

6.B. Freight Investments

As a part of the implementation of the CFMP 2020, input from previous chapters help inform the most critical future freight investments necessary for California to meet the everchanging demands of tomorrow. This has resulted in the development of the Regional Freight Investment Strategies (FIS).

Understanding the context of a region is helpful in assessing 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 regions' unique attributes and competitive strengths. As such, this CFMP analyzes California's freight system from seven regional perspectives, highlighting the unique context and freight needs of each of these regions. In alignment with state policy including California's "Regions Rise Together" initiative and stakeholder input from the CFAC, the boundaries of the CFMP regions are conceptualized to generally align with California freight flows to best address the unique context of California's regional communities and economies.¹

Table 6.B.1 describes how California's counties are divided among the seven CFMP regions, and **Figure 6.B.1** is a map that illustrates the borders of the CFMP regions. Each of the following perspectives are comprised of two sections—1) a regional narrative; 2) policies and programs.

Table 6.B.1. The CFMP Freight Investment Strategy Regions by County

CFMP Region	County	Caltrans District of 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		

CFMP Region	County	Caltrans District of County
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, with the exception of 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

CFMP Region	County	Caltrans District of County
	San Benito	
	Santa Barbara	
	San Luis Obispo	
	Santa Cruz	
Los Angeles and Inland Empire	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	

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 strong partnerships between 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, freight projects should also leverage efforts to address impacts of climate change. As a leader in sustainable freight activities, California strives to evolve and grow its freight industry while simultaneously reducing any negative externalities that could exacerbate climate change impacts. This is a vital consideration, especially for projects that may increase VMT. To mitigate our greatest freight challenges, the State's most critical freight investments should be consistent and aligned with at least one the following four themes:

Improving Port Access Reliability

With some of the busiest maritime port complexes in the nation, imports from the Pacific Rim to California and national markets are a significant economic engine for California. With one of the largest concentrations of warehouses and distribution centers in the nation, California's 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 largest exporters of high-value electronic goods in the nation, and one of the largest exporters of agricultural goods in the world, California's competitiveness in the

world and national markets depend on the intricate and interdependent roles of the public and private sectors working cohesively to move goods to, through, and from the ports.

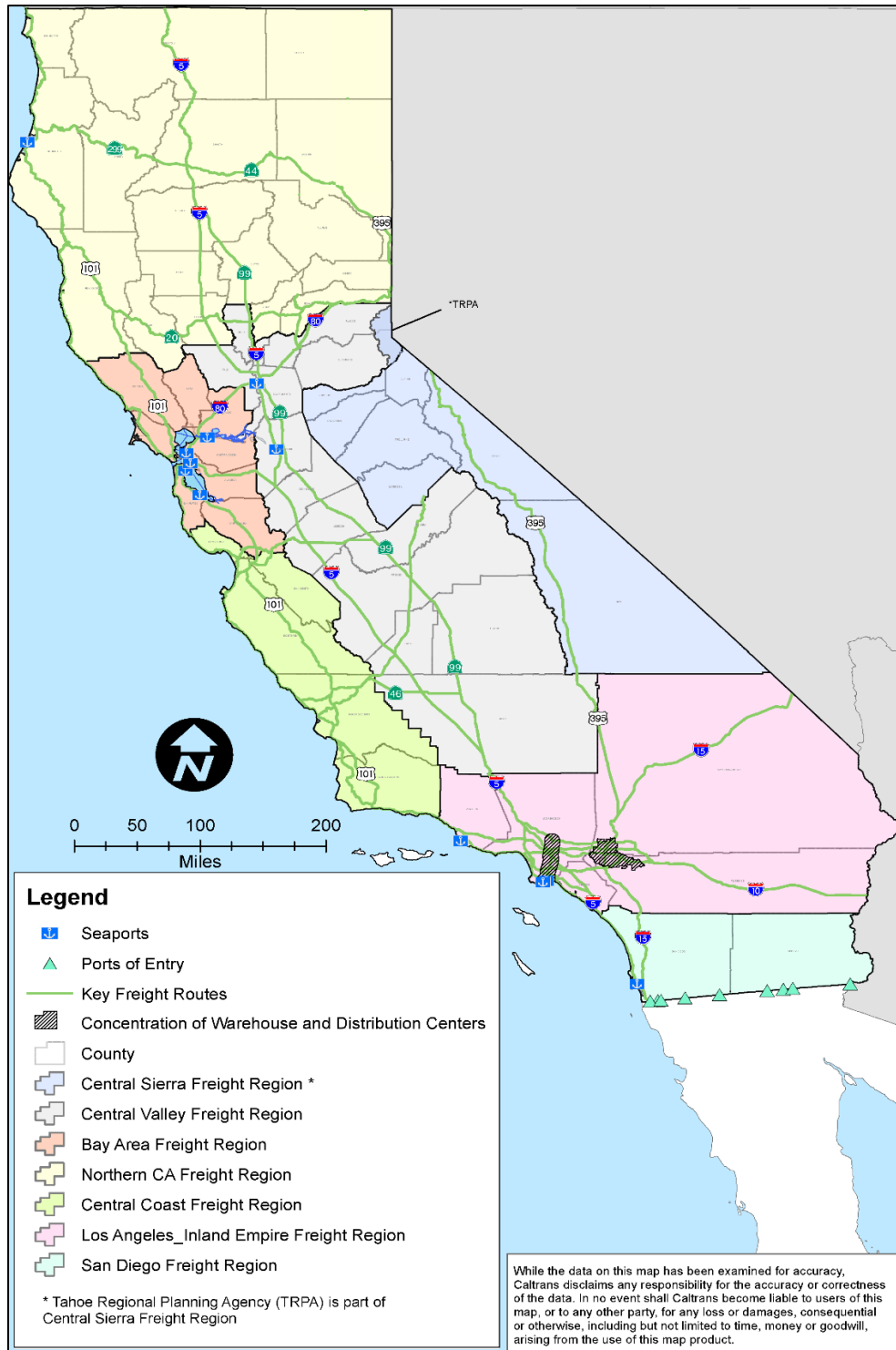
Border Efficiency

Mexico is California's largest trading partner, and trade between the two partners will continue to grow as manufacturers' supply chains continue to 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 will need to address how they will not only mitigate impacts to, but also 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 nation, as well as Mexico and Canada. Improving the inter- and intra-state freight network is a critical component to increase the state's economic competitiveness. Critical freight corridors, such as I-5, I-10, I-15, I-80, SR 99 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 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.

Figure 6.B.1. Map of CFMP Freight Investment Strategy Regions relative to Key Freight Routes in California



Source: Caltrans

Sustainability and Innovations

As the world’s innovation epicenter, California has been at the forefront in countless sectors to deliver ideas, products, and services that have tremendous impact to the world. Within California’s freight sector, innovative practices and technologies continue to be developed. With adoption of the CSFAP, EO N-19-19, and other climate change resilience initiatives, combined with local and regional policies, California is committed to enhance all aspects of freight in a manner that will advance the triple bottom line--its economy, its people, and the natural environment. Initiatives such as workforce and community development, environment improvement programs, freight intelligent transportation systems, renewable energy infrastructure, and smart land use decisions are only 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 become more sustainable. In alignment with this principle, the following types of projects are examples of those that may provide added benefits to the freight transportation system but also 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. This could potentially include using 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.

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 low-emission vessels and cargo handling equipment to maximize emissions reductions and take full advantage of 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 efficiency of the freight system, and reduce emissions—especially 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 located where drivers tend to park for long periods of time to meet HOS regulations and could plug in and/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 - Systems that provide real-time information about the position of vehicles via location enabled smart devices and truck OEM on-board hardware. Information can be accessed by 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 that determines the eco-friendliest route for truck drivers and fleet operation managers. Routes can 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 that enables 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 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 performance 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.

Truck Platooning – As mentioned earlier, truck platooning refers to the linking of two or more trucks in a convoy using technology to link and automate acceleration and deceleration of the connected trucks. The technology automatically sets and maintains close distance between each vehicle allowing for 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 the 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 the weight of the vehicles 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 both interstate and state networks and improve network capacity, operational flexibility, service availability, travel times, safety, system reliability, and security. Control and dispatch centers are able to 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. The use of 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 boundary of the North Pacific coastline. The NCR coincides with the combined counties of 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 (Caltrans District 3) and is approximately 28 percent of the state’s total land area.² 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, Siskiyou, Shasta, and Plumas Counties--are all located within this region. Together in 2017, these five counties produced a combined total of 891.2 million board feet of timber valued at \$294.3 million, comprising approximately 68 percent of the State’s total timber production.³ 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 expense 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 benefits the state and local economies. During the summer season, traffic volumes climb nearly 25-50 percent on many of the regional highways, impacting trucking on rural freight highways. National and international travelers to the state partake in the natural beauty of the national 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.B.2. Northern California Regional Overview

Counties	Distinguishing Characteristics
Butte	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. Butte County is nationally ranked for its agricultural products in rice, walnuts, prunes and plums. According to the United States Department of Agriculture, the 2012 Census of Agriculture noted that Butte County is ranked in the top ten in the nation in walnut, prune, and plum production.
Colusa	Agriculture (ranching and farming) and recreation play significant roles for Colusa County’s economy. The county’s transportation network provides access to camping, fishing, boating, and bird watching at East Park Reservoir and 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 Colusa County. In this agriculture-dominant county, rice and almonds are the main crops.

