

U.S. 101 Central Coast California Freight Strategy

Appendix C. Literature Review

working
paper

prepared for

AMBAG

prepared by

Cambridge Systematics, Inc.

working paper

U.S. 101 Central Coast California Freight Strategy

Appendix C. Literature Review

prepared for

AMBAG

prepared by

Cambridge Systematics, Inc.
555 12th Street, Suite 1600
Oakland, CA 94607

date

November 19, 2014

Table of Contents

1.0	Introduction	1
2.0	Literature Review	1
2.1	California Central Coast Commercial Flows Study (2012)	1
2.2	California Freight Mobility Plan (2014).....	4
2.3	Caltrans U.S. 101 Transportation Concept Report (2014)	6
2.4	San Luis Obispo Council of Government (SLOCOG) U.S. 101 Mobility Master Plan (2014).....	7
2.5	Santa Barbara CAG 101 in Motion Final Report (2006)	12
2.6	Monterey Bay 2035 Metropolitan Transportation Plan/Sustainable Communities Strategy (2014).....	14
2.7	SLOCOG Regional Transportation Plan (Draft 2014)	16
2.8	Santa Barbara CAG (SBCAG) Regional Transportation Plan and Sustainable Communities Strategy (2013)	18
2.9	Salinas Valley Truck to Rail Intermodal Facility Feasibility Study (2011).....	20
2.10	Other Regional/State-Level Plans	21
2.11	Data and Needs Identification.....	26

1.0 Introduction

This literature review is conducted to help fulfill four goals of the project:

1. Understand the visions and goals of past studies in order to incorporate them into this project.
2. Develop an issues and opportunities matrix based on past studies in order to understand key issues along the corridor which can inform this plan.
3. Understand performance measures that were used in previous studies which are applicable to this project.
4. Document all data used in previous studies. This will help us to evaluate the needs, trends, and economics of the corridor using the most effective and convenient methods and data.

The literature review is split into four sections. The first is a detailed review of documents that have a direct bearing on the U.S. Highway 101 Central Coast California Freight Plan development. The second is a brief survey of documents that focus on alternative modes, other regions, or which contain limited information on the region. The third is a preliminary list of data needs and possible resources. The fourth is a list of additional documents that may be of use later in the study, but that are incomplete, summary documents, or are otherwise less critical to this particular topic and geography.

2.0 Literature Review

2.1 California Central Coast Commercial Flows Study (2012)

2.1.1 Summary

This study focused on studying freight flows, issues, needs, and deficiencies in the five county region of the Central California Coast (Santa Barbara, Monterey, San Luis Obispo, Santa Cruz, San Benito). A growing population is projected to increase freight traffic, especially by truck, and focused in the agriculture, manufacturing, and transportation/warehousing industries. In 2007, approximately 63 million tons of freight worth approximately \$50 billion were transported into, out of, and within the Central Coast region. In 2007, approximately 50 percent of shipments are outbound (by both value and weight) with inbound and internal split (by tons), and inbound accounting for 43 percent (by value)—mostly to other parts of California¹. Agriculture makes up the largest category of freight by volume with over 14 million tons of agricultural products moved in 2007. By value, the top grossing agricultural products in the five county area berries, lettuce, grapes, broccoli, flowers, and other vegetables. Data shows that sand, gravel, and aggregate is the second largest freight product by weight, accounting for over 13 million tons of freight movement in 2007. Recommendations included a new truck parking strategy, increased connections to the Central Valley (East-West), improved intermodal capacity, and maintaining a focus on freight issues specific to the region such as seasonal swings (especially in the U.S. 101 Corridor – the primary truck artery) during periods such as summer weekends and the harvesting season. A full list of prioritized projects without funding (as of 6/2011) is available on page 95 of the report.

¹ Data used is FHWA Freight Analysis Framework Data and IMPLAN data.

2.1.2 Visions and Goals

This study's main goal is to highlight freight needs and deficiencies in the Central Coast region and to development recommendations to help the region address freight issues in a future with growing needs and constrained budgets. No overarching vision for the region was developed in this report.

2.1.3 Issues and Recommendations

The study identified a number of key issues and needs for the region as well as some recommendations including:

- Support development of multimodal distribution centers and supporting infrastructure by developing an analysis framework and public-private task force. A key goal is to try to shift some of the long distance movements that currently occur by truck to rail.
- Gather better economic and transportation data in order to support goods movement strategies. Gaps exist in the data, especially about seasonal shifts in traffic patterns.
- Address freight mobility concerns due to traffic congestion on U.S. 101 as well as Highways 1, 17, 29, 156, and 25. Highway segments through Watsonville and Salinas are of special concern due to congestion. Conversion of U.S. 101 into a highway is a long-term goal to help relieve these issues.
- The Santa Maria region is a rapidly growing area that has the potential to add significant stress to the U.S. 101 Corridor. Growth must be accommodated and managed in order to minimize impacts.
- Better understand freight congestion concerns due to agricultural movements. This need is tied to the need for better data.
- Parking locations for trucks in the study area are limited, with only two official rest areas (Gaviota and Camp Roberts) open. Interviews with stakeholders raised the concern about truck parking specific to cooler locations in the Salinas Valley, San Luis Obispo region, and Santa Maria.
- Improve truck connections between U.S. 101 and Interstate 5 (I-5). I-5 is a key route in the nation's freight network as well as the Central Valley, which is a key trading partner for the Central Coast. Improving connector routes such as State Route (SR) 41, 46, 166 would increase commerce between the two regions.

Other issues highlighted in the report include the need to:

- Take a regionwide truck count on routes outside U.S. 101 and SR 46. These two routes have the most data available on them, but the connector routes to U.S. 101 are mostly unknown. This will help increase the amount of data available to draw on in order to determine future performance measures and direct funding.
- Restructure the Freight Action Strategy Taskforce (FAST) and define clear purpose/goals to allow it to advocate effectively.

- Identify funding options and opportunities in order to advance prioritized projects.
- Develop performance measures.

2.1.4 Performance Measures

As of writing, the FAST had limited performance measures in place. This study recommended a number of performance measures for future implementation including:

Performance Measure	Performance Metric	Description	Data Needs	Potential Sources of Data
System Demand	Truck Freight Demand	Heavy truck Vehicle Miles Traveled (VMT)	Annual average daily truck traffic (AADTT), roadway section lengths (centerline)	Caltrans
	Rail Freight Demand	Rail freight tonnage	Tons originating/terminating by rail in the region	Carload waybill sample
	Air Cargo Demand	Air freight tonnage	Tons enplaned, deplaned or both	Caltrans CA Air Traffic Statistical Reports
Freight Delay	Truck Delay	Travel time above that needed to complete a trip at free-flow speed	Average travel time, free-flow travel time	Need travel time estimates for corridors, not currently available
	Rural National Highway System (NHS) Travel Speed	Global Positioning System (GPS) truck speed data	GPS position records for trucks in Central Coast region	Contract with vendor for GPS data
	Rural Congestion	% of rural miles congested	Volume to Capacity (V/C) ratios for rural highways	Not readily available
Freight Cost/Value	Truck Congestions Cost	Annual cost of wasted time and fuel for large trucks due to congestion	Daily veh. Hours of delay, % commercial vehicles, value of commercial vehicle time, annual conversion factor	Not readily available
	Truck Commodity Value	Value of commodities carried by truck in region	Commodity value for Central Coast truck moves	FAF3 database (FHWA Commodity flow database)
System Condition	Pavement Condition	% pavement/lane miles in good or better condition	International Roughness Index for high-speed roads, conditional ratings for low-speed roads	Caltrans
	Bridge Condition	% of bridges in good or better condition	# of bridges that are not Structurally Deficient (SD), Functionally obsolete (FO), SD, FO, or substandard for load only, total number of bridges	Caltrans
	Deficient Bridges	# of structurally deficient/functionally	Bridge condition ratings for all bridge	Caltrans

