

CALIFORNIA CENTRAL COAST SUSTAINABLE FREIGHT STUDY

Final Report



AUGUST 2, 2024



California Central Coast Sustainable Freight Study

Final Report

prepared for

Association of Monterey Bay Area Governments

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date

August 2, 2024

TABLE OF CONTENTS

1.0	Plan Purpose and Overview	6
1.1	Purpose of the Sustainable Freight Study	6
1.2	Vision and Goals	6
1.3	Approach to Developing the Plan	8
1.4	Stakeholder Engagement	9
1.4.1	Central Coast Working Group	9
1.4.2	Stakeholder Survey	9
1.4.3	Technical Advisory Committee Briefings	9
1.4.4	Stakeholder Interviews	10
2.0	Freight in the Central Coast Region	3
2.1	Multimodal Freight Network	3
2.1.1	Highways	3
2.1.2	Rail	14
2.1.3	Air	18
2.2	Freight Demand	20
2.2.1	Top Commodities	20
2.2.2	Directional Split	22
2.2.3	Modal Split	25
3.0	Freight System Assessment	27
3.1	Congestion and Reliability	28
3.1.1	U.S. 101 Bottlenecks	28
3.1.2	Other Truck Bottlenecks and Critical Corridors	33
3.2	Infrastructure Conditions	36
3.3	Safety	37
3.3.1	Collisions by Mode	38
3.3.2	Collisions by Type	39
3.3.3	Disadvantaged Communities	40
3.3.4	Systemic Trends and Strategies	42
3.3.5	Hot Spots and Strategies	48
3.4	Resiliency	51

3.4.1	Zero Emissions Fuels	56
3.5	Equity and Community Impacts	59
3.5.1	Identification of Disadvantaged Communities	59
3.5.2	Freight Impacts on Equity Focus Areas	66
4.0	Strategies and Recommendations	71
4.1	Project Identification and Alternatives Evaluation	71
4.2	Long-Term Implementation Plan	72
4.2.1	Enhance Freight Throughput and Increase Network Connectivity	73
4.2.2	Operational Strategies to Improve Freight Mobility and Safety	79
4.2.3	Enhance the Capacity, Operations, and Safety on the Freight Rail Network	95
4.2.4	Adopt new Technologies to Improve Freight Operations and Safety	101
4.2.5	Increase Access to Truck Parking and Charging Infrastructure	104
4.2.6	Improve Freight Network Resiliency	108
4.2.7	Mitigate Freight Impacts on Communities and the Environment	110
4.3	Funding Sources	113
4.3.1	Federal Funding Sources	113
4.3.2	State Funding Sources	124
4.3.3	Local and County Funding Sources	128
5.0	Conclusion	132

LIST OF TABLES

Table 1	Truck Parking Capacity by County	12
Table 2	Summary of Needs	27
Table 3	Top Ten U.S. 101 Freight Bottlenecks	29
Table 4	Other Central Coast Truck Bottlenecks	33
Table 5	Truck-Involved Collision Profile 1 Countermeasures	44
Table 6	Truck-Involved Collision Profile 2 Countermeasures	46
Table 7	Truck-Involved Collision Profile 3 Countermeasures	48
Table 8	Truck-Involved Collision Hot Spot Locations, 2017-2021	49
Table 9	Key Findings Adapted from California’s Fourth Climate Change Assessment to Include Potential Impacts to Freight Systems	51
Table 10	Enhance Freight Throughput and Increase Network Connectivity.....	75
Table 11	Implement Operational Strategies to Improve Freight Mobility and Safety	80
Table 12	Support Increased Throughput, Enhanced Operations, and Safety on the Freight Rail Network.....	96
Table 13	Deploy Technology to Improve Freight Operations and Safety	102
Table 14	Increase Access to Truck Parking	105
Table 15	Improve Freight Network Resiliency	109
Table 16	Mitigate Freight Impacts on Communities and the Environment.....	111
Table 17	Summary of Other Federal Formula Funding Programs	116
Table 18	Self-Help County Measures.....	129
Table 19	Monterey County Local Funding Sources	129
Table 20	San Benito County Local Funding Sources.....	130
Table 21	San Luis Obispo Cities’ Transportation Funding Sources.....	130
Table 22	Santa Barbara County Local Funding Sources	130
Table 23	Santa Cruz County Local Funding Sources	131

LIST OF FIGURES

Figure 1	Sustainable Freight Study Approach	8
Figure 2	Critical Urban Freight Corridors - Castroville.....	4
Figure 3	Critical Rural/Urban Freight Corridors – South Central Coast	5
Figure 4	Santa Barbara Airport Intermodal Connectors	6
Figure 5	STRAHNET.....	8
Figure 6	Caltrans District 5 Truck Routes.....	10
Figure 7	Reasons Truck Drivers Park.....	11
Figure 8	Capacity of Truck Parking Facilities	13
Figure 9	Railroads in the California Central Coast Region.....	15
Figure 10	STRACNET.....	17
Figure 11	Commercial Airports in the Central Coast	19
Figure 12	Top 10 Commodities by Tonnage and Value, 2022	21
Figure 13	Top 10 Commodities by Tonnage and Value, 2050	22
Figure 14	Freight Tonnage by Direction, 2022 and 2050	23
Figure 15	Freight Value by Direction, 2022 and 2050	23
Figure 16	County-Level Distribution of Inbound Freight Tonnage and Value, 2022 (Inner) and 2050 (Outer).....	24
Figure 17	County-Level Distribution of Outbound Freight Tonnage and Value, 2022 and 2050	25
Figure 18	Freight Tonnage by Mode, 2022 and 2050	26
Figure 19	Freight Value by Mode, 2022 and 2050	26
Figure 20	Top Ten U.S. 101 Freight Bottleneck – North Central Coast	31
Figure 21	Top Ten U.S. 101 Freight Bottleneck – South Central Coast	32
Figure 22	Freight Bottlenecks	35
Figure 23	International Roughness Index Rating by Lane-Miles for Major Collectors and Higher in the Central Coast.....	36
Figure 24	Bridge Conditions in the Central Coast, 2022	37
Figure 25	Truck-Involved Collisions by Year, 2017-2021	38
Figure 26	Truck-Involved KSI Collisions by Year, 2017-2021	38
Figure 27	Truck-Involved Collisions by Mode, 2017-2021	39
Figure 28	Truck-Involved Collisions by Type, 2017-2021	40
Figure 29	State Designated Disadvantaged Communities, 2017 – 2021.....	41

Figure 30	Federal Designated Disadvantaged Communities, 2017 - 2021.....	41
Figure 31	Collision Profile 1: Truck-Involved Rear End Collisions due to Unsafe Speed on State Highways	43
Figure 32	Collision Profile 2: Truck-Involved Broadside Collisions due to Vehicle Right-of-Way Violation at Unsignalized Intersection.....	45
Figure 33	Collision Profile 3: Truck-Involved Hit Object and Head-On Collisions due to Improper Turning.....	47
Figure 34	Top Ten Truck-Involved Collision Hot Spots, 2017-2021.....	50
Figure 35	Fire Risk Exposure	53
Figure 36	Sea Level Rise Exposure –Moss Landing and Castroville.....	55
Figure 37	Alternative Fuel Stations in the Central Coast.....	58
Figure 38	Federal Equity Focus Areas – Disadvantaged Communities and Areas of Persistent Poverty.....	61
Figure 39	Caltrans EQI Disadvantaged Communities, North Central Coast.....	64
Figure 40	Caltrans EQI Disadvantaged Communities, South Central Coast	65
Figure 41	Congestion and Reliability Impacts in Equity Focus Areas	67
Figure 42	2017-2022 Truck-Involved Collisions and Equity Focus Areas - North Central Coast	69
Figure 43	2017-2022 Truck-Involved Collisions and Equity Focus Areas – South Central Coast.....	70
Figure 44	Project Identification Process	71
Figure 45	Project Prioritization Factors.....	72
Figure 46	Sustainable Freight Study Recommendations	73

1.0 PLAN PURPOSE AND OVERVIEW

The Central Coast region is one of the most important agricultural production areas in the country and is known for its production of fresh produce and wine grapes. Beside agriculture, it has significant clusters of freight-dependent industries – including manufacturing and food processing. These industries rely on the multimodal freight network to serve their customers. However, the region’s freight network has been faced with a host of challenges related to safety, congestion, reliability, and others that threatens the continued economic prosperity of the Central Coast. These challenges must be addressed to ensure the region’s continued economic competitiveness.

1.1 Purpose of the Sustainable Freight Study

The California Central Coast Sustainable Freight Study (Sustainable Freight Study) serves as the long-term blueprint for addressing the region’s challenges and for guiding its freight investments. It followed an approach, grounded in data but informed by the firsthand experiences of stakeholders, to assess the region’s freight-related needs and challenges. The Sustainable Freight Study defines a comprehensive set of strategies for improving the performance of and reducing the negative impacts of the regional goods movement system while capitalizing on development opportunities. Additionally, it provides an implementation plan that outlines the action steps, potential funding sources, and planning level cost estimates needed to execute the recommendations.

1.2 Vision and Goals

The vision for the Sustainable Freight Study reflects the 2045 Metropolitan Transportation Plan’s vision. That vision emphasized the importance of setting the region on a path towards a sustainable and resilient future, enabled by the development of equitable transportation solutions that will improve the lives of all current and future Monterey Bay Area residents.

Defining goals was a critical first step for determining the strategic direction of the Sustainable Freight Study. Goals and objectives establish the means to measure and manage performance. The goals of overarching regional and statewide long-range plans serve as the foundation for the Sustainable Freight Study’s goals. Specifically, the Sustainable Freight Study’s goals and objectives were developed to align with those goals and objectives defined in the 2045 Metropolitan Transportation Plan (MTP), California Freight Mobility Plan, Climate Action Plan for Transportation Infrastructure (CAPTI), and the California Transportation Plan (CTP).

VISION

As a national source for key agricultural products, manufacturing, retail, and other freight products, the California Central Coast strives to have one of the State’s most innovative, economically-competitive multimodal freight network that is efficient, reliable, modern, integrated, resilient, safe, and sustainable, where benefits are realized by all while supporting equity, healthy communities and a thriving environment.

MULTIMODAL MOBILITY

Implement a long-range freight strategy for the Central Coast Region in alignment with State planning priorities that promotes strategic investments to maintain, enhance and modernize the multimodal freight transportation system.

SUSTAINABILITY

Reduce greenhouse gas emissions by optimizing integrated network efficiency to reduce vehicle miles of travel, congestion and idling, and by expanding Zero Emissions Vehicle (ZEV) infrastructure and access to funding for ZEV medium- and heavy-duty trucks.

ECONOMIC PROSPERITY

Maintaining and growing the economic competitiveness of the California Central Coast's freight sector through increases system efficiency, productivity, and workforce preparation while improving livability and the environment.

ENVIRONMENTAL STEWARDSHIP

Advance our understanding of climate risks and areas of vulnerability on the transportation network while supporting strategies that reduce, avoid, and/or mitigate adverse environmental impacts caused by the movement of goods.

HEALTHY COMMUNITIES

Promote healthy communities across California's Central Coast by reducing freight-generated air quality, noise, and safety impacts by working towards implementation of clean transportation technologies, land use policies that support sustainable industrial development, circulation policies that minimize truck operations near sensitive receptors, and electrified truck parking and loading provisions that reduce idling in communities.

EQUITY

Advance equity in California's Central Coast communities by mitigating existing impacts of incompatible industrial uses near historically disadvantaged communities, establishing local land use and mobility "good neighbor" compatibility policies for industrial development in historically disadvantaged neighborhoods, avoiding the development of affordable housing near major freight generators or major freight transportation corridors, and creating opportunities for local hire.

SAFETY AND RESILIENCY

Reduce freight-related deaths/injuries and improve system resilience by addressing infrastructure vulnerabilities associated with security threats, effects of climate change impacts, and natural disasters.

ASSET MANAGEMENT

Maintain and preserve infrastructure assets per the State Highway System Management Plan (SHSMP), the California Asset Management Plan, and other applicable state and federal statutes and regulations.

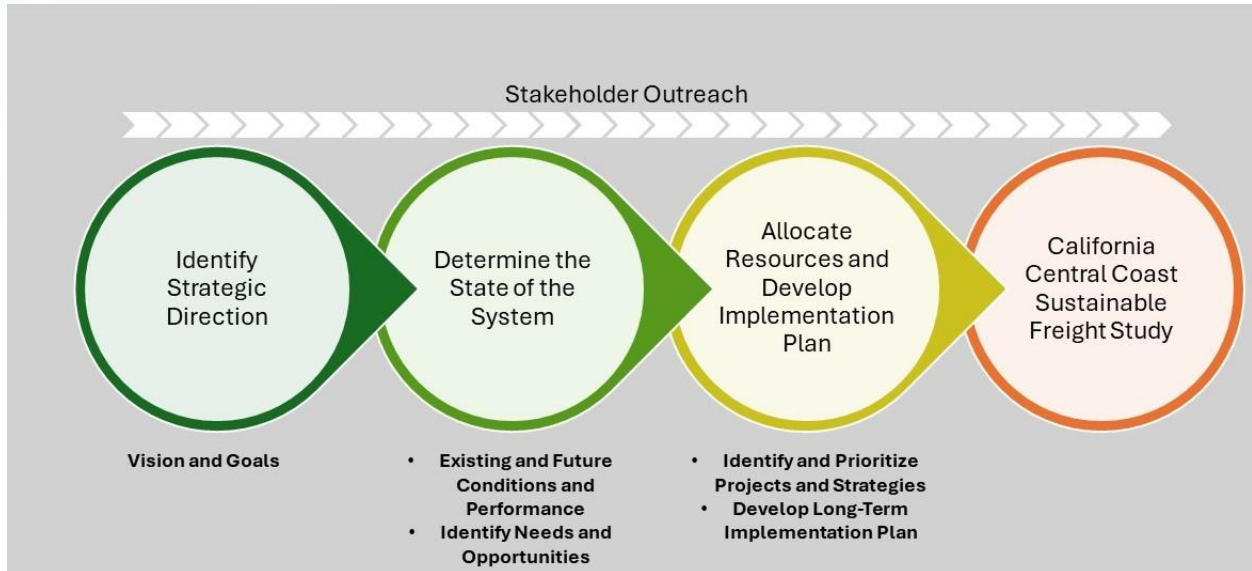
CONNECTIVITY AND ACCESSIBILITY

Provide Transportation choices and improve system connectivity for all freight modes.

1.3 Approach to Developing the Plan

The Sustainable Freight Study utilized a data-driven, stakeholder-informed approach to identifying priorities, needs, and recommendations for the Central Coast region. Figure 1 shows the approach for developing the Sustainable Freight Study.

Figure 1 Sustainable Freight Study Approach



Source: Cambridge Systematics.

These tasks resulted in a series of technical memorandums documenting the findings of each analysis phase. These documents are included in the Appendix and should be referred to for more detailed discussions of the technical analyses included in the Sustainable Freight Study.

1.4 Stakeholder Engagement

Stakeholder engagement was critical throughout the development of the Sustainable Freight Study to ensure that freight issues experienced by residents, businesses, community leaders, and other stakeholders were identified and addressed. Stakeholder engagement as part of the Sustainable Freight Study was designed to identify freight mobility concerns through engagement with key partner agencies, local governments and their constituencies, and the California Central Coast business community, most notably the agricultural businesses. Public meetings conducted in each of the five counties coupled with phone interviews provided meaningful input to project processes and outcomes. As a result, there were many stakeholders in both the public and private sectors that contributed valuable knowledge and insight into the update of this plan.

1.4.1 Central Coast Working Group

The Central Coast Working Group (CCWG) served as the steering committee for the Sustainable Freight Study. The CCWG met monthly throughout the plan development to provide regular input and feedback and assist with engaging key stakeholders. The CCWG provided frequent guidance on an ongoing basis by reviewing the work plan, suggesting and providing contact information for key stakeholders to engage, and providing guidance on deliverables. This committee included representatives from the California Department of Transportation (Caltrans), Association of Monterey Bay Area Governments (AMBAG), Santa Cruz County Regional Transportation Commission (SCCRTC), Council of San Benito County Governments (SBCOG), Transportation Agency for Monterey County (TAMC), San Luis Obispo Council of Governments (SLOCOG), and Santa Barbara County Association of Governments (SBCAG).

1.4.2 Stakeholder Survey

Based on input from the working group, an online survey was developed to assist with obtaining feedback from various industry stakeholders. The survey was emailed to a list of industry partners actively involved in freight planning in the Central Coast region. Many of the contacts are trade representatives. The survey was shared with the list of contacts along with a request to distribute it to the businesses they represent. Though only a handful of responses were received, the survey still provided some useful insights into the challenges experienced by stakeholders in the region.

1.4.3 Technical Advisory Committee Briefings

The Technical Advisory Committees for each of the Central Coast region's metropolitan planning organizations (MPOs) were updated on the status of the Sustainable Freight Study – including its interim findings and recommendations – over the course of the study. During these meetings, the members of the Technical Advisory Committees were provided with an opportunity to provide feedback and guidance to the project team. Input received from the Technical Advisory Committees has been incorporated into the Sustainable Freight Study.

1.4.4 Stakeholder Interviews

The one-on-one stakeholder interviews provided a significant amount of information about specific challenges facing both the movers of goods and local communities in the region, such as freight bottlenecks and safety concerns and opportunities for improvement. Interviews were conducted with the following organizations:

- Braga Fresh
- Grower Shipper Association of Santa Barbara and San Luis Obispo Counties
- Monterey County Farm Bureau
- Monterey County Agricultural Commission
- Ocean Mist
- San Luis Obispo County Farm Bureau
- Santa Barbara County Farm Bureau
- Santa Cruz County Farm Bureau
- Santa Maria Valley Railroad Company
- Southwest Trucking Services
- US 101 South of Salinas Traffic Safety Alliance

A summary of the feedback gathered through these interviews is provided below. Individual responses are not correlated with the interviewee:

- **Safety.** Stakeholders observed that safety is a challenge for the region's multimodal freight network. Specifically, stakeholders recommended that U.S. 101 be upgraded to an expressway throughout the entirety of the corridor to improve safety. Large trucks carrying heavy loads are slow to accelerate and have difficulty merging into fast-moving highway traffic from at-grade intersections. Stakeholders went on to note that safety on U.S. 101 would be improved by truck climbing lanes as well as improvements additional storage capacity at exit ramps to eliminate vehicles queuing onto U.S. 101 mainline. Additionally, stakeholders observed that near Salinas there are multiple at-grade rail crossings that impact travel conditions on U.S. 101.
- **Congestion and Reliability.** Stakeholders raised concerns about congestion and poor travel time reliability on the region's east-west corridors. In particular, SR 68 in Monterey County, SR 156 in San Benito County, and SR 46 and SR 166 in San Luis Obispo County were cited as examples of important east-west freight corridors that experience congestion and reliability challenges. Stakeholders suggested that passing lanes, intersection design improvements, capacity expansions, and re-routing freight corridors or creating bypasses around urbanized areas would improve conditions on these corridors.

HIGH COST OF POOR RELIABILITY

An hour of truck travel time delay equates to a one-day loss in shelf life for fresh produce.

Specific to U.S. 101, stakeholders observed that at-grade intersections contribute to travel time reliability challenges. They noted that trucks have trouble finding adequate gaps in the traffic stream to safely enter or cross U.S. 101. This is a particular challenge for the agricultural industry as trucks serving crop-producing lands must often navigate these intersections. Stakeholders stated that delays of up to 30 minutes are common and that every minute counts when growers are trying to move time-sensitive crops to market, such as berries and lettuce.

- **Resiliency.** Extreme weather and its impact on the multimodal freight network is a growing concern for stakeholders. They perceive wildfires, floods, and other extreme weather events as growing more prevalent, resulting in increased rail and roadway closures. Stakeholders noted that SR 1 is frequently closed due to landslides, flooding, and coastal erosion.

Furthermore, stakeholders observed that resiliency challenges in other parts of the State impact the Central Coast. For example, they stated that storms are causing more closures to the Tejon Pass. As a result, trucks are forced to divert to U.S. 101 where there is insufficient roadway capacity and truck parking to accommodate them. Diverted drivers often exceed their hours-of-service limits with little to no emergency truck parking sites available for them to rest.

- **Regulatory Challenges.** Stakeholders also cited regulatory challenges that impact freight operations in the Central Coast. In particular, they expressed concerns about the impacts that electronic logging device (ELD) and zero emissions fuel (ZEF) mandates might have on the agriculture industry. Agricultural goods are very time-sensitive. Stakeholders were concerned that

additional stops to switch drivers due to ELD mandates would delay perishable goods in getting to market, resulting in reduced shelf life and lost revenue to farmers.

Regarding ZEF mandates, stakeholders noted that ZEF vehicles are costlier and require a significant investment from the agricultural industry to comply with the mandates. Furthermore, they expressed that for many agricultural goods, trucks weigh out before they cube out – meaning they reach federal and/or state truck weight limits before consuming all available cargo space. As electric vehicles are generally much heavier than diesel or gasoline vehicles, a greater number of alternative fuel trucks would be needed to move the same amount of goods. This would result in higher costs for agricultural shippers.

2.0 FREIGHT IN THE CENTRAL COAST REGION

2.1 Multimodal Freight Network

2.1.1 Highways

The roadway network provides a critical connection between users and producers of goods throughout the state, the nation, and the world. The Central Coast region's roads provide nearly 28,000 centerline miles.

National Highway Freight Network

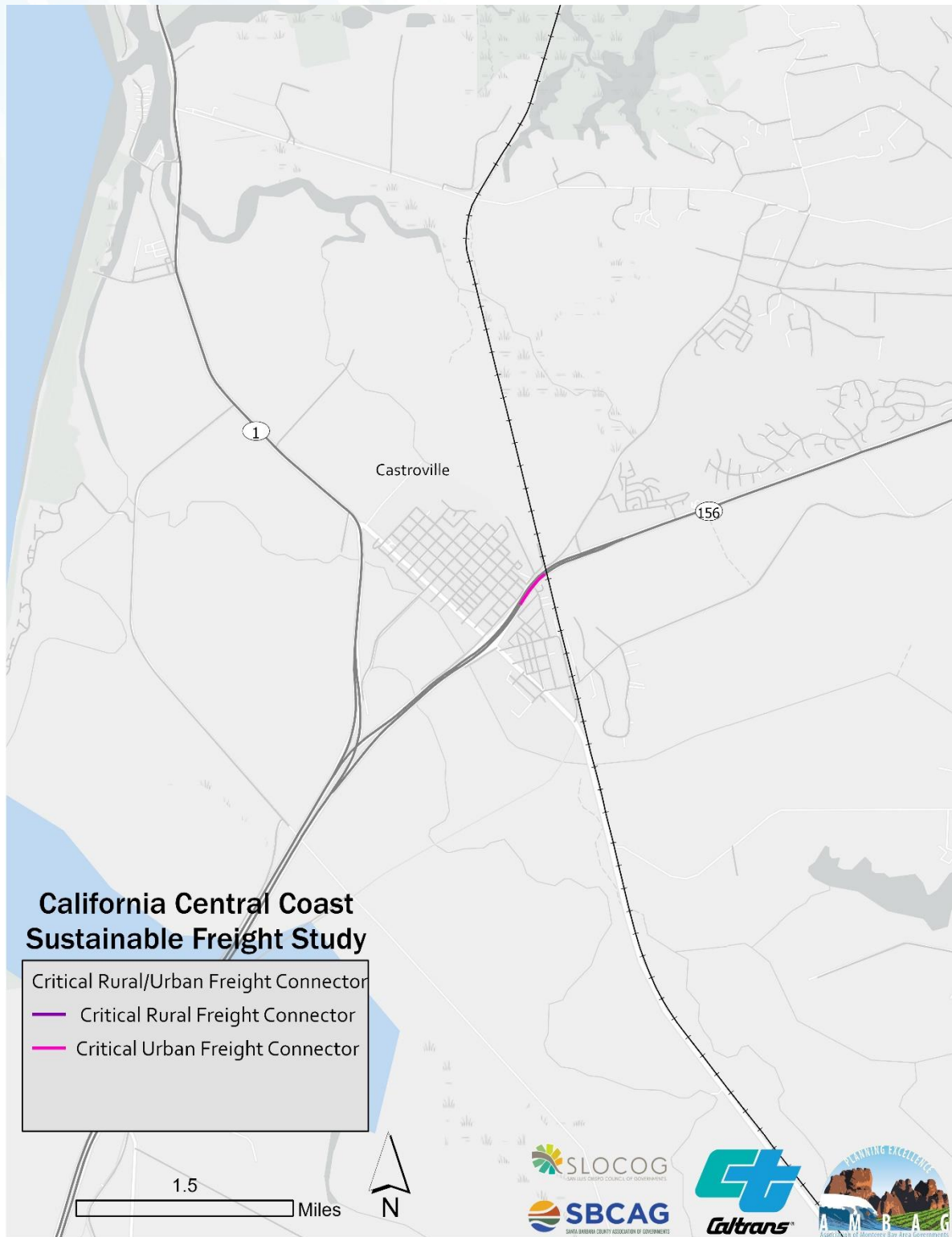
The National Highway Freight Network (NHFN) was defined at the national level by the Fixing America's Surface Transportation (FAST) Act passed in 2015 for the purpose of strategically directing federal resources and policies toward improved performance of highway portions of the U.S. freight transportation system. The NHFN includes the following subsystems of roadways:

- **Primary Highway Freight System (PHFS):** This is a network of highways identified as the most critical highway portions of the U.S. freight transportation system determined by measurable and objective national data. The network consists of 41,518 centerlines miles Interstate and non-Interstate roads such as National Highway System (NHS) freight intermodal connectors. California has over 3,126 centerline miles on the PHFS.¹
- **Other non-PHFS Interstate:** These highways consist of the remaining portion of Interstate roads not included in the PHFS. These routes provide important continuity and access to freight transportation facilities.
- **Critical Rural Freight Corridors (CRFCs):** These are public roads not in an urbanized area which provide access and connection to the PHFS and the Interstate with other important ports, public transportation facilities, or other intermodal freight facilities.
- **Critical Urban Freight Corridors (CUFCs):** These are public roads in urbanized areas which provide access and connection to the PHFS and the Interstate with other ports, public transportation facilities, or other intermodal transportation facilities.

Only a small portion of California's portion of the NHFN lies within the Central Coast region – namely CUFCs and CRFCs in Monterey, San Luis Obispo, and Santa Barbara Counties. As shown in Figure 2, about 0.2 miles of SR 156 just west of the Union Pacific rail line in Castroville is designated as a CUFC. The region has another CUFC in Santa Barbara County as shown in Figure 3. About 3.1 miles of U.S. 101 in the Montecito area of Santa Barbara County is designated as a CUFC. The only CRFC in the region is located along SR 46 in the northeastern corner of San Luis Obispo County near its border with Monterey and Kern Counties.

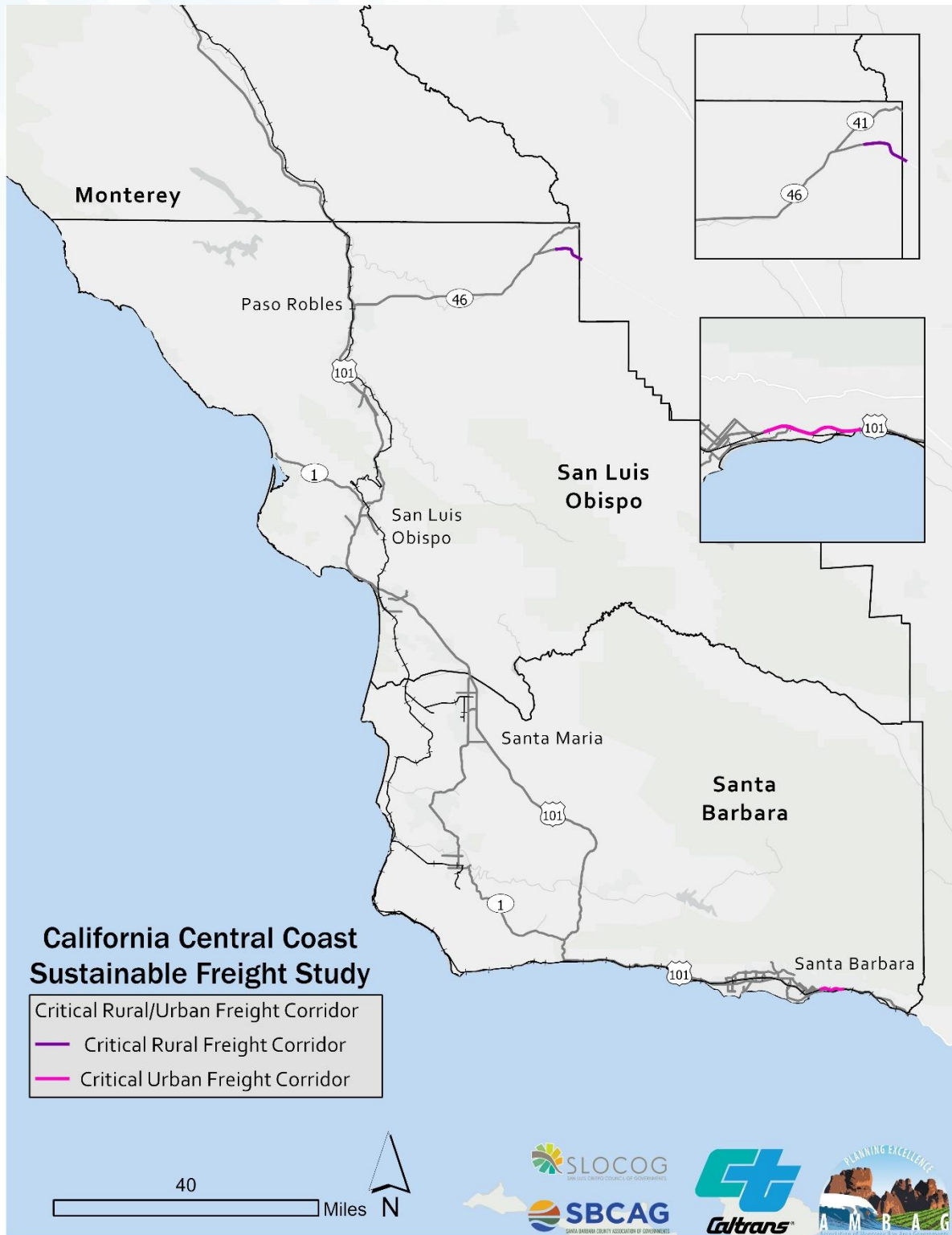
¹ https://ops.fhwa.dot.gov/Freight/infrastructure/nfn/maps/nhfn_mileage_states.htm

Figure 2 Critical Urban Freight Corridors - Castroville



Source: Caltrans, CUFC and CRFC Designation Map Viewer,
<https://www.arcgis.com/apps/webappviewer/index.html?id=f3458a90339b4becb471262eee8d8412>.

Figure 3 Critical Rural/Urban Freight Corridors – South Central Coast



Source: Caltrans, CUFC and CRFC Designation Map Viewer,
<https://www.arcgis.com/apps/webappviewer/index.html?id=f3458a90339b4becb471262eee8d8412>.

NHS Freight Intermodal Connectors

NHS intermodal connectors, also known as the “first or last mile” linkages, provide critical connections between major freight nodes and designated NHS highways. This designation assists federal, state, and local governments with prioritizing operations, maintenance, and improvements of these key arterial connections to ensure that these networks support the ports, rail yards, airports, and other freight-intensive nodes efficiently. When designed, maintained, and operated with freight in mind, connector routes facilitate the best use of individual modes and improve the overall efficiency of regional highway networks.

Designation as a freight intermodal connector depends on a roadway meeting one of several primary and/or secondary criteria established by FHWA. These criteria primarily revolve around terminals meeting volume thresholds for trucks, twenty-foot equivalent units (TEUs), or tonnages. Roadways that are designated as NHS freight intermodal connectors are included on the PHFS. As shown in Figure 4, there is only one freight-related NHS intermodal connector (i.e., those facilities connecting to an airport, port, or rail/truck terminal) in the Central Coast region. It consists of SR 217 and Moffett Place between the Santa Barbara Airport and U.S. 101.

Figure 4 Santa Barbara Airport Intermodal Connectors

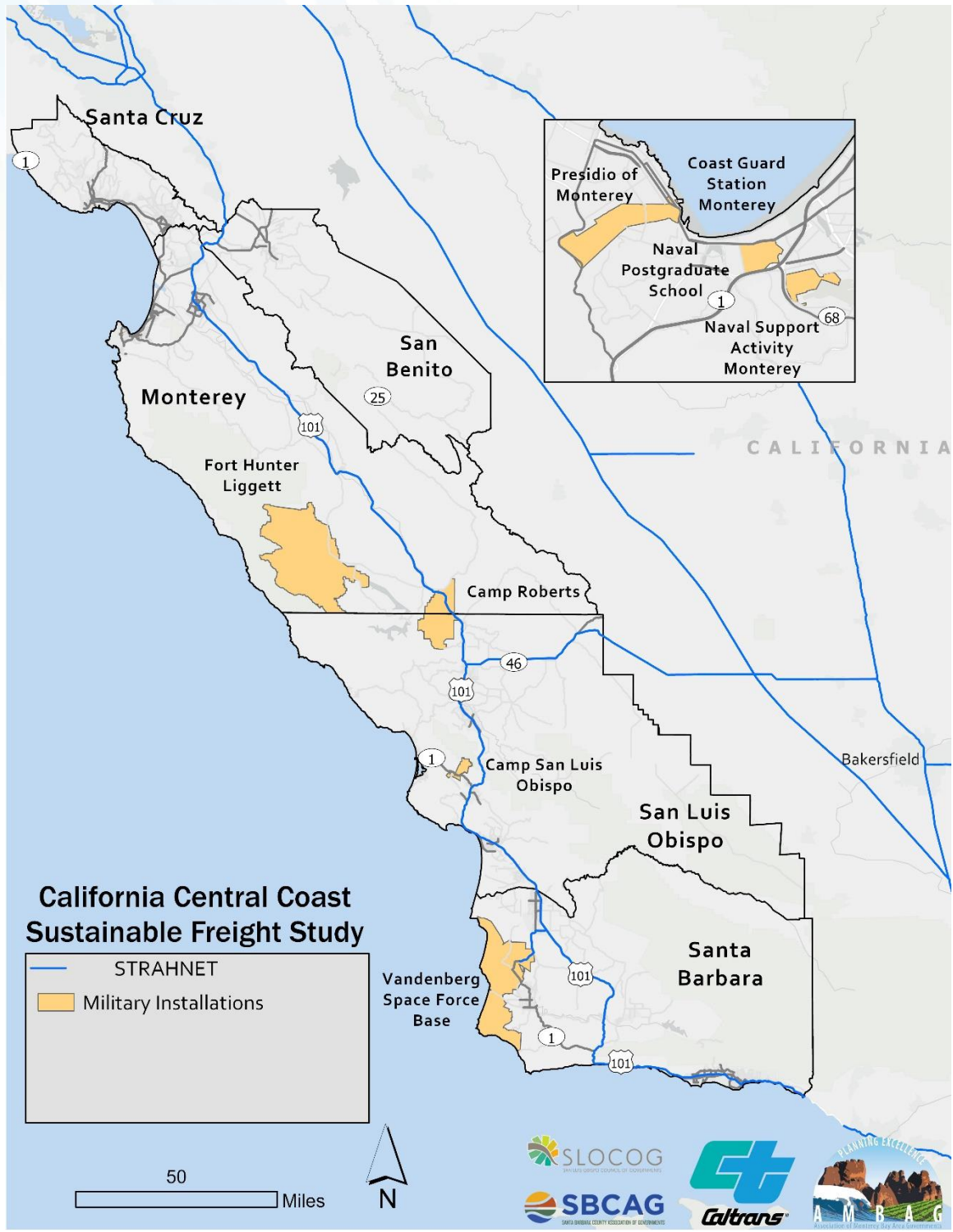


Source: Caltrans, National Highway System.