Counties	Distinguishing Characteristics
Del Norte	<p>Del Norte County is known for giant Coastal Redwoods. Crescent City, the county's only incorporated city, is home to the Crescent City Harbor and Pelican Bay State Prison. Cattle, milk, and nursery products are the county's primary commodities. The county's topography is comprised of 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 residing in the area. Commercial fishing and tourism are the Crescent City Harbor's primary economic activities and represent a significant sector of the county's economy.</p>
Glenn	<p>Glenn County, located approximately 75 miles north of Sacramento, is one the smallest California counties. The Grindstone Indian Rancheria, the county's only federally recognized Tribal Government, is located to the 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.</p>
Humboldt	<p>Humboldt County'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 key to the county's economy. This county is the state's largest supplier of timber, producing 289 million board feet valued \$120.8 million, which equates to 32 percent of the county's agricultural value and 28 percent of the state's total timber value in 2017.⁴ 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 boats from other West Coast ports utilize the harbor.⁵ 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 movement that travels through the county moves by trucks utilizing the SHS and local roads.</p>

Counties	Distinguishing Characteristics
Lake	Lake County 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 largely of mountainous terrain, Clear Lake (largest freshwater lake in the state), and resource lands (surrounding the lake). Lake County is home to the world’s largest complex of geothermal power plants, and it has the cleanest air in the state. Lake County has a limited economy. In 2015, approximately 25 percent of the population lived at or below the poverty level and around 27 percent of the residents needed social assistance. ⁶ Agriculture plays a significant role in its economy, as Lake is the largest supplier of premium fresh pears in California. Other commodities include wine grapes, wine, English walnuts, cattle, and calves.
Lassen	Government agencies manage approximately 63 percent of Lassen 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	Mendocino County is known for its distinctive coastline and forest lands. Its main commodities are wine grapes, wine, timber (44 percent of the county’s agriculture value), Bartlett pears, cattle, and calves. In 2017, the county ranked second in the State for timber production producing 120.5 million board feet of timber valued at \$60 million. ⁷ Mendocino 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 2007 and 2016. ⁸
Nevada	Cattle, heifers, and steers accounted for one-third of the Nevada County’s agriculture production value in 2010. Pasture/rangeland, wine grapes, timber, and manufacturing are other major economic generators.
Modoc	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.

Counties	Distinguishing Characteristics
Plumas	Plumas County boasts 100-plus lakes, more than 1,000 miles of rivers and streams, and over a million acres of National Forest – providing a multitude of outdoor adventure opportunities year-round. Top commodities include timber (44 percent of the county’s agriculture value), livestock, and alfalfa and meadow hay. The county is ranked fifth in the state for timber production. In 2015, the county produced 117.4 million board feet of timber valued at \$23 million.
Sierra	Divided by the Pacific Crest, this rural county’s largest 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	Recreation is Shasta County’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 2017, the county was ranked fourth in the state for timber production and produced 155.7 million board feet of timber valued at \$42 million. ⁹
Siskiyou	Siskiyou County is located in the Shasta Cascade Region, home to Mount Shasta (the 5 th highest peak in the State). More than 60 percent of its land is managed by federal and state agencies. Tourism play a significant role in the county’s economy and employment. “The Siskiyou County Visitors Bureau estimates that the county provides opportunities and services for nearly 400,000 people annually.” ¹⁰ The county’s agriculture consists primarily of livestock grazing and field crops, such as strawberries. Strawberry plants are the top commodity in this county, followed by timber, hay, steers and heifers, raspberry plants, and wheat. In 2017, the county ranked third in the state for timber production and produced 208.8 million board feet of timber valued at \$48.5 million. ¹¹
Tehama	Tehama County is bisected by I-5 and the Sacramento River. By far, the primary commodity is walnuts, followed by olive products, almonds, and prunes. Other regional commodities include honey and bee products, milk, timber and livestock. Many of the goods from this area are shipped international in over 50 countries. Between 2016 and 2017 agricultural production increased in Tehama County by almost 14 %. ¹²

Counties	Distinguishing Characteristics
Trinity	Trinity County’s rugged topography is comprised of the Trinity Alps, South Fork Mountain and other ridges of the Klamath Mountains and Coastal Range, and the County is carved by the deep canyons and valleys of the Trinity, Van Duzen, and Eel Rivers. This county is extremely 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 are reliant on natural resources, mining, construction, manufacturing, trade, transportation and utilities. Over 70 percent of the land in Trinity County is owned by the Federal government and is not subject to property taxes. The top commodities include forest products as well as cattle and calves.
Yuba	Home to Beale Air Force Base, Yuba County’s main industries involve 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/U.S.)

I-5

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, 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).

U.S. 97

Major north-south interregional corridor that begins at its junction with I-5 (near the City of Weed, CA) then 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 of the total AADT at the northerly end of the route. Total truck volumes range from 989 -1166 trucks daily with the majority being larger (5+ axle) trucks.

U.S. 101

Major north-south national, inter-/intra-regional freight corridor linking California's North Coast, Oregon, and Washington and all 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 important industrial activities. This route is part of the NHS and the California Freeway and Expressway System and serves as the primary interregional corridor for goods movement between the NCR and the Bay Area. This corridor is also a vital lifeline for the 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, and it is utilized to transport agriculture, lumber, and other goods produced in the corridor to market or to 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 access 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.

U.S. 199

Important 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 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

Principal north-south freight corridor beginning in San Bernardino County and continues to the California/Oregon State Line. U.S. 395 is a critical connection for freight in Northern California between SR 36 in Susanville and Reno, NV, and serves as part of the SR 299/44/36/U.S. 97 corridor between the Pacific Coast (Port of Humboldt) and Reno, NV. The Sierra Army Depot is the largest military storage facility in the nation and is accessed from U.S. 395 south of Susanville.

State Routes (SR)

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

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 for 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 SR 70). This corridor is also an important regional route serving the rural communities of Mendocino and Lake Counties.

SR 44

State Route 44 traverses northcentral California through the northern Sacramento Valley. It begins at the junctions of SRs 273 and 299 in Redding, connects to SR 89 near the Sierra Nevada Mountain range, and ends at SR 36 (Lassen County). SR 44 serves as part of the SR 299/44/36/U.S. 395 corridor between the Pacific Coast (Port of Humboldt) and Reno, NV.

SR 49

North-south interregional route that serves many historic mining communities of the California Gold Rush. This rural highway begins at Oakhurst (Madera County) and continues generally northwest through the counties of Tuolumne, Calaveras, Amador, El Dorado, Placer, Nevada, Yuba, Sierra, and Plumas where it ends at its junction with SR 70 (in Vinton). State Route 49 acts as a “Main Street” throughout the Sierra Nevada Foothills and functions as an important last-mile connector for local goods movement.

SR 70

Rural minor arterial highway beginning at SR 99 (Sutter County near Catlett Road in Marysville) and ending at U.S. 395 (Hallelujah Junction). This route crosses SR 49, SR 89, SR 149, SR 191, SR 284, and U.S. 395, and serves the long-distance movement of people and goods.

SR 89

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 and serves as a major thoroughfare for many small communities in northeastern California and provides access to tourists and service providers (hotels, resorts, parks, restaurants) 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 corridor also provides lifeline access to Sierra and Alpine Counties and linkages between I-5 and SR 36, SR 44, SR 70, and SR 299. Portions of SR 89 in Siskiyou and Shasta Counties are part of the detour when I-5 is closed through the Sacramento River Canyon.

SR 99

Critical north-south interregional freight corridor and an important highway for California’s economy. This corridor serves as a major farm to market route for most of the agricultural products from the Central Valley. Most of the commercial and personal travel between the

cities within the Central Valley use 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 197

North-south two-lane minor arterial 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)

Key intermodal route that connects the Port of Humboldt Bay to U.S. 101.

SR 299

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), and 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 and alfalfa, livestock, potatoes, and vegetables), and 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 main east-west corridors at Seattle, Portland, Oakland, and Los Angeles. BNSF has a route (using some UPRR-trackage rights) in District 2 that serves as a primary unit and manifest (mixed car/cargo) freight. Major commodities shipped in the region include tomato products, olives, rice, cheese, frozen foods, beer, wine, and wheat with 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) and 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-Marín 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 currently exclusively passenger service, it could resume freight service in the future.

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 both 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. If these businesses are revived, truck and port rail access would also need attention.