Performance Measure	Performance Metric	Description	Data Needs	Potential Sources of Data
		obsolete bridges	components	
	Short Line 286K Railcar Capacity	% of short line track miles capable of handling 286K cars	Short line/region track miles capable of handling 286K cars, total shortline/regional track miles	Caltrans
Safety	Truck-Involved crashes	# of truck-involved injury/fatal crashes	Crash incident records including vehicle types involved	Caltrans
	Grade Crossing Collisions	# of highway-grade crossings collisions/fatalities	Grade crossing accident reports/ records	Caltrans
Services	Truck rest area/parking utilization	# of trucks that use rest areas/truck parking facilities	Time-of-day truck counts at truck parking facilities, capacity	Not readily available

2.2 California Freight Mobility Plan (2014)

2.2.1 Summary

The California Freight Mobility Plan (CFMP) is a statewide planning document that examines freight movement across every mode of transportation. It serves as a high-level analysis of the transportation system and identifies initiatives and projects needed to strengthen California’s position in the global market. Four purposes were identified for the plan, including: 1) building on previous freight plans such as the Goods Movement Action Plan (2008) and programs such as the Trade Corridors Improvement Fund, 2) prepare a freight plan consistent with Federal guidelines, 3) provide a foundation for air quality improvements and energy transition programs that will guide and support the freight sector in achieving pollutant and GHG reductions, and 4) serve as a catalyst to normalize freight as a regular part of transportation planning in California. The CFMP is developed out of requirements of MAP-21, which encouraged states to develop state freight plans. Thus, the goals are closely aligned with the six MAP-21 guidelines.

2.2.2 Vision and Goals

The Plan’s vision state reads: “As the national gateway for international trade and domestic commerce, California enhances economic competitiveness by collaboratively developing and operating an integrated, multimodal freight transportation system that provides safe, sustainable freight mobility. This system facilitates the reliable and efficient movement of freight while ensuring a prosperous economy, social equity, and human and environmental health.”

The six goals for the freight movement system are: 1) Improve Economic Competitiveness, 2) Congestion Relief, 3) Improve Safety and Security, 4) Freight System Infrastructure Preservation, 5) Support Innovative Technology and Practices, and 6) Environmental Stewardship.

2.2.3 Issues and Recommendations

The Plan's 11 identified needs include:

- **Funding.** Obtaining a substantial, predictable, long term freight funding source(s) is the highest priority identified in the CFMP.
- **Strengthen Multi-Agency Coordination to Achieve Air Quality and Other statewide Goals.** Transportation projects and issues extend beyond any single municipality and require a coordinated, cooperative response.
- **Needed Guidance.** Near-term guidance (next one to three years) is needed to ensure that transportation, environmental, and land use projects are implemented in accordance with Caltrans' mission, the vision of the CFMP and the State's environmental sustainability goals.
- **Dedicated Truck Facilities.** With few exceptions, trucks utilize the same road network as automotive travelers. Delays on this system harm the economic competitiveness of companies in the state. The need for dedicated truck facilities is largely unmet.
- **Identification of State's Highest Priority Freight Corridors and Facilities for Investment.** Projects that are located on high priority corridors or at gateways, hubs, and last-mile connectors served by those corridors should be prioritized for funding. The Trade Corridors Improvement Fund Program is identified as a key funding resource.
- **Mode Shift.** There is a need to explore an new mode to serve inter-urban freight movements beyond roads and rail.
- **Maintain Competitive Edge.** California will always have a substantial freight sector. However, as the rest of the United States and the world expand their ability to move goods, California must be diligent in order to keep discretionary freight shipments and their related jobs in the State.
- **Maintain and Preserve the Freight System.** Maintenance and preservation work is needed. California's road network was mostly built in the 1950s and 1960s and is the most in need of care.
- **Capacity Expansion.** An increasing population and economy are placing additional pressure on an already stretched system.
- **Climate Change Planning.** Develop a sea-level-rise plan that addresses the freight industry through coordination among industry, government, and communities.
- **Education.** Create a comprehensive education strategy to train the next generation of transportation planners and freight/supply chain managers that can work towards enhancing the freight system in the future.

2.2.4 Performance Measures

Performance measures are split into three modes and are aligned with the CFMP goals above:

Highway Metrics	Rail Metrics	Seaport Metrics
Pavement Condition	Train Height Clearances	Navigation Channel Depths
Bridge Condition	Track Weight Limits	Waterway Bridge Clearance
Truck Travel Speed	Posted Max. Train Speed	
Truck Hours of Delay	Rail Bottlenecks/Chokepoints	
Highway Bottlenecks/Chokepoints	Railroad Grade Crossing Fatalities and Injuries	
Corridor Reliability Buffer Index		
Roadway Truck Collisions, Fatalities, and Injuries		

2.3 Caltrans U.S. 101 Transportation Concept Report (2014)

2.3.1 Summary

This study is a multimodal look at the entire U.S. 101 corridor that identifies trends and deficiencies, providing a basis for long-term preservation strategies. This technical document does not define policy, and is largely informational. U.S. 101 is the main alternate route to Interstate 5 which fully closed 17 times between January 2006 and January 2011. Agriculture and manufacturing are key freight-generating economic sectors in the corridor. Union Pacific owns the main rail right-of-way parallel to U.S. 101 which handles freight, commuter, and inter-city traffic, but conducts only limited loading/unloading in the region. Conversion to freeway is a key recommendation. The 2035 concept also includes conversion from a four-lane to a six-lane highway at strategic locations. This concept will have a number of benefits for the freight sector. A mixture of high-volume, high-speed traffic with uncontrolled access on a conventional highway can interrupt traffic flow, compromise interregional mobility and increase the likelihood for vehicle accidents at conflict points. Highways with limited access onto and off of the right-of-way allow for improved vehicle flow, reducing congestion concerns. Both of these upgrades will allow trucks more predictable and faster access to origins and destinations within and beyond the region.

2.3.2 Visions and Goals

The goal of this document is to identify multimodal transportation trends and deficiencies within U.S. 101, provide a basis for considering future action to preserve the corridor long-term, and develop the data resources necessary to plan and monitor progress on these goals. Caltrans' vision for the corridor is to optimize existing facilities to improve throughput, increase opportunities for intermodal operation, improve safety and operations, provide a sustainable transportation system, and support efficient and reliable travel for all modes.

2.3.3 Issues and Recommendations

The main freight need identified in this study is to evaluate existing and future truck access, parking, and overall travel needs. Growing congestion on the route due to population and employment will also impact

freight movement, though the solutions do not necessarily involve freight-related projects. An example is the U.S. 101 South Coast HOV lanes in Santa Barbara that has built an HOV lane as a way to relieve congestion caused mainly by personal vehicles that will have an ancillary impact on freight movement. Ramp metering, which would manage the flow of traffic entering U.S. 101 at on-ramps, electronic toll collection, and other system management approaches would also benefit freight movement in the corridor without specifically targeting freight. Transportation Demand Management strategies such as carpools, ridesharing, and alternate work schedules may help.