Strategic Highway Network

Another important highway freight network is the Strategic Highway Network (STRAHNET). The STRAHNET is a system of roads deemed necessary for emergency mobilization and peacetime movement of heavy armor, fuel, ammunition, repair parts, food, and other commodities to support U.S. military operations. It provides defense, continuity, and emergency capabilities for the nation's military installations. There are over 62,000 miles of STRAHNET roadways which consists of both Interstate and non-Interstate routes. The STRAHNET through the California Central Coast region is shown in Figure 5. It includes U.S. 101 and SR 46 which serve Camp Roberts and Vandenberg Space Force Base.

Figure 5 STRAHNET



Source: Caltrans, National Highway System.

State Truck Routes

Truck route maps and signage are key tools that allow drivers to adapt to congestion or incidents along their routes. It also is an important way for municipalities to direct trucks to routes that are able to accommodate them. Caltrans Traffic Operations produces a truck network map with major state routes and U.S. highways for each Caltrans District. This provides an overview for most of the major routes truckers utilize while moving through the region. Figure 6 shows truck routes throughout Caltrans District 5.

Truck Parking

There are various reasons truck drivers need to park and associated with each reason are unique challenges (see Figure 7). Drivers must adhere to Federal hours of service (HOS) regulations that place specific time limits on driving and rest intervals. Drivers almost always need to park and wait for delivery windows at shippers and receivers, and sometimes are impacted by unexpected road closures or congestion. Finally, truck drivers are essential workers, who need to take personal breaks for rest and safety.

Figure 7 Reasons Truck Drivers Park



Source: Cambridge Systematics.

The inventory of truck parking facilities covers both public and commercial facilities. Public facilities include rest areas and welcome centers which are state-owned and are located adjacent to state highways to provide temporary parking for rest and access to restrooms, vending machines, and other basic services. They do not provide food, fuel, or other commercial amenities. Data on the location and capacity of public truck parking facilities was collected from the Caltrans California Statewide Truck Parking Study.²

Commercial truck parking facilities are private businesses that provide fuel, and often offer food, rest, and other services for truck drivers. Because of federal limitations on the types of amenities that may be offered at public facilities, drivers often prefer commercial truck stops. In total, there are 12 truck parking facilities - 5 public and 7 commercial.

Table 1 summarizes the amount of truck parking by county in the California Central Coast region. Figure 8 shows truck parking facilities along with their capacities. The region's 12 facilities provide 428

² <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/freight-planning/plan-accordion/catrpkpgstdy-finalreport-a11y.pdf>

truck parking spaces. About 63 percent of capacity in terms of total spaces is located in Monterey County. San Luis Obispo County provides nearly 28 percent of the region’s capacity with the remainder in Santa Barbara County. There are no truck parking facilities in San Benito or Santa Cruz Counties.

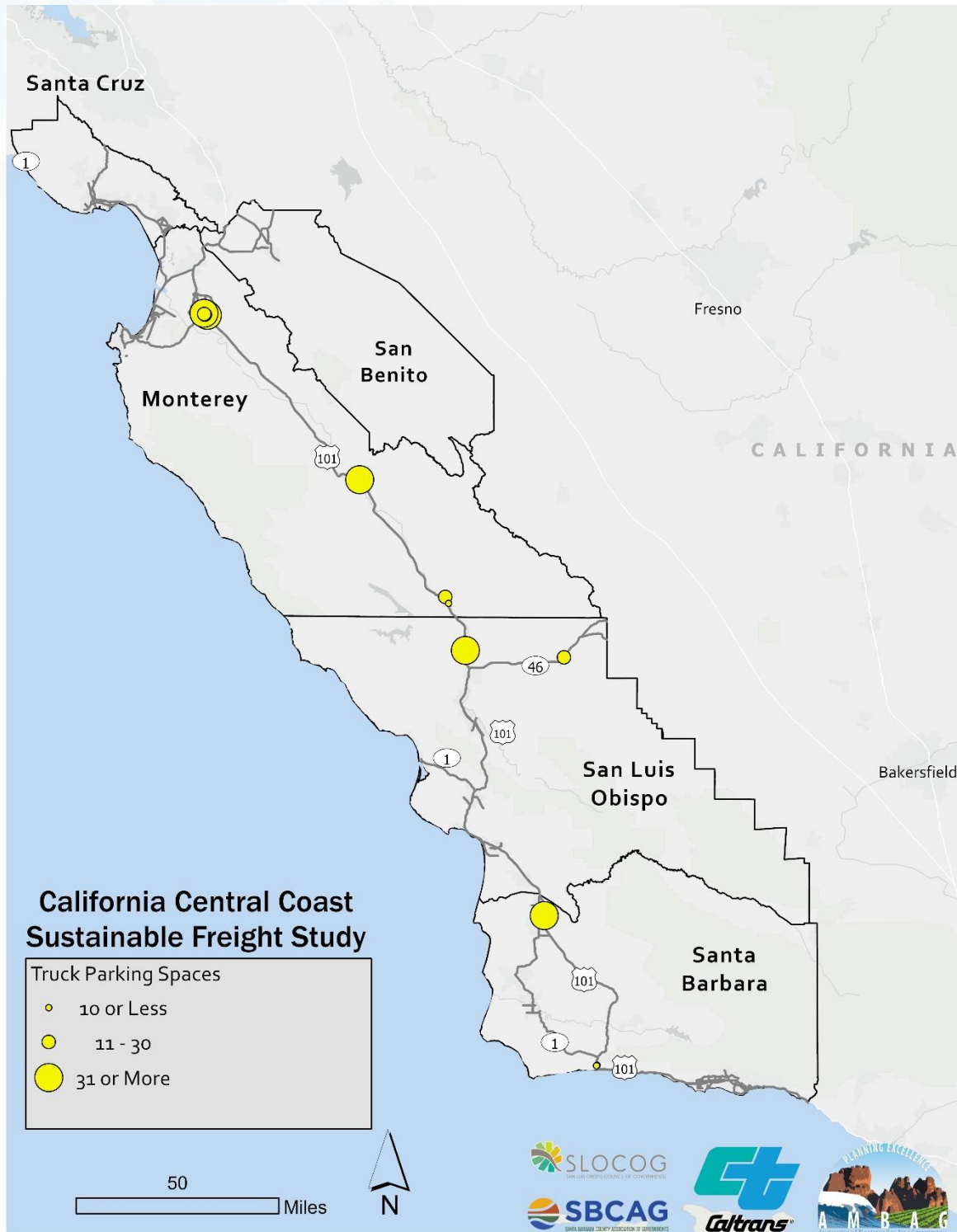
Notably, San Luis Obispo County has about 17 percent of the region’s truck parking facilities but about 28 percent of capacity. These facilities are larger than those in other parts of the region and are likely used by drivers to meet 10-hour mandated rest breaks and overnight parking needs. Santa Barbara County is the opposite; it has 25 percent of facilities, but less than 10 percent of capacity. The concentration of small parking facilities in Santa Barbara County likely reflects the limited availability of parcels for larger facilities and the prevalence of hotels, restaurants, retailers, and other businesses that would require drivers to stage pick-ups or deliveries. Neither San Benito County nor Santa Cruz County have truck parking facilities. This is likely due to the lack of long-haul truck corridors as no portion of U.S. 101 passes through Santa Cruz County and only a small portion is located in San Benito County.

Table 1 Truck Parking Capacity by County

County	Number of Facilities	Percent of Total Facilities	Number of Spaces	Percent of Total Spaces
Monterey	7	58%	269	62.8%
San Benito	0	0%	0	0%
San Luis Obispo	2	17%	118	27.6%
Santa Barbara	3	25%	41	9.6%
Santa Cruz	0	0%	0	0%
Total	12	100%	428	100%

Source: California Statewide Truck Parking Study

Figure 8 Capacity of Truck Parking Facilities



Source: Caltrans Statewide Truck Parking Study.

2.1.2 Rail

Freight railroads are categorized as Class I, Class II, or Class III based on their annual revenues.³ Class I railroads are the largest, and generally include those operators that carry freight longer distances across state lines and into other regions of the United States or internationally into Canada and Mexico. Class III railroads are commonly referred to as shortlines and primarily act as last-mile connectors between Class I railroads and the ports, manufacturing facilities, and other industrial properties they serve. The region is served by one Class I railroad, Union Pacific (UP), and two Class III railroads, the Santa Maria Valley Railroad (SMVRR) and the Santa Cruz, Big Trees & Pacific Railway (SCBG) as shown in Figure 9. Union Pacific's tracks run parallel to U.S. 101 through much of the region and is shared with Amtrak for its Coast Starlight service. Union Pacific's tracks run parallel to U.S. 101 through much of the region and is shared with Amtrak. Of the approximately 488 track miles of rail in the region, Union Pacific owns 85 percent.

³ Current Surface Transportation Board thresholds establish Class I carriers as any carrier earning revenue greater than \$943.9 million, Class II carriers as those earning revenue between \$42.4 million and \$943.9 million, and Class III carriers as those earning revenue less than \$42.4 million (<https://www.stb.gov/reports-data/economic-data/>).

Figure 9 Railroads in the California Central Coast Region



Source: Caltrans, California Rail Network.

The SMVRR is a 14-mile-long shortline operating in the Santa Maria Valley and interchanging with UP in Guadalupe.⁴ It primarily transports goods associated with the agricultural, manufacturing, and retail industry sectors. Its track is rated to transport 286,000-pound railcars, which is essential for efficiently interchanging with Union Pacific. The Betteravia Industrial Park in Santa Barbara County is a major transload location for the line and also provides space for on-ground and covered storage. The SMVRR also partners with 3rd party logistics providers to offer transload services, temporary warehousing of products, cross docking, and trucking for door-to-door service for Santa Barbara and San Luis Obispo Counties.

There is also the Santa Cruz, Big Trees & Pacific Railway (SCBG) and the Santa Cruz Branch Line. The SCBG is primarily a tourist railroad, but also hauls freight.⁵ Freight traffic on the SCBG line is primarily lumber. The Santa Cruz Branch Line stems from UP's mainline near Watsonville and runs northwest into Santa Cruz County. The Santa Cruz County Regional Transportation Commission (SCCRTC) purchased this line in 2012 and performed a feasibility study in 2015 for incorporating transit on the line. In 2022, the SCCRTC approved a request for proposals for preliminary engineering and environmental work for electric passenger rail on the Santa Cruz Branch Rail Line.⁶ The Iowa Pacific Railroad formerly operated freight service on the line, but that service was discontinued.

There are no rail intermodal connections in the Central Coast region.

Strategic Rail Corridor Network (STRACNET)

The STRACNET (see Figure 10) is an interconnected and continuous rail line network consisting of over 36,000 miles of track serving over 120 defense installations.⁷ It ensures the readiness capability of the national railroad network to support defense deployment and peacetime needs. The STRACNET consists of primary corridors and defense connector lines. Primary corridors are moderate to high traffic density rail lines. Defense connector lines are designated to complete the network between the STRACNET and defense installations or other activities requiring rail service. Together, the STRACNET and connector lines are the civil railroad lines most important to national defense.

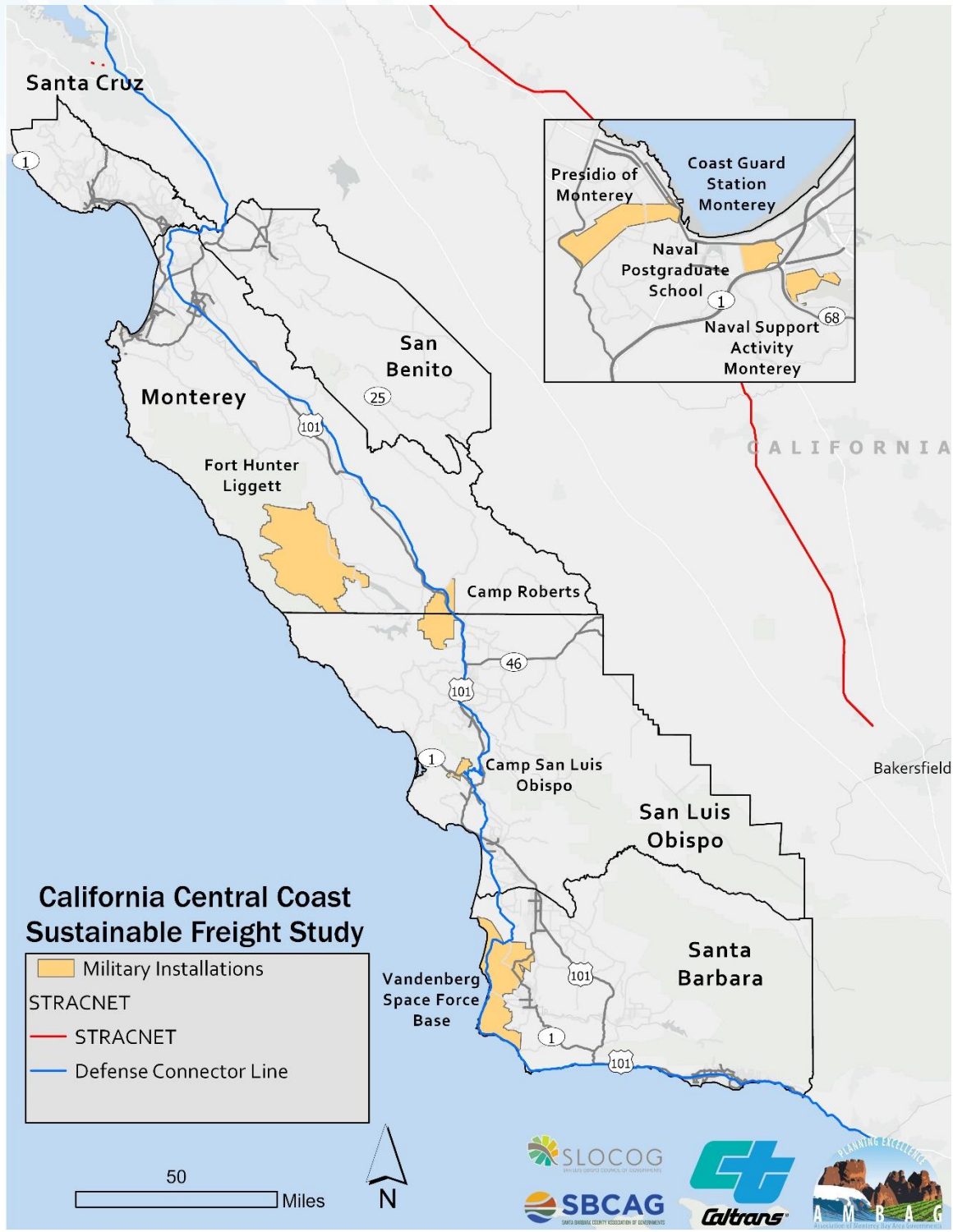
⁴ <https://www.smvrr.com/>

⁵ https://www.up.com/customers/shortline/profiles_q-s/scbg/index.htm

⁶ <https://santacruzlocal.org/2022/08/05/money-approved-for-passenger-rail-planning/>

⁷ <https://www.sddc.army.mil/sites/TEA/Functions/SpecialAssistant/RND%20Publications/STRACNET%202023.pdf>

Figure 10 STRACNET



Source: Caltrans, California Rail Network.

2.1.3 Air

Air cargo has a significant role in the multimodal freight network as it provides the fastest service for long-distance shipments of goods. The high service quality provided by air cargo results in higher shipping costs for this mode. As a result, air cargo tends to be limited to high-value and low-weight goods such as medical supplies, flowers, and electronics.

As shown in Figure 11, there are four commercial airports in the Central Coast region: Monterey Peninsula Airport, San Luis Obispo Regional Airport, Santa Maria Public Airport, and the Santa Barbara Municipal Airport. Monterey Peninsula Airport provides some minor cargo services, shipping and offloading 625,000 pounds of UPS and FedEx packages between October 2022 and November 2023. The Central Coast is also served by cargo airports in nearby regions such as the Norman Mineta San Jose International Airport and the Fresno Yosemite International Airport.

Since the Bipartisan Infrastructure Law was signed at the end of 2021, Central Coast airports have received more than \$19.5 million through the Federal Aviation Administration.⁸ In San Luis Obispo County, more than \$2.3 million is earmarked for San Luis Obispo Regional Airport, with Paso Robles Municipal Airport slated to receive \$295,000.⁹ In Santa Barbara County, the Santa Maria Public Airport will receive almost \$1.02 million

⁸ <https://carbajal.house.gov/news/documentsingle.aspx?DocumentID=1628>

⁹ https://hanfordsentinel.com/news/local/local-central-valley-airports-getting-a-more-than-600k-federal-boost/article_d526ea8f-c73e-55ae-9dee-9371412dacbd.html

Figure 11 Commercial Airports in the Central Coast



Source: Caltrans.

2.2 Freight Demand

The needs of the Central Coast region's freight system are driven by both the current and future demand for freight transportation. Overall, in 2022 about 117 million tons of commodities worth \$146 billion were transported to, from, and within the Central Coast Region. In 2050, the estimated total freight tonnage will reach 161 million tons, valued at \$239 billion, representing a 38 percent increase in weight and a 64 percent increase in value.¹⁰

This chapter examines the demand for freight transportation services in the Central Coast region by analyzing the commodities flows underlying that demand. It relies on disaggregated data from the Federal Highway Administration Freight Analysis Framework (FAF) version 5.1 (FAF5).¹¹ The FAF5 database provides estimates for the tonnage and value of goods transported across the nation and is commonly used by many state and regional agencies for freight planning. Estimates are provided for a base year as well as a forecast through 2050. The analysis included in this section of the report examines flows of goods by truck, rail, water, and air freight modes. This includes analyzing how and where the commodities moved and the region's predominant trading partners across three geographies: within California, within the United States, and internationally.

It is important to note that though while it is a high-value agricultural commodity being transported across the region's freight network, this analysis does not account for the freight movements of cannabis. Cannabis produced in Monterey County was estimated to be valued at \$618 million in 2021, making it the third most valuable agricultural product in Monterey County.¹² Despite the omission of cannabis from this analysis, it is not believed to generate substantial volumes of truck movements given that it is a high-value, low-weight commodity.

2.2.1 Top Commodities

California stands as the foremost state in the U.S. for food manufacturing and agriculture, and within the state, the Central Coast is one of California's most significant agricultural regions. As shown in Figure 12, in 2022 the top commodities transported over the region's multimodal freight network included other prepared foodstuffs, agricultural products, animal feed and other products of animal origin, non-metallic mineral products, and crude petroleum, among others. The top ten commodities accounted for 66 percent of total freight tonnage. Some of these goods, such as gravel and non-metallic minerals, are bulk commodities that typically have high unit weights, but relatively low value compared to other commodities. By value, the leading commodities were electronic and other electrical equipment and components, office

¹⁰ Note that though the 2016 U.S. 101 Central Coast California Freight Strategy reported a higher total tonnage of freight demand for the region, the results presented here should not be interpreted as a decrease in demand. The 2016 study used a provisional version, as opposed to a final version, of the Freight Analysis Framework (FAF) as that was the most recent data at the time. In addition, the 2016 study used version 3.5 of the FAF while this report uses version 5.1, which incorporates methods and data that were previously unavailable.

¹¹ https://ops.fhwa.dot.gov/freight/freight_analysis/faf/

¹² Mashayekhi, R., "Monterey County's cannabis industry is struggling to survive -- and claims overtaxing and burdensome regulations are to blame", Monterey County Weekly, July 13, 2023. https://www.montereycountynow.com/news/cover/monterey-county-s-cannabis-industry-is-struggling-to-survive---and-claims-overtaxing/article_d78ecd54-20df-11ee-915c-f78e9848979d.html#:~:text=By%202021%2C%20cannabis%20was%20the,%24618%20million%20produced%20th at%20year.

equipment, mixed freight, other prepared foodstuffs, and agricultural products, among others. The top ten commodities comprised 63 percent of total value in 2022. That other prepared foodstuffs and agricultural products represent top ten commodities by both tonnage and value, demonstrates how essential the agricultural sector is to the regional economy and is dependent on the freight network.

Figure 12 Top 10 Commodities by Tonnage and Value, 2022



Source: FAF5; Cambridge Systematics.

The top commodities are projected to remain consistent over the 2022-2050 forecast horizon as shown in Figure 13. Compared to 2022, goods related to agriculture and food sectors are expected to remain the most prevalent commodities transported over the region’s multimodal freight network in 2050. Reflecting improvements in alternative fuel technologies and national initiatives to reduce dependence on fossil fuels, oil-related commodities are projected to decline in 2050. Crude petroleum remains relatively unchanged, while most other goods show an increasing trend. Between 2022 and 2050, other oil-related commodities including gasoline and other fuels, fuel oils (including diesel, Bunker C, and biodiesel), and coal are estimated to decline by 747,000 tons, 288,000 tons, and 10,000 tons, respectively.

Figure 13 Top 10 Commodities by Tonnage and Value, 2050



Source: FAF5; Cambridge Systematics.

By tonnage, some commodities are expected to lose their top ten ranking by 2050. These include cereal grains, waste and scrap, and wood products. Instead, commodities such as gravel and crushed stone, mixed freight, and fertilizers are projected to increase their share of total tonnage and ascend into the top tier. Overall, the top ten commodities are estimated to comprise 64 percent of total tonnage in 2050 – a slight decrease from 2022.

In terms of total value, the top ten commodities are forecasted to remain the same but with some shifting of ranks among the commodities. For instance, pharmaceutical products (valued at \$7 billion in 2022) moves up from the 7th position to 4th by 2050, reaching an estimated value of \$16 billion. The combined value of the top ten commodities is estimated to account for approximately 65 percent of total value in 2050.

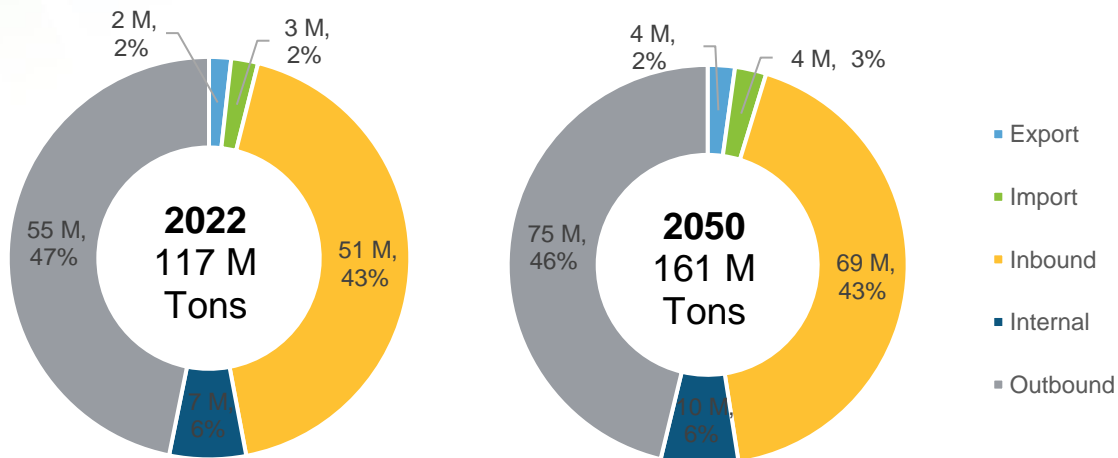
2.2.2 Directional Split

By direction, domestic inbound and outbound are the predominant flows for the Central Coast region as shown in Figure 14 and Figure 15. In 2022, approximately 55 million tons (47 percent of total tonnage) were domestic outbound flows. These flows were valued at approximately \$57 billion, which corresponds to about 39 percent of total value. Inbound flows are the next predominant direction comprising approximately 51 million tons of goods (43 percent of total tonnage) valued at \$64 billion (about 44 percent of total value). Though the share of goods inbound to the region is slightly less than outbound (43 percent versus 47 percent), the share by value is higher (44 percent versus 39 percent). This implies that the region generally ships in higher value goods than those being shipped out. Internal movements

comprise about 7 million tons (6 percent of total tonnage) and \$6 billion in value (4 percent of total value) in 2022.

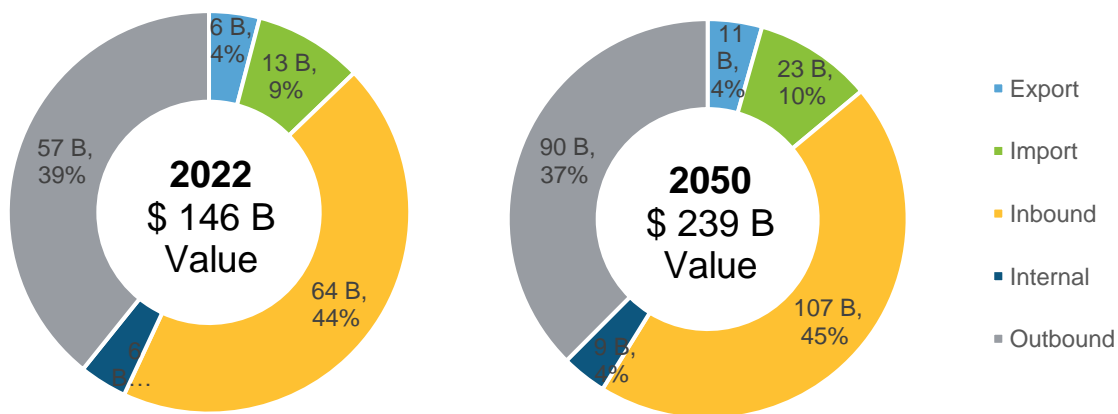
As shown in Figure 14 and Figure 15, the proportions of inbound and outbound flows will remain stable through 2050. About 69 million tons of goods, valued at \$107 billion, are anticipated to be shipped into the region. Inbound flows are projected to comprise about 43 percent of total tonnage and 45 percent of total value in 2050. Outbound flows of goods from the region are estimated to account for 75 million tons (46 percent of total tonnage) and \$90 billion (37 percent) of total value.

Figure 14 Freight Tonnage by Direction, 2022 and 2050



Source: FAF5; Cambridge Systematics.

Figure 15 Freight Value by Direction, 2022 and 2050

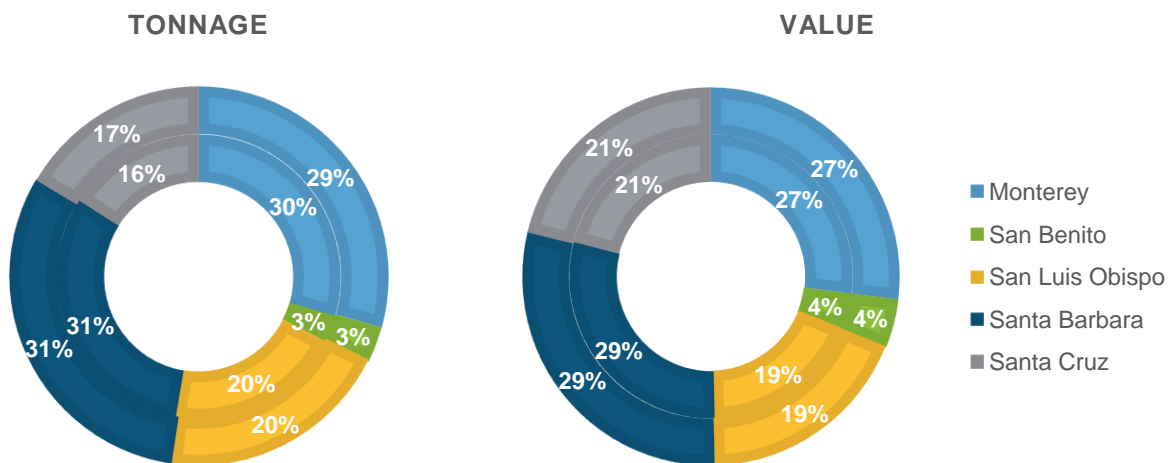


Source: FAF5; Cambridge Systematics.

Figure 16 shows the county-level distribution of goods (tonnage and value) shipped into the Central Coast region for 2022 and 2050. Overall, Santa Barbara and Monterey Counties receive the highest shares of freight shipped into the region. About 31 percent of inbound tonnage is destined for Santa Barbara for both 2022 and 2050. Monterey County is estimated to receive approximately 30 percent of total tonnage shipped into the region in 2022, but a slightly smaller share (29 percent) in 2050.

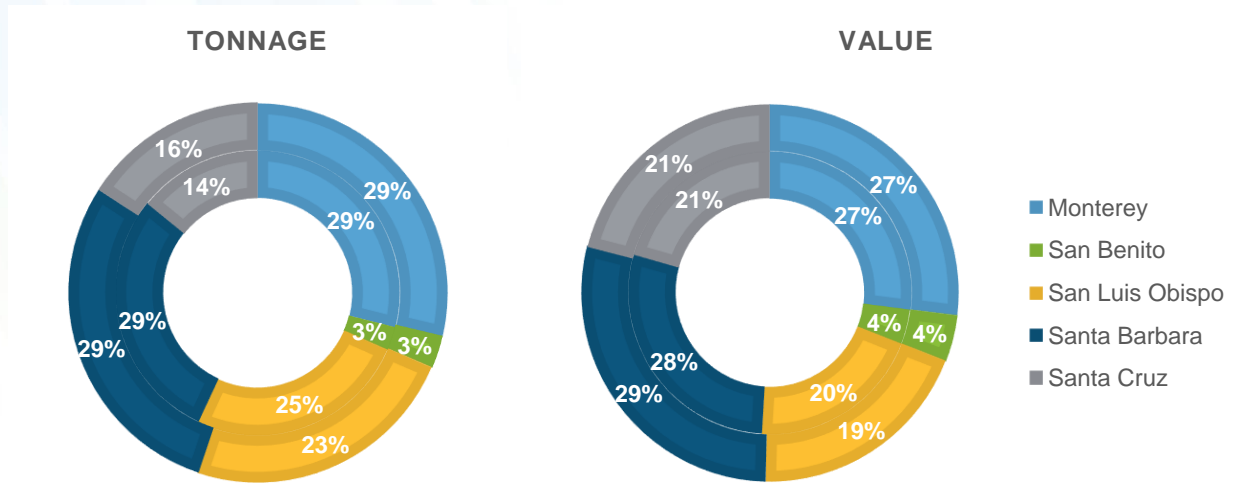
The same information is shown for goods shipped outbound from the region in Figure 17. Santa Barbara and Monterey Counties account for the largest shares of outbound tonnage at approximately 29 percent each for both 2022 and 2050. Notably, San Luis Obispo County accounts for significantly larger share of outbound tonnage (25 percent in 2022) than inbound tonnage (20 percent in 2022). This is likely due to the estimated large volume of crude petroleum shipped outbound from the county.

Figure 16 County-Level Distribution of Inbound Freight Tonnage and Value, 2022 (Inner) and 2050 (Outer)



Source: FAF5; Cambridge Systematics.

Figure 17 County-Level Distribution of Outbound Freight Tonnage and Value, 2022 and 2050

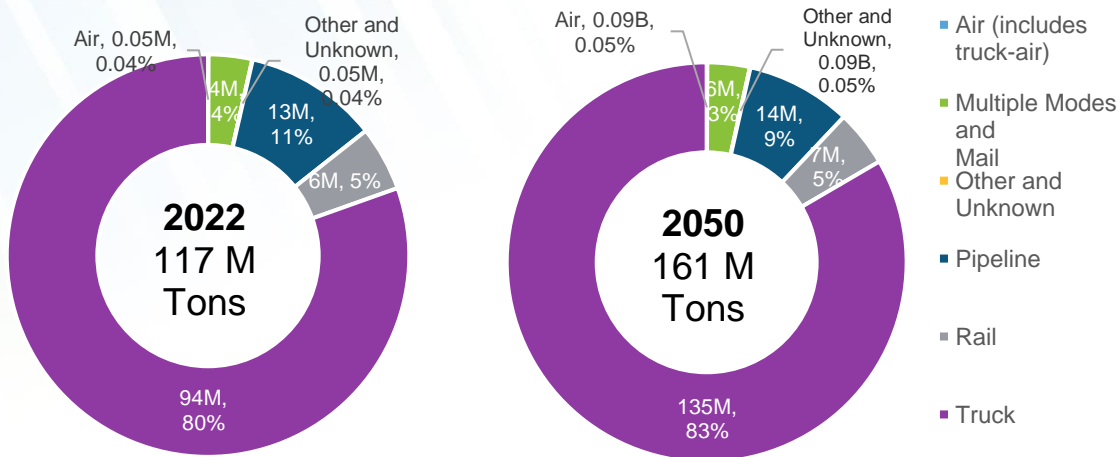


Source: FAF5; Cambridge Systematics.

2.2.3 Modal Split

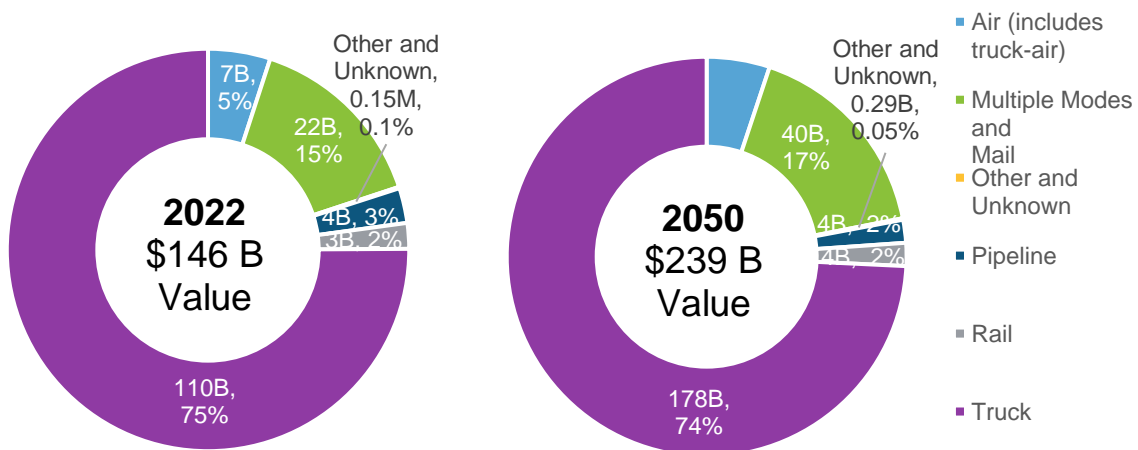
Figure 18 and Figure 19 show freight demand by mode in terms of tonnage and value for 2022 and 2050. Trucks carry the majority of freight both in terms of tonnage and value. In 2022, 94 million tons of goods (valued at \$110 billion) were transported via truck. This represents nearly 80 percent of the total tonnage and 75 percent of the total value for that year. The second leading mode by total tonnage was pipeline, carrying 13 million tons of goods in 2022. Despite its substantial share of total tonnage, the value of goods transported via pipeline was relatively low at \$4 billion – roughly 3 percent of total value in 2022. Rail ranked third, transporting approximately 6 million tons of goods (5 percent of total tonnage) valued at around \$3 billion. Remaining modes comprised less than 5 percent of total freight tonnage. However, in terms of value, the 4 million tons of freight moved by multiple modes corresponded to \$22 billion – 15 percent of total value. The 50,000 tons of goods transported by air accounted for \$7 billion in value.

Figure 18 Freight Tonnage by Mode, 2022 and 2050



Source: FAF5; Cambridge Systematics.

Figure 19 Freight Value by Mode, 2022 and 2050



Source: FAF5; Cambridge Systematics.