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. Most docks at Crescent City Harbor were destroyed by surges 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

Although the smaller airports of the NCR do not have the same economic impact as the large Southern California and Bay Area airports (which move more than 90 percent of the state’s airborne freight), these smaller airports do play an important role by handling cargo like mail and parcels for remote rural communities. Rural airports connect smaller communities to larger global markets as well as play other vital roles – especially in emergencies (e.g., critical medicine and organ transport and disaster response). Uncharacteristic of a traditional truck, sea, and rail freight, commodities transported by aircraft tend to be light-weight, of high-value, time-sensitive, and traveling a long distance.

There are fifty public use airports spread throughout the region, but only three scheduled service commercial airports – Redding Municipal, 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; however, the following list contains the more prominent cargo-carrying airports in the region.

Airports

Redding Municipal 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 an important cargo hub for the area.

Murray Field and Redwood Coast Airports are run by Humboldt County Public Works. In 2013, Murray Field, Humboldt County’s main cargo airport and sole base of operations for FedEx air cargo operations, transported over 860 metric tons of cargo. The Redwood Coast (formerly known as the Arcata-Eureka Airport) is classified by the Federal Aviation Administration (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.¹³

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 counties of the NCR have common transportation, growth, and land use issues, and as such, can benefit from a well-formulated and unified strategies that can be advocated to implementing agencies and the public. In the NCR where small communities are scattered across large expanses, undeveloped forest, foothills, mountains, and coastal lands, trucks are the primary freight mode. Truck drivers must travel further distances, consume more fuel, and incur greater 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 communities to each other and to major population centers of the state. Therefore, it is not unusual for a single state highway to serve as a community's primary freight route, "Main Street," and an emergency evacuation route. However, many of these freight routes do not have parallel and connecting routes that can serve as alternative passages for trucking. Many of these alternate options are local roads or highways that were not designed to carry larger vehicles.

The NCR's steep and unpredictable terrain creates challenges for developing surface roads, which end up meandering along narrow, winding, steep passageways that are not ideal for large truck transport. Many of the roads in the NCR were constructed post World War I, have not been upgraded to current highway standards, and are deteriorating. In 1997, Congress began allowing heavier truck weights with no maintenance funding increase, and as a result, many rural highways in this region have significantly deteriorated. The 2012 Statewide Transportation System Needs Assessment identifies Lake and Mendocino Counties as having a "poor" Pavement Condition Index rating, and the region's remaining nine counties are in the "at-risk" category. Funding levels for bridge maintenance, repair, and replacement has also dwindled, leaving many bridges throughout the region with maintenance concerns or without meeting current FHWA design criteria standards. More than 36 bridges along I-5 do not meet the new minimum vertical clearance standard of 16 feet above the roadway and over 24 lack weight capacity for full permit loads.

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, thereby allowing access to industry-standard freight trucks, will enhance regional livelihood and increased the NCR's competitiveness. The non-STAA highways and highway segments result in chokepoints that prevent freight industry-standard trucks from accessing the region. This results in truckers having to make more trips using smaller California Legal trucks that are not equipped with clean technologies to move the same amount of goods. Simply put, with STAA access, manufacturers and industries would be able to transport more goods, utilize clean technologies, while making fewer trips (hence reducing VMT).

The NCR is also an important 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. 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. It is also critical to find stable funding to maintain roadways that handle heavy trucks and equipment in adequate condition.

Similar to many regions in California, the NCR is heavily impacted by wildfires. In addition to supporting freight movement, the rural freight highways also act as regional and local evacuation routes as well as 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 its facilities during the fire season. It is anticipated that climate change will result in longer fire seasons which will require larger firefighting equipment to use outdated rural highways that may not be able to accommodate.

To support the region’s freight vision, below are 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, 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 facility concept.
- Realign and widen highways 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 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).
- 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 where feasible and practical.
- Improve the freight transportation system to accommodate emergency response vehicles.

Central Sierra Region

Section 1. Regional Overview

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

The western slope of the Sierra Nevada encompasses some of the oldest transportation routes in California. Many of the highway alignments follow routes developed during the Gold Rush, and 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. It was after World War I that 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; and 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 largely 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 with Yosemite Valley, businesses aligned with tourism have boomed since World War II. The CSR's travel industry is comprised of retail and services including lodging establishments, gas stations, retail stores, restaurants, and other business that offer services that support 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 the CSR benefits 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.B.3.** for direct travel impacts by county in 2018.

Table 6.B.3. Direct Travel Impacts by County (2018)

County	Spending		Employment (Jobs)	Tax Revenue		
	Total	Destination (\$Millions)		Local (mil, USD)	State (mil, USD)	Total (mil, USD)
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 the regional land use and demographics over the decades. Travelers captivated by the region's beauty perceive this area to be more affordable and offering 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, but 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.B.4. below describes the distinguishing characteristics of each county in the Central Sierra region:

Table 6.B.4. Central Sierra Regional Overview

County	Distinguishing Characteristics
Tahoe Basin Counties	<p>The Lake Tahoe Basin (the Basin) is located in the Sierra Nevada Mountain Range, running along the eastern portion of California in El Dorado and Placer Counties and is centered by Lake Tahoe, consisting of 71 shoreline miles (42 miles in California and 29 in Nevada). 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, environmental and animal preservation. The Basin is heavily reliant on tourism, which often peaks in the summer and winter months due to the large number of resorts and outdoor based activities in the area.</p>
Alpine	<p>Alpine County 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 the tourism comprise a large part of the economy and employment. The County's rugged terrain and its remote location make it an ideal area for recreational travel. However, the harsh winter weather and heavy snowfall often result in winter closures of the roads serving it. 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.¹⁴</p>
Amador	<p>Amador County is located approximately 35-miles southeast of Sacramento on the western slope of the Sierra Nevada mountain range. 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 approximately 3.5% of its population (1,350 residents) moving out of the county between 2010 and 2013.¹⁵ Like Alpine County, Amador's economy is heavily reliant of 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.</p>
Calaveras	<p>Tourist attractions in the Calaveras County range from gold-panning and winetasting to 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 taxes¹⁶. Future employment</p>

	<p>growth is expected to occur in sectors such as construction, leisure and hospitality, education and healthcare, and government services.</p>
Mariposa	<p>Recreation associated with Yosemite National Park and government services are the primary industries in Mariposa County. Combined, 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 that visit each year.</p>
Tuolumne	<p>Tuolumne County is a destination for tourism from outside the region. 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, there were approximately 1.2 million visitors using the Big Oak Flat Entrance to Yosemite along SR 120. The Tuolumne County Visitors Bureau estimates that visitors to Tuolumne County added approximately \$205 million to the local economy in 2014¹⁷.”</p>
Inyo	<p>Inyo County, located in the easternmost portion of central California, spans the southeastern length of Sierra Nevada Mountains between Bishop and just north of Walker Pass. It borders the State of Nevada (east), Mono County (north) and San Bernardino and Kern Counties (south). The county is comprised of 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.¹⁸ Domestic and international tourism is the major economic activity in the region with over 13 million visitors annually to the region. 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.</p>
Mono	<p>Mono County’s population in 2007 was estimated to be 13,985 persons; 7,650 persons (54 percent) in Mammoth Lakes and 6,425 persons (46 percent) in the unincorporated portion of the County.¹⁹ Mono County is home to Mammoth Mountain Ski Area, which attracts hundreds of thousands of visitors each year. 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. Although development is limited due to much of the land being public (7 percent private ownership), 2018 agriculture production was \$32,347,000. Other natural</p>

	resource-related industries, including renewable energy and mining also rely on the highway system for production and maintenance access.
Source: Caltrans (2019)	

Truck Routes

Interstate Routes (I/U.S.)

U.S. 6

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

U.S. 50

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 the communities of South Lake Tahoe and Meyers. The route is heavily congested during the summer and winter peak tourism months. Tahoe Basin industries are dependent on this route to provide access for the delivery of goods and services.

U.S. 395

Principal north-south freight corridor beginning in San Bernardino County and continues to the California/Oregon State Line. This corridor provides a consistent high level of service and lifeline accessibility for rural communities and for interregional and interstate movement of people, goods, and recreational travel along the eastern slope of the Sierra Nevada Mountains in both Inyo and Mono counties. Approximately 60 percent of the annual average daily traffic (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 also serves as “Main Street” to many communities in the Eastern Sierra including Lone Pine, Bishop, and Bridgeport. U.S. 395 provides critical links to U.S. 6 and I-80 to the north and SR 14 to the south.

State Routes (SR)

SR 49

North-south interregional route that serves many historic mining communities of the California gold rush. This rural highway begins at Oakhurst (Madera County) and continues generally

northwest through the counties of Tuolumne, Calaveras, Amador, El Dorado, Placer, Nevada, Yuba, Sierra, and Plumas, where it ends at its junction with SR 70 in Vinton. SR 49 acts as a “Main Street” throughout the Sierra Nevada foothills and functions as an important “last mile” connector for local goods movement.

SR 88

East-west Trans-Sierra route connecting Stockton, CA to the State of Nevada, and is an important route for the importation of 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 a Surface Transportation Assistance Act (STAA) of 1982 route to the City of Jackson, it serves as an alternative route during intermittent winter closures of I-80 and U.S. 50.

