and staging area with dedicated lanes to expedite inspection times, reduce idling, and enable predefined appointment times.

Policymakers face the complex task of enhancing mobility for residents, workers, and businesses while at the same time supporting international trade by improving the efficiency of regional airports, seaports, and land border crossings. To assist in this task, identifying types of infrastructure investments that will best contribute to economic growth is essential. To enhance efficiency at the international trade gateways, strategies are needed to limit congestion and wait times. Businesses can be enabled to take advantage of scale economies as well as agglomeration economies from the consolidation of related production and warehousing facilities. Ultimately, a more efficient and improved border region transportation system will support California's sustainability and trade growth.

Transportation agencies in the Border Corridor are pioneers in integrating sustainability into their freight strategies and projects. SANDAG and Imperial County Transportation Commission (ICTC) are developing the San Diego and Imperial Counties Sustainable Freight Implementation Strategy, a planning study funded by a Caltrans Sustainable Transportation Planning Grant. The plan will seek to pilot innovative technologies that might be firsts in the nation; engage stakeholders to understand needs, opinions, and aspirations regarding implementation; identify potential funding sources for implementation; develop and strengthen partnerships between public agencies, community members, and the private sector; and create a workforce development toolkit highlighting training opportunities for constructing and maintaining these investments.

SANDAG is working on a Regional Medium- and Heavy-Duty Zero Emission Vehicle Blueprint in collaboration with the Port of San Diego, funded with a grant from the California Energy Commission. The Blueprint will guide the region by researching current vehicle, infrastructure, and market availability; engage the public and stakeholders; develop medium- and heavy-duty zero emission technology siting criteria; and identify key strategies and actions needed to transition goods movement and transit fleets to zero emission technology. For this project,

SANDAG has partnered with the Environmental Health Coalition to engage members of the public to support environmental justice goals.

Caltrans District 11, in partnership with SANDAG, ICTC, SCAG, and other stakeholders, is making progress in implementing the initial phases of their Advanced Technology Corridors at Border Ports of Entry pilot project. Initial phases focus on installing equipment to measure southbound border wait times and displaying this information through an advanced traveler information system in order to better manage commercial and passenger vehicle traffic at the border. Caltrans District 11 and SANDAG will be installing air monitoring equipment to track progress in improving air quality in border communities. In addition, members of the San Diego Working Waterfront (previously the San Diego Port Tenants Association), through a California Energy Commission grant, recently transitioned some of their fleets to ZE/NZE vehicles. The organization implemented a freight signal prioritization (FSP) pilot project along Harbor Drive for one year; summary results showed improvements in travel times and a reduction in idle times.

Caltrans, SANDAG, and the Port of San Diego are collaborating on the Harbor Drive 2.0 Port Access Improvements project, which will make permanent and expand on the FSP pilot in San Diego's Working Waterfront with additional roadway enhancements through truck-only lanes, truck queue jumps, and ITS technologies that (1) reduce freight travel times, and (2) minimize truck impacts on San Diego's AB-617 Portside Environmental Justice Neighborhoods of Barrio Logan and National City. As an economic engine for the San Diego region, the project will transform San Diego's Working Waterfront into a sustainable freight corridor by promoting commercial near-zero or zero-emission vehicle (ZEV) charging stations and supportive infrastructure. The Project will address longstanding community concerns about diverting truck traffic away from local streets in the residential communities of Barrio Logan and improving the connections and throughput between San Diego's Working Waterfront, intermodal freight facilities, Interstate 5 (I-5), and State Route 15 (SR-15) freeways The agencies are working with the AB 617 Portside Community Steering Committee on implementing strategies identified in the Portside Community Emissions Reduction Plan to improve air quality in the surrounding neighborhoods. After hosting a truck parking summit in 2018, the Port of San Diego, Caltrans District 11, and SANDAG are also looking into potential truck parking opportunities near the working waterfront and near the Otay Mesa POE.

SANDAG is partnering with the San Diego County Regional Airport Authority to prepare an Advanced Air Mobility (AAM) Regional Strategy, with funding provided through a Caltrans Sustainable Transportation Planning Grant. This project seeks to establish a uniform vision for AAM technologies and identify near-term pilot opportunities to alleviate transportation demands on the ground, including goods movement. As part of the project, a Collaborative will be convened and act as a forum for discussion and information-sharing to guide the development of an AAM Policy Framework and Implementation Strategy for local jurisdictions. Resources produced may be adapted by other regions and inform state policy and efforts spearheaded by the Caltrans Division of Aeronautics.

Examples of regional policies and programs are shown in **Table 6.7**.

Table 6.7: Regional Policies and Programs by County

Regional Policy/Program	County
Collaborate with U.S. and Mexican agencies, community members, commercial industry representatives, and additional stakeholders on freight projects and policies	San Diego/ Imperial
Collaborate with stakeholders, including community members, public agencies, and commercial industry representatives on the implementation of air quality improvement programs	San Diego/ Imperial
Collect or procure freight origin-destination data to determine intraregional and interregional flows and better inform planning decisions	San Diego/ Imperial
Develop a curbside and sidewalk management strategy for urban deliveries	San Diego
Encourage context-sensitive community improvements that support access to freight hubs	San Diego/ Imperial
Develop and implement truck parking strategies	San Diego/Imperial
Encourage operational improvements to better manage vehicle and rail traffic in the region	San Diego/Imperial
Expand ZE/NZE infrastructure	San Diego/Imperial
Collaborate to implement the Advanced Technology Corridors at Border Ports of Entry pilot project	San Diego/Imperial
Partner with the San Diego County Regional Airport Authority to prepare an Advanced Air Mobility (AAM) Regional Strategy	San Diego
Develop the San Diego and Imperial Counties Sustainable Freight Implementation Strategy.	San Diego/Imperial
Develop the San Diego Regional Medium- and Heavy-Duty Zero-Emission Vehicle Blueprint.	San Diego
Source: Caltrans	

Glossary