By 2050, both tonnage and value of each mode are projected to increase across all modes. Trucking's share of total tonnage is expected to increase slightly to 83 percent, while its share of value slightly decreases from 75 percent to 74 percent. The amount of goods transported by multiple modes and mail (which includes rail intermodal) is estimated to increase by 1 million tons. The associated value for this mode is projected to nearly double, increasing from approximately \$22 billion to \$40 billion.

3.0 FREIGHT SYSTEM ASSESSMENT

The Central Coast region’s multimodal freight network contributes significantly to its economic prosperity. However, the network faces multiple needs and challenges that limits its ability to further contribute to the region’s success. These needs and challenges are summarized in Table 2. These needs and opportunities were determined through data analysis and stakeholder engagement, which was a vital part of understanding needs as it allowed for feedback from users who interact with the freight system regularly. As freight demand is projected to grow substantially over the long-term, the region’s freight needs will be exacerbated unless actions are taken now. To this end, these needs and opportunities served as the basis for the recommendations and strategies proposed as part of Sustainable Freight Study.

Table 2 Summary of Needs

Need Area	Description
Congestion and Reliability	» Multiple freight routes exhibit high levels of congestion or unreliable travel times. This hinders the mobility of freight, adds cost to shippers, and negatively impacts the communities reliant on freight-dependent industries.
Infrastructure Conditions	» Poor pavement conditions are dispersed throughout the region’s freight corridors. These conditions can result in increased costs for motor carriers and negatively impact the safety of drivers.
Freight Network Connectivity	» At-grade rail crossings contribute to access challenges for farmland and agricultural facilities. In particular, the prevalence of at-grade crossings along certain segments of the U.S. 101 contributes to congestion, reliability, and safety challenges on that corridor. » Limited east-west roadway connectivity hinders freight mobility and accessibility throughout the region. The lack of east-west routes (combined with poor performance on existing routes) impacts the ability of freight shipments to reach critical north-south corridors including U.S. 101, I-5, and the Union Pacific railroad.
Safety	» Multiple corridors that are critical to freight mobility exhibit high crash rates. » Some at-grade rail crossings have experienced multiple crashes over the past ten years. » At-grade rail crossings and at-grade driveways/intersections on U.S. 101 contribute to safety challenges for trucks accessing farmland and agricultural facilities. » The region lacks truck parking capacity, which impacts the safety of truck drivers and the traveling public.
Resiliency	» Several of the region’s freight assets are at risk to disruption from sea level rise, flooding, and wildfires.
Equity	» Federal- and state-designated disadvantaged communities are disproportionately impacted by goods movement in the Central Coast, particularly in terms of safety and congestion.

Source: AMBAG; Cambridge Systematics; Fehr and Peers.

Stakeholders were engaged throughout the development of the Needs Assessment using the methods summarized in section 1.4. These initiatives provided insight on the region’s industries use of the freight system, identified the challenges associated with goods movement within the region, and opportunities for

improvement. A few major themes related to the region's freight needs that emerged from stakeholder engagement are summarized below:

- **Congestion and Reliability.** Historically, the region has not experienced the same type of investment in its highway truck capacity as other regions in California. Of the Central Coast region's approximate 3,926 lane-miles of principal arterial (expressways and freeways), about 85 percent are contained on U.S. 101. This illustrates that historical investments in throughput have focused on moving trucks north and south along the coast, but not east and west where they may access I-5 and rail intermodal terminals in the Central Valley. It also illustrates the lack of high-throughput route alternatives for trucks operating in the region.
- **Infrastructure Conditions.** Several freight corridors have poor pavement conditions. Additionally, there are some bridges in poor condition. However, poor condition bridges tend to be concentrated on roadways that do not carry significant volumes of truck traffic.
- **Freight Network Connectivity.** Stakeholders identified two primary challenges that impact network connectivity in the region: (1) at-grade rail crossings and (2) lack of east-west roadway connectivity in certain areas. At-grade rail crossings adjacent to U.S. 101 create mobility, accessibility, and safety challenges; these challenges are most prevalent in Monterey County near the City of Salinas.

Regarding east-west roadway connectivity, stakeholders observed that the region generally lacks east-west corridors. This creates access challenges for trucks that must reach areas that are not adjacent to U.S. 101 and that need to access I-5. The lack of east-west connectivity has been an ongoing issue for Central Coast shippers.

- **Safety.** Multiple freight corridors exhibit relatively high rates of truck-involved crashes. On average, thirteen people are killed year in truck-involved collisions each year in the California Central Coast. In addition to truck-involved crashes, stakeholders noted that the region generally lacks truck parking which poses a safety concern as fatigued drivers do not have many options for finding safe areas to rest.

The remainder of this section of the report provides a more detailed summary of the Central Coast region's freight needs and challenges. For more information, interested readers should refer to the technical memorandums included in the Appendix.

3.1 Congestion and Reliability

Fast and reliable truck transportation is critical to modern supply chains and the companies that rely on them. The ability of the Central Coast region to support these supply chains impacts economic development opportunities and quality of life across the region. As a result, addressing needs related to congestion and unreliability is a crucial element of the Sustainable Freight Study.

3.1.1 U.S. 101 Bottlenecks

The top ten bottlenecks on U.S. 101 are listed in Table 3 and shown in Figure 20 and Figure 21. The bottlenecks were ranked according in order of decreasing values of truck vehicle-hours of delay per mile

as calculated using data from the NPMRDS. The worst ranked freight bottleneck in the Central Coast is U.S. 101 Southbound from SR 129 in San Benito County to Dunbarton Rd. in Monterey County. That portion of U.S. 101 experiences approximately 6,314 truck-hours of delay annually. In addition, it has a truck BTI of 133 indicating very unreliable truck travel times. Furthermore, the bottlenecks tend to encompass (or are proximate to) interchanges with major east-west corridors such as SR 156 and SR 166.

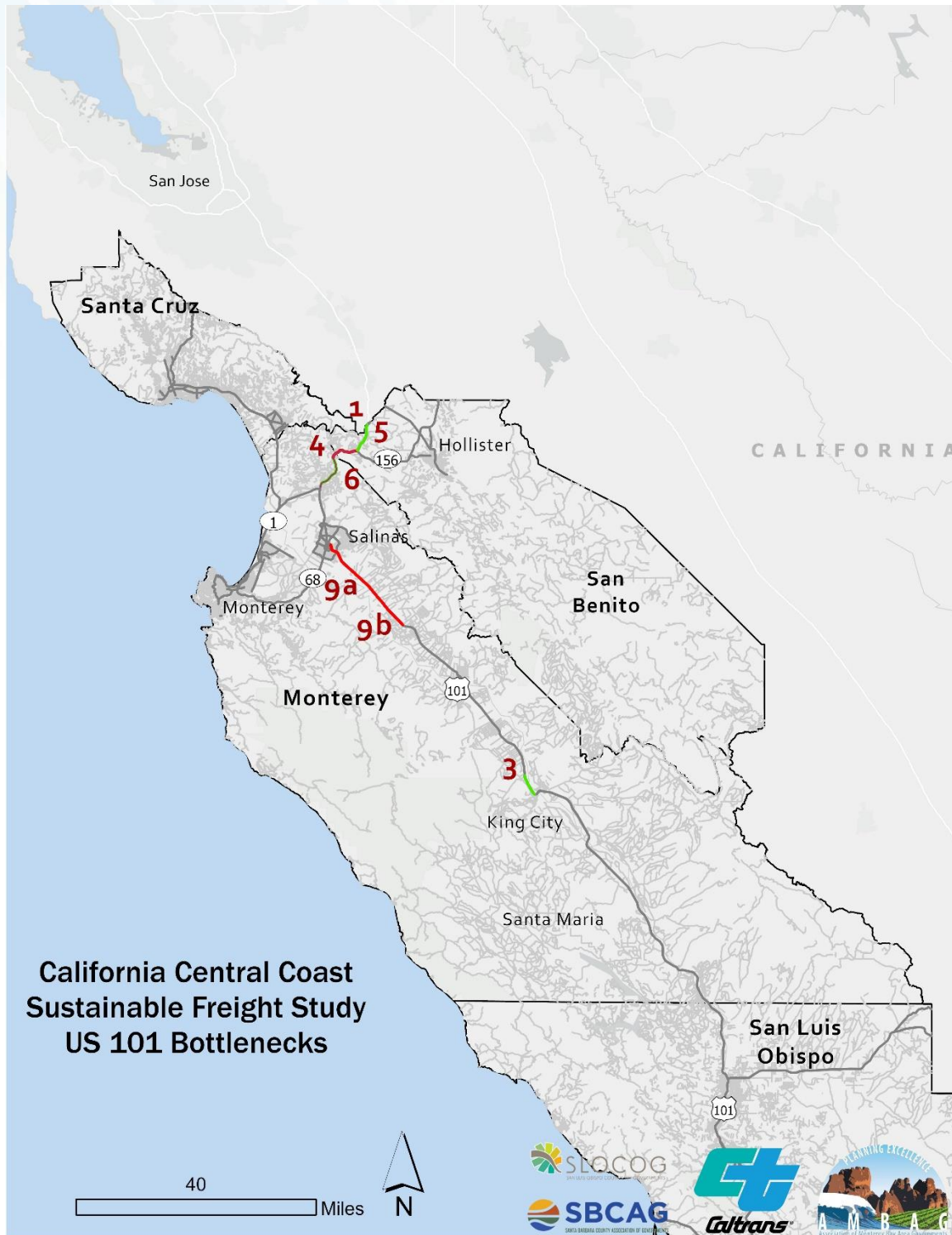
Table 3 Top Ten U.S. 101 Freight Bottlenecks

Rank	Location	Length (mi)	Counties	Directional Truck AADT	Annual Hours of Truck Delay per Mile	Avg. Maximum BTI	Avg. Maximum TTI	Avg. Maximum TTTR
1	U.S. 101 SB from SR 129 to Dunbarton Rd.	6.0	San Benito and Monterey	2,771	6,314	127.5	1.60	3.02
2	U.S. 101 SB from Tefft St. to SR 166	7.0	San Luis Obispo	2,706	4,605	50.2	1.34	1.72
3	U.S. 101 SB from Central Ave. to Jolon Rd.	2.8	Monterey	1,727	4,137	181.0	1.64	3.96
4	U.S. 101 SB from Dunbarton Rd. to San Miguel Canyon Rd.	4.3	Monterey	2,716	3,916	43.7	1.37	1.59
5	U.S. 101 NB from SR 156 to 0.5 miles north of Betabel Rd. Interchange	3.7	San Benito	2,883	3,060	59.7	1.34	1.83
6	U.S. 101 NB from Vierra Canyon Rd. to SR 156	8.4	Monterey and San Benito	2,265	2,903	19.4	1.26	1.27
7	U.S. 101 NB from Donovan Rd. to SR 166	3.8	Santa Barbara and San Luis Obispo	4,057	3,072	17.3	1.30	1.22
8	U.S. 101 NB from Santa Ynez Ave. to Ortega Hill Rd. On-Ramp	4.7	Santa Barbara	1,506	2,694	20.4	1.23	1.23
9a	U.S. 101 NB from Spence Rd. to Kern St. On-Ramp	6.5	Monterey	2,274	2,336	30.8	1.24	1.37
9b	U.S. 101 NB from Alta St. On-Ramp to Spence Rd.	8.1	Monterey	2,365	2,887	12.0	1.22	1.12
10	U.S. 101 NB from Wineman Rd. (north of SR 166) to Thompson	6.5	San Luis Obispo	2,809	2,739	124.7	1.71	2.96

Rd./Los Berros
Rd.

Source: National Performance Management Research Data Set; Cambridge Systematics.

Figure 20 Top Ten U.S. 101 Freight Bottleneck – North Central Coast



Source: National Performance Management Research Data Set; Cambridge Systematics.

Figure 21 Top Ten U.S. 101 Freight Bottleneck – South Central Coast



Source: National Performance Management Research Data Set; Cambridge Systematics.

3.1.2 Other Truck Bottlenecks and Critical Corridors

In addition to U.S. 101, other corridors important for goods movement were considered as part of the bottlenecks analysis. Like the analysis of U.S. 101 bottlenecks, the first step was to perform an initial screening of bottlenecks in order to obtain a set of candidate sites to be designated as freight bottlenecks. These sites were identified based on truck buffer time index (BTI), truck travel time index (TTI), and truck travel time reliability (TTTR). Truck delay was not calculated for these corridors as it would require data on hourly truck volumes for multiple corridors.

The bottlenecks are listed in Table 4 and depicted in Figure 22. In Santa Cruz County, the SR 1 corridor carries substantial volumes of freight traffic and experiences relatively high levels of truck congestion and unreliability as indicated by TTTR, TTI, and BTI. Challenges on SR 1 extend into Monterey County as multiple segments on that corridor experience TTTR values exceeding 2.0, TTI values greater than 1.5, and BTI values of 70 or more. Also in Monterey County, there are challenges on east-west corridors important for freight mobility. Specifically, SR 156 and SR 68 provide connectivity between the north-south corridors SR 1 and U.S. 101. Both of these corridors exhibit congestion and poor travel time reliability. The challenges on SR 156 extend into San Benito County as it provides access to I-5 (via SR 152) further east in Merced County. This route serves as the closest east-west route to Monterey, Santa Cruz, and San Benito Counties with the next closest major east-west truck route being over 70 miles north through Bay Area to SR 580.

Table 4 Other Central Coast Truck Bottlenecks

Location	Length (mi)	Counties	Avg. Truck AADT	Avg. Maximum TTTR	Avg. Maximum TTI	Avg. Maximum BTI
SR 1 SB from Emilene St. to State Park Dr.	7.1	Santa Cruz	1,877	4.03	3.65	143.1
SR 1 NB from Rio Del Mar Blvd. to Commercial Way	6.2	Santa Cruz	1,955	3.11	1.99	118.1
SR 156 NB/SB between SR 1 and U.S. 101	5.8	Monterey	1,246	2.24	1.52	81.2
SR 1 NB/SB between Dolan Road and Del Monte Blvd. (North)	6.3	Monterey	1,273	2.05	1.51	72.6
SR 1 NB from Sloat Ave./Old Golf Course Rd. to Del Monte Blvd.-Reindollar Ave. Intersection	10.6	Monterey	686	2.44	1.98	80.4
SR 1 SB from Sloat Ave./Old Golf Course Rd. to Carpenter St.	10.5	Monterey	760	2.53	1.59	101.2

Location	Length (mi)	Counties	Avg. Truck AADT	Avg. Maximum TTTR	Avg. Maximum TTI	Avg. Maximum BTI
SR 68 EB/WB between SR 1 and Reservation Rd./River Rd.	13.4	Monterey	820	2.67	2.07	89.7
SR 156 NB/SB between Fairview Rd. and Lucy Brown Rd.	14.5	San Benito	1,578	2.16	1.74	75.3
SR 46 EB/WB between U.S. 101 and San Luis Obispo-Kern County Line	75.1	San Luis Obispo	1,354	1.23	1.14	17.7
SR 166 between U.S. 101 and San Luis Obispo-Santa Barbara-Kern County Lines	64	San Luis Obispo and Santa Barbara Counties	NA	NA	NA	NA

Source: National Performance Management Research Data Set, 2022; Cambridge Systematics.

It should be noted that in San Luis Obispo and Santa Barbara Counties, freight bottlenecks were generally concentrated on U.S. 101. Though there are other corridors in both counties with freight-related performance challenges in terms of the selected performance measures that are not listed in Table 4, those corridors tend to carry relatively low volumes of trucks. As a result, those corridors were not identified as freight bottlenecks.

Figure 22 Freight Bottlenecks



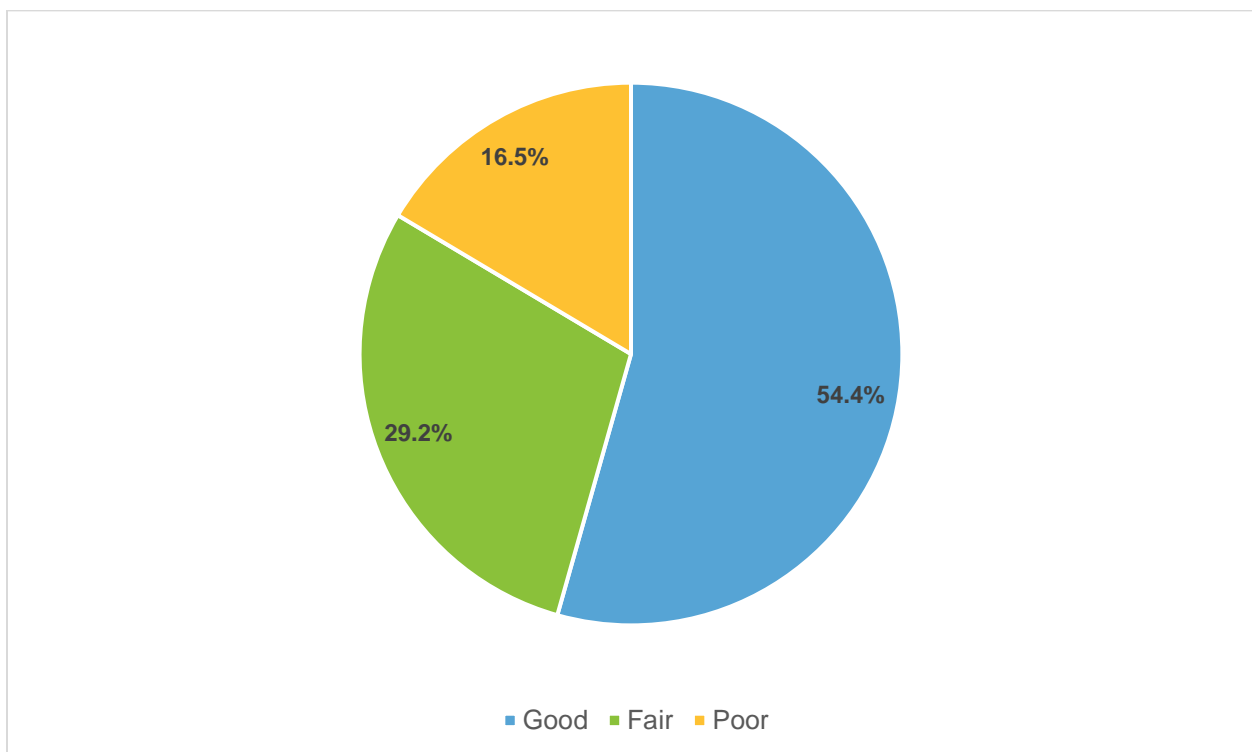
Source: National Performance Management Research Data Set; Cambridge Systematics.

3.2 Infrastructure Conditions

Poor pavement and bridge conditions can impact the cost and safety of travel for passengers and freight. Cracked and rutting roadway surfaces can cause additional wear and tear on freight vehicles as well as damage the goods they are transporting. They can also result in increased travel times and negatively impact safety if drivers maneuver into other lanes to avoid potholes or other condition-related hazards. Building and maintaining the freight network to a condition that facilitates the efficient movement of goods is a critical regionwide need.

Pavement conditions throughout the Central Coast are summarized in Figure 23. Figure 23 shows the percentage of lane-miles in good, fair, or poor condition for major collectors and higher. It indicates that about 84 percent of the region's pavements may be considered to be in good to fair condition. Poorer pavements are largely concentrated on the region's non-freeway/non-expressway principal arterials. These include corridors such as SR 1 in Santa Cruz County, SR 156 in San Benito County, SR 68 in Monterey County, SR 46 in San Luis Obispo County, and SR 1 in Santa Barbara County.

Figure 23 International Roughness Index Rating by Lane-Miles for Major Collectors and Higher in the Central Coast

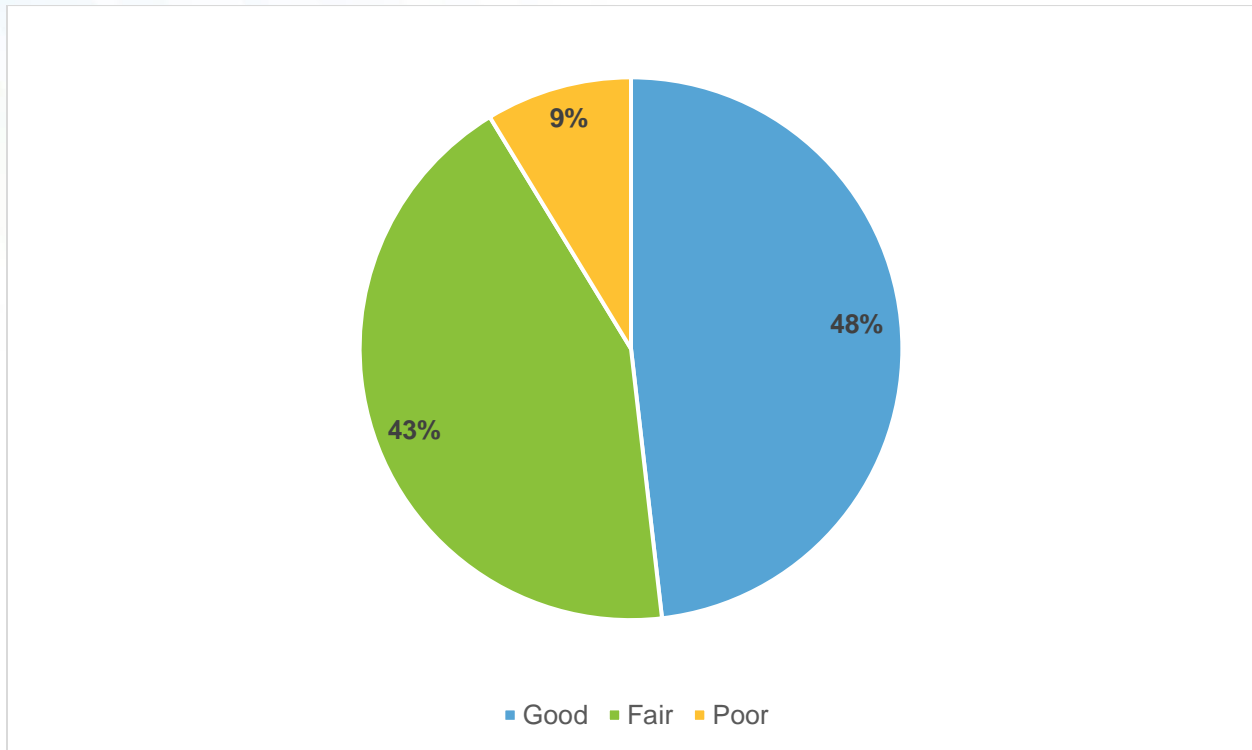


Source: Highway Performance Monitoring System, 2020; Cambridge Systematics, Inc. analysis.

In addition to pavements, bridge conditions are also important to consider from a freight mobility perspective. Bridges that cannot handle typical truck sizes or weights may contribute to congestion and lead to significant re-routing as trucks find alternative detours. If a truck cannot pass over a bridge and does not have a close alternative route, the detour can prove costly in both time and money. One of the reasons a bridge can be a barrier for certain trucks is if the bridge is in poor condition.

Bridge conditions in the Central Coast region are summarized in Figure 24. It shows that approximately 91 percent of the region's bridges are in good to fair condition.

Figure 24 Bridge Conditions in the Central Coast, 2022



Source: National Bridge Inventory, 2022; Cambridge Systematics, Inc. analysis.

3.3 Safety

Transportation safety is extremely important and is one of the highest priorities at all levels of transportation planning and engineering – national, statewide, regional, and local. Understanding freight safety and related performance is a critical component necessary for addressing frequency and severity of incidences and the overall impact they have on congestions and delays within the overall multimodal freight network.

This section of the report presents an assessment of freight-related (i.e., truck-involved) collisions for the most recent five-year period from 2017 through 2021 in Santa Cruz, Monterey, San Benito, San Luis Obispo, and Santa Barbara counties. Collision records are from the Statewide Integrated Traffic Record System (SWITRS).

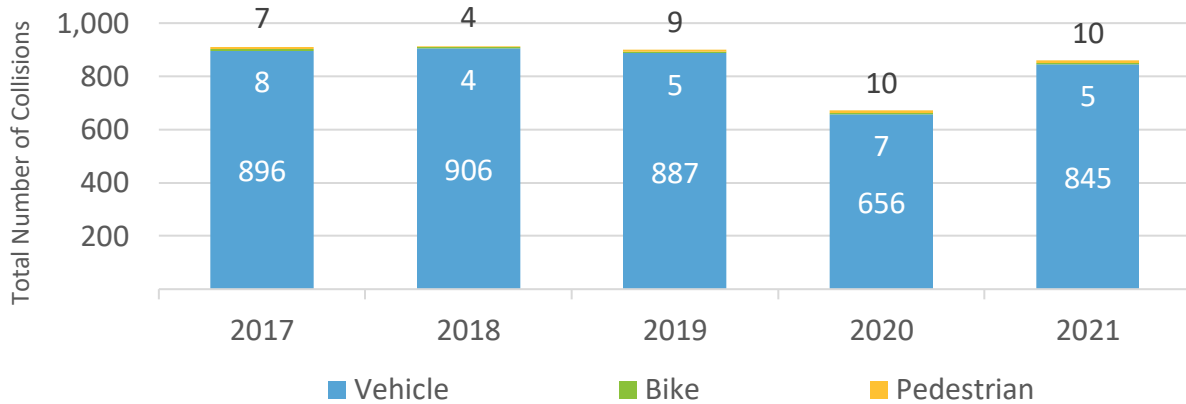
KILLED OR SEVERELY INJURED (KSI)

Severe injuries due to a traffic collision can result in a number of catastrophic impacts, including permanent disability, lost productivity and wages, and ongoing healthcare costs.

Throughout this chapter, the acronym KSI is used to denote collisions where someone was killed or severely injured.

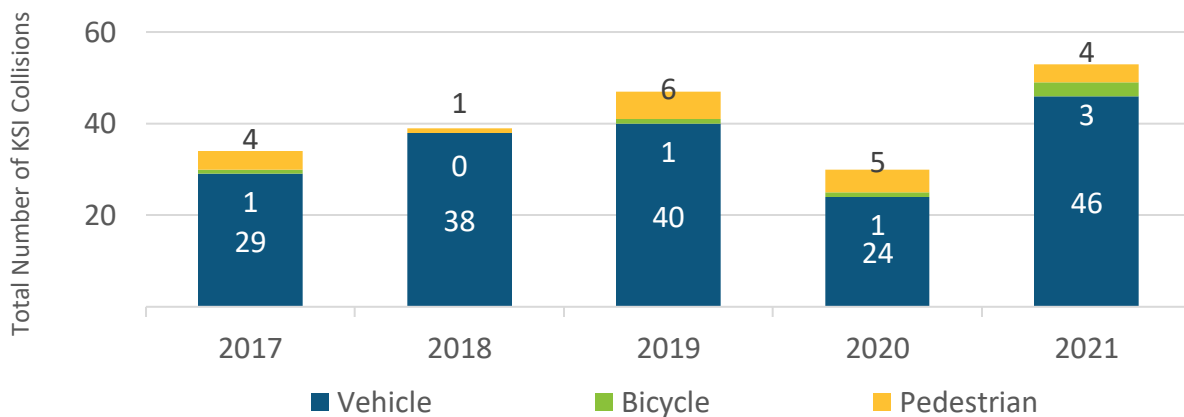
From 2017 to 2021, there were 4,259 total truck-involved collisions as shown in Figure 25. Figure 26 shows that among total truck-involved collisions, 203 (or 5 percent) included victims who were killed or severely injured (KSI). On average, thirteen people are killed year in truck-involved collisions each year in the California Central Coast.

Figure 25 Truck-Involved Collisions by Year, 2017-2021



Source: Statewide Integrated Traffic Record System; Fehr & Peers.

Figure 26 Truck-Involved KSI Collisions by Year, 2017-2021



Source: Statewide Integrated Traffic Record System; Fehr & Peers.

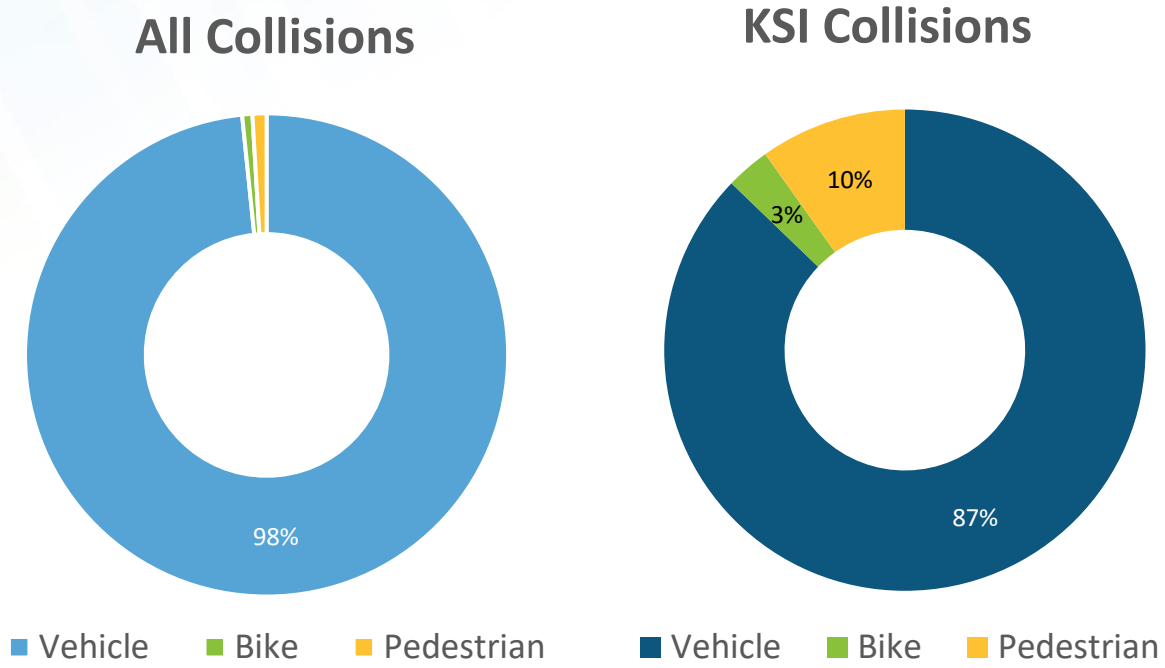
Overall, the number of truck-involved collisions across the region have declined in the last five years, as shown in Figure 25. However, KSI truck-involved collisions have steadily increased, as shown in Figure 26. There was a decrease in overall collisions in 2020, likely attributed to the COVID-19 pandemic and overall reduction in traffic volume.

3.3.1 Collisions by Mode

People walking and biking are involved in 2 percent of all truck-involved collisions in the California Central Coast but are disproportionately involved in 13 percent of all truck-involved KSI collisions, as shown in

Figure 27. Pedestrians are particularly over-represented in KSI collisions, as they are involved in 1 percent of all truck-involved collisions but 10 percent of all truck-involved KSI collisions.

Figure 27 Truck-Involved Collisions by Mode, 2017-2021

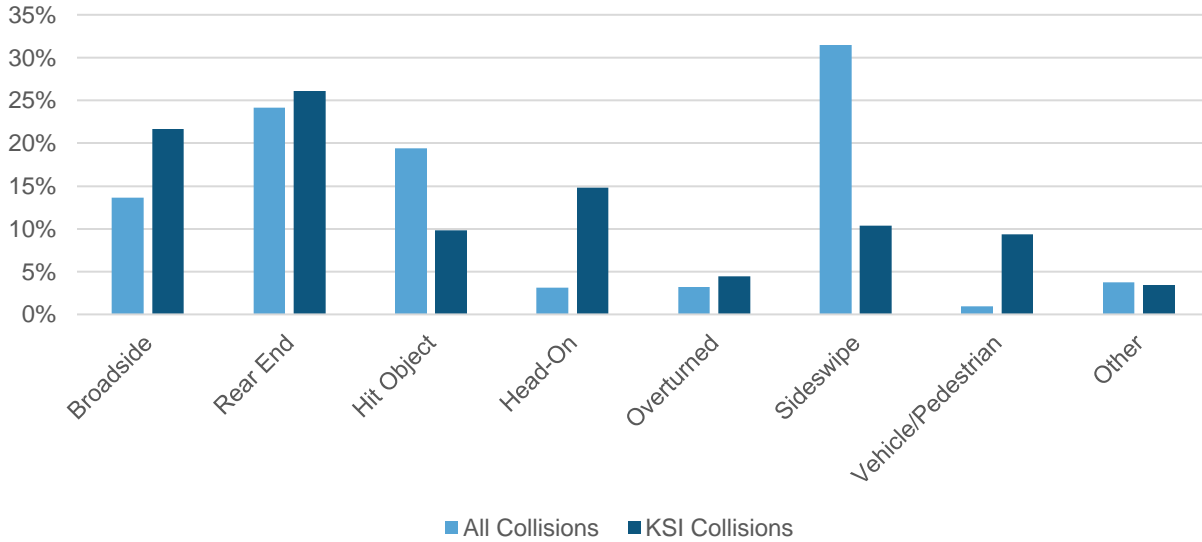


Source: Statewide Integrated Traffic Record System; Fehr & Peers.

3.3.2 Collisions by Type

The three most common truck-involved collision types across the five counties are sideswipe (32 percent), rear end (24 percent), and hit object (19 percent) collisions, as shown in Figure 28. Examining truck-involved KSI collisions, rear end collisions account for the largest share of collision types (26 percent), followed by broadside (22 percent), and head-on (15 percent). Rear end collisions rank second highest amongst all truck-involved collisions and highest amongst truck-involved KSI collisions.

Figure 28 Truck-Involved Collisions by Type, 2017-2021



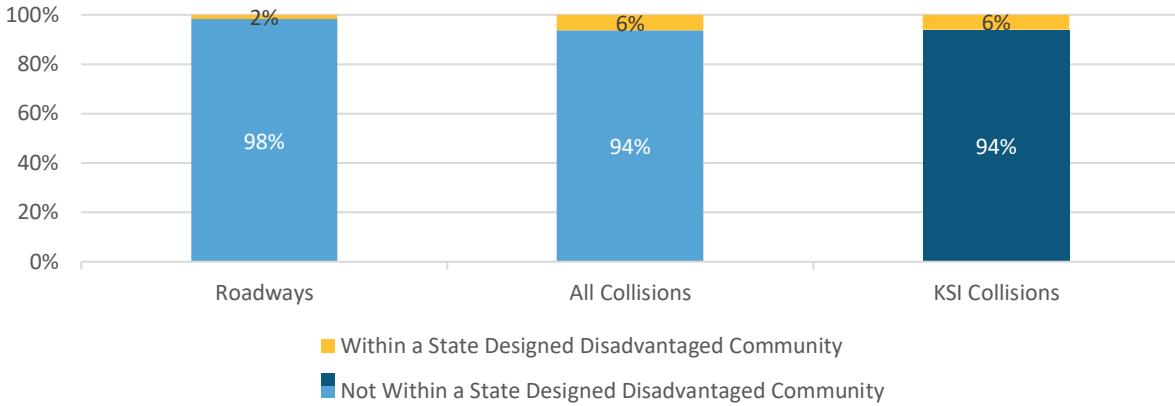
Source: Statewide Integrated Traffic Record System; Fehr & Peers.

3.3.3 Disadvantaged Communities

In the State of California, disadvantaged communities refer to census tracts which most suffer from a combination of economic, health, and environmental burdens. These burdens include poverty, high unemployment, air and water pollution, presence of hazardous wastes, and high incidence of asthma and heart disease. Environmental justice seeks to address a history of unfair treatment of communities, predominantly communities of people of color and/ or low-income residents as it pertains to transportation and infrastructure decision-making. As shown in Figure 29, 2 percent of roadways within the five counties are located within a state designated disadvantaged community, however state designated disadvantaged communities disproportionately represent 6 percent of all truck-involved collisions and 6 percent of truck-involved KSI collisions.