SR 89

North-south interregional mountain highway that begins at I-5 in Mount Shasta and ends at U.S. 395 near Coleville (Mono County). 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, SR 44, SR 70, and SR 299. During the winter, portions of SR 89 are closed between Lassen National Park and Monitor Pass.

SR 120

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 an important truck freight route into Tuolumne County, freight crossing Tioga Pass is restricted by the park.

SR 267

East-west 11-mile long undivided two-lane mountain highway that connects I-80 in Truckee (Nevada County) to the North Shore of Lake Tahoe in Kings Beach (Placer County). This corridor provides access to recreational, residential, commercial, and industrial uses. Facilities along the SR 267 corridor include the Truckee Tahoe Airport and the primary administrative offices of the Town of Truckee. Recreational sites include the Northstar California ski and year-round resort, and the Martis Creek Lake recreation area.

Freight Rail

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

Air Cargo

Bishop Eastern Sierra Regional Airport expects commercial designation by Fall, 2020, but no freight service is yet available.

Section 2. Corridor Strategies

Unlike the densely populated urbanized areas of the state, where manufacturers and industries are located near large highways and interstates, and freight providers have modal choices (shipping, rail, air cargo); the rural communities within the CSR are isolated from each other and the rest of the state by miles and mountains and are heavily reliant 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 of the highways that serve the CSR were constructed decades ago. Most of the highway construction dates from the interwar period and has rarely been upgraded. Subsequently, these routes have truck weight and length restrictions that have not been upgraded to Surface Transportation Assistance Act (STAA) of 1982 standards that are required to accommodate standard freight industry trucks. These restrictions limit accessibility to this region to smaller non-standard trucks and result in more freight trips, vehicle miles traveled, and greater transportation and product costs. The non-STAA highways and highway segments result in choke points that prevent freight industry standard trucks from accessing the region. As a result, truckers must make more trips using smaller California Legal trucks that are not equipped with clean technologies to move the same amount of goods. Simply put, with STAA access, manufactures and industries would be able to move more goods, and utilize clean technologies, with fewer trips while decreasing VMT.

A key consideration of the transportation system is to provide an efficient modern truck connection between the cities and towns of the region with the larger freight hubs and to provide a continuous STAA route, as well as 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 this Region to view the beauty of the rugged mountains, hike mountain trails, and to fish the rivers and lakes. The same geographic features that make this area a tourist favorite also 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 that are not ideal for large truck transport. During winter months, 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 to move goods into or out of this region. Truck drivers have difficulty finding truck 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 not only support freight movement but also act as evacuation routes and a way for CalFire and Forest Service trucks to quickly access areas to combat wildfires and stage firefighter camps. With new State regulations, controlled burns will be more frequent, again requiring CalFire and Forest Service access. 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 important.

Trucking Strategies

- 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 roadway.
- 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 lane were feasible and practical.
- Improve the freight transportation system to accommodate emergency response vehicles and evacuation route.

Bay Area

Section 1. Regional Overview

The San Francisco Bay Area Region (Bay Area) is home to approximately 7.7 million people. The regional goods movement infrastructure includes the nation’s eighth largest container port (the Port of Oakland) and several specialized seaports; two of the most active air cargo airports in the Western U.S., San Francisco International Airport (SFO), and Oakland International Airport (OAK); major rail lines and rail terminals; and highways that carry some of the highest volumes of trucks in California. A significant share of the regional economy is associated with goods movement-dependent industries. This includes industries that either produce goods for sale, or for whom transportation access to markets is a critical aspect of their business operations, such as the construction industry.

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 provided almost 1.1 million jobs (32 percent of total regional employment).²⁰ The large difference between the shares of industrial output and shares of employment provided by goods movement-dependent industries in the Bay Area is due to two factors: manufacturing in the Bay Area has shifted increasingly toward high-value products that do not use labor-intensive production processes such as biotechnology products; and many high-tech product manufacturers have shifted its 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: operation and management of the seaport, OAK (airport), and commercial real estate along the waterfront (Jack London Square). The Port of Oakland maintains the highest export ratio of any port on the West Coast and generally retains a 50/50 balance of import and export container volume throughput. In 2010, the Port of Oakland commissioned an economic study that revealed the Port of Oakland and its partners provided approximately 73,600 jobs in the region and was tied to nearly 827,000 jobs nationwide through direct, indirect, and induced employment. Nearly one in five direct jobs created by the Port of Oakland is held by an Oakland resident, and the jobs associated with the Port of Oakland paid 10 percent above the regional average.²¹ The Port of Oakland paid over \$56 million in taxes, which had a multiplier effect on the economy of over \$230 million. Transportation sectors (truck, rail, and “other”) were responsible for creating more than 76 percent of the 10,900 direct jobs, with warehousing and storage, government, and construction industries making up the rest. The indirect and induced jobs are mostly in the services sector and government.

Local Goods Movement System

The Bay Area goods movement system consists of a series of interconnected infrastructure components, including highways, rail lines and rail terminals, airports, ports and warehouse 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

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

The Port of Oakland expects continued growth in exports. On the import side, the Port of Oakland faces some significant obstacles to growth, as well as some landside challenges that need to be addressed, including impacts on neighborhoods nearby. While the Port of Oakland is

“Big Ship Ready,” the sudden surge in larger post-Panamax ships may create unintended consequences not only for the portside operations, but also 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 the building of a dike in the area of the airport used most for air cargo movements to prevent runway flooding, which could grow more critical in the future as a result of climate change impacts. Likewise, SFO faces vulnerabilities from sea level rise. San Jose International Airport does not face present capacity constraints but is locked into a limited land footprint without expansion opportunities, should need arise. The biggest 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), as well as on local access routes. The Bay Area also features numerous General Aviation airport facilities that significantly contribute to the economic well-being of the region.

Interregional and Intra-regional Corridors

The inter- and intra-regional 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 Port of Oakland and the international airports of San Francisco, San Jose and Oakland, rail yards, distribution centers, and warehouse/industrial districts. Key interregional and intra-regional truck corridors in the Bay Area include I-80, I-580, I-880, I-238 and I-680; U.S. 101; and limited segments of SR 92 (San Mateo Bridge), SR 152, SR 4, SR 12 and SR 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. Key segments of I-880 and I-580/I-238 connecting the Port of Oakland to the San Joaquin Valley, however, carry between 15,000 and 37,000 trucks per day on average.

Traffic congestion is one of the most prominent issues in the Bay Area. Truck delays increase the costs of goods movement and also 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 poor reliability of service. To help address these issues, various freeway interchange, auxiliary lane, corridor capacity enhancement, and operations improvement projects have been identified in these major freight corridors.

Two Class I rail carriers, UPRR and BNSF Railway, operate in the Bay Area. The UPRR maintains and manages the Martinez Subdivision, Niles Subdivision, Coast Subdivision, Oakland Subdivision, Warm Springs Subdivision and the Tracy Subdivision. 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 goods movement system that moves freight to and from its origins and destinations is a vital function of goods movement. Last-mile connectors, local streets that provide the critical connections between major freight facilities, and the interregional and intraregional corridors are becoming 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 rural parts of the region also are a vital part of the local goods movement system and serve important economic functions. The key issues identified 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 Port of Oakland 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 sources of pollution, as well port-related emission reductions strategies, will be important to implement. In addition, the operational issues 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 Port of Oakland'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 Plan²² 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 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 to buses) are related to both roadway traffic volumes and the number of trains using the route. Train horn regulation also creates noise impacts on adjacent communities. To mitigate these impacts, targeted safety improvements have been identified such as grade crossing improvements at Jack London Square in Oakland, Emeryville, and Berkeley, and establishment of Railroad Quiet Zones in Fremont.

Major Trends Influencing Goods Movement in the Bay Area

In recent years the Bay Area is planning 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.

Within the region, there is also an urgent need to address environmental justice issues while reducing pollutant emissions. Along with the region's concern over housing affordability comes an overarching concern about equity in land use and transportation decisions. The region's major goods movement corridors and facilities tend to be concentrated in close proximity to communities which are disproportionately 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 identified 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 is coordinated with passenger transportation systems and local land use decisions.
- Increase economic growth and prosperity.

To implement the plan, MTC adopted a near-term (10 year) goods movement investment strategy 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 2040*, including reducing delay on the regional freight network, increasing middle-wage jobs, and reducing per capita GHG emissions.

2. **Address community and environmental concerns of freight.** The strategy also sets forth a commitment to reduce impacts of pollution on communities, mitigate emissions from existing technologies, and adopt cleaner technologies. These efforts would be led by the BAAQMD, in coordination with MTC, Alameda County Transportation Commission (ACTC), Port of Oakland, and public health and environmental groups.
3. **Enable the region to coordinate and compete for state and federal fund sources.** Over the past couple years, three new major state and federal funding programs with a direct nexus to freight have been initiated. These include the National Highway Freight Program, the National Significant Freight and Highway Projects Discretionary Program (FASTLANE/INFRA), and the SB 1 TCEP. Staff estimates that the region is positioned to receive over \$1 billion in funding over the next 10 years from these funding sources alone.