A specific project mentioned by the study is the Unikool agricultural processing facility just south of Salinas. This new operation is projected to generate a large number of trips, including 5,839 heavy-truck trips per day that will have significant impacts on U.S. 101 operations. Better understanding of agricultural freight movements is needed, as is incorporating defense related shipments into planning, especially as it relates to Vandenberg Air Force Base, located off of U.S. 101 in Santa Barbara County. San Benito County and the area between San Luis Obispo and Santa Maria are also mentioned as sources of future traffic on the route due to both agricultural output and increasing opportunities for commercial and residential growth.

2.3.4 Performance Measures

A list of specific performance measures for the corridor related to freight movement was not developed in this report. However, for each of the segments of U.S. 101 in District 5, Caltrans measured the following during the PM Peak:

- Traffic volume;
- Vehicle miles traveled;
- Vehicle hours traveled;
- Volume/capacity ratio;
- Level of service;
- Average speed; and
- Capacity per lane.

Trucks utilize the same road network as other vehicles, therefore, these performance measures all have a bearing on freight movement. Segments of U.S. 101 with a high volume/capacity ratio or low average speed, for example, indicate congested sections which negatively impacts the movement of freight. As these performance measures improve, freight movement will also improve. The appendix also includes the percent of roadway in each segment with truck climbing lanes – a freight specific metric that indicates areas with geographic constraints and high volumes of trucks.

2.4 San Luis Obispo Council of Government (SLOCOG) U.S. 101 Mobility Master Plan (2014)

2.4.1 Summary

This study examined U.S. 101 in San Luis Obispo County. Four sections of the route (totaling 25 out of 70 miles) were studied in detail in order to develop a final recommendation list of multimodal projects on the corridor that should be included in requests for funding. More efficient goods movement was considered as an ancillary benefit for each of the proposed projects but was not the motivating factor for any of them.

2.4.2 Visions and Goals

The plan's vision is, "Connecting communities within and across the region to improve travel time reliability, safety and modal choices for the efficient movement of people and goods." The main goal of this plan was to

develop a list of projects that would improve future conditions on U.S. 101 for all users using a cost/benefit analysis and through evaluating success according to 12 performance measures.

2.4.3 Issues and Recommendations

Four sections of the route (totaling 25 out of 70 miles) were studied in detail. Specific needs were identified for each and can be grouped into five general categories:

- Increase capacity on U.S. 101 and important cross streets.
- Simplify and improve design and management of intersections in the interim while looking to transition the entire stretch of U.S. 101 to highway condition. This includes design features such as expanded acceleration lanes.
- Provide better access management to U.S. 101 mostly by converting intersections to ramps.
- Close bicycle and pedestrian system gaps and extend routes when possible.
- Increase access to and availability of park and ride lots for all vehicles.

These needs were then divided into Short-Term (Within 5 years), Short-Medium Term (5 to 10 years), Medium-Long Term (10 to 20 years) and Long Term (20+ years) recommendations. Addressing these needs, except for the bicycle/pedestrian connectivity issue, would improve freight capacity and congestion issues along the corridor by reducing the amount of congestion created by personal vehicle use.

2.4.4 Performance Measures

Twelve performance measures were used to select the four segments that were studied in detail. The initial screening criteria, which were not specific to freight, include the following:

Group	Phase I Performance Measure	Score Criteria
Corridor Vehicle Operations	U.S. 101 Mainline Level of Service	Level of Service (LOS) A-C=0, LOS D=2.5, LOS E=5, LOS F=10
	U.S. 101 Merge-Diverge Level of Service	LOS A-C=0, LOS D=2.5, LOS E=5, LOS F=10
	U.S. 101 Weave Level of Service	LOS A-C=0, LOS D=2.5, LOS E=5, LOS F=10
	Parallel Roadway / Intersection Level of Service	LOS A-C=0, LOS D=2.5, LOS E=5, LOS F=10
Corridor Safety	U.S. 101 Safety (Collisions)	Crashes per MVMT < expected (using TASAS, as compared to facilities in California)=0 0.1675>expected=2.5 0.335>expected=5 0.5025>expected=7.5 0.67>expected=10
	Parallel Roadway Safety (Collisions)	Number of parallel network crashes(0)=0 Number of parallel network crashes(31)=2.5 Number of parallel network crashes(62)=5 Number of parallel network crashes(92)=7.5 Number of parallel network crashes(123)=10

Group	Phase I Performance Measure	Score Criteria
Emissions	U.S. 101 Emissions	Tons of CO ₂ with Pavley I+LCFS (0)=0 Tons of CO ₂ with Pavley I+LCFS(0.755)=2.5 Tons of CO ₂ with Pavley I+LCFS(1.51)=5 Tons of CO ₂ with Pavley I+LCFS(2.265)=7.5 Tons of CO ₂ with Pavley I+LCFS(3.02)=10
Vehicular Connectivity	Parallel Roadway Connectivity	Frontage roads or adjacent route=0 Alternate route that is slower or longer=5 No alternate routes=10

Other performance measures with limited applicability to the current study included park and ride coverage, transit coverage, bicycle connectivity, and pedestrian connectivity.

2.5 Santa Barbara CAG 101 in Motion Final Report (2006)

2.5.1 Summary

This 2006 study produced a consensus package of projects to improve mobility in the U.S. 101 Corridor in Santa Barbara County, from the Ventura County line north/west for approximately 27 miles to Winchester Canyon. This section of U.S. 101 saw the highest traffic volumes in the county, with up to 66,000 vehicles per day. This volume is projected to increase between 20 percent and 45 percent in different sections in the coming decades.

While not specific to freight needs, reducing congestion on the route will help increase the efficient movement of freight in the corridor. Overall, truck traffic was not seen as a major contributor to congestion during the peak period, accounting for only 5 percent of all trips on U.S. While the planned HOV lane has been completed, commuter rail is on hold pending negotiations with Union Pacific for use of their tracks. Off-hours delivery is a voluntary part of the operations improvement goal that may warrant exploration in other segments of the route.

2.5.2 Visions and Goals

The main goal of this study is to find long term solutions to growing congestion problems along 27 miles of Highway 101 in Southern Santa Barbara County. Goals focus on managing demand, creating multimodal options for travel, and increasing operations and safety capacity. Freight movement is tangential to main goal of improving commuter travel. No overarching vision was identified in the plan.