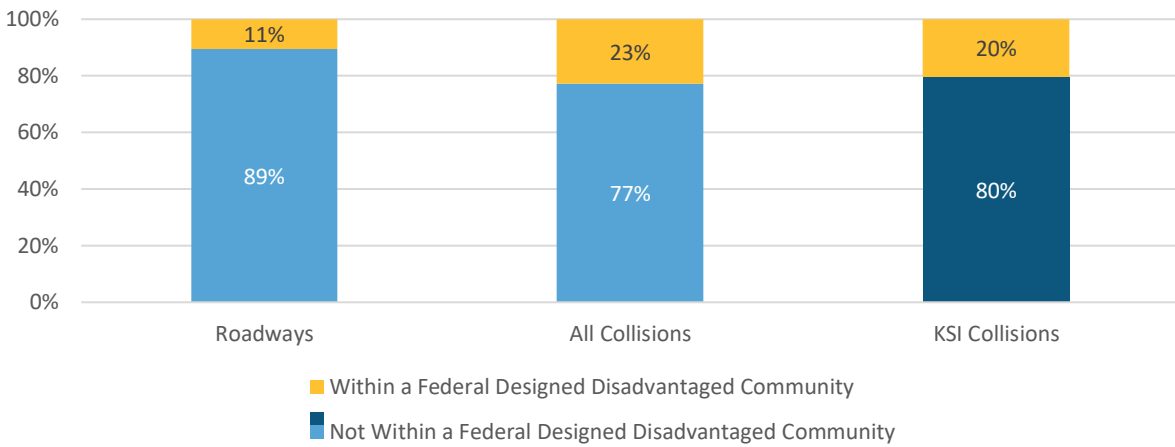
At the federal level, disadvantaged communities refer to census tracts that exceed the 50th percentile (75th for resilience) across at least four of the following six transportation disadvantaged indicators, 1) Transportation Access, 2) Health, 3) Environmental, 4) Economic, 5) Resilience, and 6) Equity. As shown in Figure 30, 11 percent of County-maintained roadways are located within a federally designated disadvantaged community, however federally designated disadvantaged community disproportionately represent 23 percent of all truck-involved collisions and 20 percent of truck-involved KSI collisions.

Figure 29 State Designated Disadvantaged Communities, 2017 – 2021



Source: Statewide Integrated Traffic Record System; Fehr & Peers.

Figure 30 Federal Designated Disadvantaged Communities, 2017 - 2021



Source: Statewide Integrated Traffic Record System; Fehr & Peers.

3.3.4 Systemic Trends and Strategies

Systemic analysis is a proactive safety approach that focuses on evaluating collision history across all roadways on an aggregate basis to identify high-risk roadway characteristics in addition to looking at high-collision locations.

Collision data from SWITRS is not mapped and therefore cannot be used in the systemic analysis. Instead, collision data from the Transportation Injury Mapping System (TIMS) published by the University of California, Berkely was used for the systemic analysis. The dataset is nearly identical, however non-injury collisions (i.e., “property-damage-only” collisions) are excluded from the dataset.

WEIGHTED COLLISION SCORE

The Weighted Collision Score represents the overall cost of collisions, weighted by the severity of a collision.

According to the 2020 Caltrans Local Roadway Safety Manual (LRSM), “fatal and severe injury” collisions are 27 times more costly than “complaint of pain injury” collisions. “Visible injury” collisions are twice as costly as complaint of pain injury” collisions.

A systemic analysis was performed for truck-involved collisions on all roadways within the five-county California Central Coast. Truck-involved collision attributes were cross-examined to populate a set of matrices. The matrices allow for the identification of the combinations of factors that contributed to the highest density of collisions resulting in severe injury or fatalities, and combinations that led to the highest Weighted Collision Score.

The Weighted Collisions Scores identified three collision profiles. Each collision profile highlights key locations throughout our 5 counties study area and a set of recommended countermeasures aimed at reducing the number and severity of collisions.

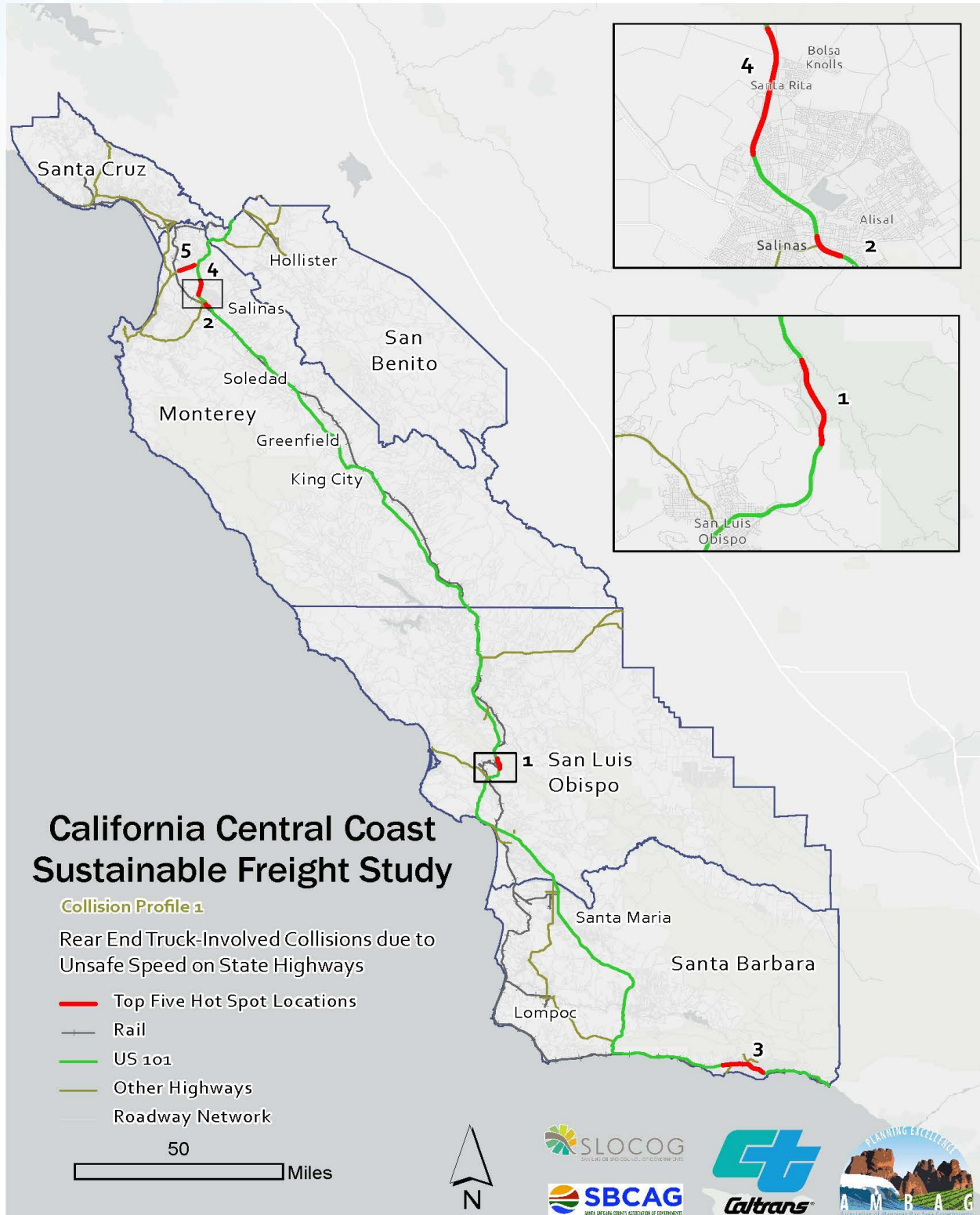
Collision Profile 1: Truck-Involved Rear End Collisions due to Unsafe Speed on State Highways

40 percent of truck-involved collisions and 39 percent of truck-involved KSI collisions occur on State Highways. Rear End Collisions due to Unsafe Speed on State Highways represents 11 percent of all truck-involved collisions and 15 percent of truck-involved KSI collisions.

Hot spot locations where Collision Profile 1 is most prevalent are shown in Figure 31 and are listed below:

1. U.S 101 between West Cuesta Ridge Trailhead and Old Stage Coach Road, San Luis Obispo County (Northwest of San Luis Obispo, CA).
2. U.S. 101 between Alisal Street and Sanborn Road, Monterey County (Salinas, CA)
3. U.S. 101 between Los Carneros Road and Carrillo Street, Santa Barbara County (Between Goleta and Santa Barbara, CA)
4. U.S. 101 between Sala Road and Laurel Drive, Monterey County (Salinas, CA)
5. SR 156 between Castroville Boulevard and Meridian Road, Monterey County (West of Castroville, CA)

Figure 31 Collision Profile 1: Truck-Involved Rear End Collisions due to Unsafe Speed on State Highways



Source: Transportation Injury Mapping System; Fehr & Peers.

Countermeasures for Collision Profile 1 are provided in Table 5.

Table 5 Truck-Involved Collision Profile 1 Countermeasures

Engineering Countermeasures	Crash Reduction Factor
Install deceleration/acceleration lanes, truck climbing lanes.	25%
Add two-way left-turn lane	30%
High friction surface treatment along curved roadway segments.	55%
Install chevron signs on horizontal curves.	40%
Install curve advance warning signs (potentially with flashing beacon)	25-30%
Install dynamic/variable speed warning signs.	30%

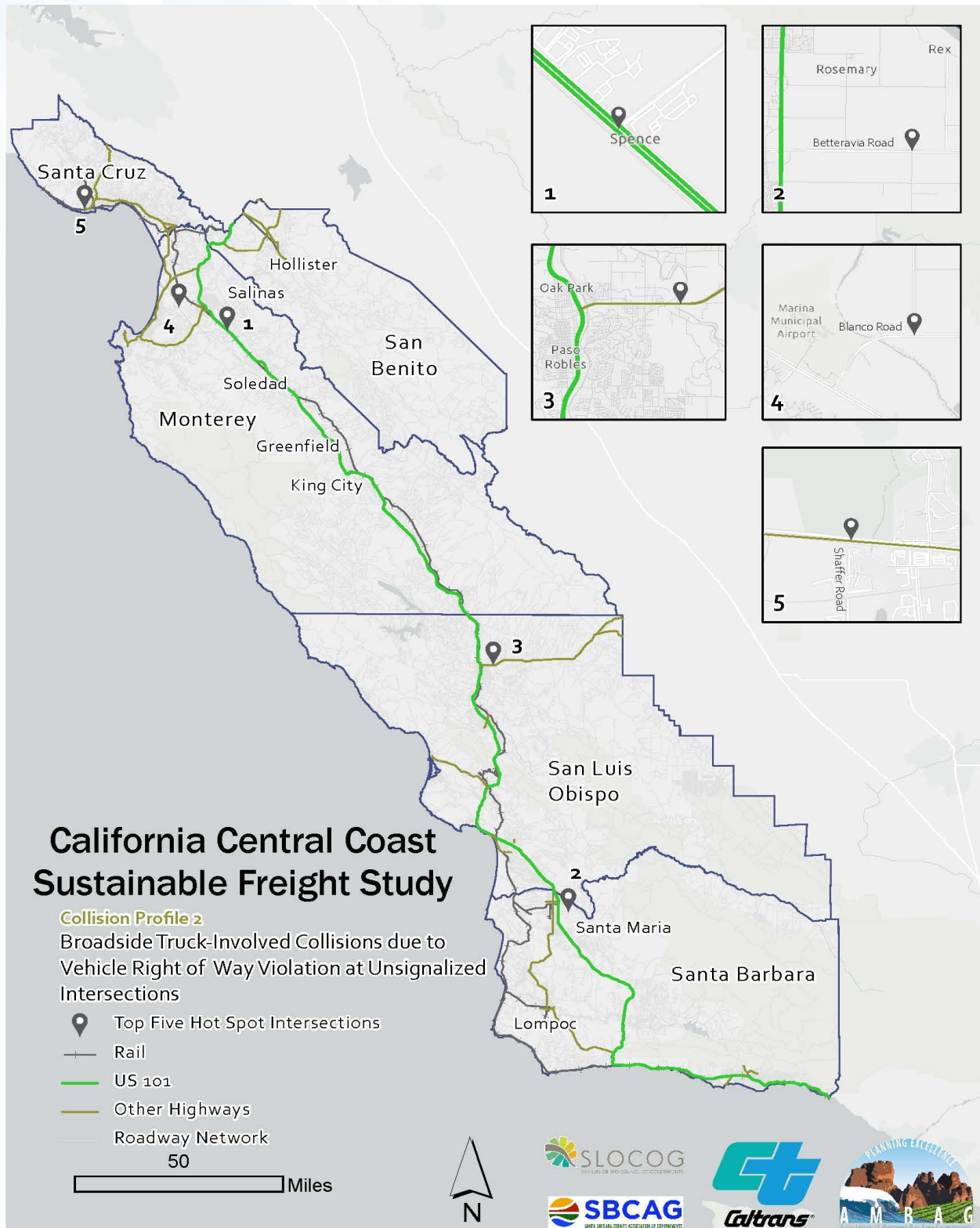
Collision Profile 2: Truck-Involved Broadside Collisions due to Vehicle Right of Way Violation at Unsignalized Intersections

Broadside Collisions due to Vehicle Right of Way Violation at Unsignalized Intersections represent 4 percent of all truck-involved collisions and 5 percent of truck-involved KSI collisions. Within Collision Profile 2, 40 percent of parties failed to yield to opposing traffic.

Hot spot locations where Collision Profile 2 is most prevalent are shown in Figure 32 and are listed below:

1. Unsignalized intersection at U.S. 101 & Spence Road, Monterey County (South of Salinas, CA)
2. Unsignalized intersection at Telephone Road & Betteravia Road, Santa Barbara County (West of Santa Maria, CA)
3. Unsignalized intersection at SR 46 & Airport Road, San Luis Obispo County (Paso Robles, CA)
4. Unsignalized intersection at Blanco Road & Cooper Road, Monterey County (East of Salinas, CA)
5. Unsignalized intersection at SR 1 and Shaffer Road, Santa Cruz County (Santa Cruz, CA)

Figure 32 Collision Profile 2: Truck-Involved Broadside Collisions due to Vehicle Right-of-Way Violation at Unsignalized Intersection



Source: Transportation Injury Mapping System; Fehr & Peers.

Countermeasures for Collision Profile 2 are provided in Table 6.

Table 6 Truck-Involved Collision Profile 2 Countermeasures

Engineering Countermeasures	Crash Reduction Factor
Install signals.	30%
Install intersection warning signs.	15%
Install flashing beacon on stop-controlled approaches.	15%
Install transverse rumble strips on stop-controlled approaches.	20%
Install splitter islands on the minor road approaches.	40%

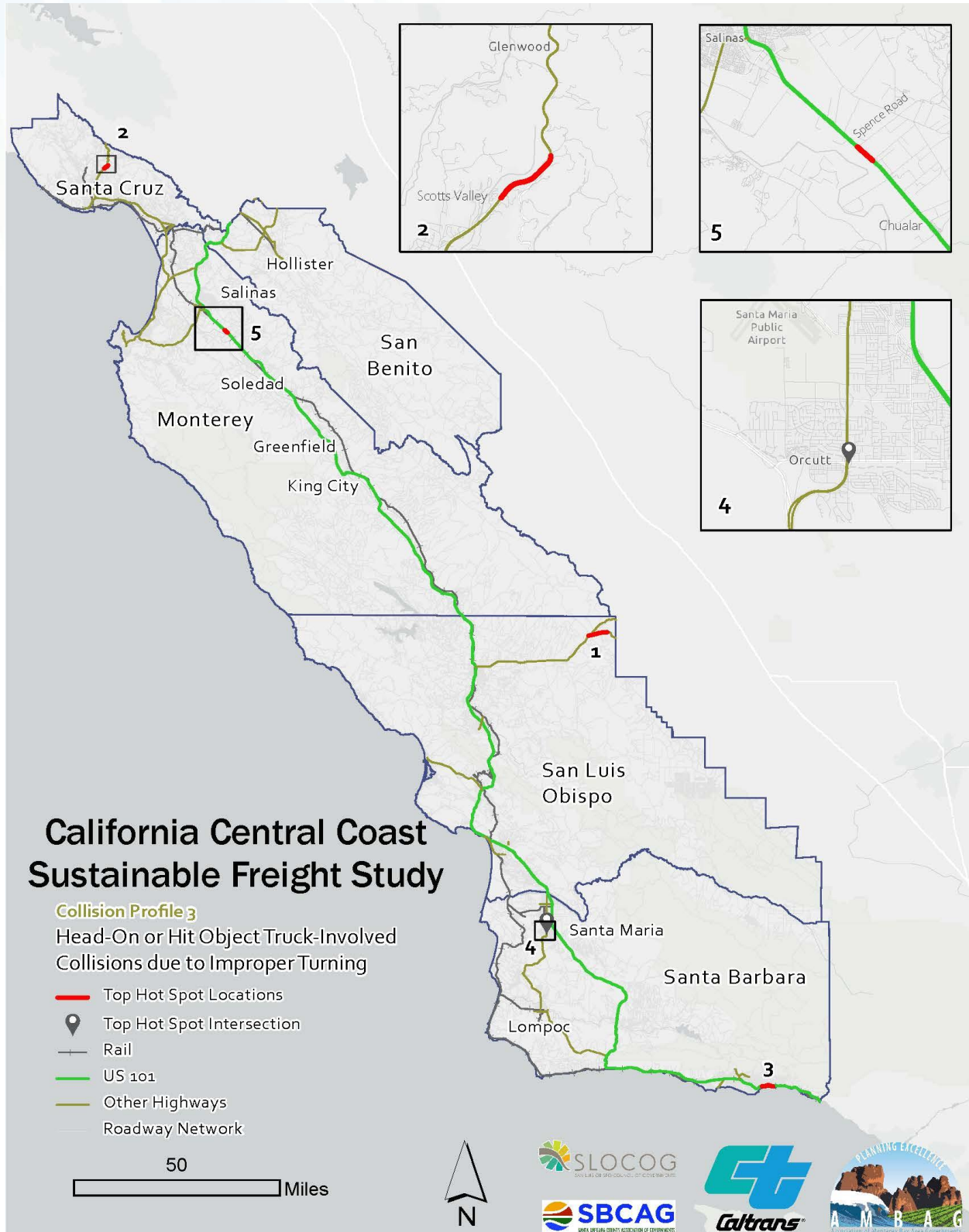
Collision Profile 3: Truck-Involved Hit Object and Head-On Collisions due to Improper Turning

Hit Object and Head-On Collisions due to Improper Turning represent 8 percent of all truck-involved collisions and 7 percent of truck-involved KSI collisions.

Hot spot locations where Collision Profile 3 is most prevalent are shown in Figure 33 and are listed below:

1. SR 46 between Davis Road and Antelope Road
2. SR 17 between Jarvis Road and Crescent Drive
3. U.S. 101 between Quarantina Street and Spring Road
4. SR 135/Clark Avenue Interchange
5. SR 101 between Spence Road and Potter Road

Figure 33 Collision Profile 3: Truck-Involved Hit Object and Head-On Collisions due to Improper Turning



Source: Transportation Injury Mapping System; Fehr & Peers.

Countermeasures for Collision Profile 3 are provided in Table 7.

Table 7 Truck-Involved Collision Profile 3 Countermeasures

Engineering Countermeasures	Crash Reduction Factor
For rural two-lane road: Install no-passing line or widen center median to provide a horizontal buffer (for cars in opposing directions to mistakenly draft, run over the centerline rumble strip and then space to recover without crossing into opposing lane of traffic)	45%
On state routes and rural roads: Install centerline rumble strips/stripes	20%
On state routes and rural roads: Install edgeline rumble strips/stripes	15%
At interchanges: Restripe lanes at intersection and set-back stop bars to accommodate left turning trucks	-

3.3.5 Hot Spots and Strategies

Hot spot analysis is a traditional safety approach that identifies high-risk locations based on collision history. Locations that account for a disproportionate share of collisions were identified as hot spots. Collision data from TIMS was used for the hot spot analysis.

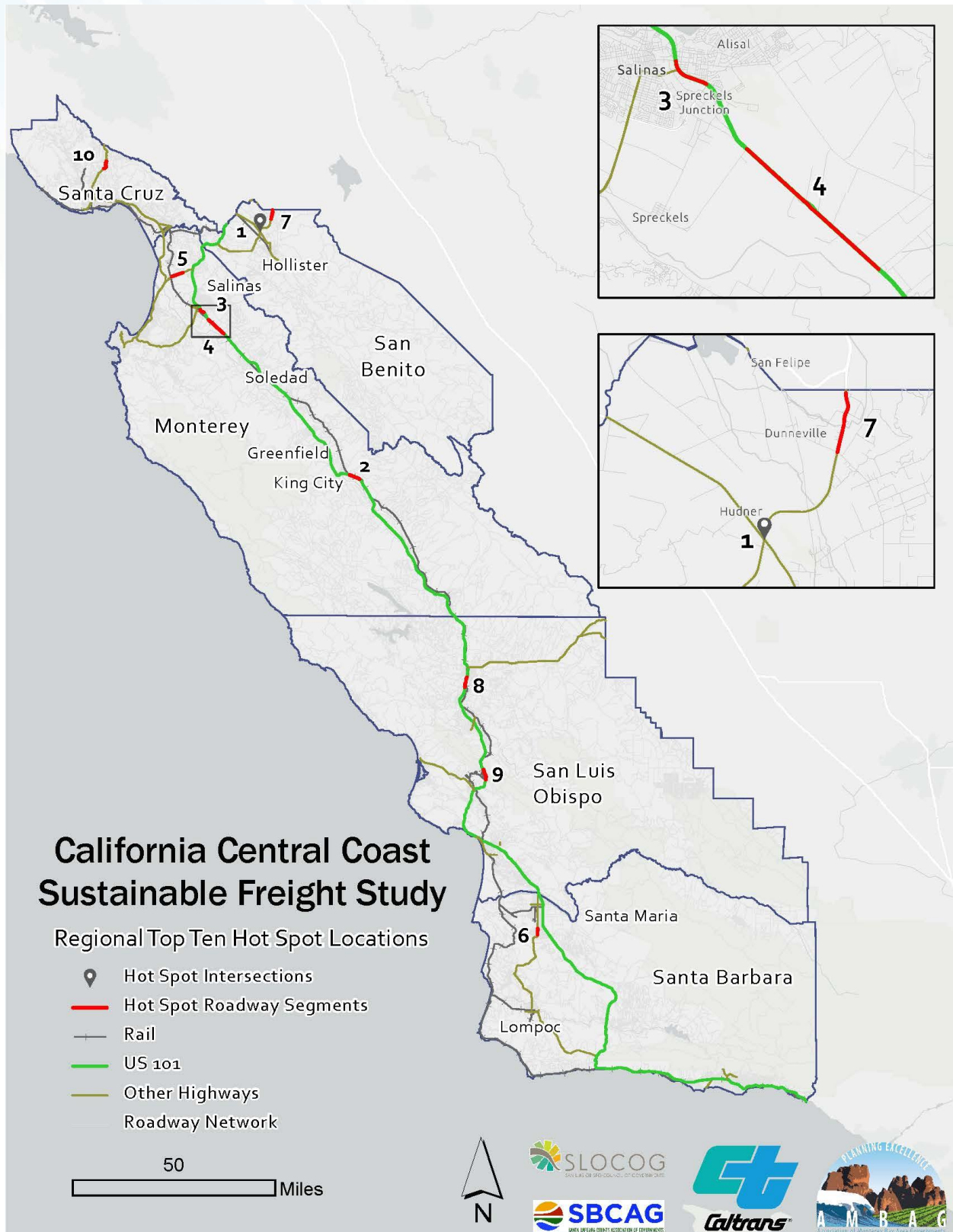
A hot spot analysis was performed to identify the top ten locations within the five-county California Central Coast with the highest density of collisions resulting in severe injury or fatalities, and locations with the highest Weighted Collision Score, as shown in Figure 34. Additionally, the top three “hot spot” locations in each county are included, as shown in Table 8.

Table 8 Truck-Involved Collision Hot Spot Locations, 2017-2021

Top 10 Rank	Collision Hot Spot Locations	Length (mi.)	Collisions		Disadvantaged Community
			Total	KSI	
Santa Cruz County					
10	SR 17 between Vine Hill Road and Eagle Crest Drive	1.8	4	2	-
-	SR 129 between SR 1 and Lakeview Road	3.7	6	3	State & Federal
-	SR 1 and Main Street between San Andreas Road and Green Valley Road	6.4	10	3	-
Monterey County					
2	U.S. 101 between King City and Welby	2.3	6	5	-
3	U.S. 101 between Alisal Street and Sanborn Road	1.2	7	2	State & Federal
4	U.S. 101 between Harris Road and Potter Road	5.1	33	8	-
5	SR 156 between Castroville Boulevard and Oak Hills Drive	2.9	11	4	Federal
San Benito County					
1	Signalized Intersection of SR-156 & SR-25	-	17	4	Federal
7	SR-156 between Fairview Road and Barnheisel Road	2.3	5	3	Federal
-	U.S. 101/SR 156 between Chittenden Road and Rocks Road	3.2	10	3	-
San Luis Obispo County					
8	U.S. 101 between Niblick Road and Volpi Ysabei Road	2.6	11	3	-
9	U.S. 101 between West Cuesta Ridge Trailhead and Old Stage Coach Road	2.6	9	3	-
-	SR-46 between Davis Road and Antelope Road	4.7	8	5	-
Santa Barbara County					
6	SR-135 between Foster Road and Clark Avenue	3.0	11	3	Federal
-	U.S. 101 between Micheltorena St and Milpas Street	1.6	5	2	-
-	U.S. 101 between Los Carneros Road and San Marcos Pass Road	6.2	16	2	State

Source: Truck-Involved Injury Collisions from Transportation Injury Mapping System (TIMS), 2017-2021.

Figure 34 Top Ten Truck-Involved Collision Hot Spots, 2017-2021



Source: Truck-Involved Injury Collisions from Transportation Injury Mapping System (TIMS), 2017-2021.

3.4 Resiliency

Over the last decade, metropolitan planning organizations (MPOs), state departments of transportation (DOTs), and other transportation agencies have taken steps to assess the vulnerability of transportation infrastructure to extreme weather events and to integrate resilience planning considerations into transportation decision-making. The Federal Highway Administration (FHWA) defines resilience as “the ability to anticipate, prepare for, and adapt to, changing conditions and withstand, respond to, and recover rapidly from disruptions.” Freight resiliency entails the ability of the multimodal freight network to withstand disruptions with minimal impacts to safety and the economy. As large-scale disruptions to the freight network and associated supply chains have become more common, resiliency has become a much more important component of freight transportation planning and represents a pressing need for the Central Coast region.

The 2023 California Freight Mobility Plan (CFMP) observed that “resilience in the state’s freight system is needed for California to meet its growing needs for efficient freight mobility, as well as to help meet challenges presented by California’s changing climate and human threat landscape impacts.” Transportation investments to improve resiliency are needed to prevent extreme weather events from resulting in faster deterioration of infrastructure, increased system disruptions, and a loss of economic competitiveness. The 2023 CFMP identified the implications of climate change for the resiliency of the State’s multimodal freight network. Those potential outcomes are relevant for the Central Coast and are summarized in Table 9.

Table 9 Key Findings Adapted from California’s Fourth Climate Change Assessment to Include Potential Impacts to Freight Systems

Climate Stressor	Future Change	Impacts to Freight
Temperature	By 2100: Estimated 5.6° to 8.8° increase in daily temperature	Increase in daily temperatures can lead to hotter warehouses and damage to truck tires and engines. Workers will need more protections from overheating (e.g., access to air conditioning, more frequent breaks, and shorter shifts).
Water	By 2050: Water supply from snowpack is projected to decline by two-thirds	Agricultural shortages could arise from the limited water supply, which would change patterns of freight from California’s Central Valley to more reliance on food imports from other countries.
Wildfire	By 2100: Average land area burnt will increase by 77 percent	Road closures from damaged highways could result in freight trucks needing to be rerouted to other highways that may be further away, thus increasing delivery and shipping costs and times.
Sea Level Rise	By 2100: <ul style="list-style-type: none"> » 31%-67% of Southern California beaches may completely erode » \$17.69 billion worth of residential and commercial buildings could be inundated statewide 	Inundation could cause relocation of container yards, commercial buildings, and warehousing, especially those found in coastal areas that have not implemented adaptation measures. Impacts from sea level rise are projected to inhibit operations and accessibility for rail and vehicular facilities at all of California’s ports. Flooding of highways will lead to road closures which could affect the trucking industry.

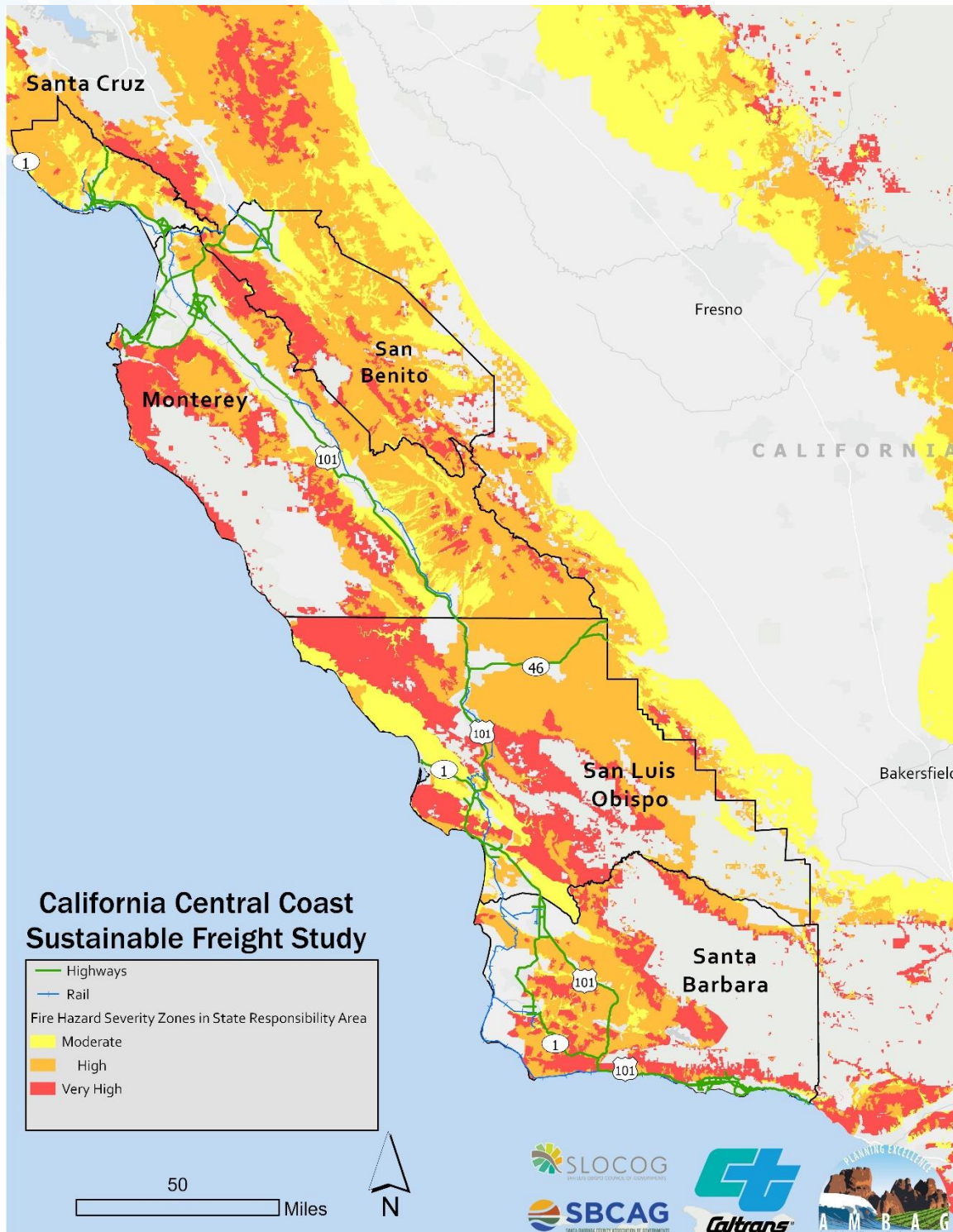
Climate Stressor	Future Change	Impacts to Freight
	» The number of highway miles exposed to coastal flooding will triple	

Source: Caltrans, California Freight Mobility Plan 2023.

While all of the climate stressors presented in Table 9 are relevant for the Central Coast, wildfires, sea level rise, and flooding are of particular concern. In October 2007, devastating wildfires driven by strong Santa Ana winds burned hundreds of square miles in Southern California. Overhead utility power lines and aerial communication facilities near power lines are believed to have been contributing factors. The wildfires that now occur nearly year-round in California are recent examples highlighting the need for a resilient freight system. From 2017 to 2022 California experienced some of the most devastating fires in its history. These fire events interrupted freight rail and roadway mobility and closed freight-related businesses. Figure 35 shows areas where there is an increased risk for wildfires associated with utilities such as overhead utility power lines and aerial communication facilities near power lines.¹³

¹³ <https://www.cpuc.ca.gov/industries-and-topics/wildfires/fire-threat-maps-and-fire-safety-rulemaking>

Figure 35 Fire Risk Exposure



Source: California Public Utilities Commission, 2021.