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) project 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 bridge that is structurally obsolete and has 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-based and non-equipment-based emission reduction projects have been identified for the Port of Oakland. This includes upgrade to ZE/NZE equipment, port electrical grid improvements, facility upgrades, emission reductions, and extended gate hours/days.

Mainline Rail

The UPRR Martinez Subdivision between Richmond and Oakland is the most constrained segment in the region. Adding more trains to this segment of the network may result in unstable operating conditions seriously degrading Amtrak's Capitol Corridor's on-time performance, as well as intermodal and unit trains moving to and from the Port of Oakland. In Solano County, there are a number of 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 Connection, Shinn Connection and new wye connections at Lathrop and Stockton Junctions are all expected to improve connectivity of the system. Likewise, targeted operational improvements such as the City of Hercules Third Track, upgrade of the water side drill track to 3 mainlines between Port and Bancroft, and track improvements to Coast Subdivision will improve system capacity and operation.

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.²³ Past planning efforts created a logical, cohesive, and integrated goods movement system in the Central Valley.

There are three general types of freight movements in the region—the export of agricultural goods and products to the rest of the world; the import of finished goods from major urban and manufacturing centers into the cities and towns of the region; and the interstate and international transport from other regions through the Valley. 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. Although the dominant transport mode is trucking, rail, maritime, and air transport all have their roles within the region.

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 and is becoming a major logistics complex with expanding numbers of mega-distribution centers and new manufacturing/processing facilities.

Projects to enhance goods movement in the Central Valley Corridor may benefit regions outside the Central Valley as well. Approximately half of all trucks with five or more axles moving through the Valley on I-5 (approximately 6,000 daily) originate from or travel to destinations outside the region.²⁴ Although heavy trucks comprise about 11 percent of volumes on I-5, many of the gateway and cross-valley connector routes have truck volumes of greater than 30 percent.²⁵

Sustainable technologies, programs, and policies in the Central Valley Corridor have some of the greatest 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 jobs/housing balance for disadvantaged communities.

Document Structure

The Central Valley region FIS 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.

Part 1. Northern Central Valley

Part 1. Section 1. Regional Overview

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, and 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, Yolo, and Yuba. 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 also is home to the J.T. Davis Rail Yard in Roseville, which is the largest intermodal rail facility in the West Coast. Similar to San Joaquin County, I-5 and SR 99 are the key north-south truck routes throughout the SACOG region.

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. There are several major state routes that are designated as “Goods Movement Priority Corridors” by Caltrans District 3:

- I-5 Seattle, Portland, Los Angeles and serving Sacramento International Airport

- I-80 Salt Lake City, Reno, San Francisco Bay Area
- SR 99 San Joaquin and Upper Sacramento Valleys

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.²⁶

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 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 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.²⁷ These bottleneck locations are all within a 15-mile radius of downtown Sacramento.

California Trucking Association 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.

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, and 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 (SMF) is located 12 miles northwest of downtown Sacramento on I-5. In 2012, SMF had an estimated 4,718 annual freighter operations and handled over 68,500 metric tons of cargo. Federal Express (FedEx) operates wide-body and feeder aircraft through SMF.
- 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 had an estimated 4,741 freighter operations and handled almost 43,000 metric tons of cargo in 2012. 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).²⁸

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. Fixing bottlenecks along trucking corridors is important for effective movement of goods throughout the region and for traffic management, as each truck represents the traffic-generating equivalent of two to four automobiles in stop-and-go traffic. 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 movement of freight 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 running parallel to the major freeways.

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

Identify a complete network of STAA routes to the Port

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 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 truck-only toll lanes on SR 99 to allow for smoother speeds and truck platooning, safety increases, and extra capacity. 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.

Port of West Sacramento Unit Train Landing Track

The Port of West Sacramento is working 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 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.

Part 2. Mid and Southern Central Valley

Part 2. Section 1. Regional Overview

Local Goods Movement System

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. Along its western portion, SR 132 has become a major truck connector route between I-5 and SR 99. Approximately 8.2 million tons of freight use the SR 132 Corridor annually. The route serves to transport agricultural goods produced in Stanislaus County out to the Bay Area and the Port of Oakland, such as various nuts, vegetables, and fruits that are in high demand both domestically and internationally.

SR 108/120

Existing SR 108/120 is a vital east-west, inter-regional corridor that connects the heart of the Central Valley to the Sierra Nevada mountains all the way 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 and 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.

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. Traffic volumes vary across the connector, with AADT of 2,500 near I-5 and 30,000 near Shackelford. Both the I-5 and SR 99 interchanges are grade-separated.

Mitchell Road

Mitchell Road is approximately 4.8 miles in length, 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 employ 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 route 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, that 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.²⁹

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.^{30,31} 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 a one-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 important, last-mile connectors to major agriculture and other resource development areas, as well as connections to neighboring regions. For example, SR 46 provides an important connection for Salinas Valley produce to the UPRR refrigerated intermodal facility in Delano.

Rail

Thirty miles northwest of Tejon Pass, along the Sierras, is the Tehachapi Pass gateway. The pass features the only BNSF/UPRR corridor connecting the Central Valley and Southern California.

Nearly all rail freight shipments on this route are connecting 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.

Part 2. Section 2. Mid and Southern Central Valley Corridor Policies, Programs, Infrastructure Investments

Corridor-wide system components

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 that have both benefit and applicability throughout the Central Valley Corridor region.

The list has been modified to be more inclusive of 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 design.

9. *Capital projects for safety hotspots alleviation.
10. *Operational projects for safety hotspots alleviation.
11. *Container depot service near Stockton for the Port of Oakland and in Shafter for the Ports of Long Beach and Los Angeles.
12. *Short-haul rail/unit train service between the SJV and Port of Oakland.
13. *Short-haul rail/unit train service between SJV and ports of Long Beach/Los Angeles.
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.

Of the 17 project types above, over half 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

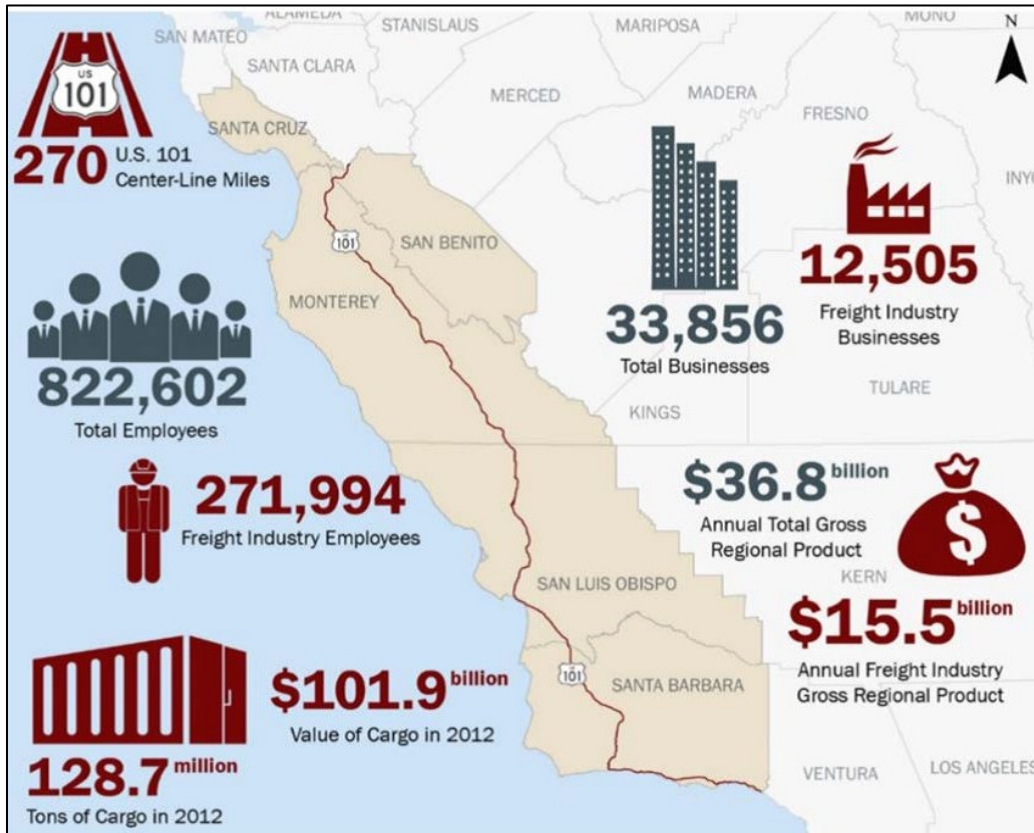
The Central Coast region includes Santa Barbara, San Luis Obispo, Monterey, San Benito, and Santa Cruz counties. The region is known for its fresh produce and wine grape production. The region is home to major industries in agriculture, manufacturing, food processing, and other freight-related business 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 Santa Maria and Santa Maria Valley. The Santa Cruz Branch Rail Line is owned by Santa Cruz County Regional Transportation Commission (SCCRTC) and operated by Progressive Rail 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 lumber, coal, construction materials, fertilizer, and steel.