2.5.3 Issues and Recommendations

A full list of identified needs and issues from this study is below:

Problem/Need	Description
Recurrent Traffic Congestion	22 miles of U.S. 101 during the AM Peak and 27 miles during the PM Peak hours already experience congested levels of service. This is expected to spread both geographically and in time of day over the next 25 years.
Physical Constraints	The built environment along with physical geography and distinct vegetation make expanding U.S. 101 difficult, as well as severely limits the options for new construction.
Design Deficiencies	Inadequate weave distances, left-side egress and ingress, limited acceleration lanes, and other design features lead to congestion and safety issues on U.S. 101.
Discontinuity of Arterial System	There are limited continuous parallel routes that could take pressure off of U.S. 101 forcing nearly all traffic to use U.S. 101, and limiting alternative routing options during incidents.
Insufficient Mode Choice	Auto dependency is due to lack of viable alternative modes in the corridor, increasing the use of SOV and congestion
System Management	There is no coordinated freeway management, incident management, or traveler information system for the entire U.S. 101 corridor.
Population and Employment Density and Growth	Population is forecasted to grow by 30% and jobs by 44% between 2000 and 2030.
Jobs-Housing Imbalance	The high cost of housing is driving up commute times, as people move north in the county for affordability, while jobs remain in the southern part of the county.
Safety	Congestion has led to an elevated number and severity of crashes on this section of U.S. 101 compared to similar California routes.

All of these issues impact the movement of goods in the region. Congestion and incidents especially impact the movement of goods, leading to delays, increased pollution, and higher costs for producers and consumers.

Projects recommended to improve this corridor include:

- Adding a lane for HOV between Milpitas and the Ventura County Line and adding commuter rail service to Goleta to reduce congestion.
- Improving transit and carpool use through the creation of bus priority lanes on select arterials using queue jumps and signal priority, converting inside shoulders of the freeway to bus only lanes during peak hours, and the creation of HOV lanes.
- Manage transportation demand by offering incentives for vanpools, carpools, and other trip reduction strategies, and encouraging telecommuting and flextime to reduce congestion.
- Improving operations and communications using ITS, ramp metering, real-time arrival information at bus stops, and 511 services.
- Improvements including auxiliary or additional lanes where needed, demand management, rideshare programs, long-term planning for expansion, commuter rail, and other projects.

2.5.4 Performance Measures

Evaluation criteria in this report were divided into three sections: Transportation Performance, Community/Environmental Considerations, and Cost/Implementation. The most relevant ones to freight movement are:

Transportation Performance Criteria	Objectives	Measures
Improve Mobility/Increase Capacity	<ul style="list-style-type: none"> • Increase peak hour person trip capacity • Reduce peak hour corridor person trip demand • Increase network capacity 	<ul style="list-style-type: none"> • Added person trip capacity (PPH) • Reduced demand, PPH • Reduce number of gaps and lane drops
Reduce Congestion	<ul style="list-style-type: none"> • Improve LOS to “D” or better • Reduce person hours of congestion 	<ul style="list-style-type: none"> • Number of “D” or better locations • Total reduce hours of congestion
Improve Safety	<ul style="list-style-type: none"> • Reduce Corridor Accident Potential 	<ul style="list-style-type: none"> • Rating from 1-5 based on representative accident rates
Improve Goods Movement	<ul style="list-style-type: none"> • Increased Goods movement capacity and reduce conflicts 	<ul style="list-style-type: none"> • Added Highway/Rail capacity usable for freight reduced conflicts/regulatory constraints
Economic Vitality	<ul style="list-style-type: none"> • Minimized Impacts 	<ul style="list-style-type: none"> • Congestion Relief • Potential Pricing and Job Creation Impacts

2.6 Monterey Bay 2035 Metropolitan Transportation Plan/Sustainable Communities Strategy (2014)

2.6.1 Summary

The Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) is the Long Range Transportation Plan (LRTP) for the AMBAG region and includes land use, housing, and environmental considerations in addition to transportation projects. The region is growing, with 2035 projections of 885,000 (more than 150,000 person increase) and will add 65,000 jobs. Growth in all modes of travel is projected with accompanying congestion and environmental concerns. Agriculture is a critical economic sector in the region and agricultural goods are almost entirely transported by truck. A long-term goal of the region is to transition some these shipments to rail in order to alleviate pressure on the region’s highways, reduce congestion and infrastructure costs, improve safety, and generate environmental benefits.

2.6.2 Visions and Goals

This study sets out a vision of a more efficient multimodal transportation system that provides sustainable access to jobs and education while improving quality of life. To achieve this vision, AMBAG focused on six broad goals for the region:

- **Access and Mobility.** Convenient, accessible, and reliable travel options for people while maximizing productivity for people and goods;
- **Economic Vitality.** Raise the region’s standard of living by improving the economy;

- **Environment.** Promote sustainability and protection of the natural environment;
- **Healthy Communities.** Protect the health of residents, foster efficient development patterns, and encourage active transportation;
- **Social Equity.** Provide transportation services to all segments of the population; and
- **System Preservation and Safety.** Preserve and ensure a safe and sustainable regional transportation system.

2.6.3 *Issues and Recommendations*

Topics addressed in this study spanned across all modes of transportation. Those related to freight movement include:

- Transition freight from truck to rail whenever possible with an emphasis on agricultural goods movement. The planned Salinas Valley intermodal station is highlighted as a model project.
- Study impacts of goods movement on major arterials and corridors. Continue to support projects to improve mobility.
- Population growth and job growth will lead to increased congestion that will impact freight movement, as well as increased demand for goods. This will create the need for more trucks on the road.
- Develop a new, reliable, and long-term source of funding for transportation projects. The Highway Trust Fund, which is the main funding source for transportation projects is not sustainable in its current form.

2.6.4 *Performance Measures*

Freight-related performance measures and goals proposed in this study include:

- Daily truck delay goals (Economic Vitality). 2,802 hours in 2010. 11,471 in 2035 no-build scenario, 10,667 in 2035 MTP/SCS scenario.
- Greenhouse gas reduction goals (Environment) –Comply with Senate Bill 375, California Global Warming Solution Act, (Nunez, 2006), which requires the AMBAG region to reduce GHG by 5 percent per capita by 2035.
- Maintenance of the transportation system goals (System Preservation and Safety). 50% of total spending goes to rehabilitation and maintenance.
- Fatalities and Injuries per capita goals (System Preservation and Safety). 0.4% in 2010, and remaining 0.4% in both 2035 no-build and MTP/SCS scenarios.

2.7 SLOCOG Regional Transportation Plan (Draft 2014)

2.7.1 Summary

This is the regional transportation plan (RTP) for San Luis Obispo (SLO) County, and includes a Sustainable Communities Strategy (SCS) plan that together provide a blueprint for the region’s transportation system that enhances the quality of life while meeting current and future mobility needs. San Luis Obispo County is growing, both in terms of population and employment, with most of the growth focused in urban areas along the U.S. 101 corridor.

Key freight dependent industries are similar to other areas of the Central Coast. Commute patterns, and therefore most congestion, is focused around the City of San Luis Obispo, with AM peak congestion inbound from both north and south, and PM peak congestion outbound. Truck traffic, while lower than that found around Salinas is still high, with at least 5,500 trucks per day recorded at two locations south of San Luis Obispo. U.S. 101 is the main corridor for the region, both for personal movement and commodity flow.