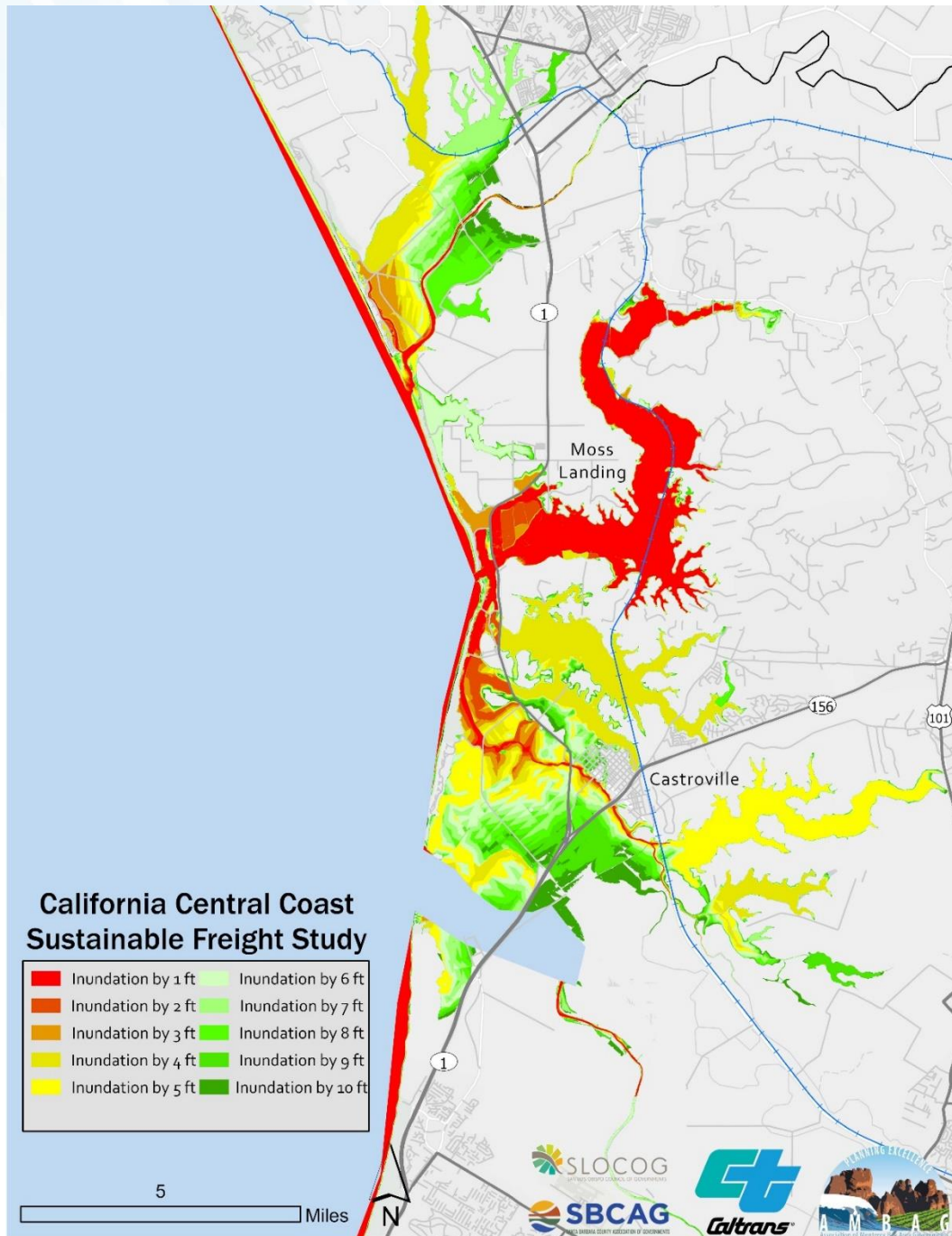
Due to its geography, the Central Coast region's people, infrastructure, and economic assets (namely farmland) will be susceptible to sea level rise in the future. Sea level rise will not only affect areas of the

Central Coast region closest to the ocean. When the sea level rises, more ocean water will enter drainage systems that currently empty into the ocean, and water will cause backpressure in these pipes. Water can spill out into the streets far away from the ocean and cause additional flooding. The National Oceanic and Atmospheric Administration (NOAA) Center for Operational Oceanographic Products and Services estimates that the sea level around the Central Coast will increase between 1 to 6.25-feet between 2020 and 2100.¹⁴

Different parts of the Central Coast region have varying levels of vulnerability to sea level rise. As an example, Figure 36 depicts sea level rise vulnerability for the Moss Landing and Castroville portion of the region. It shows areas that are likely to be inundated by different scales of sea level rise. Areas along the coast (including Elkhorn Slough) and the Salinas River are most susceptible to sea level rise, with only one foot of additional sea level enough to inundate most of these locations. Further south in Santa Barbara County, the Santa Barbara Airport (which is adjacent to the Goleta Slough State Marine Conservation Area) is one of the most susceptible areas to sea level rise. SR 217, which provides access to the airport, would likely be impacted with only one foot of sea level rise. It should be noted that though inundation by 5 or more feet of sea level rise is included in Figure 36, that magnitude of sea level rise is linked to very long-term projections - beyond the turn of the century. Inundation by 4-feet or less is more consistent with a 30- to 50-year planning horizon.

¹⁴ https://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?id=9413450#tab50yr

Figure 36 Sea Level Rise Exposure –Moss Landing and Castroville



Source: National Oceanic Atmospheric Administration, 2022.

Related to sea level rise, the Central Coast region is also susceptible to flooding. Floods occur when water from different sources overflow their typical boundaries, causing any general or temporary inundation of normally dry land areas. Floods are considered a natural and inevitable occurrence; they happen with seasonal rains or when stormwater drains into river basins and fills them beyond their capacity. However, floods can cause widespread damage to private property and transportation

infrastructure and can lead to road closures, bridge damage, and disruptions of travel routes across large areas. Flash floods, which are caused by strong storms and can appear rapidly with little warning, can cause significant damage and dangerous conditions to people and roads.

Notably, Union Pacific railroad infrastructure has been impacted on multiple occasions by flooding and storm surge. In March 2023, flooding in the Watsonville area resulted in embargoed freight shipments as the route was impassable.¹⁵ Washouts from heavy rail during this period forced Union Pacific to take track out of service from Santa Barbara to San Luis Obispo. Union Pacific has also had several instances of track closures in Santa Barbara County due to storm surge.¹⁶

3.4.1 Zero Emissions Fuels

The environmental impacts of goods movement are directly related to the resiliency of the multimodal freight system as the burning of fossil fuels contributes to climate change and resultant extreme weather events. The Central Coast Community Energy Blueprint estimated that medium and heavy-duty fleets account for between 10 – 30 percent of emissions for each Central Coast municipality or county. Therefore, transitioning away from fossil fuels to ZEVs would reduce the environmental impacts of freight as well as contribute to improving the resiliency of the region's infrastructure.

The California State Legislature has enacted multiple bills and executive orders to reduce GHG emissions and transition to ZEVs.^{17 18 19 20 21} The Advanced Clean Fleets (ACF) regulation, led by the California Air Resources Board (CARB), is the product of the various legislative bills and executive orders. It requires that trucks operating at California ports and rail yards must be zero-emission vehicles by 2035.²² All trucks in California must be zero-emission vehicles by 2042. Its purpose is to contribute to meeting the goals in Executive Order N-79-20 which aims, among other goals, to improve air quality throughout California.²³ The ACF regulation is expected to introduce 1,690,000 ZEVs into the California fleet by 2050 and produce health benefits as well as fuel savings for fleet owners.

¹⁵ <https://www.up.com/customers/announcements/customernews/generalannouncements/CN2023-19.html>

¹⁶ <https://www.independent.com/2023/01/11/planes-trains-and-automobiles-santa-barbara-gets-mostly-moving-again-after-storm/>

¹⁷“Assembly Bill No. 32.” Bill Text - AB-32 Air Pollution: Greenhouse Gases: California Global Warming Solutions Act of 2006., California Legislative Information, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32.

¹⁸“Senate Bill No. 350.” Bill Text - SB-350 Clean Energy and Pollution Reduction Act of 2015, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350.

¹⁹California, State of. “Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America.” Governor Edmund G Brown Jr, <https://www.ca.gov/archive/gov39/2015/04/29/news18938/>.

²⁰“Senate Bill No. 210.” Bill Text - SB-210 Heavy-Duty Vehicle Inspection and Maintenance Program, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB210.

²¹“Senate Bill No. 44.” Bill Text - SB-44 Medium- and Heavy-Duty Vehicles: Comprehensive Strategy, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB44.

²² <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets/about>

²³ https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf?utm_medium=email&utm_source=govdelivery

The implementation of the ACF regulation will require medium- and heavy-duty vehicles to significantly reduce their emissions through the use of zero-emission and near-zero-emission technologies. There are multiple options for alternative fuels including include natural gas, biodiesel, propane, hydrogen, and electricity. However, there are multiple challenges to ZEV adoption with the lack of ZEV infrastructure being among the primary barriers. The number of vehicles utilizing alternative fuels helps drive and is driven by the availability of charging and fueling infrastructure (see Figure 37 for the locations of alternative fueling stations). The lack of electric charging/fueling infrastructure is a primary constraint to commercial truck fleets adopting these technologies as trucks that do not move on a set route and do not return to a home base every night (e.g., long-haul and regional operators) are at risk of running out of fuel with no refueling stations nearby. Furthermore, in the case of electric-powered trucks, these vehicles require much more powerful chargers than are typically installed in public locations – i.e., DC Fast Charging stations with a power output of 350 kilowatts or more.

There are also ZEV challenges that are specific to the Central Coast region's largest industry – agriculture. For example, current electric truck offerings tend to be limited to small to medium-sized vehicles, such as small tractors and orchard vehicles. Another challenge pertains to vehicle weight and the roadway network that agricultural trucks typically operate on. The gross vehicle weight for trucks is generally limited to 80,000 pounds for highways. For many agricultural goods, trucks reach this weight limit before consuming all available cargo space. As a result, transitioning to ZEVs may result in higher shipping costs for the region's agriculture industry as greater numbers of ZEVs would be needed to move the same amount of goods.

Compared to other freight-intensive industries, trucks serving the agriculture industry are more prevalent on local and county roads. Because ZEVs and equipment are heavier than their standard diesel-fueled counterparts, aging rural roadways, culverts, and bridges may be unable accommodate the extra weight. This would limit access to crop producing lands and potentially result in higher costs to the industry along with higher and less reliable shipping times.

Figure 37 Alternative Fuel Stations in the Central Coast



Source: Alternative Fuels Data Center, U.S. Department of Energy.

3.5 Equity and Community Impacts

Transportation equity seeks fairness in mobility and accessibility to meet the needs of all community members²⁴. A core tenet of transportation equity is ensuring that the benefits and burdens of the transportation system are equitably distributed. Under Executive Order 13985, equity is defined as the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.²⁵ Executive Orders 12898²⁶ and 13985 direct federal agencies, including the U.S. Department of Transportation (USDOT), to take steps to advance equity for all.

The Sustainable Freight Study is a critical vehicle for the region to advance transportation equity. Compared to passenger travel, freight transportation has a higher marginal impact on surrounding communities. This is because of freight transportation's contribution to increased noise, higher emissions, reduced safety (as crash outcomes are typically more severe), infrastructure degradation, and often reduced mobility and accessibility (as freight corridors can act as physical barriers) for the communities adjacent to freight assets. Advancing transportation equity within a freight context is challenging. The benefits of freight are diffuse as they are broadly distributed across geography and stakeholders. Meanwhile, the burdens of freight tend to be localized and disproportionately endured by communities adjacent to freight assets.

3.5.1 Identification of Disadvantaged Communities

Three sources were used to define and identify disadvantaged communities: (1) the USDOT's Equitable Transportation Community (ETC) Explorer, (2) the California Office of Environmental Health Hazard Assessment's CalEnviroScreen 4.0 database, and (3) the Caltrans Transportation Equity Index (EQI). All three sources provide rigorous methodologies for identifying disadvantaged communities and have implications for federal and State funding opportunities. The USDOT-defined equity focus areas are consistent with the federal Justice40 Initiative and the guidelines of the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Discretionary Grant program. At the State level, Senate Bill 535 and Assembly Bill 1550 directed that at least a quarter of California Climate Investments funds go to projects that provide a benefit to disadvantaged communities and at least 10 percent of the funds go to projects located within those communities.

²⁴ FHWA, Transportation Planning and Capacity Building. Transportation Equity. https://www.planning.dot.gov/planning/topic_transportationequity.aspx.

²⁵ Federal Register Vol. 86, No. 14, Monday, January 25, 2021. Presidential Documents: Executive Order 13985 of January 20, 2021. <https://www.govinfo.gov/content/pkg/FR-2021-01-25/pdf/2021-01753.pdf>.

²⁶ Federal Register Vol. 59, No. 32, February 16, 1994. Presidential Documents: Executive Order 12898 of February 11, 1994. <https://www.govinfo.gov/content/pkg/FR-1994-02-16/html/94-3685.htm>

Federal Equity Measures

Two types of communities are identified as part of the USDOT ETC Explorer that are relevant for the Central Coast to consider as part of equity initiatives that stem from the Sustainable Freight Study – “Historically Disadvantaged Communities” and “Areas of Persistent Poverty.” A Historically Disadvantaged Community is defined by the Justice40 Interim Guidance Addendum, issued by the White House Office of Management and Budget (OMB), White House Council on Environmental Quality (CEQ), and Climate Policy Office (CPO)²⁷:

- any Census Tract identified as disadvantaged in the Climate & Economic Justice Screening Tool (geoplatform.gov) (CEJST), created by CEQ, which identifies such communities that have been marginalized by underinvestment and overburdened by pollution; or
- any Federally Recognized Tribe or Tribal entity, whether or not they have land.

Generally, the procedure that determines if a Census tract is a Historically Disadvantaged Community accounts for factors related to transportation access, health, environmental impacts, economic impacts, resilience, and equity.

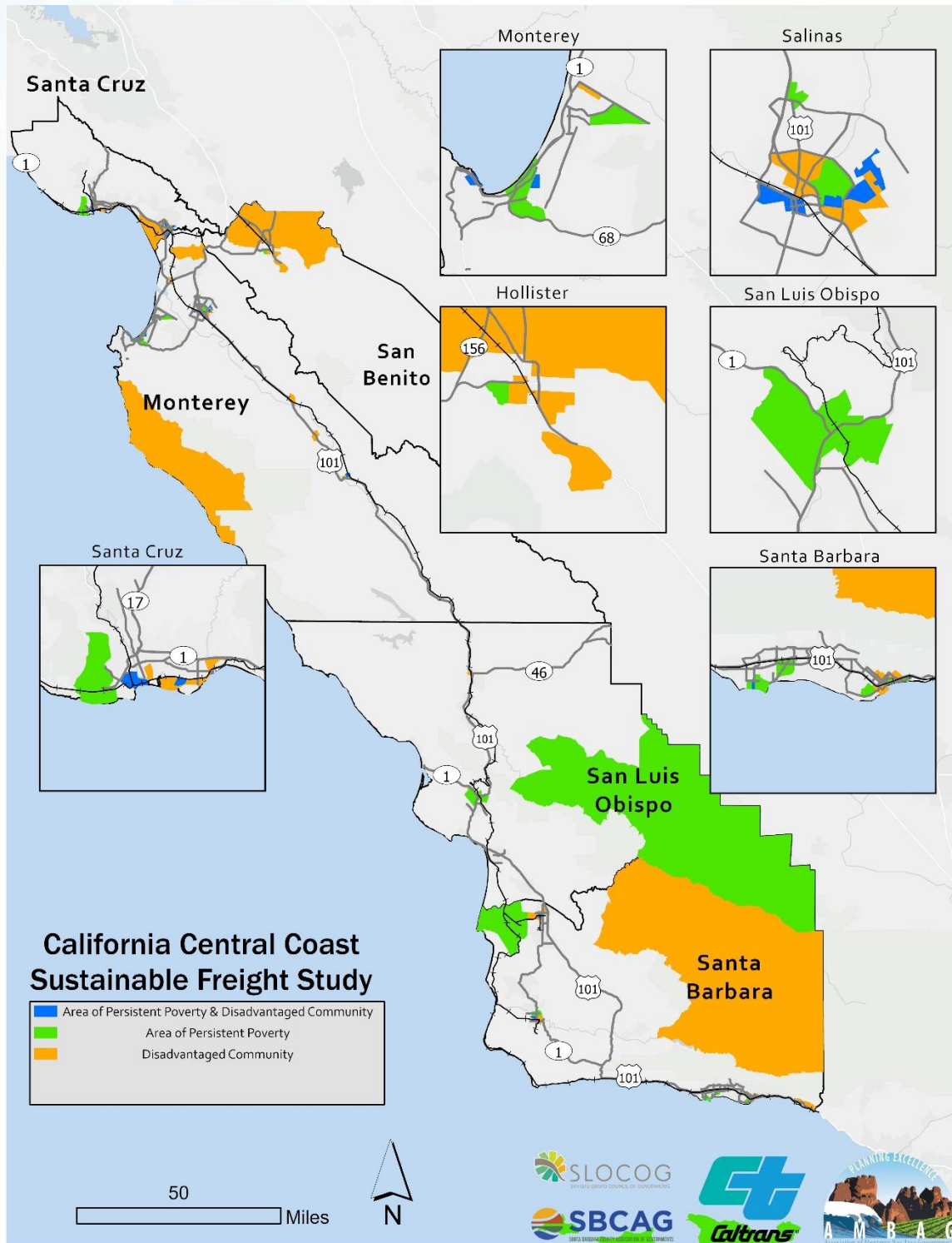
An “Area of Persistent Poverty” is defined by the Bipartisan Infrastructure Law. A community is an Area of Persistent Poverty if:

- a County that consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: (a) the 1990 decennial census; (b) the 2000 decennial census; and (c) the most recent (2021) Small Area Income Poverty Estimates; or
- a Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; or
- any territory or possession of the United States.

Figure 38 shows Historically Disadvantaged Communities and Areas of Persistent Poverty in the Central Coast region. Generally, these communities are concentrated in the freight activity centers. Other areas designated as Historically Disadvantaged or an Area of Persistent Poverty are large, rural Census tracts in the eastern portions of Santa Barbara and San Luis Obispo Counties, western Monterey County, and northern San Benito County.

²⁷ Memorandum for the Heads of Executive Departments and Agencies, Memorandum No. M-23-09 (2023). https://www.whitehouse.gov/wp-content/uploads/2023/01/M-23-09_Signed_CEQ_CPO.pdf

Figure 38 Federal Equity Focus Areas – Disadvantaged Communities and Areas of Persistent Poverty



Source: USDOT, Equitable Transportation Community (ETC) Explorer.

State Equity Measures

Disadvantaged communities in California are specifically targeted for investment of proceeds from the state's Cap-and-Trade Program as authorized by the California Global Warming Solutions Act of 2006.²⁸ These investments are aimed at improving public health, quality of life, and economic opportunity in California's most burdened communities, while also reducing pollution that causes climate change. In 2012, Senate Bill (SB) 535 established initial requirements for minimum funding levels to "Disadvantaged Communities" (DACs) and also tasked the California Environmental Protection Agency (CalEPA) with identifying those communities.

CalEPA designated DACs through the development of its CalEnviroScreen metric. The CalEnviroScreen metric is a score, ranging from 0 to 100, that is calculated using a framework that accounts for the cumulative impacts of pollution burdens experienced by communities as well as their susceptibility to harm from those exposures.²⁹ Examples of pollution burdens include exposure to lead, pesticides, and diesel particulate matter. A community's susceptibility to harm from those exposures is gauged using population characteristics such as rates of asthma, cardiovascular disease, and poverty. A lower CalEnviroScreen score indicates that an area experiences less harm while a higher score indicates that an area experiences greater harm.

Assembly Bill (AB) 1550 established minimum levels for California Climate Investments funds that are invested in DACs:

- At least 25 percent of funds must be allocated toward DACs.
- At least 5 percent must be allocated toward projects within low-income communities or benefiting low-income households.
- At least 5 percent must be allocated toward projects within and benefiting low-income communities, or low-income households, that are outside of a CalEPA-defined DAC but within ½ mile of a disadvantaged community.

In addition to the CalEnviroScreen metric, Caltrans developed the Transportation Equity Index (EQI). The Caltrans EQI is a spatial screening tool designed to identify transportation-based priority populations. This tool integrates transportation and socioeconomic indicators into three screens (each of which reflect low-income and Tribal land status):

- **Transportation-Based Priority Populations.** Communities that are most burdened by and receive the fewest benefits from the transportation system.
- **Traffic Exposure.** Communities that are the most burdened by high exposure to traffic and crashes.

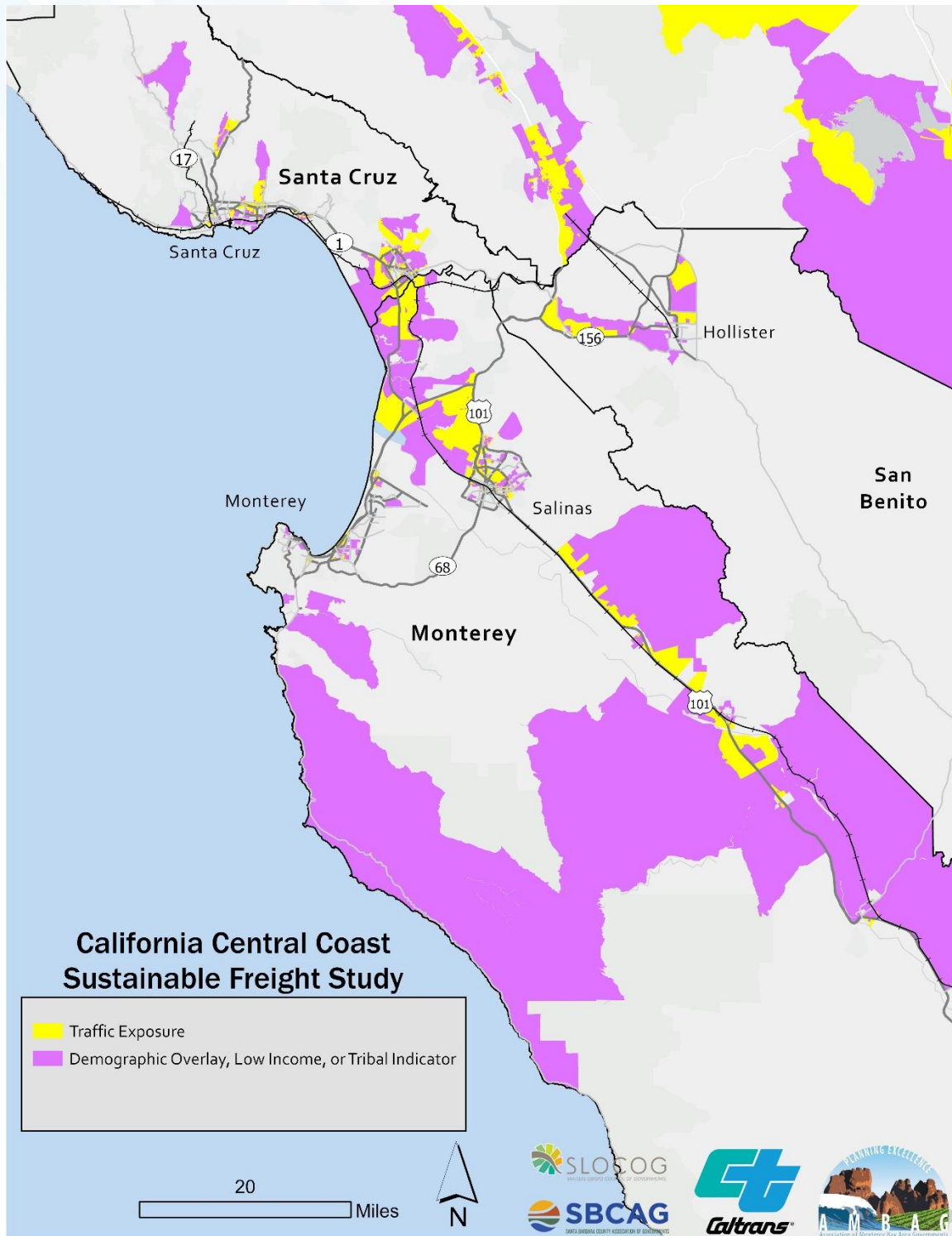
²⁸ <https://oehha.ca.gov/calenviroscreen/sb535>

²⁹ CalEnviroScreen 4.0 Report, 2021.
<https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf>

- **Access to Destinations.** Communities that have the greatest gaps in multimodal access to destinations.

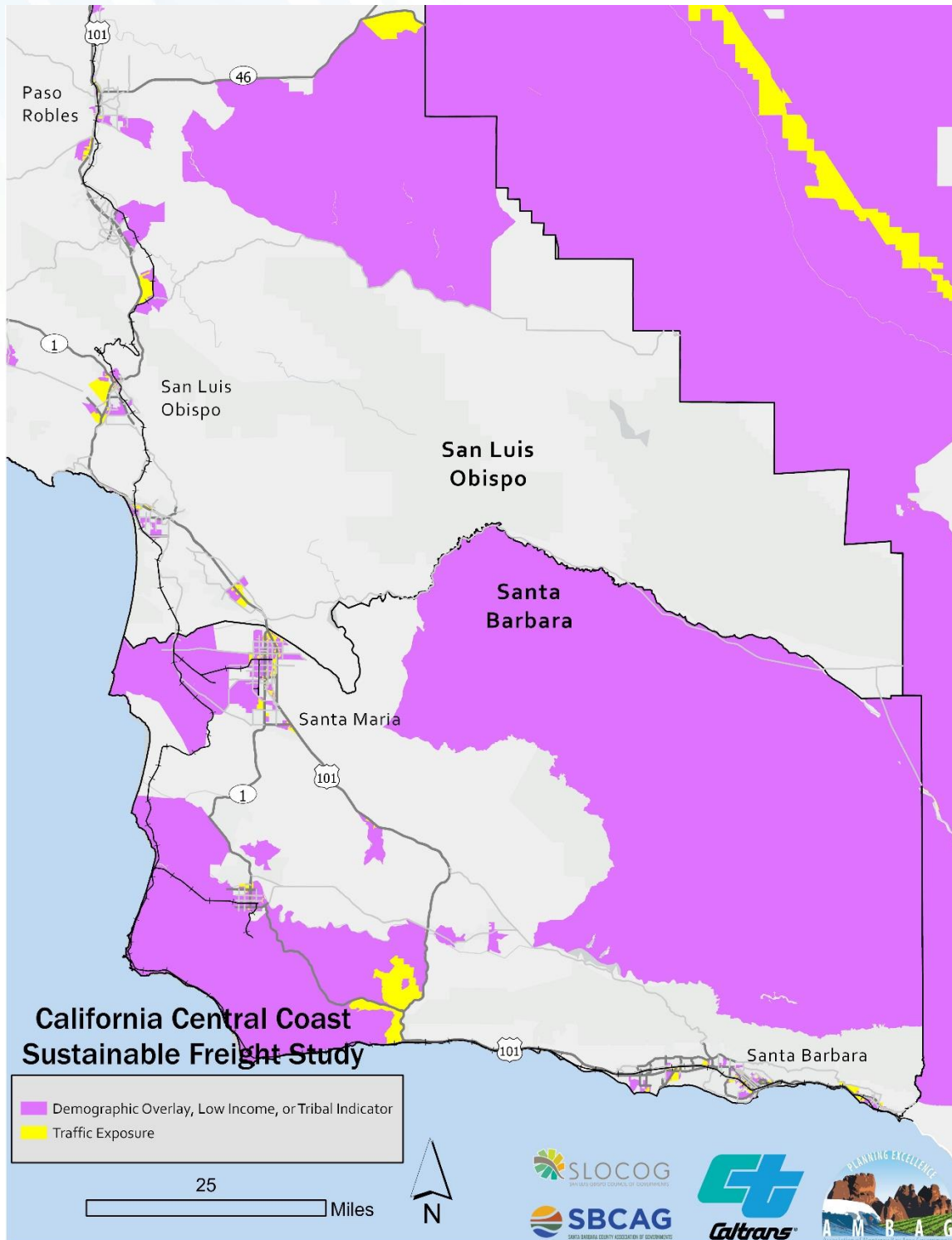
Disadvantaged communities as indicated by the Caltrans EQI are shown in Figure 39 and Figure 40. The results indicate that disadvantaged communities in rural areas primarily impacted by lack of access to destinations. Communities in urbanized areas, especially those located along major corridors, tend to fall in the transportation-based priority screen indicating that they are overburdened by the transportation system.

Figure 39 Caltrans EQI Disadvantaged Communities, North Central Coast



Source: Caltrans Transportation Equity Index, version 1.0.

Figure 40 Caltrans EQI Disadvantaged Communities, South Central Coast



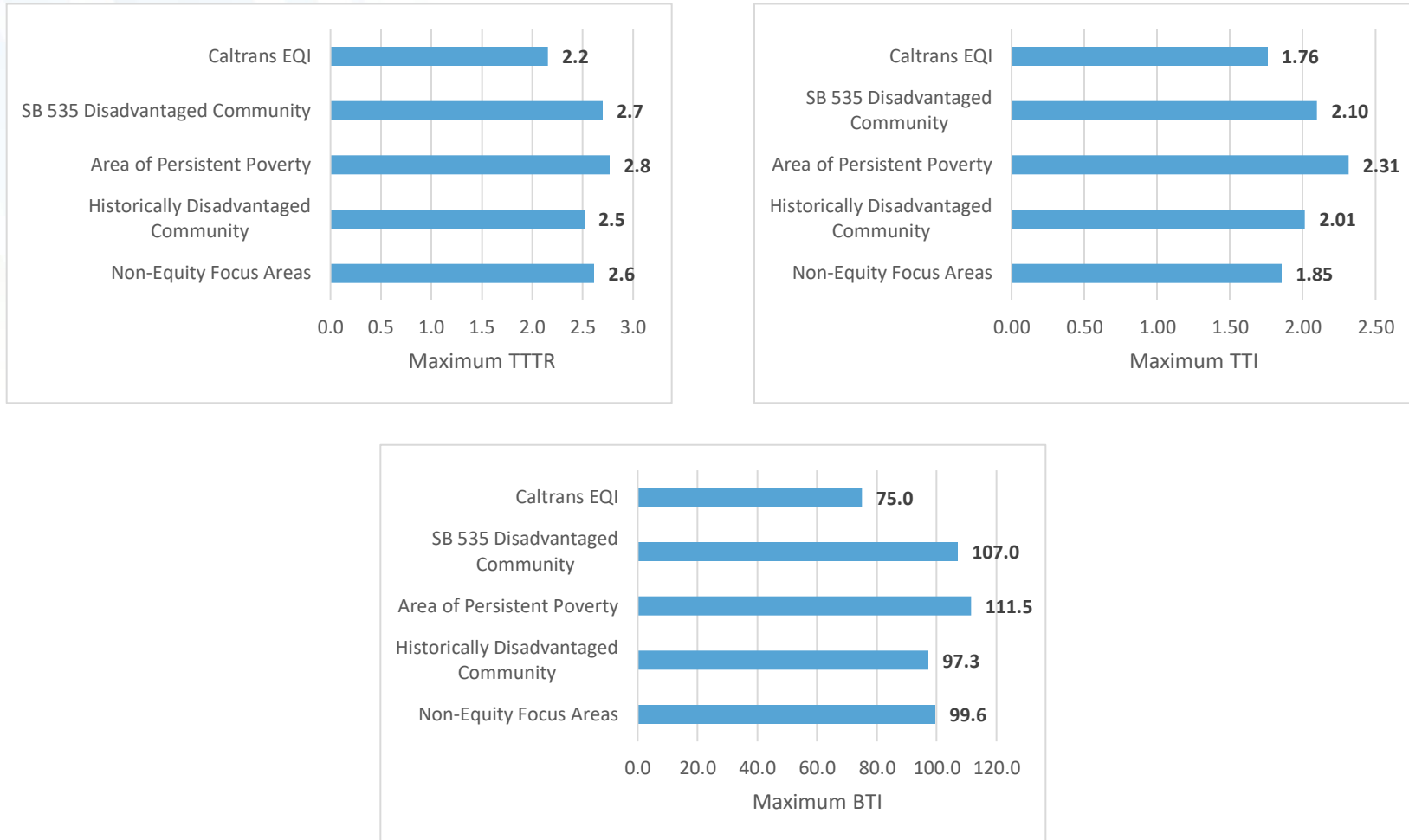
Source: Caltrans Transportation Equity Index, version 1.0.

3.5.2 Freight Impacts on Equity Focus Areas

Freight transportation brings positive and negative impacts to a community. Job creation and access to goods can improve quality of life, while exposure to pollutants and noise can be harmful to health outcomes. Increased traffic due to freight activity may also impact crash rates or severity, especially if facilities are not designed to accommodate the mixing of freight, passenger, and non-motorized traffic.

This analysis primarily focuses on the distribution of the negative congestion and safety impacts related to highway infrastructure because this is the mode and network for which data is available, and negative impacts present the greatest opportunity for the Central Coast region's planning consideration. For congestion-related impacts, one consideration is the comparison of freight-related congestion and travel time reliability in equity focus areas versus non-equity focus areas. The truck buffer time index (BTI), truck travel time index (TTI), and the truck travel time reliability (TTTR). Figure 41 shows that on average, equity focus areas – Historically Disadvantaged Communities, Areas of Persistent Poverty, Caltrans EQI, and SB 535 Disadvantaged Communities – experience higher levels of freight-related congestion than non-equity focus areas as captured by the truck buffer time index (BTI), truck travel time index (TTI), and the truck travel time reliability (TTTR). Notably, Areas of Persistent Poverty consistently experience levels of freight-related congestion and travel time unreliability that are higher than other equity focus areas.

Figure 41 Congestion and Reliability Impacts in Equity Focus Areas

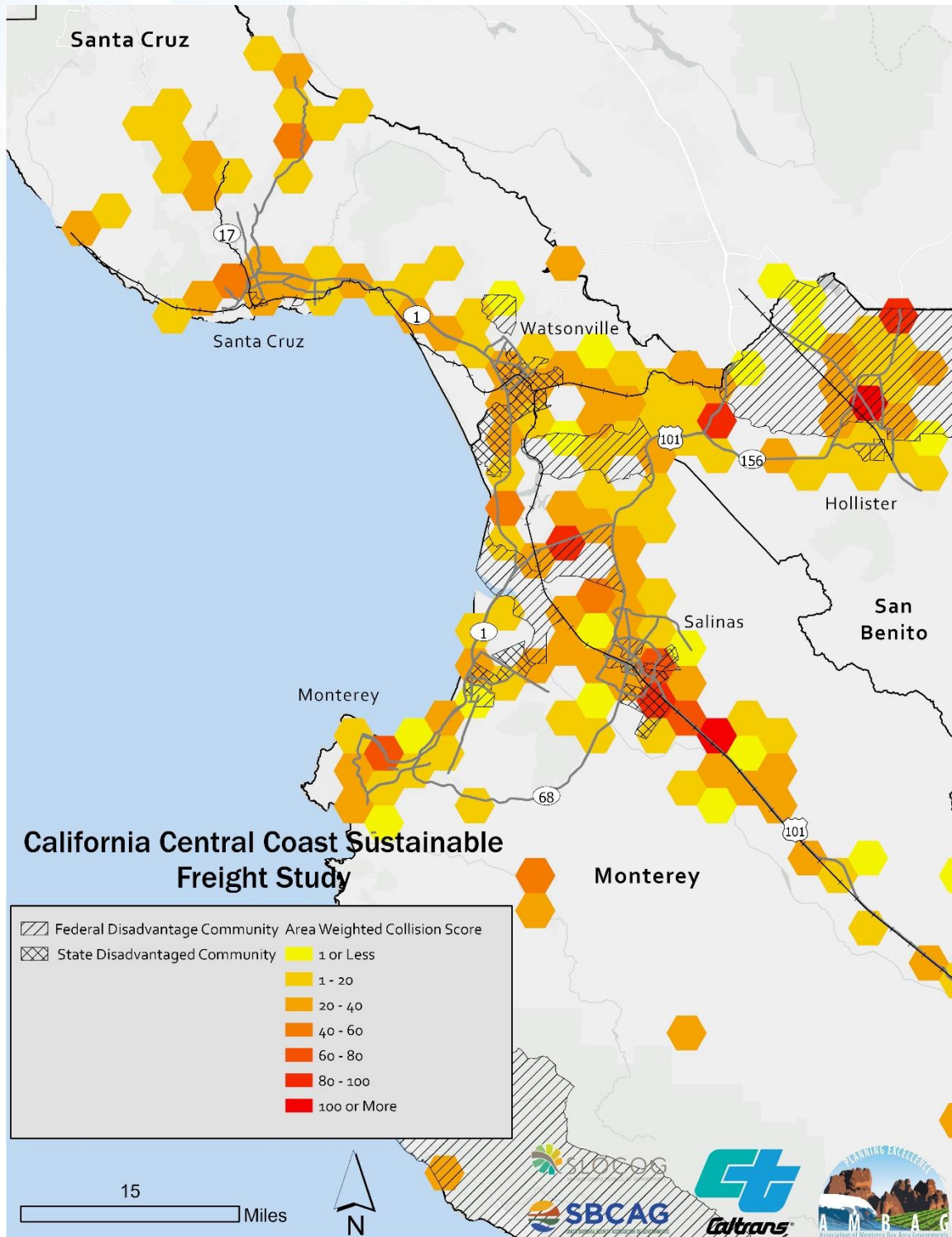


Source: National Performance Management Research Data Set; Cambridge Systematics, Inc.