In 2016, 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.

Figure 6B.2. 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.B.5 provides a summary of key socio-economic and infrastructure characteristics in the corridor that drive the movement of goods.

Table 6.B.5. Central Coast California Summary Economic Profile by County

Description	Monterey	San Benito	Santa Cruz	San Luis Obispo	Santa Barbara
Population (2010)	415,057	55,269	262,382	269,593	423,895
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

Description	Monterey	San Benito	Santa Cruz	San Luis Obispo	Santa Barbara
Total GRP (2009)	\$16,016	No Data	\$9,122	\$9,577	\$17,732
Key Industries	Agriculture (salad, wine), retail, manufacturing (includes food products)	Retail, manufacturing (includes food products), agriculture	Retail, construction, manufacturing (includes food products), agriculture	Retail, construction, manufacturing (includes food products)	Retail, manufacturing (includes 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: Analysis conducted by AMBAG, 2019					

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.

InfoUSA data shows high concentrations of agriculture businesses along the U.S. 101 corridor, with key clusters located around Salinas, south of Watsonville, Soledad, Santa Maria, and Paso Robles. Apart from U.S. 101, SRs 166, 41/46, and 156/152 are major interregional connecting routes between the Central Coast and the Central Valley that support these businesses, and 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 a particularly important 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, 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 156/SR 152.

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. Total freight rail outflow and inflow ranges 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), which means there is absolute reliance on trucks for goods movement between these regions. With the Central Coast region 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 156/SR 152 corridors. Over the coming decades, mode shift from truck to rail freight will become increasingly important to offset GHG emissions and truck traffic congestion on the key east-west routes providing interregional connectivity.

Goods Movement Flows

Transporting goods in, out, and through the Central Coast region is heavily dependent on trucking. Approximately 75 percent of all shipments, measured by both tons and 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 6B.2**.

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.

Figure 6B.3. Central Coast Agriculture Production



Source: Data from ESRI Business Analyst; mapped by Cambridge Systematics (2019)

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.

Figure 6B.3 shows 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 strong 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).

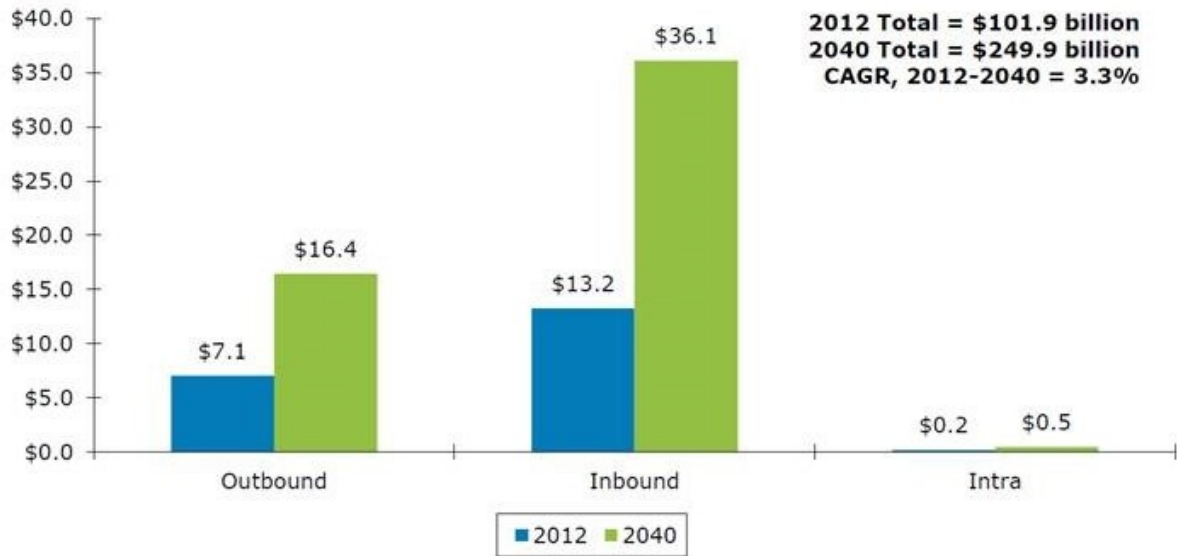
Trends

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 significant 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 1.4 million in 2010 (2010 Census). In total, the population of the five-county region grew by 5.1 percent from 2000 to 2010, or by nearly 70,000 people, which is about one-half the rate of the State's overall population growth. By 2040, the population of the region is expected to grow approximately 30 percent above 2010's levels, leading to an increase the number of trucks on the roads.³²

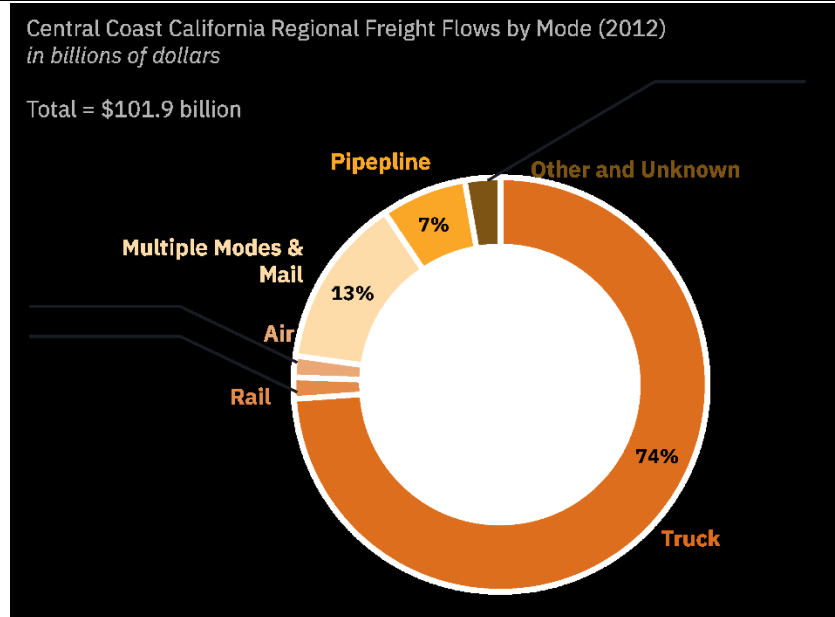
Not only is volume of goods increasing but also the frequency of demand. The rate of growth in demand for consumer products is related to population growth but also to income growth for families. For example, San Luis Obispo County median household income increased from \$57,365 in 2010 to \$67,175 in 2017 (2010 census) at a 17 percent increase over eight 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 6B.4. Central Coast California Regional Freight Flows by Direction of Movement (2012 and 2040)



Source: AMBAG, "Central Coast California Commercial Flows Study," (2012); data from Federal Highway Administration, Freight Analysis Framework 3 (2012). Additional analysis by Cambridge Systematics (2012)

Figure 6B.5. Central Coast California Regional Freight Flows by Mode (2012)



Source: AMBAG, "Central Coast California Commercial Flows Study," (2012)

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 nearly a 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.

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 delay, 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, with special focus on the critical U.S. 101 corridor. 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 2019 CFMP 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.
- 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 completing the SR 46 4-lane divided expressway conversion from U.S. 101 to I-5 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.
- 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.
- 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.

Figure 6B.6. Central Coast Key Highway Freight Routes



Source: AMBAG data, prepared by Cambridge Systematics

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. In 2016, nearly 1.8 billion tons of

Investment That Targets Key Industries to Support and Sustain the Economy

In 2016, goods movement-dependent industries (manufacturing, construction, retail trade, wholesale trade, and transportation and warehousing) employed 2.3 million people in the SCAG region reflecting 37 percent of all employees and contributed over \$335 billion to Gross Regional Product (GRP), reflecting nearly 30 percent of all industries. Additionally, trade through Southern California’s container ports supported nearly 3 million jobs throughout the U.S. 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 that will help 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 the 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 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 doubling of volumes without increasing delay and includes investments in highway and local access and connector improvements that eliminate truck 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.

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 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—fully understanding that further progress is necessary. 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 85 percent for particulate matter, 50 percent for nitrogen oxides, and 95 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.
- 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.
- 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.
- 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 inform truck drivers of parking availability to provide better planning and scheduling of shipments.
- 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 Advanced Transportation Management Information System (ATMIS) 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 2018, maritime and air cargo valued at \$543 billion moved through the Los Angeles Customs District. 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. 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 and exported from states across the continental U.S., thereby connecting rural areas to global markets. This is notable for top agricultural product exports from the Ports 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 7.3 million metric tons with a value of \$10.6 billion in 2018. This ranked third against other major commodity category exports, only trailing machinery and parts (\$17.5 billion) and electric machinery and components (\$16.8 billion). 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, the U.S. remained the world's largest manufacturing economy, and Southern California continued to be a critical manufacturing hub. The Southern California region is the second largest manufacturing center in the country, trailing only the State of California as a whole. In 2016, manufacturing activities contributed approximately \$112 billion to the region's GRP with regional manufacturers trading in both international and domestic markets. 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 6B.8. Manufacturing Firms in the Region



Source: Map by SCAG; data from InfoGroup

Serves the Needs of Local Businesses and Residents

Like most metropolitan areas of this 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 2016, construction-related activities employed 325,000 people in the region and contributed \$43 billion to GRP.