2.7.2 Visions and Goals

The overall vision of the 2014 Regional Transportation Plan is, “To create a fully integrated and intermodal transportation system that facilitates the safe movement of people, goods, and information within and through the region while encouraging the development of more sustainable communities.” In order to achieve this vision, a number of goals and corresponding policy objectives were developed, including:

Goal	Objective
Mobility and Congestion Reduction	Provide reliable, integrated, and flexible travel choices and a reduction in congestion within and through the region
Accessibility	Improve accessibility to goods, services and jobs
Safety and Security	Enhance public safety and security in all modes of travel and achieve a significant reduction in accidents, fatalities, and serious injuries on all public roads
Sustainability	Maintain and improve the efficiency of the surface transportation system and the project development and delivery process
System Reliability	Maximize the efficiency of the existing transportation system
Equity	Avoid a disproportionately adverse impact to all sectors of the population Provide equitable levels of funding and transportation services to all areas, users, communities, and socioeconomic groups
Livability	Support livable community concepts and efforts Reflect community values while integrating land use and transportation planning
Environmental Protection	Conserve and protect natural and sensitive resources Preserve aesthetic resources and promote environmental enhancements with all transportation projects
Freight Movement and Economic Vitality	Improve the freight network and strengthen the ability of rural communities to access national and international trade markets Support regional economic development

Key policies include the following:

1. Support the economic vitality of the region by improving highways and regionally-significant local streets and roads to increase multimodal access and mobility;
2. Improve the efficiency of the transportation system and minimize the adverse impact of commodity movement throughout the region;
3. Establish appropriate modern electronic and other controls and procedures to assure the safe transportation of hazardous materials by all transportation modes;
4. Promote integration of bikeways and other active modes of transportation within existing, replacement, newly proposed pipeline and utility corridor easements, where feasible; and
5. Support mitigation of freight rail impacts on the efficiency of passenger train movement.

2.7.3 Issues and Recommendations

1. Work with local jurisdictions and Caltrans to improve truck routes and facilities to maximize their safe use by large trucks and prioritize construction for a number of projects;
2. Replace existing interchange bridge structures on U.S. 101 to meet 16'-6" minimum vertical clearance and provide sufficient bridge length allowing construction of six lanes on US 101;
3. Review any proposals to truck heavy cargos on non-designated truck routes with applicable agencies to address adverse impacts on the maintenance of streets and roads;
4. Work with Caltrans an the Central Coast to identify appropriate locations along the U.S. 101 Corridor to establish truck parking facilities and support improvements;
5. Request consideration of onshore oil pipelines as an alternative to truck transport systems;
6. Review all routes proposed by state and federal agencies for hazardous/explosive/nuclear materials transport in and through the region;
7. Coordinate with county and city emergency services and other appropriate regulatory and enforcement agencies to ensure an effective emergency response network;
8. Review and comment on all major proposals to ship hazardous materials by rail, ship, or truck through the region;
9. Request Caltrans and the CHP hold public hearings in San Luis Obispo to consider any route designation request should PG&E desire to ship high-level radioactive material;
10. Support the de-certification of SR 1, SR 41, and SR 46 as explosive shipment routes; and
11. Continue to monitor the separation of hazardous materials by classification and routing and shipping restrictions by class, and discourage the shipment of hazardous materials during peak hours.

2.8 Santa Barbara CAG (SBCAG) Regional Transportation Plan and Sustainable Communities Strategy (2013)

2.8.1 Summary

This study is the Long Range Transportation Plan for SBCAG and includes land use, housing, and environmental considerations in addition to transportation. Freight-specific topics coalesce around U.S. 101's importance to the region and the heavy reliance on truck trips to move goods. Population growth, combined with a current job/housing imbalance that sees the majority of the jobs located in the southern part of the region while housing is growing in the northern portion creates a dependence on automobiles (65.5 percent of workers use SOV), and thus congestion for both automobiles and trucks centered on U.S. 101.

2.8.2 Vision and Goals

Although no overall vision for the region was identified in the plan, the purpose of the RTP is to, “set forth a plan for how the region will invest limited transportation funds to maintain, operate, and improve an integrated, multimodal transportation system that facilitates the efficient movement of people and goods.” In order to achieve this, five goals were developed: 1) Environmental Sustainability, 2) Mobility and System Reliability, 3) Safety and Public Health, 4) Social Equity, and 5) Prosperous Economy. Freight movement topics are included under Mobility and System Reliability goals, with identified policy objectives listed below:

- Make efficient use of the existing transportation system
- Identify and construct projects to improve freight movement, including rail projects, highway projects, and projects to improve ground access to airports and rail terminal in the region.
- Regularly collect and update information on freight and goods movement and facility needs.
- Address freight and goods movement facility improvement needs as a high priority, including needs identified in the Central Coast Coalition Commercial Flow Study, with special focus on U.S. 101 Corridor projects.
- Consider freight and goods movement in the design and planning of all projects.
- Plan for intermodal connectivity in freight and goods movement in order to shift more freight to rail.

2.8.3 Issues and Recommendations

The Plan identifies a number of issues and challenges facing Santa Barbara County, one of which—Goods Movement—is directly concerned with freight.

Issue or Challenge	Sub-topics	Explanation
Jobs/Housing Imbalance	Housing Affordability Aging in Place	The majority of housing in the region is located in the northern part of the county, most jobs are in the southern sections. This generates a large number of commuters and produces congestion. This is driven by lower housing costs in the north of the region, and by the limited amount of housing stock available in the Southern Coast—partially due to retirees choosing to remain in their homes.
Population Growth		The county is expecting to grow by approximately 520,000 people by 2040, an increase of 23% over the 2010 population. This will place further burden on the road network, both in terms of commuters and by increasing demand for goods.
Auto Dependence	Lengthening Commutes Increasing Congestion Increasing Costs	Although more people are using transit (up 91.4% between 1990 and 2010), the majority of workers in the region still utilize single occupancy vehicles (SOV). As the population increases and the jobs/housing imbalance continues, more automobiles enter the road system leading to congestion, longer commutes, and increasing costs for both road users and repair work.
Social Equity		14% of the Santa Barbara County lives in poverty, with the highest rates found in Lompoc, Santa Maria, and Guadalupe.
Air Quality and Climate Change		Federal and state restrictions will decrease the amount of reactive organic gases by 69% and the amount of nitrogen oxide by 65% by 2030. Transportation is the second largest source of GHG, and is forecasted to increase 25% over 2005 by 2035 without State and Federal controls.
System Security		Resiliency in transportation network is critical to protect the transportation network from disruptions.
Public Health and Safety	Physical Activity and Active Transportation Collision Injuries and Fatalities Air Pollution Climate Change Stress and Mental Health	Public health and safety is closely tied to transportation choices.
Goods Movement		The economy and quality of life in the SBCAG region depend on the ability of shippers to move goods safely, efficiently, and cost-effectively. More than 16 million tons of freight moved to, from or within Santa Barbara County in 2007.
Intermodal Connectivity		The ability to link a trip between various modes is critical in creating an effective transit network.
Financial Constraints, Growing Needs, and Infrastructure Maintenance		Constrained funding combined with growing needs and an aging infrastructure places a burden on the ability of Santa Barbara County to maintain its transportation system.

2.8.4 Performance Measures

Performance measures for the Mobility and System Reliability goal include:

- Roadway Level-of-Service;
- Average travel distance (all trips and work trips);
- Average travel time;
- Average commute time (workers);
- Transit ridership;
- Transit accessibility (% of population and jobs within ½ mile of bus stop with frequent and reliable service);
- Percent mode share (all trips); and
- Percent mode share (workers).

These performance measures are not specific to freight but may impact goods movement performance. Since trucks utilize the same road network as other users, decreases in average travel time or improved level-of-service will have positive impacts on truck movement.