Another area of consideration for freight-related equity impacts is safety. The Existing Conditions technical memorandum observed that though only about 2 percent of the region’s roadway miles are within an equity focus area, federally designated disadvantaged communities represent 23 percent of all truck-involved collisions and 20 percent of truck-involved collisions resulting in a fatality or serious injury. Furthermore, half of the region’s top ten hotspots for truck-involved collisions overlap a federal- or State-designated disadvantaged community.

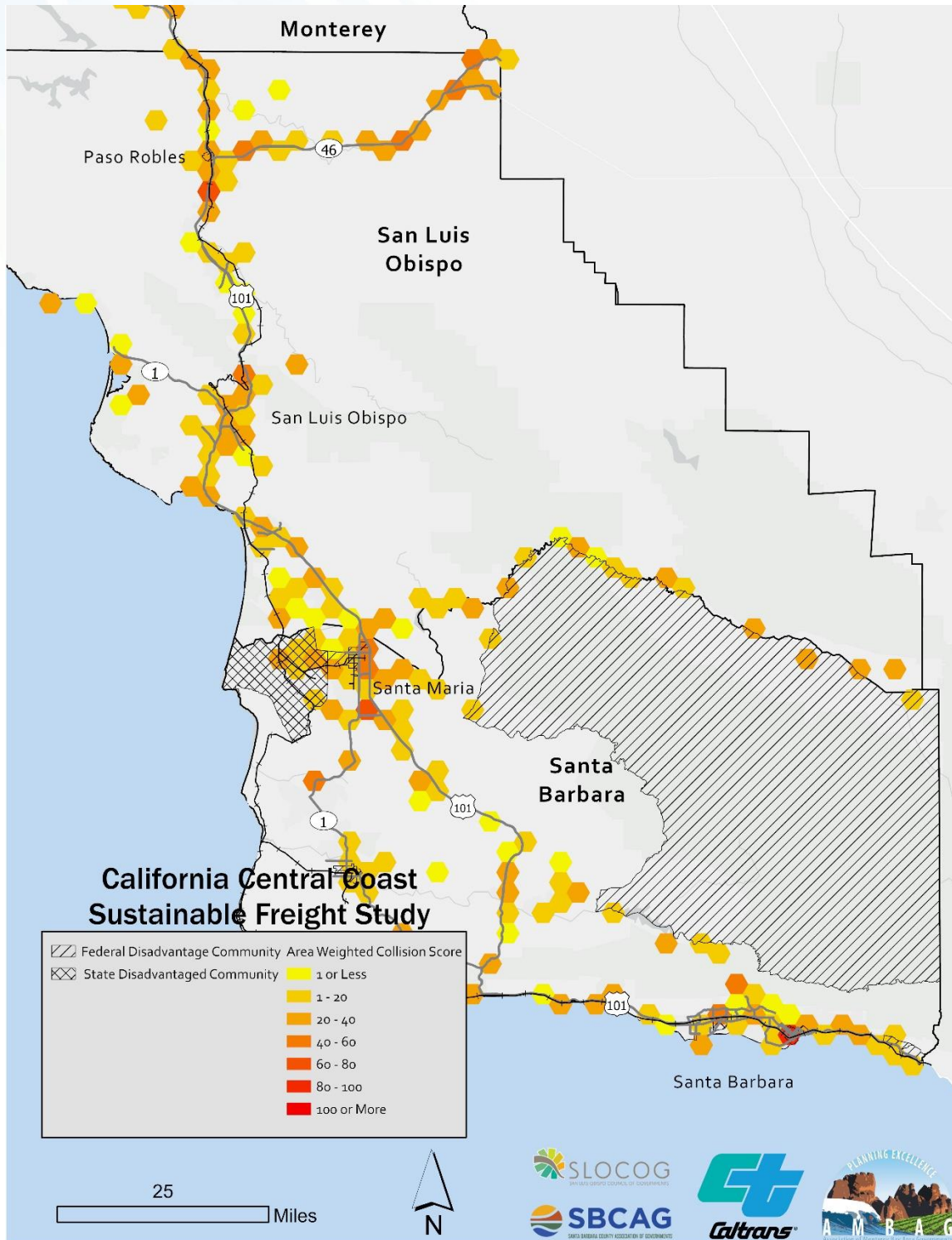
Figure 42 and Figure 43 depict the concentration of truck-involved collisions (weighted by crash severity) across the Central Coast region in relation to its equity focus areas. Collision weights are derived based on the 2022 CA Local Road Safety Manual (LRSM) crash costs for each collision severity. This method is similar to the Highway Safety Manual (HSM) Equivalent Property Damage Only (EPDO) weighting method but uses the “Complaint of Pain” severity level as its baseline. It shows that there is significant overlap between the region’s truck crash hotspots and these communities. This has implications not only for roadway safety in equity focus areas, but also for their mobility as crashes are generally a significant source of non-recurring delay.

Figure 42 2017-2022 Truck-Involved Collisions and Equity Focus Areas - North Central Coast



Source: Caltrans; Fehr and Peers.

Figure 43 2017-2022 Truck-Involved Collisions and Equity Focus Areas – South Central Coast



Source: Caltrans; Fehr and Peers.

4.0 STRATEGIES AND RECOMMENDATIONS

4.1 Project Identification and Alternatives Evaluation

The recommendations and strategies presented in this memorandum were initially identified through stakeholder interviews, public meetings, discussions with the Central Coast Working Group, feedback from the Technical Advisory Committees of the region's MPOs, the findings of the needs assessment, and through a review of previous projects and studies. The project identification process is shown in Figure 44.

Figure 44 Project Identification Process



Source: Cambridge Systematics.

The first step in the project identification process was a review of recommendations made by previous studies. This was done by collecting projects included in the most recent long-range plans from the Central Coast region's MPOs. The next step in the project identification process was to filter and enhance previous recommendations. Previous project recommendations were screened and filtered based on their potential to positively impact the freight network. Recommendations that were not located on or proximate to freight corridors were screened out. Also, projects that did not address truck throughput, operational, or other freight-focused needs as indicated by the needs assessment (e.g., active transportation, transit, etc.) were also screened out. Furthermore, previous recommendations were refined or enhanced (where appropriate) based on the region's needs. It should be noted that although active transportation and transit projects were generally screened out, these types of projects can benefit freight mobility by reducing demand from non-freight users on the highway network, improving safety for other roadway users, and addressing some equity concerns.

The last step in the project identification process was to fill in gaps. If there were no previous recommendations that addressed an identified need, a new recommendation was developed to address the unmet need. For example, there were few previous recommendations that addressed needs related to truck parking.

After project identification, the Sustainable Freight Study then evaluated the recommendations for the purpose of prioritizing projects. Projects were divided into tiers according to their ability to positively impact the transportation network and advance the region's freight transportation goals. Figure 45 shows the project prioritization factors and the Sustainable Freight Study goal areas they support. Generally,

Tier 1 projects consist of high-impact projects that are programmed in either one of the region’s Regional Transportation Improvement Programs (RTIPs) or one of the Federal Transportation Improvement Programs (FTIPs). Tier 2 projects are also high-impact but have not yet achieved the level of regional and statewide support, funding, or preliminary analysis needed to advance into the programming phase. Also, Tier 2 projects are generally located on or proximate to one of the freight bottlenecks identified in section 2 of this report. Lastly, Tier 3 projects are those that would advance the region’s freight goals but would have a more modest impact on freight network level performance. However, it should be noted that many of these may be much more important from a passenger travel standpoint.

Figure 45 Project Prioritization Factors



Source: Cambridge Systematics.

Additionally, projects were separated into implementation time frames based on their potential complexity and cost. Short-term projects (0 – 5 years) are less complex and costly. Thus, they can be implemented on a shorter time frame. Mid-term projects (5-10 years) have moderate complexity and cost while long-term projects (10 years or more) are potentially very complex and costly. For projects sourced from previous initiatives, planning-level cost estimates from those efforts are reported in the Sustainable Freight Study. For newly recommended projects, planning-level cost estimates were developed as part of this effort.

4.2 Long-Term Implementation Plan

From the quantitative and qualitative analysis, the project identification process resulted in seven broad, overarching recommendations. Those seven recommendations are shown in Figure 46. Each overarching recommendation is comprised of a set of specific project, policy, and program recommendations. Project

recommendations are those that make capital, operational, or technology investments on the multimodal freight network. Policy recommendations are those that provide guidelines or principles that shape the way the region approaches its freight needs. For purposes of the Sustainable Freight Study, policy recommendations also include solutions that require further study before a specific project recommendation is made. Programmatic recommendations are those that feature ongoing actions, initiatives, or activities.

Figure 46 Sustainable Freight Study Recommendations

Enhance Truck Capacity and Increase Network Connectivity	<ul style="list-style-type: none"> • Provide relief to existing bottlenecks and address future demand.
Operational Strategies to Improve Freight Mobility and Safety	<ul style="list-style-type: none"> • Enhance freight operations' ease, efficiency, and safety while minimizing network footprint impacts.
Enhance the Capacity, Operation, and Safety on the Freight Rail Network	<ul style="list-style-type: none"> • Ensure that shippers have access to alternative modes beside trucking and support economic competitiveness.
Adopt new Technology	<ul style="list-style-type: none"> • Leverage technology and information to reduce freight congestion and boost operations' mobility and efficiency.
Increase Access to Truck Parking and Charging Infrastructure	<ul style="list-style-type: none"> • Improve safety for truck drivers and provide solutions for areas that experience unauthorized truck parking.
Enhance Freight Network Resiliency	<ul style="list-style-type: none"> • Improve the freight network's ability to withstand and recover from disruptions.
Mitigate Freight Impacts on Communities and the Environment	<ul style="list-style-type: none"> • mitigate the negative impacts of freight to communities and the environment.

Source: Cambridge Systematics.

The categories listed in the Figure 46 serve as a mechanism for organizing freight improvement projects contained in the regional transportation plans. The funding sources referenced in Tables 10 through 16 are defined and described in section 5.3.

4.2.1 Enhance Freight Throughput and Increase Network Connectivity

Freight throughput and network connectivity improvements are intended to relieve existing bottlenecks and to proactively address emerging demand by expanding the physical footprint of the network. As discussed in the Needs Assessment, historically the region has not experienced the same type of investment in its highway truck capacity as other regions in California. Much of the region's high throughput roadway infrastructure (i.e., functionally classified as a principal arterial – freeway or expressway) is concentrated on U.S. 101. The region generally lacks high throughput east-west routes for

accessing I-5 and rail intermodal terminals in the Central Valley and also generally lacks alternatives to U.S. 101 for trucks operating in the region.

The 2016 U.S. 101 Central Coast Regional Freight Strategy identified congestion and travel time reliability as one of the region's most pressing challenges. Accordingly, it recommended multiple congestion relief and operational improvements as priority projects. The Sustainable Freight Study has found that this challenge persists. As indicated by the travel time performance measures (e.g., truck delay per mile, truck travel time index), major freight routes including U.S. 101, SR 1, SR 68, SR 46, and SR 156 experience recurring and often severe freight-related congestion. These conditions are expected to continue over the long term due to greater volumes of freight and commuter traffic.

For these reasons, the Sustainable Freight Study recommends that the State and region invest in targeted investments aimed at improving freight throughput primarily along the region's existing major freight corridors – namely U.S. 101, SR 156, SR 1, SR 46, and SR 25. The specific corridors and projects contained in Table 10 were identified from the long-range plans of the Central Coast region's MPOs. Those projects that were located on major freight corridors and proposed changes that would enhance throughput (e.g., widening, auxiliary lanes, new roadways, etc.) were integrated into this strategy.

Table 10 Enhance Freight Throughput and Increase Network Connectivity

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocations
MON-CT036-CT	SR 156 - Castroville Boulevard Interchange	Project	Construct new interchange for SR 156 and Castroville Boulevard / Blackie Rd (related to CT022 and CT036)	TAMC, Caltrans	\$55,200	TAMC 2022 RTP	Tier 1	Mid-term	State MFT TCEP RAISE STBG RSTP	PS&E and ROW completed Const \$1.975M extended to June 2024
MON-CT023-CT	SR 156 and U.S. 101 Interchange	Project	Construct new interchange for SR 156 and U.S. 101 (related to CT022 and CT036)	TAMC, Caltrans	\$250,890	TAMC 2022 RTP	Tier 2	Long-term	State MFT TCEP RAISE INFRA NHPP RSTP	
MON-CT022-CT	SR 156 - Expressway Conversion	Project	Construct new 4 lane highway south of existing alignment; convert existing highway to frontage road (related to CT023 and CT036)	TAMC, Caltrans	\$106,225	TAMC 2022 RTP	Tier 2	Long-term	State MFT TCEP RAISE INFRA STBG RSTP	Prior Year \$1.6M E&P
MON-CT030-SL	U.S. 101 - Salinas Corridor	Project	Widen U.S. 101 to 6 lanes and/or auxiliary lanes within city limits of City of Salinas where feasible.	TAMC, Caltrans	\$52,000	TAMC 2022 RTP	Tier 2	Long-term	State MFT TCEP RAISE HSIP NHPP RSTP	E&P done \$8.45M for PS&E in 2026-27
MON-MYC147-UM	SR 156 - Blackie Road	Project	Construct new road from Castroville Blvd to Blackie Road	TAMC, Caltrans	\$18,000	TAMC 2022 RTP	Tier 1	Mid-term	State MFT TCEP RAISE	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocations
									STBG RSTP	
MON-CT046-CT	SR 1 Improvements	Project	Elevate and widen Highway 1 from SR 183 to Salinas Road with operational improvements and a frontage road.	TAMC, Caltrans	\$750,000	TAMC 2022 RTP	Tier 2	Long-term	State MFT RAISE INFRA MEGA STBG RSTP	
CT-PL-1	U.S. 101 HOV Widening (FTIP CT20)	Project	Parts of this project are programmed. This project highlights the out-years of the overall project.	SBCAG, Caltrans	\$308,395	SBCAG 2022 RTP	Tier 1	Mid-term	State MFT TCEP RAISE INFRA NHPP RSTP CMAQ	
GU-IL-1	Widen or Bypass SR 1 through/around Guadalupe	Project	Location: SR 1 through Guadalupe. Reconstruction, widen to four lanes, bring up to standard.	SBCAG, Caltrans	\$2,474	SBCAG 2022 RTP	Tier 3	Mid-term	State MFT RSTP TCC STBG	
SB-CT-A17	Airline Highway Widening/SR 25 Widening: Sunset Drive to Fairview Road	Project	Convert to 4 lane expressway from Sunset Drive to Fairview Road with bicycle lanes.	SBCOG, Caltrans	\$28,214	SBCOG 2020-2045 RTP	Tier 3	Long-term	State MFT ATP HSIP SS4A RAISE STBG	
SB-CT-A44	Route 25 Expressway Conversion Project, Phase 1	Project	Convert to four lane expressway from San Felipe Road to Hudner	SBCOG, Caltrans	\$106,000	SBCOG 2020-2045 RTP	Tier 1	Mid-term	State MFT RAISE INFRA STBG	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocations
			Lane. Includes Area No.1. SR 25/SR 156 interchange to Hudner Lane and Area No. 2-south of the SR 25/SR 156 interchange to San Felipe Road.							
SB-CT-A45	Route 25 Expressway Conversion Project, Phase II	Project	Convert to four lane expressway from Hudner Lane to County Line. Includes Area No 3. SR 25/ SR 156 interchange to County line and Area No. 4 County line to Bloomfield Road.	SBCOG, Caltrans	\$135,000	SBCOG 2020-2045 RTP	Tier 2	Long-term	State MFT RAISE INFRA STBG	
SB-CT-A55	U.S. 101: Las Aromitas: Monterey/San Benito County Line to State Route 156	Project	Convert to 6 lanes from Monterey/San Benito County line to SR 156 in San Benito County.	SBCOG, Caltrans	\$246,000	SBCOG 2020-2045 RTP	Tier 2	Long-term	TCEP RAISE INFRA NHPP STBG	
SB-CT-A56	U.S. 101: SR 156 to SR 129	Project	Convert to 6 lanes and upgrade facility to freeway standards.	SBCOG, Caltrans	\$2	SBCOG 2020-2045 RTP	Tier 2	Mid-term	State MFT TCEP RAISE INFRA HSIP STBG NHPP	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocations
EST-MHWY-1003	SR 46E Corridor Improvements – Antelope Grade Segment	Project	SR 46E corridor improvements: Antelope Grade segment to add capacity by widening to 4 lanes to address congestion & truck mobility	SLOCOG, Caltrans	\$113,490	SLOCOG 2023-2045 RTP	Tier 1	Mid-term	State MFT RAISE INFRA	

Source: Association of Monterey Bay Area Governments; Cambridge Systematics; Fehr and Peers.

Note: Any projects looking to increase/enhance capacity if state funds are considered, will require further review by Caltrans.

4.2.2 Operational Strategies to Improve Freight Mobility and Safety

Operational strategies are those improvements that can be implemented without expanding the physical footprint of the multimodal freight network. They include intersection/interchange redesigns, signal timing adjustments, auxiliary lanes, and other projects. Relative to truck capacity and network expansions, operational strategies generally have lower costs and fewer environmental and community impacts. As a result, they can often be completed faster and at lower costs. Additionally, generally all of the project types recommended under this strategy are included in Caltrans' *Transportation Analysis under the California Environmental Quality Act (CEQA) for Projects on the State Highway System (TAC)*, which identifies project types that are not likely to lead to a measurable and substantial increase in vehicle travel.³⁰ Thus, they are considered to not likely to have a significant impact on the environment.

The operational recommendations in the Sustainable Freight Study are numerous and broadly distributed over the Central Coast region's network as these projects can typically move forward faster and at lower cost than those that increase or enhance capacity. Similar to the "Enhance Freight Throughput and Increase Network Connectivity" strategy, the specific corridors and projects contained in Table 11 were identified from the long-range plans of the Central Coast region's MPOs. Those projects that were located on major freight corridors and proposed operational improvements (e.g., intersection improvements, roundabouts, etc.) were integrated into this strategy.

Importantly, the operational strategies include project recommendations for addressing safety concerns at the top truck crash hot spots for each county in the Central Coast. Safety improvements at these locations range from rumble stripes, the addition (or extension) of acceleration/deceleration lanes, improved signage, and the conversion of some intersection to roundabouts, among others. Generally, the safety recommendations made as part of this strategy are consistent with the types of recommendations included in FHWA's Proven Safety Countermeasures guidance.³¹

³⁰ Governor's Office of Planning and Research (OPR), Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018), 20-21.

³¹ <https://highways.dot.gov/safety/proven-safety-countermeasures>

Table 11 Implement Operational Strategies to Improve Freight Mobility and Safety

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
MON-CT011-CT	Scenic Route 68 Corridor Improvements	Project	Make intersection and other operational improvements to increase safety and improve traffic flow from Salinas to Monterey.	TAMC, Caltrans	\$94,143	TAMC 2022 RTP	Tier 1	Long-term	State MFT SCCP HSIP RAISE STBG	
MON-CT031-CT	U.S. 101 - South of Salinas Improvements	Project	Improve safety and relieve future traffic congestion by eliminating multiple highway crossings, constructing a new interchange at Harris Road, and provide necessary frontage roads to allow farmers to access their lands. Build frontage roads along U.S. 101 south of Salinas (Abbott Street on/off ramp) and make related intersection improvements. Enhance bicycle and pedestrian mobility and facilitate transit access.	TAMC, Caltrans	\$112,000	TAMC 2022 RTP	Tier 1	Long-term	State MFT SCCP TCEP HSIP RAISE MPDG Rural STBG NHPP	
MON-GON014-GO	U.S. 101 / 5th Street Interchange	Project	Install roundabouts at on off ramps	TAMC, Caltrans	\$6,000	TAMC 2022 RTP	Tier 3	Short-term	State MFT HSIP STBG	
MON-KCY043-CK	Roundabout at U.S. 101/Broadway St/San Antonio Dr	Project	Install Roundabout @ U.S. 101/Broadway St/San Antonio Dr	TAMC, Caltrans	\$10,000	TAMC 2022 RTP	Tier 3	Mid-term	State MFT HSIP STBG	
MON-SEA042-SE	Fremont Street /Monterey Rd / SE	Project	Redesign and build new intersection at Fremont, Monterey Road, and Highway 1 on/off ramps.	TAMC, Caltrans	\$25,000	TAMC 2022 RTP	Tier 2	Long-term	State MFT HSIP TDA	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
	Highway 1 Intersection		Design concept includes a double-roundabout and an underground tunnel for the continuation of the SURF! Busway corridor and bike/ped path in the TAMC rail right-of-way.						ATP RAISE STBG	
MON-SOL004-SO	U.S. 101 - Camphora Interchange	Project	Install new interchange at Camphora-Gloria Street	TAMC, Caltrans	\$35,500	TAMC 2022 RTP	Tier 3	Mid-term	State MFT HSIP TCEP RAISE INFRA STBG	
SC-P108	Hwy 1 - Harvey West Area Alternative Access	Project	Development of an on/off ramp from NB Highway 1 to Harvey West Boulevard/ Evergreen St, to improve access, especially during peak congestion times and emergencies.	SCCRTC, Caltrans	\$4,130	SCCRTC 2045 RTP	Tier 2	Short-term	State MFT SCCP HSIP STBG	
SC-P136	Hwy 1 Mission St at Fair Ave Intersection Modification	Project	Install Traffic Signal with left-turn lane (NB) to reduce congestion and improve safety.	SCCRTC, Caltrans	\$700	SCCRTC 2045 RTP	Tier 3	Short-term	State MFT SCCP HSIP	
SC-P112	Hwy 1 Mission at Laurel St Intersection Modification	Project	Modify traffic signal to add right-turn from Mission St to Laurel St and signal overlap phase.	SCCRTC, Caltrans	\$1,030	SCCRTC 2045 RTP	Tier 3	Short-term	State MFT SCCP HSIP STBG	
SC-P113	Hwy. 1 Mission at Swift St Intersection Modification	Project	Modify traffic signal to add Swift St right-turn lane and signal overlap phase, and a second left turn lane	SCCRTC, Caltrans	\$500	SCCRTC 2045 RTP	Tier 3	Short-term	State MFT SCCP HSIP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SC-P81	Hwy. 1 Mission St at Chestnut/King/Union Intersection Modification	Project	Modify design of existing intersections to add lanes and upgrade the traffic signal operations to add capacity, reduce delay and improve safety. Provide access ramps and bike lanes on King. Includes traffic signal coordination.	SCCRTC, Caltrans	\$4,650	SCCRTC 2045 RTP	Tier 3	Short-term	State MFT HSIP SS4A STBG	
SC 38	Hwy 1/San Lorenzo Bridge Replacement	Project	Replace the Highway 1 bridge over San Lorenzo River to increase capacity, improve safety and improve seismic stability, from Highway 17 to the Junction of 1/9. Reduce flooding potential and improve fish passage. (Caltrans Project ID 05-0P460)	SCCRTC, Caltrans	\$20,000	SCCRTC 2045 RTP	Tier 2	Mid-term	State MFT PROTECT STBG	
SC-P92	Hwy 1/Shaffer Rd Signalization	Project	Signalization of intersection of Hwy 1 and Shaffer Rd. Project may include some widening of Hwy 1 to accommodate a left turn lane.	SCCRTC, Caltrans	\$520	SCCRTC 2045 RTP	Tier 3	Short-term	State MFT STBG SCCP	
SC-RTC-24e-RTC	State Route 1 State Park to Bay-Porter Auxiliary Lanes and Bus on Shoulder and Mar Vista Bike/Ped Crossing	Project	Near Capitola and Aptos, SR 1 from State Park Dr to Bay/Porter Interchanges. Includes construction of auxiliary lanes between interchanges and bus-on-shoulder facilities at interchanges, bicycle/pedestrian overcrossing at Mar Vista Dr, and	SCCRTC, Caltrans	\$90,000	SCCRTC 2045 RTP	Tier 1	Long-term	State MFT INFRA RAISE STBG	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			reconstruction of Capitola Avenue overcrossing to accommodate new lanes on SR 1.							
SC-RTC-24f-RTC	Hwy 1 Auxiliary Lanes & Bus RTC 24f on Shoulders: 41st Ave to Soquel Ave & Chanticleer Bike/Ped Bridge	Project	Construct auxiliary lanes, modify shoulders for bus operations, and construct a bicycle/pedestrian overcrossing of Hwy 1 at Chanticleer Ave. (Caltrans Project ID 05-0C732)	SCCRTC, Caltrans	\$32,000	SCCRTC 2045 RTP	Tier 1	Mid-term	State MFT INFRA RAISE STBG	
SC-RTC-RTC 24g-RTC	Hwy 1 Auxiliary Lanes and Bus on Shoulders: Freedom Blvd. to State Park Dr.	Project	Construct auxiliary lanes between State Park Dr-Rio Del Mar and Rio Del Mar Blvd - Freedom Blvd interchanges and modify shoulders to allow buses to use shoulders. Includes soundwalls and retaining walls; widening of the bridge over Aptos Creek/Spreckles Drive; Segment 12 of the MBSST (State Park Dr-Rio Del Mar Blvd/Sumner); and reconstruction of two railroad bridges over Highway 1, including bike/ped trail. [Part of Highway 1 CIP project (RTC 24a)] (EA# 05-C734)	SCCRTC, Caltrans	\$102,000	SCCRTC 2045 RTP	Tier 1	Long-term	State MFT INFRA RAISE STBG	
CT-PL-1	U.S. 101 HOV Widening (FTIP CT20)	Project	Parts of this project are programmed. This project highlights the	SBCAG, Caltrans	\$308,395	SBCAG 2022 RTP	Tier 1	Long-term	State MFT STBG SCCP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			out-years of the overall project.						TCEP HSIP INFRA CMAQ	
CT-PL-2	SR 246 Passing Lanes – East Segment	Project	East and west bound passing lanes from east of Big Ranch Road to west of Drum Canyon Road, channelization at Drum Canyon and Mail Road, and bridge widening at Santa Rita Creek.	SBCAG, Caltrans	\$50,229	SBCAG 2022 RTP	Tier 3	Mid-term	State MFT STBG SCCP HSIP INFRA RSTP	
CT-PL-5	U.S. 101 at Glen Annie Operational Improvements	Project	Operational Improvements northbound on U.S. 101 at Glen Annie Rd. off ramp	SBCAG, Caltrans	\$5,000	SBCAG 2022 RTP	Tier 3	Short-term	State MFT STBG SCCP TCEP	
CT-PL-6	U.S. 101 at Castillo Improvements	Project	Reconstruct portions of, or entire interchange of U.S. 101 at Castillo Street	SBCAG, Caltrans	\$75,000	SBCAG 2022 RTP	Tier 3	Long-term	State MFT STBG SCCP TCEP	
CT-PL-7	U.S. 101 Milpas St SB Off-Ramp Improvements	Project	U.S. 101 Milpas St SB off-ramp Improvements	City of Santa Barbara, SBCAG, Caltrans	TBD	SBCAG 2022 RTP	Tier 3	Mid-term	State MFT STBG SCCP TCEP	
CT-PL-8	U.S. 101 / Las Positas Operational Improvements	Project	U.S. 101 / Las Positas Operational Improvements	City of Santa Barbara, SBCAG, Caltrans	TBD	SBCAG 2022 RTP	Tier 3	Mid-term	State MFT STBG SCCP TCEP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
GO-25 CT-IL-6	U.S. 101 Auxiliary Lanes	Project	Construct auxiliary lane on U.S. 101 NB between Los Carneros and Storke/Glen Annie Rd on NB U.S. 101 and on U.S. 101 NB and SB between at Fairview Rd to Los Carneros Rd	SBCAG, Caltrans	\$16,180	SBCAG 2022 RTP	Tier 3	Long-term	State MFT STBG SCCP TCEP	
SB-PL-4	Final design and construction for HOV HWY 101 Widening Mitigation Projects	Project	Replace the Union Pacific Railroad bridge over Cabrillo Boulevard with a bridge meeting contemporary standards and construct capacity improvements on Cabrillo Boulevard at Los Patos. Capacity and operational improvements at the intersection of Cabrillo Boulevard and Los Patos Road. Construct roundabout to accommodate anticipated demand and alleviate existing congestion.	SBCAG, Caltrans	\$16,180	SBCAG 2022 RTP	Tier 2	Mid-term	State MFT STBG State MFT STBG SCCP TCEP RCE/CRISI CMAQ	
SM-PL-23	U.S. 101/SR 166 (Main Street) Interchange	Project	Design and construction of interchange	SBCAG, Caltrans	\$35,000	SBCAG 2022 RTP	Tier 2	Long-term	State MFT STBG SCCP TCEP	
CT-IL-5	Castillo Street Seal Slab (CT #49290)	Project	U.S. 101/Castillo interchange improvement	SBCAG, Caltrans	\$40,000	SBCAG 2022 RTP	Tier 3	Mid-term	State MFT STBG SCCP TCEP RAISE	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
CT-IL-8	Lane Realignment on U.S. 101 at Arroyo Quemado Canyon Bridge (CT # 40260)	Project	Lane realignment on U.S. 101 at Arroya Quemado Canyon bridge, south of Gaviota pass	SBCAG, Caltrans	\$10,000	SBCAG 2022 RTP	Tier 3	Mid-term	State MFT STBG SCCP TCEP	
CT-IL-27	U.S. 101/ SR 135 Broadway Interchange Project	Project	U.S. 101/ SR 135 Broadway Interchange (0G840)	City of Santa Maria, SBCAG, Caltrans	TBD	SBCAG 2022 RTP	Tier 3	Long-term	State MFT STBG SCCP TCEP	
SB-CT-A57	SR 156 Bridge/ Ramps at U.S. 101 Operational Improvements (Caltrans EA: 05-1N910)	Project	At U.S. 101/SR 156E interchange: Extend southbound U.S. 101 connector and construct a ramp meter.	SBCOG, Caltrans	\$1,250	SBCOG 2020-2045 RTP	Tier 2	Short-term	State MFT STBG SCCP TCEP	
SB-CT-A02	SR 156/Fairview Road Intersection Improvements	Project	Construct new turn lanes at the intersection.	SBCOG, Caltrans	\$6,824	SBCOG 2020-2045 RTP	Tier 3	Mid-term	State MFT STBG SCCP TCEP	
NTH-MHWY-1021	U.S. 101/ Wellsona Rd. Interchange	Project	New U.S. 101/ Wellsona Rd. interchange to address corridor and truck mobility	SLOCOG, Caltrans	\$18,450	SLOCOG 2023-2045 RTP	Tier 3	Short-term	State MFT STBG SCCP TCEP	
N/A	U.S. 101/ Main St. Templeton Interchange Improvements	Project	U.S. 101/ Main St. Templeton interchange improvements	SLOCOG, Caltrans	\$27,540	SLOCOG 2023-2045 RTP	Tier 3	Mid-term	State MFT STBG SCCP TCEP	
NTH-MHWY-1404	U.S. 101 / SR 46 East Interchange	Project	U.S. 101 / SR 46 East Interchange: Northbound off-ramp	SLOCOG, Caltrans	\$11,475	SLOCOG 2023-2045 RTP	Tier 1	Mid-term	State MFT STBG SCCP TCEP	Project Total: \$11.5M (unfunded need)

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
										~\$75k PID/PSR (currently state sponsored PID) \$2.0M PA&ED (Recommended in 2022 RTIP) \$2M PS&E (Estimate) \$6.9M CON Capital (Estimate)
NTH-MHWY-1019	U.S. 101 / SR 46 East Interchange Operational Improvements	Project	U.S. 101 / SR 46 East Interchange operational improvements: SB/NB ramps and SR 166/Thompson	SLOCOG, Caltrans	\$20,655	SLOCOG 2023-2045 RTP	Tier 1	Mid-term	State MFT STBG SCCP TCEP	\$19.1M Total Cost (Phase 3 & 4) East and Westside roundabouts FY18-19 \$200k PA&ED FY22-23 \$1.3M PS&E in 2022 STIP FY23-24 \$17.8M CON (needed and funded through SB1 and agency partnership funds)

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
STH-MHWY-1902	Five Cities Multimodal Transportation Network Enhancement Project (1G680)	Project	U.S. 101 Southbound Pismo Congestion Relief and Operational Improvements: TBD from 4th St in Pismo Beach to Avila Beach Dr.	SLOCOG, Caltrans	\$40,950	SLOCOG 2023-2045 RTP	Tier 1	Mid-term	State MFT STBG SCCP TCEP RAISE	PA&ED: \$4.6M PS&E: \$6.8M total Right of Way: \$2.8M CON: \$5.5M regional funds to leverage \$54M Cycle 3 TCEP and SCCP grant.
N/A	SR 166 Passing Lanes	Project	SR 166 passing lane and operational improvements – new passing lanes	SLOCOG, Caltrans	\$44,217	SLOCOG 2023-2045 RTP	Tier 2	Mid-term	State MFT STBG SCCP TCEP RAISE HSIP	
EST-MHWY-1005	SR 41 Truck-Climbing Lanes	Project	SR 41 truck-climbing lanes- new climbing lane.	SLOCOG, Caltrans	\$30,600	SLOCOG 2023-2045 RTP	Tier 2	Mid-term	State MFT STBG SCCP TCEP HSIP	
NTH-HWY-1001	State Route 46 Golden Spike Project (SR 46E/ Union Rd. Improvements – Phase I)	Project	Phase I of this project will develop an overpass to eliminate cross traffic movements between Union Road/Paso Robles Blvd. and SR 46.	Paso Robles, SLOCOG, Caltrans	\$65,000	SLOCOG 2023-2045 RTP	Tier 1	Short-term	State MFT STBG SCCP TCEP HSIP	
SFS-1	SR 17 Safety Improvements	Project	Perform the following improvements along SR 17 between Vine Hill Road and Eagle Crest Drive: (1) high friction	SCCRTC, Caltrans	\$4,100	CCCSFS	Tier 2	Short-term	State MFT STBG SCCP TCEP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			<p>surface treatments; (2) chevron signs on horizontal curves; (3) rumble stripes between travel lanes; (4) no-passing line between travel lanes; (5) speed monitoring and feedback; (6) elevation change advance warning signs; and (7) wider retroreflective edgelines and centerlines.</p> <p>(Multiple Caltrans projects have/are implementing high friction surface treatments, rumble strip placement, and upgrading striping to current standards which feature higher retro-reflectivity and a wider footprint.)</p>						HSIP	
SFS-2	SR 129 Safety Improvements	Project	<p>Perform the following improvements along SR 129 between SR 1 and Lakeview Road: (1) high friction surface treatment at the SR 1 loop on-ramp from westbound SR 129; (2) install speed monitoring and feedback at SR 129 approaching and departing SR 1; and (3) construct raised median to channelize left turns at Harvest Drive.</p>	SCCRTC, Caltrans	\$200	CCCSFS	Tier 2	Short-term	State MFT STBG SCCP TCEP HSIP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SFS-3	SR 1 Safety Improvements	Project	Perform the following improvements along SR 1 between San Andreas Road and Main Street: (1) construct acceleration/deceleration lanes and/or auxiliary lanes at on-/off-ramps; (2) Construct a deceleration lane on eastbound Main Street at merge with southbound SR 1 off-ramp; (3) and deploy speed enforcement for the entire corridor.	SCCRTC, Caltrans	\$52,000	CCCSFS	Tier 2	Long-term	State MFT STBG SCCP TCEP HSIP	
SFS-4	U.S. 101 King City Safety Improvements	Project	Perform the following improvements along U.S. 101 between King City and Welby: (1) construct acceleration lanes at on-ramps; (2) install wider retroreflective edgelines and centerlines with black underlay to contrast with pavement color; and (3) deploy high visibility speed enforcement.	TAMC, Caltrans	\$7,800	CCCSFS	Tier 2	Mid-term	State MFT STBG SCCP TCEP HSIP	
SFS-5	SR 156 Monterey County Safety Improvements	Project	Perform the following improvements along SR 156 between Castroville Blvd and Meridian Road: (1) install right-turn lanes at Monte Del Lago; (2) construct or extend acceleration/deceleration lanes at unsignalized intersections; (3) convert	TAMC, Caltrans	\$8,100	CCCSFS	Tier 2	Mid-term	State MFT STBG SCCP TCEP HSIP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			the Oak Hills Dr.- Cathedral Oak Rd. intersection to a roundabout with advanced warning signs; (4) install transverse rumble strips on stop-controlled approaches at unsignalized intersections; (5) install centerline rumble strips; and (6) install edgeline rumble strips.							
SFS-6	SR 156 San Benito County Safety Improvements	Project	Perform the following improvements along SR 156 between Fairview Road and Barnheisel Road: (1) install a wider center median; and (2) install a high friction surface treatment along curved roadway segments.	SBCOG, Caltrans	\$7,700	CCCSFS	Tier 2	Mid-term	State MFT STBG SCCP TCEP HSIP	
SFS-7	U.S. 101/SR 156 Safety Improvements	Project	Perform the following improvements along U.S. 101/SR 156 between Anzar Rd. and Rocks Rd.: (1) widen westbound SR 156 to southbound U.S. 101 freeway-to-freeway connector to 2 lanes; (2) construct/extend acceleration lane at southbound U.S. 101 after westbound SR 156 on-ramp; (3) construct/extend deceleration lane at westbound SR 156 prior	SBCOG, Caltrans	\$100,000	CCCSFS	Tier 2	Long-term	State MFT STBG SCCP TCEP HSIP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			to off-ramp to northbound U.S. 101; (4) install yield sign at northbound U.S. 101 loop on-ramp from Chittenden Road; and (5) deploy high visibility enforcement for driving under the influence violations.							
SFS-8	U.S. 101 San Luis Obispo County Safety Improvements		Perform the following improvements along U.S. 101 between West Cuesta Ridge Trailhead and Old Stage Coach Rd.: (1) install solid lane striping to restrict passenger cars from using the truck climbing lanes; (2) and install "Pass with Care" sign at the start of this corridor.	SLOCOG, Caltrans	\$200	CCCSFS	Tier 2	Short-term	State MFT STBG SCCP TCEP HSIP	
SFS-9	SR 46 Safety Improvements		Perform the following improvements along SR 46 between Davis Rd. and Antelope Rd.: (1) install no-passing line; (2) widen 4' center median to provide a horizontal buffer (for cars in opposing directions to mistakenly draft, run over the centerline rumble strip and then space to recover without crossing into opposing lane of traffic); and (3) install edgeline rumble stripes.	SLOCOG, Caltrans	\$18,300	CCCSFS	Tier 2	Mid-term	State MFT STBG SCCP TCEP HSIP	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SFS-10	SR 135 Safety Improvements		Perform the following improvements along SR 135 between Foster Rd. and Clark Ave.: (1) install speed limit advisory signs for off-ramps at the SR 135-Clark Ave. Interchange; (2) install pavement reflectors (raised pavement markers) along centerline and edgeline for the entire corridor; (3) install traverse rumble stripes at northbound SR 135 south of Union Valley Pkwy.; and (4) install edgeline rumble stripes along the entire corridor.	SBCAG, Caltrans	\$60	CCCSFS	Tier 2	Short-term	State MFT STBG SCCP TCEP HSIP	
SFS-11	U.S. 101 East Santa Barbara County Safety Improvements		Perform the following improvements along U.S. 101 between Micheltorena St. and Milpas St.: (1) install/extend deceleration/acceleration lanes at freeway ramps; (2) install centerline rumble stripes; and (3) install edgeline rumble stripes.	SBCAG, Caltrans	\$30,960	CCCSFS	Tier 2	Mid-term	State MFT STBG SCCP TCEP HSIP	
SFS-12	U.S. 101 West Santa Barbara County Safety Improvements		Install/extend deceleration/acceleration lanes at freeway ramps along U.S. 101 between Los Carneros Rd. and San Marcos Pass Rd.	SBCAG, Caltrans	\$61,780	CCCSFS	Tier 2	Long-term	State MFT STBG SCCP TCEP HSIP RAISE	

Project ID	Project Title	Type	Description	Key Agencies	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
									Rural	

Source: Association of Monterey Bay Area Governments; Cambridge Systematics; Fehr and Peers.