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 – ocean shipping and air freight (for international supply chains), trucking (for intra-regional shipments and drayage moves), and industrial warehousing and distribution (to support both international trade and local delivery of consumer goods). In 2016, transportation and warehousing activities provided nearly 300,000 jobs in the region and accounted for \$35 billion of GRP.

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. Costs, throughput, velocity, and reliability of goods movement are driven by the end-to-end performance of this system. International trade and e-commerce have recently expanded the need for more fulfillment, sortation and local distribution centers, with closer proximity to major urban centers. Consumers now expect digital orders to be delivered within a day or less, and return policies to allow for unwanted items, 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.

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: the Ports of Los Angeles and Long Beach (San Pedro Bay Ports), and the Port of Hueneme in Ventura County. The Ports of Los Angeles and Long Beach are the two largest container ports (by volume) in the United States. Combined, the San Pedro Bay Ports in 2018 were the world’s ninth busiest container port. The Port of Hueneme has developed a competitive focus on automotive and fresh fruit products with \$10 billion in total trade.

Containerized trade between the U.S. and Asia constitutes the majority of international cargo transiting the SCAG region, with approximately 35 percent of all containers in the U.S. moving through the San Pedro Bay Ports. About 40 percent of all U.S. imports and 25 percent of all U.S. exports move through the POLA-POLB. 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 2018 with a throughput of 17.6 million twenty-foot equivalent units (TEUs), and \$370 billion in trade value. Total container capacity is expected to double this amount to 34 million TEUs by 2035.

Imports, which constitute most of the containers that move through the San Pedro Bay Ports, may be categorized as 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 is that which 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. 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.

Airports

There are six airports that provide air cargo services in the region. Collectively, these airports handled nearly 3.3 million tons of air cargo in 2018. Los Angeles International Airport (LAX) and Ontario International Airport (ONT) handled approximately 97 percent of the region's international and domestic air cargo during 2018, including international goods valued at \$120 billion. LAX ranked 3rd in the U.S. for imports during 2018. Most of the remaining air cargo moves through Bob Hope (BUR), Long Beach (LGB), John Wayne (SNA), and Palm Springs International Airport (PSP). The share handled by the remaining airports combined was less than 3 percent in 2018.

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. 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.

Rail

Critical to the growth of the economy, the BNSF and 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 six major 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), serving the POLA-POLB, Los Angeles Junction Railway (LAJ) and the Ventura County Railroad (VCRR) that provide short-haul services.

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.

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 forecast to double over the next few decades.

Highways and Connectors

By 2035, the POLA-POLB is projected to handle about 34 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. To put this volume in perspective, this amount of truck trips requires about 14 lanes of freeways. 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. 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 Gerald Desmond Bridge on the east. The primary access route to the Port of Hueneme (the third international seaport in the SCAG region) is U.S. 101, along with the secondary routes of SR 126 and SR 1. As specified in the City of Oxnard's General Plan, the preferred arterial access route for trucks is Hueneme Road and Rice Avenue.

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-10, I-15, I-110, I-605, I-710, SR 57, SR 60, SR 78, SR 91, which carry the highest volumes of truck traffic in the region, averaged more than 25,000 trucks per day in 2016. Other major components of the regional highway network also serve significant numbers of trucks. These include I-5, I-215, I-405, and I-210. 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 2016 RTP/SCS, 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 exceeding 1.2 billion. The mix of building sizes remains skewed to larger footprints with every two out of three buildings being greater than 50,000 square feet.³³ Industrial warehouse and distribution facilities have witnessed sustained growth in construction, with lease rates near all-time highs, and vacancy rates remaining near historic lows. 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 industrial warehouse and distribution centers in the region are connection points for all modes of transportation and provide necessary services to stock inventory, transload and interchange transitional cargo, fulfill orders, 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 goods movement industry near the San Pedro Bay Ports, as well as provides 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;
- I-5 provides 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.

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.
- Technology and other goods movement initiatives.

The CFMP 2020 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 (CTCs) 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.

San Diego - Imperial Counties Border

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. 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 dollars for San Diego and Imperial Counties in 2018.³⁴

This Border region therefore 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.

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 2018, SDIA handled approximately 192,351 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. BAX Global, DHL, Federal Express (FedEx), and United Parcel Service (UPS) are the four all-cargo airlines that serve SDIA. Currently, air cargo capacity at SDIA is constrained by limited infrastructure, as well as 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. Currently, freight is transported through the courier services of FedEx and UPS. At the Imperial County Airport, there are daily scheduled airline flights, air cargo, military operations, 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 currently closed to civil aircraft operations but does have future economic development potential for a future regional air cargo and passenger facility. In 2007, the Imperial County Airport Feasibility and Site Analysis Study identified the

Holtville Airstrip as a feasible regional airport facility. Since 2017, Imperial Valley stakeholders are pursuing the opportunity of a new regional airport facility.

Land Ports of Entry

Currently, the seven land Ports of Entry (POEs) in the Border region serve more than 154 million people and represent over \$75 billion dollars in cross-border trade annually, including over \$24 billion dollars' worth of goods crossing southbound.^{35,36} A new POE, Otay Mesa East, is under development and several are undergoing expansion and improvement. Otay Mesa and Calexico East currently 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, and the third highest dollar value of bilateral trade among all U.S.-Mexico land POEs (\$46.7 billion). In 2018, the Otay Mesa POE handled more than 962,000 trucks, 29,000 buses, more than 13.3 million passengers in personal vehicles, and 3.4 million pedestrians crossing northbound into the U.S.

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 2018, Calexico East processed \$6.6 billion in exports and \$10.2 billion in imports, ranking seventh among the U.S.-Mexico commercial border crossings in terms of trade value carried by truck. The same year, the POE processed more than 376,000 trucks, nearly 6.5 million passengers in personal vehicles, and more than 300,000 pedestrians northbound into the U.S.

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 include one cruise ship terminal 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 in 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 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's maritime capacity at TAMT is growing as a result of a U.S. DOT Transportation Investments Generating Economic Recovery (TIGER) grant project that was awarded to the Port in 2015 and will be completed in 2020. This project will modernize TAMT by supporting modern, clean, and efficient technology while increasing cargo operations. The port has already

added one break bulk liner service to Europe and a bulk service from Mexico because of that grant project and additional liner services are likely. The National City Balanced Plan will restructure the layout of the NCMT 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 communities of Barrio Logan and West National City necessitates context-sensitive community improvements to support Port access projects.

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. The volume of petroleum products shipped by pipeline in the region is projected to continually increase. Improved truck access to this pipeline terminal could ensure the efficient delivery of petroleum products.

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 also provides aviation fuel to the El Centro Naval Air Facility via another extension.

Rail

BNSF Railway and UPRR, two Class I railroads, operate in the Corridor. BNSF serves the Port of San Diego providing primarily automobile rail service north and south along the coast, 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 two operating short line railroads – the Pacific Sun Railroad (PSRR) and the San Diego and Imperial Valley Railroad (SDIV) - and the proposed rehabilitation of the Baja California Railroad (BJRR).

The region's rail operators handled commodities such as motor vehicles, lumber, chemicals, petroleum, agricultural products, cement, and aggregate. Freight capacity is constrained by limited infrastructure and sharing of track with passenger operations including Amtrak, Metrolink, COASTER, SPRINTER, and the San Diego Trolley.

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. Finally, the Carrizo Gorge Railway (CZRY) owns the rights to operate on a small section of tracks in the western portion of the county between the San Diego County line and Plaster City. This section of the rail line is currently closed for operations; however, there are potential operators and investors exploring opportunities to re-open the line for freight movement between the San Diego-Tijuana region to and through the Imperial-Mexicali region. 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.

Roads/Highways

Most freight in the Border Corridor travels by truck. Congested freeways and highways slow the movement of freight, particularly at major freight hubs including POE crossings 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 (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 (under construction 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.

Section 2. Policies, Programs, And Major Freight Infrastructure Investments

The California – Baja California border region is one of the most important and dynamic economic zones in North America. However, demand is growing at a pace that will outstrip supply at the California-Mexico border crossings. 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 ports of entry. 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.

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 important. To enhance efficiency at the international trade gateways, the strategies adopted should address the growing needs to limit congestion and waiting times. Businesses can be enabled to take advantage of scale economies as well as agglomeration economies from 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.