2.9 Salinas Valley Truck to Rail Intermodal Facility Feasibility Study (2011)

2.9.1 Summary

This 2011 study was produced by AMBAG to analyze the potential for building and operating a truck-to-rail intermodal facility to improve the movement of perishable, agricultural goods from the region. The study shows that there is a compelling case for building the facility, with two alternative sites selected utilizing GIS to determine site suitability. The most urgent considerations driving this are labor costs, labor shortages, and volatile fuel costs. The project would provide congestion relief to the U.S. 101 corridor, reduced air pollution emissions, and encourage mode-share shifts from truck to rail which would reduce truck traffic along the U.S. 101. Priority site locations were chosen to minimize truck congestion to and from the facility by routing truck traffic off of U.S. 101 and onto frontage roads.

2.9.2 Visions and Goals

Building off of a 2008 study from the Growers-Shippers Association of Central California, the goal of this study was to identify how to provide an alternative mode for Monterey County agricultural producers to maintain economically competitive by reducing their reliance on truck-based goods movement. This would be accomplished by implementing a rail mode to rapidly transport perishable agricultural products to key east coast markets. Implementing a rail mode would result in cost savings for producers, and reducing truck traffic would reduce congestion, improve air quality, and improve safety for the region. To that end, this study determined whether a truck-to-rail intermodal facility in the Salinas Valley was feasible, identified the best potential sites, created a preliminary operating plan, and conducted preliminary environmental assessments on potential sites.

2.9.3 Issues and Recommendations

Needs and issues revolve around site specific concerns and did not include traditional planning concerns. Needs for an intermodal facility included:

- Access to roads;
- Access to rail;
- Access to cooler locations;
- Suitable land use; and
- Topography and flooding concerns.

Based on the above criteria, two candidate sites were selected. The first is located just north of the City of Gonzales. This site provides for adequate truck access while limiting the possibility of vehicles queuing on public roads, is adjacent to existing Union Pacific tracks, and avoids sensitive areas such as a cemetery and wineries on the southern side of town. The second site selected is on the west side of Chualar. This site would also limit trucks queuing on public roads, would avoid the need for a new at-grade rail crossing, and utilizes existing ramps on U.S. 101.

An intermodal facility at either location would reduce future truck traffic on the U.S. 101 Corridor by 46,800 truck trips a year. Truck-mileage savings vary depending on destination. For shipments to the Eastern Seaboard, the study estimates that over 126 million truck-miles could be saved by using rail to move goods from the Salinas Valley to Philadelphia, PA. Local drayage trips to the intermodal location in the Salinas Valley would average only 8.5 miles. This switch would also increase the resiliency of the regional freight network by providing an alternative mode of transport to growers in the region and reduce greenhouse gas emissions.

2.9.4 Performance Measures

Performance measures were not developed beyond those used to determine site suitability within the study. It was determined that two sites, Gonzales and Chualar, would offer a viable location and could sustain profitable operations in the region.

2.10 Other Regional/State-Level Plans

2.10.1 Safety Roadside Rest Area Master Plan Final Task 5 Report (2011)

This study looked at the Safety Roadside Rest Area (SRRRA) system and recommended sites for closure, rehabilitation, or new construction throughout California. At current SRRAs statewide, approximately 26 percent of vehicles entering are buses or trucks. There are 10 total SRRAs on U.S. 101, of which four are within the primary study area. Camp Roberts NB/SB and Gaviota SRRRA (NB/SB) are separated by 117 miles. Camp Roberts NB sees 23 percent trucks/buses, SB sees 32 percent trucks/buses; Gaviota NB sees 17 percent trucks/buses, Gaviota SB sees 13 percent trucks/buses. Shandon SRRRA on SR 46 is also within the study region, and receives moderate daily traffic (16,400 vehicles per day) with only minor capacity issues for automobiles forecasted. 27 percent of entering vehicles are trucks/buses. The need for a new rest area on U.S. 101 between Gaviota and Camp Roberts is identified as a second-tier need, with the possibility of developing a location near the Betteravia Rd (Exit 169) interchange into an Alternative Rest Area Stopping

Opportunity (public/private commercial rest area). The California Highway Patrol noted limited occurrences of illegal truck parking on U.S. 101, mostly on the shoulder of interchanges or along the mainline.

2.10.2 California State Rail Plan (2013)

California's State Rail Plan addresses both freight and passenger rail in the state. The Plan's vision for the future is, "California has a premier, customer-focused rail system that successfully moves people and products while enhancing economic growth and quality of life." The report predicts that the Panama Canal expansion and related port projects will not significantly change trade on California freight railroads as railroads will adjust pricing to remain competitive, among other economic factors. The study also identifies freight chokepoints and bottlenecks. Class I railroads in the area receive enough traffic from businesses on the line to vindicate maintenance of the system, though the financial justification to expand offerings remains in doubt. The plan stresses the importance of short line railroads, including the Santa Cruz Branch Line, Santa Maria-Valley Rail, and Monterey Bay Railway Company, identifies \$16 billion in trade corridor and grade-separation projects, and recognizes the need to confront the potential for conflict between freight and growing passenger rail operations. Freight railroad goals include integration with other freight modes and with passenger rail, lowering energy use and pollution, maintaining global competitiveness, and aiding in developing livable and vibrant communities. Trends projected through 2040 include:

- Outbound moves will overtake inbound moves. This is an important trend as it increases the need for an intermodal facility in the Salinas Valley.
- Intermodal shipments will overtake train carloads as the ability to transfer shipments between different modes of transportation improves.
- Mixed freight—carloads with more than one type of commodity in them—will continue to be the dominant commodity moved by rail.
- Currently, shipments that do not utilize the port outnumber port-related shipments two-to-one. This will change to an even split as California's economy continues to globalize.
- Security planning and routing may force changes on routes for hazmat shipments. Although already tightly regulated, railroads moving hazardous material may face new, more restrictive limits on moving hazardous material through communities.

2.10.3 Southern California Association of Governments (SCAG), On the Move, Southern California Delivers the Goods (2013)

This plan focuses on freight movement in the South California Region including Inland Empire and Imperial Valley. The vision for this plan is to ensure that the region continues to play a vital role in the global supply chain while meeting regional economic goals, addressing mobility issues, preserving the environment, and contributing to quality of life and livability goals. Truck traffic in the region is projected to grow (along with population and economic output), especially for goods moving from/to the San Pedro Bay Ports of Los Angeles and Long Beach. More than 90 percent of these truck trips are intraregional, which limits the possibility of increasing the shift to rail for these goods. Two locations on U.S. 101 in Ventura County are identified as a Top 50 truck bottleneck, and the below projects would help alleviate congestions on U.S. 101 in Ventura County. This area is critical as a large portion of truck traffic from the study area travels through Ventura County when entering and exiting the southern part of the study area.

- In the City of Oxnard at Rice Ave: Interchange reconstruction to improve access and reduce truck congestion; and
- Various improvements in the City of Thousand Oaks including converting an auxiliary lane to mixed flow, adding a lane in each direction, widening three bridges, and realigning ramps. U.S. 101/SR 23 connectors are also slated for improvement.