Note: Any projects looking to increase/enhance capacity if state funds are considered, will require further review by Caltrans.

4.2.3 *Enhance the Capacity, Operations, and Safety on the Freight Rail Network*

The region's freight rail system is an essential component of the multimodal freight network. Freight rail transportation can provide a safe, cost-effective way to move goods into and out of the Central Coast region. Furthermore, moving goods by rail positively impacts roadway congestion, safety, and emissions as it reduces the number of truck trips. It should be noted that the region's freight rail infrastructure is largely privately owned and any recommended improvement to the freight rail network is only feasible with cooperation from and partnership with the region's railroad owners.

Table 12 outlines strategies for improving the safety and availability of rail shipping options in the Central Coast. For example, though relatively few the region has experienced relatively highway-rail at-grade crashes. Furthermore, these crashes have largely been concentrated in Monterey County and at a subset of crossings. The At Grade Rail Crossing Safety Improvements recommendation would identify and implement safety improvements at crossings that have experienced multiple incidents.

Transporting goods throughout the Central Coast region is heavily dependent on trucking. Historically, stakeholders have sought to increase the availability of rail shipping options to reduce their reliance on trucking. Increased rail shipping has also been viewed as a congestion and emissions reduction strategy as an AMBAG study on the potential for a truck to rail intermodal terminal found that a shift of about 47,000 truckloads to rail would substantially reduce congestion in the region. Two recommendations included in Table 12 call on the region to support rail projects that increase regional rail capacity (such as those included in the California Statewide Rail Plan) and to conduct a market study for increasing rail shipping options.

35 percent of goods hauled by trucks in the region consist of agriculture, perishable produced, food products, and animal products. These products are seasonal and very time sensitive due to short shelf life. Therefore, they rely on the fastest and most reliable mode. It is critical to identify where transporting goods by rail is economically viable and has opportunity. The market study is needed because the decision to increase rail shipping options – including the development and operation of a transload or intermodal facility – is ultimately a private-sector determination that those services and associated facilities would be cost effective to build and operate. That decision is dependent on a variety of market factors including available land and consistent demand for service, among others. A study is needed to outline those market factors in detail and determine strategies for improving the region's competitive position for increased rail service.

Table 12 Support Increased Throughput, Enhanced Operations, and Safety on the Freight Rail Network

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SFS-13	Support Expansion of Regional Freight Rail Capacity	Program	Partner with rail operators and the State to identify and implement projects that increase the region's rail capacity.	Union Pacific; Santa Cruz Branch Line; Santa Maria Valley Railroad; Santa Cruz, Big Trees & Pacific Railway; AMBAG, Caltrans	TBD	CCCSFS	Tier 3	Long-term	TCEP CRISI RAISE	
SFS-14	Central Coast Freight Rail Market Study	Policy	Partner with Caltrans to conduct a regional freight rail study with the goal of increasing options for shippers in the Central Coast.	Union Pacific; Santa Cruz Branch Line; Santa Maria Valley Railroad; Santa Cruz, Big Trees & Pacific Railway; AMBAG, Caltrans	\$250	CCCSFS	Tier 3	Short-term	CRISI RAISE	
SFS-15	At-Grade Rail Crossing Safety Improvements	Program	Identify and implement safety improvements at at-grade rail crossings that have experienced multiple incidents.	Union Pacific; Santa Cruz Branch Line; Santa Maria Valley Railroad; Santa Cruz, Big Trees & Pacific Railway; AMBAG, Caltrans	TBD	CCCSFS	Tier 2	Mid-term	TCEP RCE RAISE HSIP (Section 130) Section 190	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SMVRR-1	Osburn Yard Improvements Phase 2		(1) Expansion of a 3rd Transloading track plus storage tracks for more efficient rail operations. (2) Fencing around Osburn Yard and various points of active tracks going through Santa Maria.	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	
SMVRR-2	Osburn Yard Improvements Phase 3		(1) Construction of an engine house with pit, car repair house and additional maintenance of way shops/ garages for operation of fuel-efficient locomotives. (2) Additional antitrespassing components around Osburn Yard and various points of active tracks going through Santa Maria.	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	
SMVRR-3	Guadalupe Emergency Siding Project		Construct siding track for emergency cars in or near to Guadalupe, CA	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			to accommodate future City disaster relief plan efforts.							
SMVRR-4	Santa Maria Siding Improvements		Construction of four siding tracks in various location within Santa Maria, CA for more efficient freight operations and storage capacity.	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	
SMVRR-5	Airbase Track Improvements Project		Upgrade 13,094 ft of track through the Airbase section of the SMVRR line.	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	
SMVRR-6	Re-acquisition of South Airbase		Redevelop the southern portion of the Airbase line to re-install the track and add in an additional 4-5 storage spurs.	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	
SMVRR-7	Osburn to Wye Track Project		Upgrade 10,982 ft of track, switches and crossings in the Osburn to wye section.	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	
SMVRR-8	Mainline Track Improvement Project		Upgrade 6.5 miles of mainline track to heavier rail and	Santa Maria Valley Railroad	TBD	Santa Maria Valley Railroad	Tier 2	Long-term	NHFP RRIF	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			adding new supporting ties.							
CT-IL-12:	MP 276 Track Realignment and SR 1 Overpass Replacement (LOSSAN # SB-01)		MP 276 track realignment and SR 1 overpass replacement	Union Pacific, SBCAG	\$62,000	SBCAG 2022 RTP	Tier 2	Long-term	NHFP RRIF	
CT-IL-13	Guadalupe Siding Extension and Island CTC (LOSSAN # SB-02)		Guadalupe siding extension and island CTC	Union Pacific, SBCAG	\$20,000	SBCAG 2022 RTP	Tier 2	Long-term	NHFP RRIF	
CT-IL-14	Waldorf Siding Extension and Island CTC (LOSSAN # SB-03)		Extend the current Waldorf siding one mile southward to MP 278.6, etc. (Location: 30 miles south of SLO and 4 miles south of Guadalupe)	Union Pacific, SBCAG	\$12,000	SBCAG 2022 RTP	Tier 2	Mid-term	NHFP RRIF	
CT-IL-15	Devon to Tangair Curve Realignments (LOSSAN # SB-04)		Relocate 12.1 miles of main line track between MP 279.8, etc. (Location: 14 miles south of Guadalupe)	Union Pacific, SBCAG	\$196,000	SBCAG 2022 RTP	Tier 2	Long-term	NHFP RRIF	
CT-IL-16	Tangair Siding Extension and Island CTC		Extend existing Tangair siding 0.85 miles northward, etc. (Location: 18	Union Pacific, SBCAG	\$12,000	SBCAG 2022 RTP	Tier 2	Mid-term	NHFP RRIF	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
	(LOSSAN # SB-05)		miles south of Guadalupe)							
CT-IL-17	Santa Barbara County Curve Realignment Projects (LOSSAN # SB-06)		Realign track: Surf to Arguello, Sudden to Conception, Conception to Gato, San Augustine to Sacate, Gaviota to Tajiguas, Tajiguas to Ellwood	Union Pacific, SBCAG	\$677,000	SBCAG 2022 RTP	Tier 2	Long-term	NHFP RRIF	
CT-IL-18	Narlon Honda, Concepcion – Island CTC (LOSSAN # SB-07)		Upgrade three sidings to centralized traffic control (CTC), etc.	Union Pacific, SBCAG	\$30,000	SBCAG 2022 RTP	Tier 2	Long-term	NHFP RRIF	
CT-IL-19	Capitan Siding Extension and Island CTC (LOSSAN # SB-08)		Extend the existing siding at Capitan, etc.	Union Pacific, SBCAG	\$10,000	SBCAG 2022 RTP	Tier 2	Mid-term	NHFP RRIF	
CT-IL-21	Sandyland Siding (LOSSAN # SB-10)		Add a new siding from MP 373.25 to MP 378.10, north of the existing Carpinteria Station, etc.	Union Pacific, SBCAG	\$15,000	SBCAG 2022 RTP	Tier 2	Mid-term	NHFP RRIF	
CT-IL-22	Carpinteria Siding (LOSSAN # SB-12)		Construct a new siding at the Carpinteria Station, etc.	Union Pacific, SBCAG	\$10,000	SBCAG 2022 RTP	Tier 2	Mid-term	NHFP RRIF	

Source: Association of Monterey Bay Area Governments; Caltrans; Cambridge Systematics; Fehr and Peers.

Note: Any projects looking to increase/enhance capacity if state funds are considered, will require further review by Caltrans.

4.2.4 Adopt new Technologies to Improve Freight Operations and Safety

Transportation technology is evolving rapidly and has the potential to improve the mobility, reliability, and safety of freight travel. Furthermore, technology solutions are able to yield system improvements with fewer environmental and community impacts. The 2016 U.S. 101 Central Coast California Freight Strategy recommended that the region support a program of ITS investments to improve freight mobility throughout the Central Coast. The 2024 Sustainable Freight Study recommends that the region continue its support of this program and partner with Caltrans to continue to expand and enhance the State's ITS throughout the region.

Since the completion of the 2016 U.S. 101 Central Coast Regional Freight Strategy, changeable message signs (CMS), closed circuit television (CCTV) cameras, and other ITS devices have been deployed along several of the region's major freight corridors. In addition to continuing to support the expansion of these devices across the system, the Sustainable Freight Study recommends that SR 1 in Monterey County and the region's truck parking facilities be targeted for technology-driven improvements.

Regarding SR 1 in Monterey County, multiple segments of this corridor were identified as bottlenecks in the analysis in section 3.1. Much of this corridor is functionally an expressway and is characterized by urban, highly developed surrounding land uses. Furthermore, unlike several of the other bottlenecks identified in section 3.1, there were few projects identified as part of the region's long-range plans to address the truck travel time challenges on this corridor. Because of these observations, the Sustainable Freight Study recommends that the region's ITS infrastructure be expanded along the SR 1 corridor to include ramp metering and CMS.

Table 13 Deploy Technology to Improve Freight Operations and Safety

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
CT-P01	Hwy 1 Ramp Metering: Southern Sections	Project	Reconfiguration of ramps and installation of ramp meters at interchanges from Hwy 129/ Riverside Dr to Mar Monte Ave. Could be implemented as local lead project.	SCCRTC, Caltrans	\$20,600	SCCRTC 2045 RTP	Tier 3	Mid-term	State MFT SCCP HSIP SMART STBG	
CT-IL-11	U.S. 101 ITS	Project	U.S. 101 ramp metering	SBCAG, Caltrans	\$10,000	SBCAG 2022 RTP	Tier 2	Mid-term	State MFT STBG SCCP TCEP	
CT-IL-28	SR 217 at U.S. 101 Ramp Meter	Project	Ramp meter SR 217 to U.S. 101 southbound	SBCAG, Caltrans	\$1,000	SBCAG 2022 RTP	Tier 3	Short-term	State MFT STBG SCCP TCEP	
SFS-16	Regionwide ITS Program	Policy	Continue to support the expansion of the State's ITS capabilities throughout the Central Coast.	AMBAG, Caltrans	TBD	CCCSFS	Tier 2	Mid-term	State MFT CMAQ STBG SMART ITD	
SFS-17	SR 1 ITS Improvements	Project	Install CMS and deploy ramp metering along SR 1 between Carpenter St. (Carmel-by-the-Sea) and Del Monte Blvd.	TAMC, Caltrans	TBD	CCCSFS	Tier 2	Mid-term	State MFT CMAQ STBG SCCP SMART ITD	

			(North) (Castroville)						
SFS-18	Truck Parking Availability System Pilot	Project	Partner with Caltrans to conduct a truck parking availability system (TPAS) pilot project at the Shandon Safety Roadside Rest Area. The goal of the pilot would be to identify the opportunities and challenges of expanding the pending I-10 TPAS onto non-Interstate highways.	AMBAG, Caltrans	TBD	CCCSFS	Tier 3	Mid-term	State MFT CMAQ STBG TCEP SMART RAISE

Source: Association of Monterey Bay Area Governments; Cambridge Systematics; Fehr and Peers.

Note: Any projects looking to increase/enhance capacity if state funds are considered, will require further review by Caltrans.

4.2.5 Increase Access to Truck Parking and Charging Infrastructure

Truck drivers need to park for different reasons and there are unique challenges for various types of parking needs. Drivers must adhere to Federal hours of service (HOS) regulations that place specific time limits on driving and rest intervals. Drivers almost always need to park and wait for delivery windows at shippers and receivers, and sometimes are impacted by unexpected road closures or congestion. Finally, truck drivers are essential workers, who need to take personal breaks for rest and safety.

The 2022 Caltrans Statewide Truck Parking Study found that the Central Coast has a shortage of truck parking capacity. Lack of authorized or designated truck parking results in drivers parked on shoulders, on-off ramps, and in the parking lots of neighboring businesses. Improving these conditions improves safety and operations not only for motor carriers, but also for the traveling public as they benefit from better visibility and roadway shoulders that are clear for emergency use.

The solutions outlined in Table 14 offer potential solutions for increasing access to truck parking throughout the region. Notably, as part of their 2023-2045 Regional Transportation Plan SLOCOG identified multiple opportunities to increase truck parking capacity in San Luis Obispo County. Examples include increasing capacity at the Shandon Safety Roadside Rest Area (SFS-19) and accommodating trucks at the U.S. 101 parking facility at Cuesta Summit (SFS-22). Also, as discussed in the Existing Conditions report, Santa Cruz and San Benito Counties are the only counties in the region with no truck parking facilities. As a result, drivers operating in those counties do not have any authorized locations to take rest breaks or to park in an emergency. The Sustainable Freight Study recommends that a feasibility study be conducted for developing a facility in each county to serve the drivers that operate in those areas (SFS-35).

Furthermore, the region should work to align future investments in the region's truck parking capacity with the state's freight electric vehicle (EV) corridors.³² The 2023 California's Deployment Plan for the National Electric Vehicle Infrastructure Program proposed U.S. 101, SR 156, and SR 46 as freight EV corridors. While the electrification of freight vehicles is generally less advanced than other transportation sectors, charging station networks are an essential element of their continued development and adoption. Given that electric trucks offer significant greenhouse gas emissions reductions per mile compared to diesel vehicles, aligning long-term truck parking investments with alternative fuel infrastructure is an opportunity to meet the region's truck parking needs while also improving resiliency and limiting the environmental impacts of freight. Additionally, it will better enable freight operators in the region to meet the State's zero emissions mandates in the Advanced Clean Fleets Regulation. Project SFS-24 in Table 14 recommends that the region and Caltrans partner for developing and implementing a zero-emission vehicle pilot project focused on trucks supporting the agricultural industry.

The Biden-Harris National Zero-Emission Freight Corridor Strategy³³, adopted in March 2024, does not identify any corridors in Central Coast region for the first four phases (2024-2040) of deployment of zero emission infrastructure for medium and heavy trucks. However, the State of California has requested to add U.S. 101 to the zero-emission network. It is important that the region continue to advocate and emphasize their need for zero emission infrastructure to be part of the network.

³² <https://dot.ca.gov/-/media/dot-media/programs/esta/documents/nevi/2023-ca-nevi-plan-update-final-a11y.pdf>

³³ <https://driveelectric.gov/files/zef-corridor-strategy.pdf>

Table 14 Increase Access to Truck Parking

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SFS-19	Shandon Safety Roadside Rest Area Truck Parking	Project	Expand truck parking capacity at the Shandon Safety Roadside Rest Area.	SLOCOG, Caltrans	TBD	SLOCOG 2023-2045 RTP, CCCSFS	Tier 2	Mid-term	TCEP Rural	
SFS-20	Wellsona Road Truck Parking	Policy	Support the expansion of truck parking capacity around the San Paso Truck Stop.	SLOCOG, Caltrans	TBD	SLOCOG 2023-2045 RTP, CCCSFS	Tier 2	Mid-term	TCEP Rural	
SFS-21	SR 1 at Cuesta College Truck Parking	Policy	Conduct a feasibility study to determine opportunities to add overnight parking along SR 1 near Cuesta College and Camp Roberts.	SLOCOG, Caltrans	\$100	SLOCOG 2023-2045 RTP, CCCSFS	Tier 3	Short-term	FHWA Discretionary PL Funds TCEP Rural	
SFS-22	U.S. 101 Cuesta Summit Truck Parking	Project	Add truck parking capacity, information, and signage along U.S. 101 at the Cuesta Summit.	SLOCOG, Caltrans	TBD	SLOCOG 2023-2045 RTP, CCCSFS	Tier 3	Short-term	TCEP Rural	
SFS-23	San Miguel	Policy	Conduct a feasibility study to determine opportunities for adding overnight truck parking in the San Miguel area.	SLOCOG, Caltrans	\$100	SLOCOG 2023-2045 RTP, CCCSFS	Tier 3	Short-term	FHWA Discretionary PL Funds TCEP Rural	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SFS-24	Pilot Project for Zero Emission Truck Fueling	Project	Partner with Caltrans to pursue federal funding for developing a pilot project for zero emission fueling for medium and heavy-duty trucks. The pilot project could focus on challenges and opportunities for zero emission fueling for trucks that serve the agricultural sector for trips to and from the Port of Oakland. This recommendation would support the "Provide Zero Emission Fuels at Truck Parking Facilities" strategy in the 2022 California Statewide Truck Parking Study.	AMBAG, Caltrans	TBD	CCCSFS	Tier 2	Mid-term	State MFT CMAQ CFIG	
SFS-25	Incorporate Truck Parking into Traffic Impact Assessments	Policy	AMBAG and local governments should revise and/or adopt traffic impact assessment	AMBAG, Central Coast County Governments, Caltrans	TBD	CCCSFS	Tier 3	Mid-term	FHWA Discretionary PL Funds TCEP	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			processes to account for anticipated demand for truck parking.							
SFS-26	Revise Planning Ordinances and Policies to Include Truck Parking	Policy	Local governments throughout the region should revise planning ordinances to include on-site truck parking minimums.	AMBAG, Central Coast County Governments, Caltrans	TBD	CCCSFS	Tier 3	Mid-term	TBD	FHWA Discretionary PL Funds
SFS-35	Santa Cruz and San Benito County Truck Parking	Policy	Conduct a feasibility study for developing truck parking along the SR 156 and/or U.S. 101 corridors in San Benito County and the SR 1 and/or SR 17 corridors in Santa Cruz County. The feasibility study should also explore funding options including public-private partnerships.	AMBAG, Central Coast County Governments, Caltrans	\$200	CCCSFS	Tier 3	Short-term	FHWA Discretionary PL Funds TCEP Rural	

Source: Association of Monterey Bay Area Governments; Cambridge Systematics; Fehr and Peers.

Note: Any projects looking to increase/enhance capacity if state funds are considered, will require further review by Caltrans.

4.2.6 *Improve Freight Network Resiliency*

Significant portions of the region, and its multimodal freight network, is at risk to disruption from multiple hazards – namely sea level rise/coastal flooding, riverine flooding, and wildfires. These hazards place critical components of the region’s multimodal freight network at risk to disruption. The 2020 Central Coast Highway 1 Climate Resilience Study put forth several recommendations to improve the resiliency of SR 1 through the Elkhorn Slough. Implementing the recommendations made from that study (project SFS-27) should be the first step towards improving the region’s resiliency to climate change and extreme weather events.

While the Sustainable Freight Study performed a high-level assessment of resiliency, the next step should be a detailed engineering vulnerability assessment for a selection of critical freight assets (project SFS-28). As articulated in the FHWA Vulnerability Assessment and Adaptation Framework, engineering-informed adaptation studies are characterized by a greater level of asset specific data and analysis than a geographically broad assessment that considers multiple assets.³⁴ These assessments would help the Central Coast anticipate the effectiveness of specific adaptation measures and their respective return on investment if adopted. They would be similar to the 2020 Central Coast Highway 1 Climate Resilience Study.

Additionally, as noted in section 3.4 the Union Pacific railroad has experienced multiple flooding and storm surge events that have led to track closures. Project SFS-33 recommends that the region partner with Union Pacific for identifying, secure funding, and ultimately implementing projects to address climate challenges and increase the resiliency of the Union Pacific mainline through the Central Coast. Though this is privately held infrastructure, it is critical for many of the region’s shippers and it essential for transporting goods that would otherwise travel by truck.

³⁴ Federal Highway Administration, Vulnerability Assessment and Adaptation Framework, 3rd ed., December 2017, https://www.fhwa.dot.gov/environment/sustainability/resilience/adaptation_framework/climate_adaptation.pdf.

Table 15 Improve Freight Network Resiliency

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SFS-27	Implement the Central Coast Highway 1 Climate Resilience Study	Policy	Implement the recommendations from the 2020 Central Coast Highway 1 Climate Resilience Study as the first step towards improving the region's resiliency to climate change and extreme weather events.	AMBAG, Caltrans	TBD	CCCSFS	Tier 2	Mid-term	RAISE PROTECT	
SFS-28	Engineering Informed Vulnerability Assessment for a Selection of Critical Freight Assets	Policy	Conduct a detailed engineering vulnerability assessment for a selection of critical freight assets – similar to the Central Coast Highway 1 Climate Resilience Study.	AMBAG, Caltrans	TBD	CCCSFS	Tier 2	Short-term	FHWA Discretionary PL Funds RAISE PROTECT	
SFS-33	Freight Rail Resiliency Study	Policy	Partner with the Union Pacific Railroad to identify, fund, and implement projects to address climate-driven resiliency challenges (e.g., cliff retreat, sea level rise, wildfire threats, storm surge) of the UP mainline along coastal routes.	Union Pacific Railroad, Caltrans, AMBAG		CCCSFS	Tier 2	Short-term	FHWA Discretionary PL Funds RAISE PROTECT	

Source: Association of Monterey Bay Area Governments; Cambridge Systematics; Fehr and Peers.

Note: Any projects looking to increase/enhance capacity if state funds are considered, will require further review by Caltrans.

4.2.7 Mitigate Freight Impacts on Communities and the Environment

Compared to passenger travel, freight transportation has a higher marginal impact on surrounding communities. This is because of freight transportation's contribution to increased noise, higher emissions, reduced safety (as crash outcomes are typically more severe), infrastructure degradation, and often, reduced mobility and accessibility (as freight corridors can act as physical barriers) for the communities adjacent to freight assets. Advancing transportation equity within a freight context is challenging as the benefits of freight are broadly distributed while its burdens are localized and disproportionately impact communities adjacent to highways, rail terminal, airports, and other freight assets.

One recommendation is to adopt and track freight equity indicators. This strategy defines a set of freight equity indicators that may be tracked over time. Indicators developed in this report include those related to congestion and reliability, freight activity, and safety. By tracking how indicators of freight equity change over time, the region can better identify where its efforts need to be focused and proactively address freight transportation equity concerns. It will also allow the region to gauge how well current efforts are performing.

Another is to develop a freight equity analysis and screening tool. For example, LA Metro developed a Rapid Equity Assessment Tool to assist agency staff in identifying and prioritizing equity opportunities. The screening tool consists of a set of questions to be asked and answered before a transportation decision is made. The development and deployment of an evaluation screening tool can help the region proactively address freight transportation equity concerns.

Also, another recommendation is to install green infrastructure along freight routes. This strategy would incorporate green infrastructure such as bioswales, planter boxes, and street trees into freight corridors to help filter roadway surface pollutants from stormwater runoff before they enter water bodies. They also generally serve as another layer of flooding control for freight corridors. Green infrastructure can also help to preserve existing, aging gray infrastructure (e.g., curbs, gutters, pipes) as green infrastructure would divert some stormwater before it enters those systems.

At the local level, it is recommended to support cities to adopt "good neighbor" policies. This would ensure that as region grows and attracts more freight-intensive activities, there are provisions in place to ensure communities and businesses co-exist in healthy environment. This can be done by providing sample ordinances and good practices and policies that local jurisdiction can adopt.

Table 16 Mitigate Freight Impacts on Communities and the Environment

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
SB-CT-A58	Rocks Road U.S. 101 Wildlife Connectivity Project	Project	The project will identify wildlife crossing opportunities along U.S. 101 in San Benito County in the Aromas Hills between postmile 0.0 and 2.8 to connect important habitat on both sides of the highway and improve safety for drivers and wildlife.	SBCOG, Caltrans, California Dept. of Fish and Wildlife	\$12,000	SBCOG 2020-2045 RTP	Tier 2	Mid-term	PROTECT SCG	
SFS-29	Adopt and Track Freight Equity Indicators	Program	Define and track a set of freight equity indicators so that the region may assess freight equity impacts, identify areas of need, and proactively address freight transportation equity issues.	AMBAG, Caltrans	N/A	CCCSFS	Tier 2	Short-term	SCG	
SFS-30	Develop a Freight Equity Analysis Screening Tool	Policy	Develop and deploy a freight equity analysis and evaluation screening tool to help the region proactively	AMBAG, Caltrans	\$75	CCCSFS	Tier 2	Short-term	SCG	

Project ID	Project Title	Type	Description	Key Stakeholders	Cost (\$000)	Source(s)	Tier	Implementation Timeframe	Potential Funding Source(s)	Funding Allocation
			address freight transportation equity concerns.							
SFS-31	Install Green Infrastructure along Freight Routes	Policy	Incorporate green infrastructure such as bioswales, planter boxes, and street trees into the design of freight corridors.	AMBAG, Caltrans	N/A	CCCSFS	Tier 3	Long-term	PROTECT UGGP	
SFS-32	Central Coast Zero Emission (ZE) Truck Strategy	Policy	Develop a ZE readiness plan for medium and heavy trucks.	AMBAG, Caltrans	\$300	CCCSFS	Tier 2	Mid-term	SCG	
SFS-34	Watsonville Freight Study	Policy	This study will focus on the impacts of trucking to disadvantaged communities adjacent to freight corridors in the City of Watsonville.	City of Watsonville, AMBAG	TBD	City of Watsonville	Tier 3	Short-term	FHWA Discretionary PL Funds	

Source: Association of Monterey Bay Area Governments; Cambridge Systematics; Fehr and Peers.

Note: Any projects looking to increase/enhance capacity if state funds are considered, will require further review by Caltrans.

4.3 Funding Sources

Transportation funding for projects in the region can come from a number of sources including federal programs, state programs, and funds raised locally within the region. Importantly, in November 2022 the Infrastructure Investment and Jobs (IIJA) Act was passed which authorized multiple new formula and discretionary transportation funding programs for fiscal years 2022 through 2026. This section of the report discusses the funding opportunities available to the region for implementing the recommendations discussed earlier.

4.3.1 Federal Funding Sources

Federal Formula Funding

Federal formula funding programs allocate funding to recipients based on formulas set by Congress. USDOT distributes these funds states, federally recognized tribal entities, and transit agencies. Those funds are then further allocated to counties, cities, and other localities. Federal formula programs that are relevant to the Regional Freight Transportation Plan include the National Highway Freight Program (NHFP), National Highway Performance Program (NHPP), and the Surface Transportation Block Grant Program (STBG).

National Highway Performance Program (NHPP)

The Infrastructure Investment and Jobs (IIJA) Act continues the NHPP which was initially established under MAP-21 and continued under the FAST Act. The NHPP provides support for the condition and performance of the National Highway System (NHS) – which includes the interstate system, principal arterials, intermodal connectors for motor vehicles, and highways important to U.S. defense (STRAHNET) – and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan. As such, funds from this source can be put towards either new facilities or maintenance of existing facilities, with an emphasis on ensuring that performance measures on NHS roadways are met (pavement quality, bridge, quality, etc.). The NHPP is also intended to provide support for activities to increase the resiliency of the NHS to sea level rise, extreme weather events, flooding, wildfires, or other natural disasters. For fiscal years 2022 – 2026, NHPP funds are projected to be over \$12.8 billion for California.³⁵

Surface Transportation Block Grant (STBG)

The Surface Transportation Block Grant (STBG) program has the most flexible eligibilities among all Federal-aid highway programs. In fiscal years 2022-2026, there is projected to be over \$6.2 billion for California.³⁶ There are fewer limitations on these funds as they can be applied to any project that satisfies any number of categories such as bridge and tunnel, pedestrian and bicycle, transit capital, and federal-aid highways. In general, funds from the STBG program may not be applied to local roads or rural minor

³⁵ Federal Highway Administration, Bipartisan Infrastructure Law – Funding, <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm>, Accessed 3/12/2024.

³⁶ Ibid.

collectors. Exceptions to that rule that may impact the region include projects that include, among others, infrastructure-based ITS capital improvements, truck parking facilities, and electric vehicle charging infrastructure.³⁷

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is another of the Federal-aid highway programs. It focuses on projects that improve safety on all public roads. This program is projected to have nearly \$1.37 billion for California for fiscal years 2022-2026.³⁸ Alongside this program, each state must create performance measures for the upcoming year that relate to:

- The number of fatalities;
- The number of serious injuries;
- Fatality rate per hundred million vehicle miles traveled;
- Serious injury rate per hundred million vehicle miles traveled; and
- The number of non-motorized fatalities and serious injuries.

Funds from the HSIP must be directed to projects that help the state meet these performance measures. In addition, projects must be consistent with each state's Strategic Highway Safety Plan (SHSP).³⁹ HSIP funds represent an opportunity for implementing safety improvements in the region, especially for freight corridors with relatively high crash rates and severe outcomes.

Railway-Highway Crossings (Section 130)

The Railway-Highway Crossings (Section 130) Program provides funds to reduce the number and severity of highway accidents by eliminating hazards to vehicles and pedestrians at existing railroad crossings. The funds are set-aside from the HSIP apportionment. As provided by Title 23, United States Code, Section 130, the Railroad-Highway Grade Crossing Program, also known as Section 130 Program, is funded at a 90% Federal contribution and 10% local matching contribution.

Congestion Mitigation and Air Quality (CMAQ)

The Congestion Mitigation and Air Quality (CMAQ) Program is a Federal-aid program that may be used for projects that improve congestion and air quality within a state. Within each state, extra money is apportioned to non-attainment areas which are defined as those areas that do not meet Federal standards for air quality due to levels of particulate matter, ozone, or other pollutants. Potential projects eligible for CMAQ funds include intelligent transportation systems, bicycle and pedestrian facilities, transit

³⁷ Federal Highway Administration, Surface Transportation Block Grant Program Implementation Guidance, June 1, 2022, https://www.fhwa.dot.gov/specialfunding/stp/bil_stbg_implementation_guidance-05_25_22.pdf

³⁸ Federal Highway Administration, Bipartisan Infrastructure Law – Funding, <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm>, Accessed 3/12/2024.

³⁹ Federal Highway Administration, Highway Safety Improvement Program Fact Sheet, February 8, 2022, <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/hsip.cfm>

improvements, travel demand management programs, idle reduction/advanced truck technology programs, among others. In fiscal years 2022-2026, California is projected to receive over \$2.6 billion in CMAQ dollars.⁴⁰ The IIJA continued all prior CMAQ eligibilities and added four new eligibilities, two of which are potentially relevant to the Sustainable Freight Study.⁴¹ It added the purchase of diesel replacements, or medium-duty or heavy-duty zero emission vehicles and related charging equipment, as an eligible project. Also, IIJA added vehicle refueling infrastructure projects that would reduce emissions from nonroad vehicles and nonroad engines used in construction projects or agricultural operations.

National Highway Freight Program (NHFP)

The IIJA Act continues the National Highway Freight Program, which was established under the FAST Act. The purpose of the National Highway Freight Program is to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and support several goals, including:

- Investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity;
- Improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas.
- Improving the state of good repair of the NHFN.
- Using innovation and advanced technology to improve NHFN safety, efficiency, and reliability.
- Improving the efficiency and productivity of the NHFN.
- Improving State flexibility to support multi-State corridor planning and address highway freight connectivity.
- Reducing the environmental impacts of freight movement on the NHFN.