In order to address the unique needs of this region, the San Diego Association of Governments (SANDAG) San Diego Forward: The 2019 Federal Regional Transportation Plan (RTP) and the Southern California Association of Governments (SCAG) 2016-2040 RTP/Sustainable Communities Strategy (SCS) form the foundation of this Border Corridor Freight Investment Strategy. Both of these documents review our goods movement system in detail, but this Freight Investment Strategy focuses on a few key points, including:

- How goods movement contributes to the regional economy.
- Goods movement planning is driven by sophisticated logistical practices that involve lean delivery approaches.
- There are both inherent conflicts and synergies between personal travel and the movement of goods (e.g., they often share the same assets at the same time, and operations have to be planned carefully).
- The movement of goods has to be planned and managed, so operations are sustainable.

Whenever and wherever possible, this Freight Investment Strategy strives to balance the need for mobility, reliability, and speed, the capacity for growth and innovation, economic competitiveness goals, and the importance of clean air and healthy communities.

The Border region agencies have also been some of the first to integrate sustainable efforts into their freight strategies and projects. Caltrans District 11, in partnership with SANDAG, Imperial County Transportation Commission, SCAG, and other stakeholders, is making progress in implementing the initial phases of their Advanced Technology Corridors at Border Ports of Entry pilot project. These 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, the San Diego Port Tenants Association, through a

California Energy Commission grant, recently transitioned some of their fleet to ZE/NZE vehicles and is currently implementing a freight signal prioritization (FSP) pilot project along Harbor Drive. The Port of San Diego is hoping to expand this FSP project to adjacent areas of Harbor Drive and is currently working with the AB 617 Portside Steering Committee on strategies to improve air quality in the surrounding communities. 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.

Examples of regional policies and programs are shown in **Table 6.B.6**. As SANDAG and SCAG are in the midst of updating their respective RTP/SCS documents, these and any new freight policies and investments will be updated through the CFMP amendment process in order to capture the latest adopted strategies.

Table 6.B.6. 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
Update SANDAG's Freight Gateway Study with the latest freight data, trends, and innovations	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
Source: Caltrans	

Endnotes

- ¹“*Regions Rise Together: Governor’s Office of Business and Economic Development Shares New Initiative. California Governor’s Office of Business and Economic Development,*” 10 May 2019, <http://www.business.ca.gov/Newsroom/ArticleId/66/regions-rise-together-governors-office-of-business-and-economic-development-shares-new-initiative>.
- ²State of California, Department of Finance. (May 2019). E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change —January 1, 2018 and 2019. Sacramento, California.
- ³California Department of Food and Agriculture. (December 28, 2018). *California County Agriculture Commissioners’ Report Crop Year 2016-2017*. Sacramento, CA: California Department of Food and Agriculture.
- ⁴California Department of Food and Agriculture. (December 28, 2018). *California County Agriculture Commissioners’ Report Crop Year 2016-2017*. Sacramento, CA: California Department of Food and Agriculture.
- ⁵Humboldt County Association of Governments. (2017). *Variety in Rural Options of Mobility, Regional Transportation Plan*. Humboldt County Association of Governments.
- ⁶Dow & Associates. (2018). *2017 Lake County Regional Transportation Plan*. Ukiah, CA: Lake County Area Planning Council.
- ⁷California Department of Food and Agriculture. (December 28, 2018). *California County Agriculture Commissioners’ Report Crop Year 2016-2017*. Sacramento, CA: California Department of Food and Agriculture.
- ⁸Center for Economic Development California State University, Chico. “*2018 Mendocino County Profile.*” http://www.rcrcnet.org/sites/default/files/useruploads/Documents/Advocacy/Economic_Development/County_Profiles/2018%20Mendocino%20Economic%20&%20Demographic%20Profile.pdf
- ⁹California Department of Food and Agriculture. (December 28, 2018). *California County Agriculture Commissioners’ Report Crop Year 2016-2017*. Sacramento, CA: California Department of Food and Agriculture.
- ¹⁰Green DOT Transportation Solutions. (2016). *2016 Regional Transportation Plan for Siskiyou County*. Transportation Commission: Siskiyou County Local Transportation Commission.
- ¹¹California Department of Food and Agriculture. (December 28, 2018). *California County Agriculture Commissioners’ Report Crop Year 2016-2017*. Sacramento, CA: California Department of Food and Agriculture.
- ¹²Green DOT Transportation Solutions. (2019). *2019 Tehama County Regional Transportation Plan: Tehama County Transportation Commission*
- ¹³Volaire Aviation Consulting. (2017). *Strategic Initiatives, Humboldt County Airports Division*. Eureka, CA: Humboldt County Airports Division, County Equivalent more information. Washington, DC: United States Census Bureau.
- ¹⁴Green DOT Transportation Solutions. (2015). *Alpine County Regional Transportation Plan*. Markleeville, CA: Alpine County Local Transportation Commission.
- ¹⁵Amador County Transportation Commission. (2015). *Amador County Regional Transportation Plan*. Amador County Transportation Commission.

-
- ¹⁶Green DOT Transportation Solutions. (2017). 2017 Calaveras Regional Transportation Plan. San Andreas, CA: Calaveras Council of Governments.
- ¹⁷Tuolumne County Transportation Council. (2017). 2016 Tuolumne County Transportation Council Regional Transportation Plan. Sonora, CA: Tuolumne County Transportation Council.
- ¹⁸LSC Transportation Consultants, Inc. (2015). 2015 Inyo County Regional Transportation Plan. Independence, CA: Inyo County Transportation Commission
- ¹⁹Mono County Local Transportation Commission. (2013). Mono County Regional Transportation Plan. Mammoth Lakes, CA: Mono County Local Transportation Commission.
- ²⁰MTC: San Francisco Bay Area Goods Movement Plan. Feb 2016. <https://mtc.ca.gov/our-work/plans-projects/economic-vitality/san-francisco-bay-area-goods-movement-plan>
- ²¹Port of Oakland: Powering Jobs, Empowering Communities
<https://www.portofoakland.com/community/economic-impact/powering-jobs/>
- ²²Bay Area Air Quality Management District: West Oakland Community Action Plan.
<http://www.baaqmd.gov/community-health/community-health-protection-program/west-oakland-community-action-plan>
- ²³California Department of Finance. “*E-1 Population Estimates for Counties, January 1, 2018 and 2019.*” <http://www.dof.ca.gov/Forecasting/Demographics/Estimates/e-1/> (May 1, 2019)
- ²⁴San Joaquin Valley Regional Planning Agencies. “*SJV I-5/99 Goods Movement Study.*” http://sjvcogs.org/wp-content/uploads/2017/08/DR1_FresnoCOG_FinalReport_20170710-2.pdf (June 30, 2017). p. 1-1
- ²⁵San Joaquin Valley Regional Planning Agencies. “*SJV I-5/99 Goods Movement Study.*” http://sjvcogs.org/wp-content/uploads/2017/08/DR1_FresnoCOG_FinalReport_20170710-2.pdf (June 30, 2017). p. 1-1
- ²⁶San Joaquin Valley Regional Planning Agencies. “*SJV I-5/99 Goods Movement Study.*” http://sjvcogs.org/wp-content/uploads/2017/08/DR1_FresnoCOG_FinalReport_20170710-2.pdf (June 30, 2017). p. 1-1
- ²⁷Caltrans District 3; System Metrics Group, Inc., et. al. “District 3 Goods Movement Fact Sheet.” 2015. Report.
- ²⁸FHWA, “Freight Analysis Framework.” Website. *Freight Analysis Framework - FHWA Freight Management and Operations*, Accessed in 2019.
https://ops.fhwa.dot.gov/freight/freight_analysis/faf/.
- ²⁹Caltrans. “*2017 Average Annual Daily Truck Traffic on the California State Highway System.*”
<http://www.dot.ca.gov/trafficops/census/>
- ³⁰California Department of Finance. “*E-1 Population Estimates for Counties, January 1, 2018 and 2019.*” <http://www.dof.ca.gov/Forecasting/Demographics/Estimates/e-1/> (May 1, 2019)
- ³¹U.S. Department of Transportation, Maritime Administration. “*U.S. Waterborne Foreign Container Trade by U.S. Customs Ports 2000-2017.*” <https://www.maritime.dot.gov/data-reports/data-statistics/us-waterborne-foreign-container-trade-us-customs-ports-2000-2017>

- ³²AMBAG, 2012, *Central Coast California Commercial Flows Study*,
[https://ambag.org/sites/default/files/documents/Central Coast CA Commercial Flows Study_Final_Revised_6-12-12.pdf](https://ambag.org/sites/default/files/documents/Central_Coast_CA_Commercial_Flows_Study_Final_Revised_6-12-12.pdf).
- ³³SCAG. “2018 SCAG Industrial Warehouse Study.”
https://scag.ca.gov/Documents/Final_Report_03_30_18.pdf
- ³⁴U.S. Department of Commerce, Bureau of Economic Analysis, 2018.
- ³⁵U.S. Department of Transportation, Bureau of Transportation Statistics (Border Crossing and Entry Data) based on the U.S. Department of Homeland Security, Customs and Border Protection, 2018.
- ³⁶Note: The 154 million people value is derived from the 77 million people that crossed northbound in 2018 (assumed that those crossing return), and the \$75 billion trade value includes truck and rail.