2.10.4 San Francisco Bay Area Freight Mobility Study (2014)

Major trends identified in this study that will impact the nine-county Bay Area (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties) include anticipated growth of agricultural exports through the Port of Oakland as well as distribution of imports from warehouses in the San Francisco Bay area to the Central Coast. Both of these movements are heavily reliant on truck traffic, and U.S. 101 is a major corridor into and out of the San Francisco Bay area. The growth of e-commerce is also expected to change distribution patterns with an increase of urban deliveries by trucks. U.S. 101 is identified as a core component of the intraregional system, with multiple bottlenecks due to high levels of truck delay including one in Santa Clara County near the intersection with SR 85. There is an extensive list of performance measures that fit into California's six goals: 1) Economic Competitiveness, 2) Safety and Security, 3) Congestion Relief, 4) Freight System Infrastructure Preservation, 5) Innovative Technology and Practices, and 6) Environmental Stewardship. These performance measures are grouped into the following topics:

- **Demand.** Tons of freight moved via truck, air, rail, and at ports;
- **Safety.** At-grade crashes, truck involved crashes/fatalities, truck-involved crash injury rate;
- **Condition.** Pavement and bridge conditions, track miles rated for 286k and above, track miles rated Class 2 or higher;
- **Mobility.** Travel time index on freight significant routes, percent on-time departures and arrivals for air;
- **Economic.** Multimodal value of freight, percent of through freight versus locally generated; and
- **Environmental.** Metric tons of GHG per ton-mile.

Future studies were also recommended for the following topics: Data and Modeling Capabilities; Global Gateway Needs Analysis; Interregional Corridor Analysis; Industry Supply Chain Studies; Urban Goods Movement Toolbox and Guidance for Priority Development Areas; Freight System Resiliency Study; Freight ITS and Technology Applications; and Freight/Environment Studies including converting drayage trucks to cleaner engines, market and site selection for alternate fuels, and climate change adaptation strategies for vulnerable freight resources.

2.10.5 Monterey County Regional Transportation Plan (2014)

This study is the Regional Transportation Plan for the Transportation Agency for Monterey County. The study is Monterey County's detailed version of the transportation projects included in AMBAG's *Monterey Bay 2035* plan. Population and employment are expected to grow in the county through 2035 with agriculture representing the major industry in the area.

The mission of the Transportation Agency is to plan and proactively fund a transportation system that enhances mobility, safety, access, environmental quality and economic activities in Monterey County by investing in regional transportation projects. Goals were derived that are consistent with *Monterey Bay 2035* and include the following: 1) Access and Mobility, 2) Safety and Health, 3) Environmental Stewardship, 4) Social Equity, and 5) Economic Benefit.

Projects and needs related to goods movement in the county include:

- Tolling on SR 156 which would raise funds to help cover construction costs as well as potentially fund other projects in the area. This would create a new four-lane highway while converting the existing roadway into a frontage road, expanding capacity and reducing congestion.
- Extending daily passenger service to Salinas from Sacramento would reduce congestion from automobiles on U.S. 101 which would aid freight movement.
- Widen U.S. 101 to six lanes from Boronda Road to south of Airport Boulevard in Salinas.
- Address a bottleneck at U.S. 101/Sanborn Rd interchange which is a major access route for trucks to coolers and truck facilities in south Salinas.
- Numerous ramp improvements and interchange alignments that will improve traffic flow on U.S. 101.

The study also acknowledges the overall lack of funding available to meet current and future needs.

Performance measures were tied to the five goals outlined above are shown in the table below. Performance measures in **bold** represent those specifically related to freight movement, as congestion in all forms impacts the ability of trucks to reach destinations, and funding of the entire transportation system is required in order to keep roads, bridges, and rails in a state of good repair.

Goal	Performance Measure
Access and Mobility	<ul style="list-style-type: none"> • % of work trips less than 30 minutes • Average work trip travel time
Safety and Health	<ul style="list-style-type: none"> • Number of fatalities and injuries per capita • Bicycle, pedestrian, and transit mode share • Congested vehicle miles travel • Harmful airborne pollutants (tons/day)
Environmental Stewardship	<ul style="list-style-type: none"> • Projected Green House Gas emissions in 2020 and 2035 • Impacts to open space (acres) • Impacts to farmland conservation (acres)
Social Equity	<ul style="list-style-type: none"> • Distribution of investments • Equitable transit access (low income/minority population within ½ mile of high quality transit stop)
Economic Benefit	<ul style="list-style-type: none"> • Jobs near transit • Truck delay (hours) • % funding of transportation system

2.10.6 Santa Cruz County Regional Transportation Plan 2014 (2014)

This plan provides guidance for transportation policy and projects through the year 2035 in Santa Cruz County. This RTP, along with those from Monterey County and San Benito County were incorporated into the *Monterey Bay 2035* Metropolitan Transportation Plan/Sustainable Communities Strategy discussed above. The Plan developed three goals: 1) Improve people’s access to regular needs in ways that improve health, reduce pollution and benefit the local economy, 2) Reduce transportation-related fatalities and injuries across all modes, and 3) Deliver access and safety improvements cost effectively, within available revenues, equitably, and responsive to the needs of all users and beneficially for the environment

Transportation challenges facing Santa Cruz County include the following:

- **System Preservation.** Maintenance needs are increasing, leading to worse conditions on the road network that trucks rely on.
- **Safety.** Vehicle operator safety in the county has improved, but fatality rates for bicyclists and pedestrians remains a challenge.
- **Congestion.** Population growth and regionwide jobs/housing imbalance will continue to create congestion, which negatively impacts the ability to move goods.
- **Environmental and Public Health.** A sustainable transportation system is critical to quality of life.
- **Energy.** Alternative sources of energy for transportation are needed.
- **Economy.** Transportation projects provide jobs, improvements in the network can reduce costs and free income for residents, and a well-maintained and resilient network creates economic growth opportunities for businesses.
- **Funding.** Existing funding sources are not sufficient to finance maintenance and major transportation improvements. New revenue sources are needed.

Performance measures were developed based on the above three goals. Those that relate to freight movement include:

- Improve travel time reliability for vehicle trips, especially for transit, freight, car/vanpool (Goal 1).
- Decrease single occupancy vehicle mode share (Goal 1)—reduced SOV trips will lower congestion for all road users.
- Reduce injury and fatal collisions by (Goal 2). Crashes are a nonrecurring delay that impact reliability for freight movement (in addition to the economic and social impacts).
- Reduce total number of high collision locations (Goal 2). Crashes are a nonrecurring delay that impact reliability for freight movement (in addition to the economic and social impacts).

- Increase the average local road pavement index: Better road conditions will increase efficiency and safety for freight movements.
- Reduce the number of transportation facilities in “distressed” condition.

2.10.7 On The Move: 2035 San Benito Regional Transportation Plan (2014)

This Plan is the Long Range Transportation Plan for San Benito County. Information from these documents, along with those from Monterey County and Santa Cruz County, were incorporated into the *Monterey Bay 2035 Metropolitan Transportation Plan/Sustainable Communities Strategy* discussed above. The most persuasive reason for developing the Regional Transportation Plan is to address the increased pressure from population growth on transportation infrastructure in the County. The Plan developed six goals and related performance measures to those goals, as show in the table below.