Generally, NHFP funds must contribute to the efficient movement of freight on the NHFN and be identified in a freight investment plan included in the State's freight plan. For fiscal years 2022 – 2026, NHFP funds are projected to be over \$662 million for California.⁴²

It should be noted that only a small portion of California's portion of the NHFN lies within the Central Coast region – namely critical rural or critical urban freight corridors (CRFC or CUFC) in Monterey, San Luis Obispo, and Santa Barbara Counties. About 0.2 miles of SR 156 just west of the Union Pacific rail line in Castroville is designated as a CUFC. About 3.1 miles of U.S. 101 in the Montecito area of Santa

⁴⁰ Federal Highway Administration, Bipartisan Infrastructure Law – Funding, <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm>, Accessed 3/12/2024.

⁴¹ Federal Highway Administration, Congestion Mitigation and Air Quality Improvement Program Fact Sheet, February 8, 2022, <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/cmaq.cfm>

⁴² Federal Highway Administration, Bipartisan Infrastructure Law – Funding, <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm>, Accessed 8/20/2023.

Barbara County is also designated as a CUFC. The only CRFC in the region is located along SR 46 in the northeastern corner of San Luis Obispo County near its border with Monterey and Kern Counties.

However, if additional corridors are designated as a CRFC or CUFC, then it would be eligible for NHFP. As state DOTs have the ability to continuously redesignate their CRFC/CUFC networks, it is possible that multiple Central Coast roadways could be brought onto the NHFN as part of a reevaluation.

Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) – Formula Funding

The PROTECT Program provides both formula funds and discretionary funds via a competitive grant program. It funds projects that address the climate crisis by improving the resilience of the surface transportation system, including highways, public transportation, ports, and intercity passenger rail.⁴³ Projects selected under this program should support the continued operation or rapid recovery of crucial local, regional, or national surface transportation facilities. Furthermore, projects funded under this program should utilize innovative and collaborative approaches to risk reduction, including the use of natural infrastructure strategies. Natural infrastructure strategies are those that use conservation, restoration, or construction of marshes, wetlands, native vegetation, stormwater bioswales, and other riparian and streambed treatments to reduce flood risks, erosion, and heat impacts among other benefits. For fiscal years 2022 – 2025, PROTECT formula funds are projected to be nearly \$631 million for California.⁴⁴

Other Federal Formula Funding Programs

Other federal formula funding programs that are potentially relevant to the Sustainable Freight Study are summarized in Table 17. These programs tend to be less relevant for freight projects, or generally provide far fewer funds than those discussed in the previous section. However, they are potential sources of funding for the Sustainable Freight Study recommendations.

Table 17 Summary of Other Federal Formula Funding Programs

Federal Formula Funding Program	Description
Carbon Reduction Program	Aimed to reduce transportation emissions, eligible projects establish or operate traffic monitoring, management, and control facility or program.
National Electric Vehicle Infrastructure Program	This program makes available funding to deploy charging facilities and establish an interconnected network to facilitate data collection.
Railway-Highway Crossings Program (RHCP)	This is a set aside from HSIP and provides funds for safety improvements to reduce the number of fatalities, injuries, and crashes at public railway-highway grade crossings.

Source: AMBAG; Cambridge Systematics; Fehr and Peers.

⁴³ <https://www.fhwa.dot.gov/environment/protect/discretionary/>

⁴⁴ Federal Highway Administration, Bipartisan Infrastructure Law – Funding, <https://www.fhwa.dot.gov/bipartisan-infrastructure-law/funding.cfm>, Accessed 8/20/2023.

Federal Discretionary Grant and Loan Funding

Discretionary grant funding is federal funding that is provided on a competitive basis upon a call for projects (i.e., a Notice of Funding Opportunity or NOFO). This section discusses specific discretionary grant programs most relevant to this study, though it is not exhaustive. Each section describes the grant program, criteria for eligibility and competitiveness, previous grantees in the region or the State, and recommendations for selecting projects that would be most competitive. This section does not identify or prioritize specific projects.

Beyond understanding each grant's criteria for applying, applicants for federal discretionary funding sources should also ensure broad political and community support and use data to help illustrate why a specific project would address high priority regional mobility needs. Specifically:

- **Stakeholder Engagement:** Engage a diverse group of stakeholders. This can be community leaders, businesses, advocacy groups, and residents. This should also include other transit and transportation agencies, schools, and religious institutions in the area. Engaging stakeholders early and incorporating their feedback demonstrates the project's regional importance.
- **Elected Offices:** Obtain letters of support from elected offices early. These letters should highlight their commitment to the project and explain how it benefits the community. As part of this, projects should undergo elected office engagement well before the project deadline at the local (city, county), state (Assembly, Senate), and federal (House, Senate) level.
- **Regional Coordination:** Prior to a grant deadline for a major federal grant, many other agencies may be reaching out to the same elected offices and organizations. Applicants should engage with cities, counties, MPOs, and other associations of government in the area to coordinate on project applications for the region. If applications come from several projects from the same region, this may indicate diffuse levels of support for projects. This may also create challenges for elected officials who will be faced with picking winners and losers.
- **Data Analysis:** Allocate significant time and analysis to making use of existing data (safety, equity, environmental, congestion) for the project corridor. Be sure to use analysis to justify the project. Data should help paint a picture for how a project addresses highest need compared to other projects. When presenting data (i.e., crash data), it is important to articulate how the project will address disproportionately significant key performance indicators (KPIs). If a project does not address safety concerns, it is best to avoid discussing those issues.

Multimodal Project Discretionary Grant (MPDG) Program

The MPDG discretionary grant opportunity contains three grant programs: the Nationally Significant Multimodal Freight and Highway Projects grants program (INFRA), the National Infrastructure Project Assistance grants program (Mega), and the Rural Surface Transportation Grant program (RSTG). The funding opportunities are awarded on a competitive basis for surface transportation infrastructure projects – including highway and bridge, intercity passenger rail, railway-highway grade crossing or separation, wildlife crossing, public transportation, marine highway, and freight projects, or groups of such projects –

with significant national or regional impact, or to improve and expand the surface transportation infrastructure in rural areas. Applicants that wish to submit the same application to be considered for more than one grant program under the MPDG combined NOFO only need to submit their application through one Grants.gov opportunity number and that application will be considered for all programs for which it is not opted-out or ineligible.

Nationally Significant Multimodal Freight and Highway Projects Program (INFRA)

The Nationally Significant Multimodal Freight and Highway Projects (INFRA) Grants Program is a federally funded competitive grant program for multimodal freight and highway projects of national or regional significance to improve the safety, efficiency, and reliability of the movement of freight and people in and across rural and urban areas. The minimum grant size is \$5 million. Key competitiveness factors for a project include its economic vitality, its leverage (with special attention given to public-private partnerships), its innovation, and its performance. Relevant to the Sustainable Freight Study, eligible projects include those on the National Highway Freight Network or National Multimodal Freight Network, projects at railway-highway grade crossings, or freight intermodal projects.⁴⁵

No INFRA grants have been awarded in the region since the program was launched through IJJA. Projects in California have included port improvement projects and a bridge replacement project in San Diego County. Typically, one project per region is awarded each year. As there are only two years left in IJJA funding, it is recommended that regions focus on one major project for submittal in each cycle. Additional scoping elements to address safety, sustainability and economic vitality should be explored for any project selected to pursue INFRA funding.

Projects recommended for this funding source should include Tier 1 projects that have completed preliminary engineering and can begin construction within 18 months. Projects that have not completed environmental analysis, preliminary design (30%), stakeholder outreach, or face challenges with right-of-way acquisition will not compete well for this funding.

National Infrastructure Project Assistance (MEGA) Grant Program

The National Infrastructure Project Assistance (MEGA) Program supports large, complex projects that are difficult to fund by other means and likely to generate national or regional economic, mobility, or safety benefits.⁴⁶ Eligible projects include:

- A highway or bridge project on the National Multimodal Freight Network.
- A highway or bridge project on the National Highway Freight Network.
- A highway or bridge project on the National Highway System.
- A freight intermodal (including public ports) or freight rail project that provides public benefit.

⁴⁵ <https://www.transportation.gov/grants/infra-grant-program>

⁴⁶ <https://www.transportation.gov/grants/mega-grant-program>

- A railway highway grade separation or elimination project.
- An intercity passenger rail project.
- A public transportation project that is eligible under assistance under Chapter 53 of title 49 and is a part of any of the project types described above.
- While the above criteria determine eligibility, the most competitive projects for MEGA funding generally have the following characteristics:
 - The project will be cost-effective (i.e., benefit-cost ratio greater than 1) and generate national, or regional economic, mobility, or safety benefits.
 - The project can leverage other funding, but cannot be easily and efficiently completed without other Federal funding or financing.
 - The applicant has, or will have, sufficient legal, financial, and technical capacity to carry out the project. For instance, an incomplete financial plan will suggest to evaluators that the project lacks sufficient financial capacity to be completed.
 - The application includes a plan for the collection and analysis of data to identify the impacts of the project and accuracy of forecasts included in the application as MEGA grants require a detailed Data Plan.⁴⁷

Based on the last few years of available funding, only one project in the study area received a MEGA grant, the Watsonville-Cruz Multimodal Corridor Program, which was submitted by Caltrans and received \$30,000,000 from USDOT. The funding covers auxiliary lane and bus on shoulder (BOS) access on State Route 1 (SR 1); new bicycle and pedestrian overcrossings as part of the New Coastal Rail Trail (CRT) within the Santa Cruz Branch Rail Line; and four new Zero-Emission Buses (ZEBs).⁴⁸

Last year, the State of California submitted 19 projects. Most projects did not meet all statutory requirements. Four projects were highly recommended for funding because they met all statutory requirements, and only one project in Long Beach located in a historically disadvantaged community and area of persistent poverty was selected for funding.

As there are only two years left in IIJA funding, it is recommended that regions focus on one project for submittal in each cycle. Additional scoping elements to address safety, sustainability and economic vitality should be explored for any project selected to pursue MEGA funding. It is recommended that Tier 1 projects be pursued for funding. Long-term projects that have not undergone preliminary engineering but have performed sufficient financial planning can be prioritized for this project, as statutory requirements to begin the project within a certain time are less relevant to MEGA projects, as with INFRA.

⁴⁷ [MPDG 2025-2026 Notice of Funding Opportunity \(transportation.gov\)](#), page 28 “MEGA Data Plan”

⁴⁸ [MEGA FY 2022 Combined Fact Sheet.pdf \(transportation.gov\)](#)

Rural Surface Transportation Grant Program (RSTP)

The Rural Surface Transportation Grant Program supports projects that improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life.⁴⁹

Eligible projects include:

- A highway, bridge, or tunnel project eligible under National Highway Performance Program.
- A highway, bridge, or tunnel project eligible under Surface Transportation Block Grant.
- A highway, bridge, or tunnel project eligible under Tribal Transportation Program.
- A highway freight project eligible under National Highway Freight Program.
- A highway safety improvement project, including a project to improve a high-risk rural road as defined by the Highway Safety Improvement Program.
- A project on a publicly owned highway or bridge that provides or increases access to an agricultural, commercial, energy, or intermodal facility that supports the economy of a rural area.
- A project to develop, establish, or maintain an integrated mobility management system, a transportation demand management system, or on-demand mobility services.

Based on the last three years of available funding, only one project in California competed successfully for funds, the Madera 41 Expressway in Fresno. For the Central Coast region, it is recommended that Tier 1 projects in rural communities that have performed preliminary engineering and can begin construction within 18 months be pursued for federal funding. It is also recommended that the region consider applying for only one project in the area. Projects do not need to have secured additional funding, as with INFRA and MEGA, though it is assumed this will support project competitiveness.

Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Program

The RAISE Program, previously known as Better Utilizing Investments to Leverage Development (BUILD) Program, is a federally funded competitive grant program.⁵⁰ The goal of the RAISE Program is to fund eligible surface transportation projects that will have a significant local or regional impact that advance the national priorities of safety, equity, climate and sustainability, and workforce development, job quality, and wealth creation. This includes projects that reduce greenhouse gas emissions in the transportation sector; incorporate evidence-based climate resilience measures and features; avoid adverse environmental impacts to air or water quality, wetlands, and endangered species; and address the disproportionate negative environmental impacts of transportation on disadvantaged communities.

In 2023, the program gave out more than \$2.2 billion worth of grants to 162 different transportation infrastructure projects. The BIL authorized and appropriated \$1.5 billion to be awarded by USDOT for

⁴⁹ <https://www.transportation.gov/grants/rural-surface-transportation-grant-program>

⁵⁰ <https://www.transportation.gov/RAISEgrants>

RAISE grants for FY 2024. The minimum RAISE grant award is \$5 million in urban areas and \$1 million in rural areas. The maximum grant award for capital and planning grants is \$25 million.⁵¹ In comparison to the INFRA program, RAISE program grants can generally be used to fund a wider variety of projects. Criteria that are used to evaluate projects include safety, economic competitiveness, environmental sustainability, quality of life, and innovation.

In the last 10 years of this funding program, no RAISE grants have been awarded to projects in the Central Coast. Projects awarded in California over the last two funding cycles placed a heavy emphasis on equity, complete streets design, and multi-benefit project elements. The most competitive projects for RAISE grants will be projects with multi-modal and multi-benefit project elements that are located in an Area of Persistent Poverty or in a Historically Disadvantaged Community. Significant stakeholder engagement, data analysis, and project scoping should take place prior to submission. Partnerships with community-based organizations and other innovative partners should also be considered to advance projects, particularly organizations with institutional knowledge of equitable transportation planning experience. Projects with matching funds will have no better advantage for competition, so it is not essential that matching funds be identified beforehand.

Railroad Crossing Elimination (RCE) Grant Program

The Railroad Crossing Elimination (RCE) Grant Program provides funding for highway-rail or pathway-rail grade crossing improvement projects. These projects focus on enhancing the safety and mobility of people and goods. The total funding available for award under the FY 2022 Notice of Funding Opportunity (NOFO) is \$573,264,000. The minimum award is \$1 million, and the cap is no more than 20 percent of total funding. The FY22 Application has closed and no information for FY24 has been posted for this program.⁵² Eligible projects include:

- Grade separation or closure, including through the use of a bridge, embankment, tunnel, or combination thereof;
- Track relocation;
- Improvement or installation of protective devices, signals, signs, or other;
- Measures to improve safety related to a separation, closure, or track relocation project;
- Other means to improve the safety if related to the mobility of people and goods at highway-rail grade crossings (including technological solutions);
- The planning, environmental review, and design of an eligible project type.

Eight projects were awarded funding in FY22 in California, including multiple projects in the same region. All of California's funded projects placed an emphasis on equity impacts and proposed to eliminate, separate, or close rail crossing locations, or conduct crossing studies to determine appropriate actions. If funding becomes available in future funding cycles, only projects that propose to close, separate, or

⁵¹ [FY 2024 RAISE NOFO Amendment 1.pdf \(transportation.gov\)](#)

⁵² 49 U.S. Code § 22909 - Railroad Crossing Elimination Program

eliminate rail crossings should be pursued. Additional project elements that improve safety, mobility, environmental justice, and equity should be included in scoping of a future project. Projects in Historically Disadvantaged Areas should be prioritized given the goals of the program. Because the RCE Program requires a local match of at least 20 percent, funding from formula or non-discretionary funding sources should be set aside.

Consolidated Rail Infrastructure and Safety Improvements (CRISI) Grant Program

The CRISI⁵³ program, administered by the Federal Railroad Administration (FRA), provides funding for capital projects that will improve passenger and freight rail transportation systems in terms of safety, efficiency, or reliability. CRISI grants provide funding for projects aimed at modernizing and improving rail transportation systems. For FY24, \$2,478,391,050 was made available for projects. The application deadline closed in May of 2024, though the program is expected to have funding authorized through the authorization of the BIL. There is no predetermined minimum or maximum funding required for projects. Eligible projects include deploying railroad safety technology, addressing congestion challenges in rail service, improving highway-rail grade crossings, developing regional rail service plans, implementing safety programs, advancing research in rail-related areas, fostering workforce development, rehabilitating locomotives for emissions reduction, and deploying Magnetic Levitation Transportation Projects.

The CRISI program could be used to upgrade freight rail infrastructure in the Central Coast region. Six projects in California received funding in FY22. Given the parameters of the program, it is recommended that the region submit applications for funding where significant local match can be identified and for projects where no other grant program can cover the project scope. Because the CRISI program includes a significant set-aside for projects in rural areas, rural projects be prioritized. In addition, because this program includes funding for projects in multiple stages, it may be a good candidate for funding scoping and planning projects.

Innovative Technology Deployment (ITD) Program

The ITD Program (formerly known as CVISN) provides an additional funding source for truck parking projects through the Federal Motor Carrier Safety Administration High-Priority—ITD Grant. Historically, the ITD Program has focused on commercial vehicle enforcement with funds supporting three deployment areas: electronic credentialing, safety information exchange, and electronic screening. The FY2018, 2019, and 2020 grant cycles highlight truck parking as a priority project area for States that have achieved Core Compliance in the Program. Projects should demonstrate real-time truck parking availability information dissemination to drivers using dynamic message signs, interactive voice recognition, smartphone applications, or other proven technology. Projects are funded at an 85 percent Federal/15 percent State match level. Washington DOT's Traffic Operations Division, in collaboration with the University of Washington STAR Lab, received a \$2.3M ITD grant in 2021 to deploy TPIMS at existing weigh stations and rest areas along I-5 and I-90 (470 stalls at 28 locations).

⁵³ <https://railroads.dot.gov/grants-loans/competitive-discretionary-grant-programs/consolidated-rail-infrastructure-and-safety-2>

Safe Streets for All (SS4A)

Under the Bipartisan Infrastructure Law (BIL), the Safe Streets and Roads for All (SS4A)⁵⁴ program provides financial support for planning, infrastructure, behavioral, and operational initiatives to prevent death and serious injury on roads and streets involving all roadway users, including pedestrians, bicyclists, public transportation users and operators, personal conveyance, micromobility users, motorists, and commercial vehicle operators. The SS4A program provides funding for the development of comprehensive safety action plans, supplemental planning for activities identified in an eligible action plan, and for implementation of eligible action plans.

The SS4A program is one of the largest funding programs in the BIL. Several projects were awarded last year alone for the Central Coast region, including an implementation grant for the City of Salinas. It is recommended that Tier 1 projects that are explicitly focused on safety be prioritized to receive funding. It is further recommended that projects that do not increase capacity and include no elements to improve efficiency of the roadway be prioritized. The funding source is strict in that project elements for safety that are part of a larger capacity increasing or traffic efficiency project will likely not compete well. Further, projects in Areas of Persistent Poverty and in Historically Disadvantaged communities should also be prioritized. Only projects that are on an existing Safety Action Plan for a jurisdiction should pursue implementation funds.

PROTECT – Discretionary Grant Program

Under the Bipartisan Infrastructure Law (BIL), the Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Grant⁵⁵ program provides funding to ensure surface transportation resilience to natural hazards including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure. The PROTECT program provides \$1.4 billion in funding over 5 years. Individual award amounts vary. Only 40 percent of award funds can be used for construction of new capacity. Federal cost-sharing will be higher if the eligible entity develops a resilience improvement plan (or is in a state or area served by MPO that does) and the state or MPO incorporates it into its long-range transportation plan.

- The grant program supports a wide range of activities, including:
- Planning and designing infrastructure projects that enhance resilience.
- Construction projects that improve the durability and sustainability of transportation systems.
- Development and implementation of resilience improvement plans.
- Research and development of new technologies and methods to enhance transportation resilience.

⁵⁴ [FY23 SS4A Notice of Funding Opportunity | US Department of Transportation](#)

⁵⁵ [Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program \(PROTECT\) | US Department of Transportation](#)

Only the resilience elements of infrastructure projects are eligible for funding through the PROTECT grant. If a project includes other project elements, it must use other sources of funding for those elements. Projects should be ready to proceed to construction within 10 months of selection. As such, Tier 1 projects with mid-term implementation timelines should be prioritized for the next funding cycle for this project. For example, the Highway 1 bridge replacement over the San Lorenzo River to reduce flooding and potentially improve fish passage may be a good candidate for PROTECT discretionary funds.

Railroad Rehabilitation and Improvement Financing (RRIF)

The RRIF Program dedicates funding to providing vital access to financing for railroads.⁵⁶ It was established by the Transportation Equity Act for the 21st Century (TEA-21) and amended by the Safe Accountable, Flexible and Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU), the Rail Safety Improvement Act of 2008, and the Fixing America's Surface Transportation (FAST) Act. Under this program USDOT is authorized to provide direct loans and loan guarantees up to \$35.0 billion to finance development of railroad infrastructure, with at least \$7.0 billion reserved for shortline and regional railroads.

- Among others, the funding may be used to:
- Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, components of track, bridges, yards, buildings and shops, and including the installation of positive train control systems;
- Develop or establish new intermodal or railroad facilities.

Eligible borrowers include railroads, state and local governments, government-sponsored authorities and corporations, and freight shippers that intend to construct a new rail connection.

4.3.2 State Funding Sources

Non-Discretionary Sources

State Motor Fuel Tax and State Bonds (State MFT)

The largest state source of funding for transportation improvement projects in California is from taxes on fuel and state-issued bonds. For fiscal year 2023-2024 alone, the State is projected to have approximately \$20 billion available from state motor vehicle fees and taxes.⁵⁷ Under Article XIX of the California Constitution, revenues raised from taxes and fees must be spent on transportation improvement efforts.

⁵⁶

<https://www.transportation.gov/buildamerica/financing/rrif#:~:text=Under%20this%20program%20the%20Department,other%20than%20Class%20I%20carriers.>

⁵⁷ <https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/data-analytics-services/transportation-economics/transportation-funding-booklet/2023/2023-transportation-funding-10-9-23-a11y.pdf>

Local Streets and Roads Program (LSRP)

SB 1 dedicated approximately \$1.5 billion per year in new formula revenues apportioned by the State Controller (Controller) to cities and counties for basic road maintenance, rehabilitation, and critical safety projects on the local streets and roads system. Cities and counties must provide an Annual Project Expenditure Report to the Commission for each year in which program funding was received and expended. The Commission will then report the information collected in its Annual Report to the California Legislature that is due December 15, each year. The Annual Project Expenditure Report outcomes will also be published on the Commission's website.

Local Partnership Program

Provides funding to counties, cities, districts, and regional transportation agencies in which voters have approved fees or taxes dedicated solely to transportation improvements or that have imposed fees, including uniform developer fees, dedicated solely to transportation improvements [as defined by Government Code Section 8879.67(b)]. Consistent with the intent behind Senate Bill 1, the Commission intends this program to balance the need to direct increased revenue to the State's highest transportation needs while fairly distributing the economic impact of increased funding.

State Highway Operations and Protection Program (SHOPP)

The SHOPP is a four-year document of projects that is adopted by the Commission after holding at least two public hearings and a finding of consistency with the Transportation Asset Management Plan (TAMP). The adopted SHOPP is submitted to the Legislature and the Governor not later than April 1 of each even-numbered year. SHOPP projects are identified through periodic condition assessments and field reviews, through the biennial State Highway System Management Plan, are guided by the developing Transportation Asset Management Plan, and constrained to the funding in the adopted Fund Estimate. Funding for SHOPP projects is a mixture of Federal and State funds, including the Road Maintenance and Rehabilitation Account created by SB 1. Projects included in the program shall be limited to capital improvements relative to the maintenance, safety, operation, and rehabilitation of the state highway system that do not add new capacity to the system.

Discretionary Sources

Solutions for Congested Corridors Program (SCCP)

The SCCP is a competitive program that provides funding to achieve a balanced set of transportation, environmental, and community access improvements to reduce congestion throughout the state. The SCCP makes \$250 million available annually to projects that implement specific transportation performance improvements and are part of a comprehensive corridor plan, by providing more transportation choices while preserving the character of local communities and creating opportunities for neighborhood enhancement. All nominated projects must be identified in a currently adopted regional transportation plan and an existing comprehensive corridor plan.

In FY22, the SCCP approved funds for the Santa Barbara U.S. 101 Multimodal Corridor Project - Three Creeks project. Over the last five years, the region has been awarded 6 projects, including projects to improve coastal access, install HOV lanes, and address congested intersections. The funding is on a two-year cycle, and it is expected that guidelines for funds will be released later this summer.

Trade Corridor Enhancement Program (TCEP)

The TCEP provides approximately \$300 million per year in state funding and approximately \$515 million in National Highway Freight Program funds, if the federal program continues under the next federal transportation act for infrastructure improvements on

federally designated Trade Corridors of National and Regional Significance, on California's portion of the National Highway Freight Network, as identified in California Freight Mobility Plan, and along other corridors that have a high volume of freight movement. The Trade Corridor Enhancement Program will also support the goals of the National Highway Freight Program, the California Freight Mobility Plan, and the guiding principles in the California Sustainable Freight Action Plan.

Measure	Metric	Project Type
Congestion Reduction (Freight)	Change in Daily Vehicle Hours of Delay	All
	Change in Daily Truck Hours of Delay	All (except rail)
	(Optional) Person Hours of Travel Time Saved	All
	(Optional) Daily Truck Trips Due to Mode Shift	Rail, Sea Port
	(Optional) Daily Truck Miles Travelled Due to Mode Shift	Rail, Sea Port
	(Optional) Other Information	All
Throughput (Freight)	Change in Truck Volume	Highway, road, and port projects only
	Change in Rail Volume	Rail
	(Optional) Change in Cargo Volume	Sea port, airport
	(Optional) Other Information	All
System Reliability (Freight)	Truck Travel Time Reliability Index ("No Build" Only) (Optional Metric)	National and State Highway System Only
	(Optional) Other Information	All
Velocity (Freight)	Travel time or total cargo transport time	All
	(Optional) Change in Average Peak Period Weekday Speed for Road Facility	Road
	(Optional) Average Peak Period Weekday Speed for Rail Facility	Rail
	(Optional) Other Information	All

Strategic Growth Council Transformative Climate Communities (TCC)

This program provides funding for community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities. While primarily focused on transit and active transportation improvements, some of the projects listed in Section 5.2 improve the safe and efficient movements of both goods and people, such as the intersection improvement project at Fremont, Monterey Road and Highway 1 on/off ramps that proposes a double-roundabout and an underground tunnel for the continuation of the SURF! Busway corridor and bike/ped path. TCC is funded by California's Cap-and-Trade Program. TCC primarily targets projects in disadvantaged communities.

Caltrans Active Transportation Program (ATP)

The ATP⁵⁸ consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program. The program was created by Senate Bill 99 (SB 99) and Assembly Bill 101 (AB 101) in 2013. ATP provides funds for several project types including construction or improvement of bikeways, walkways, trails, and safe routes to schools. Over 40 projects have been funded by ATP in the Central Coast region since 2018. Recommended projects in section 4.2 with active transportation elements could potentially use ATP to fund those components.

Strategic Growth Council Urban Greening Grant Program (UGGP)

The Urban Greening Program⁵⁹ funds projects that reduce greenhouse gases while also transforming the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities. The program focuses on projects that reduce greenhouse gas emissions, improve air and water quality, and provide additional community benefits such as increased access to green spaces and improved public health. The UGGP funds a variety of green infrastructure projects. Two that are relevant for the environmental and resiliency elements of the Sustainable Freight Study are the greening of public spaces (including streetscapes) and projects that include bioswales, rain gardens, and permeable surfaces to manage stormwater.

Caltrans Sustainable Communities Grant (SCG)

The SCG⁶⁰ program funds local and regional planning that supports state goals, implements Regional Transportation Plan (RTP) Sustainable Communities Strategies (SCS), and supports the State's greenhouse gas (GHG) reduction target of 40 and 80 percent below 1990 levels by 2030 and 2050, respectively. While the SCG program traditionally focuses on planning for sustainable communities and active transportation, projects related to freight and goods movement can also be competitive if they align with the program's objectives which include promoting economic growth and enhancing mobility and

⁵⁸ [Active Transportation Program \(ATP\) | Caltrans](#)

⁵⁹ [Urban Greening \(ca.gov\)](#)

⁶⁰ [Sustainable Transportation Planning Grants | Caltrans](#)

accessibility. SCG funding may be used to develop plans that incorporate sustainable freight strategies, such as using alternative fuels, optimizing delivery routes, and reducing idling times to lower emissions.

Section 190 Grade Separation Program

This is a State-funded safety program that supports projects that replace and upgrade existing at-grade railroad crossings, primarily with grade separations. The California Public Utilities Commission (CPUC) establishes a project list, and the Caltrans administers the program. Section 190 of the California Streets and Highways Code requires the State’s annual budget to include \$15 million for funding these projects.⁶¹ The maximum funding per project is \$5 million annually.

Highway Railroad Crossing Safety Account (HRCSA) (Freight)

Proposition 1B authorized the Highway Railroad Crossing Safety Account with \$250 million for high-priority grade separation and railroad crossing safety improvements. The account was split into two sections: Part 1 included \$150 million to be matched dollar-for-dollar with non-state funds for improvements to grade crossings on CPUC’s priority list; Part 2 included the remaining \$100 million, which would be used for “high-priority” railroad crossing improvements (or grade separations) at other crossings that satisfy at least one of the following five criteria:

- Crossings where freight and passenger rail share the affected line;
- Crossings with a high incidence of motor vehicle-rail or pedestrian-rail collisions;
- Crossings with a high potential for savings in rail and roadway traffic delay;
- Crossings where an improvement will result in quantifiable emission benefits; or
- Crossings where the improvement will improve the flow of rail freight to or from a port facility.

Part 2 funds had no required match, although the amount of declared matching funds would be considered as part of the project selection process.

4.3.3 Local and County Funding Sources

Self-Help Counties

California law allows voters to self-impose a sales tax increase for funding transportation improvements. The Self Help Counties Coalition (SHCC) is an association of 25 local county transportation agencies that successfully achieved a super majority of votes required to implement transportation sales tax measures throughout California. SHCC works closely with the California Transportation Commission (CTC), the Caltrans, elected officials as well as other public and private sector interests, to identify mobility needs and implement transportation solutions.

⁶¹ <https://dot.ca.gov/programs/local-assistance/fed-and-state-programs/section190>

At the time of the development of the U.S. 101 Central Coast California Freight Strategy, only Santa Barbara County had a voter-approved sales tax measure in place. Since then, SB 1 was passed, and with it, a monetary incentive for counties to pass a minimum of a one-half sales tax measure. Today, four of the five counties have successfully passed self-help measures. Several of the improvements listed in Section 5.2 are slated to receive self-help funding, including U.S. 101 in Santa Barbara and Monterey, SR 25 in San Benito, and SR 156 in Monterey.

Table 18 Self-Help County Measures

County	Measure	Sales Tax %	Timeframe	Funding Amount
Monterey	X	0.375	2016-2046	\$600 Million
San Benito	G	1.0	2018-2048	\$485 Million
Santa Barbara	A	0.5	2008-2038	\$882 Million
Santa Cruz	D	0.5	2016-2046	\$125 Million

Monterey County

Monterey County is part of California’s Self-Help Counties Coalition, an association of California counties where more than a super majority (two-thirds) of the voters approved a sales tax for funding transportation projects. In addition to a self-imposed local sales tax to fund transportation improvements, the County also implemented a Countywide transportation impact fee on new development and approved the use of tolling future SR 156. Furthermore, the City of Monterey adopted a citywide sales tax measure, which provides additional funds to the County for improving the City’s transportation network.

Table 19 Monterey County Local Funding Sources

Revenue Source	Timeframe	Funding Amount
Measure X	2016-2045	\$600,000,000
Countywide Development Impact Fees (DIF)	Established in 2008	\$114,973,772 ⁶²
SR 156 Tolls	Begin in 2030	\$146,280,000
City of Monterey Measure P for transportation	Unknown	\$56,000,000

Source: Monterey County Regional Transportation Plan (2022)

San Benito County

Like Monterey County, San Benito County is also part of California’s Self-Help Counties Coalition and also adopted a transportation impact fee on new development called the Regional Transportation Impact Mitigation Fee (TIMF). These revenue generators are assisting the County move forward with high-priority projects that improve the safe and efficient movement of goods.

⁶² https://www.tamcmonterey.org/files/c3880ac84/RDIF+-+2022+Strategic+Expenditure+Plan_FINAL.pdf

Table 20 San Benito County Local Funding Sources

Revenue Source	Timeframe	Funding Amount
Measure G	2016-2045	\$600,000,000
Regional Transportation Impact Mitigation Fee (TIMF)	Established in 2011	\$239,044,798

San Luis Obispo County

San Luis Obispo County is the only county within the study area that has not passed a local sales tax measure to obtain additional SLPP funds from the State. Measure J-16 with 66.3 percent of voters approving it fell short by one-half percent. Passage of the measure would have generated an estimated \$25 million a year in local sales tax revenue and an additional \$1.5 million per year in SLPP for roadway maintenance and repair.

Although countywide transportation measures have failed, some cities within the county have successfully passed local sales tax measures with dedicated percentages for transportation improvements as shown in the table below.

Table 21 San Luis Obispo Cities' Transportation Funding Sources

City	Sunset Date	Funding Amount
Arroyo Grande	None	\$1,607,700
Atascadero	2027	\$2,110,000
Paso Robles	2024	\$4,750,000
Pismo Beach	2027	Unknown
San Luis Obispo	2023	\$4,413,800

Santa Barbara County

Santa Barbara's Measure A is the primary source of local transportation. Several of the cities have also passed sales tax measures, but the County does not receive a share of these revenues. The City of Carpinteria passed the highest sales tax measure in the County at 1.25 percent with no sunset date. The Cities of Goleta, Guadalupe, Lompoc, Santa Barbara, and Solvang have adopted a one percent sales tax for varying purposes. These additional revenues create opportunities for the cities to coordinate with the County and the State to leverage funding and expedite local improvements.

Table 22 Santa Barbara County Local Funding Sources

Revenue Source	Timeframe	Funding Amount
Countywide Measure A	2008-2038	\$882,000,000

Santa Cruz County

Santa Cruz's Measure D provides funding for the County's transportation improvements. In addition, the County adopted two different sales tax measures, one for incorporated areas and another for unincorporated areas, and a number of member cities have adopted local sales tax measures as summarized in the table below.

Table 23 Santa Cruz County Local Funding Sources

Revenue Source	Sales Tax Rate
Measure D	0.50%
Santa Cruz County (Unincorporated areas)	1.00%
Santa Cruz County (Incorporated areas)	0.50%

5.0 CONCLUSION

The Central Coast region has prospered in large part due to its position as one of the most important agricultural regions in the nation. In addition, it has successfully leveraged its proximity to the Silicon Valley in the north and the Los Angeles metropolitan region to the south to grow its manufacturing base as well as other industries. The region's multimodal freight network has helped to enable this success. However, the network faces challenges in the form of congestion and unreliability, resiliency, and safety, among others. The recommendations and action steps outlined in the Sustainable Freight Study are crucial to addressing these challenges and demonstrate the region's continued commitment to supporting economic development, environmental sustainability, equity, and improved quality of life for its residents and businesses.

APPENDIX A. SUMMARY OF STAKEHOLDER OUTREACH

Summary of Stakeholder Outreach

APPENDIX B. EXISTING CONDITIONS AND PERFORMANCE SUMMARY

Existing Conditions and Performance Summary

APPENDIX C. ANALYZE FREIGHT PERFORMANCE, IDENTIFY POTENTIAL PROJECTS AND STRATEGIES

Analyze Freight Performance, Identify Potential Projects and Strategies