Policy Goal	Performance Measures
Access and Mobility	<ul style="list-style-type: none"> • Trips within 30 minutes • Commute travel time
Economic Vitality	<ul style="list-style-type: none"> • Jobs near transit • Truck delay
Environment	<ul style="list-style-type: none"> • GHG reductions • Open space preservation • Farmland conservation
Healthy Communities	<ul style="list-style-type: none"> • Alternative transportation trips • Air quality • Congestion
Social Equity	<ul style="list-style-type: none"> • Distribution of transportation investments • Equitable transit access
System Preservation and Safety	<ul style="list-style-type: none"> • Maintain the transportation system

Freight mobility is one of the recognized challenges in the Plan. The ability to move agricultural goods from farmers and producers to consumers outside the County will rely on investment in transportation infrastructure—a further challenge in a fiscally constrained atmosphere. The increasing population is also identified as a driver of freight demand. Finally, the need for a truck route network that meets Caltrans and engineering requirements is hampered by geometric restrictions and length/weight restrictions in many locations.

2.11 Data and Needs Identification

This section summarizes the data analysis performed in the documents reviewed above which can be relevant for this study. The highlighted data sources are new data we have identified that could be potentially useful for this study. Data sources not highlighted are either being collected currently or already obtained.

Data Source	Description	Type	What is it used for?	Geographic Extent	Do we need it?	Do we have it?
2035 MTP	Employment by industry growth forecast	Economic	Understanding economic importance of freight industries around corridor, currently and in future	City-level for each county	Yes, but we need it at the more detailed TAZ level if possible	Yes
2035 MTP	Revenue Sources	Economic	Understand how much money (and from where) will be available to fund projects	?	Yes	Yes (MPOs/Caltrans funding allocations)
2035 MTP	Land Use	Economic	Understand potential O/D locations and tie land use with transportation	Subcounty	Yes (urban areas only?)	Yes (AMBAG O/D study)
Central Coast Freight Flows	Truck Count Data	Transportation	Physical count of trucks used to verify model projections— helpful on routes not covered by PEMS	Location-specific	Yes	Yes
Central Coast Freight Flows	GRP by industry	Economic	Understanding economic importance of freight industries in the corridor	?	Ideally Yes	No
Central Coast Freight Flows/SLOCO G 101 Mobility	Truck-involved crashes and fatalities	Trans/Safety	Find high incident locations that impact safety and efficiency	Entire corridor	Yes	Statewide Integrated Traffic Records System (SWITRS)
SBCAG 101 in Motion	Significant Accident Types	Trans/Safety	Understanding the prevalent type of accident at different locations can lead to better understanding of cause/prevention	Entire Corridor	Yes	Yes (Caltrans)
U.S. 101 TCR Caltrans	Lane/Lane miles	Trans	Understand current road condition and capacity	Monterey County	Yes	Yes—need other counties
AMBAG	Agriculture	Econ/Trans	Cooler	County?	Yes	Yes (through

Data Source	Description	Type	What is it used for?	Geographic Extent	Do we need it?	Do we have it?
Salinas Intermodal Study	Cooler Locations		locations are major freight sites			Google Search)
AMBAG Salinas Intermodal Study	Railroad at-grade crossings	Trans/Safety	At-grade crossing are safety concerns, and can cause delays for traffic	National	No	Yes (FRA)
Final SRRA Master Plan	Truck parking study	Trans	Understanding use of truck rest stops in the 101 corridor will help show flows and may aid with truck counts in areas (includes unauthorized locations).	Corridor specific	No	Yes – Truck parking inventory data from AMBAG received
CA Freight Mobility Plan	Pavement and Bridge Condition Data	Trans	Highlights specific rehabilitation needs on roadway system	Statewide	Yes	Yes
Other	Weigh-in-motion	Trans	Allows tracking of truck traffic by weight, time of day, axle count	One location (King City Monterey County)	No	Yes?
AMBAG Freight Mobility Study	Travel Time Index	Trans	Reliability is the key variable for supply chain movements	State-wide	Yes	Yes and needs to be calculated
Caltrans 101 TCR	Volume/ Capacity Ratio	Trans	V/C ratio helps show what segments of the route are facing congestion and projected into the future	U.S. 101 by Segment	Yes	Yes. Use model output to calculate
CA Freight Mobility Plan	Corridor Reliability Buffer Index	Trans	Reliable trip time estimates allow freight movers to accurately arrive at O/D	Corridor	Yes	Yes, Caltrans Mobility Performance Report 2010 Appendix B

2.11.1 Other Information Documents

The below table represents studies or reports that do not heavily impact the study region, are incomplete, or are summaries/fact sheets only. They are listed as additional resources that may be of use in the future.

Title	Description	Source
System Analysis Study of Focus Routes 101, 152, and 156 (2008)	This study looked at different build scenarios for U.S. 101 and surrounding state highways in northern San Benito and southern Santa Clara counties. Information derived is specific to each scenario. All scenarios envision a widening of U.S. 101 between SR 156 and SR 25, with varying degrees of construction on those two routes creating the different build scenarios.	http://www.dot.ca.gov/dist05/planning/sys_plan_docs/system_analysis_study/sas_final_report.pdf
M-5 Marine Highway Corridor (n.d.)	This is a short fact sheet on the M-5 Marine Highway Corridor. It would mirror the I-5 Corridor, and potentially help reduce truck traffic on I-5 as well as U.S. 101.	http://www.marad.dot.gov/documents/MHI_Route_Designation_Description_Page.pdf
West Coast Corridor Coalition Trade and Transportation Study (2008)	The three emerging megaregions on the West Coast area a critical part of the world and national economies. The network is heavily truck reliant, with the main corridor being I-5, followed by SR-99 in California. Continued population growth will have an impact on adjacent and feeder routes to the main system, including U.S. 101. U.S. 101 at SR 156 is identified as an urban interchange chokepoint (AADTT 11,902; 23,197 in 2030).	http://westcoastcorridors.org/library/T&TStudy_FinalReportCOMPLETE.pdf
SR 156 Planning Fact Sheet (2007)	Cross-highway for U.S. 101. Trucking through San Juan Bautista is a particular concern, though the volume of trucks in the entire county is higher than average. Primary goods are agricultural and quarry materials.	http://www.dot.ca.gov/dist05/planning/sys_plan_docs/tcr_factsheet_combo/bt_sr156_tcrfs.pdf
Route 156 Final Environmental Impact Report (2013)	Environmental Impact Assessment on two build scenarios for expanding SR 156 and rebuilding the U.S. 101 and SR 156 interchange. The preferred alternative would change SR 156 into a four-lane freeway (Phase I) and reconfigure the interchange with U.S. 101 (Phase II).	http://www.dot.ca.gov/dist05/projects/mon_156w/156_feir.pdf
Transportation Planning Fact Sheet SR 46 in San Luis Obispo County (2009)	Cross-highway for U.S. 101 just south of study area. Primarily a farm-to-market connection for goods movement, trucks account for 20% of total traffic and the route is a major east-west connector between U.S. 1, U.S. 101 and I-5	http://www.dot.ca.gov/dist05/planning/sys_plan_docs/tcr_factsheet_combo/lo_sr46_tcrfs.pdf
Route 101 North County Corridor Study (2010)	This study examines the operational needs for U.S. 101 from the San Luis Obispo/Monterey County line south to the Cuesta Grade Overhead. Recommendations are to pursue transportation system management strategies, transportation demand strategies, and operational efficiencies in order to maintain an acceptable level of service in the corridor.	https://library.slocog.org/PDFS/PLANNING/HIGHWAYS.CORRIDORS/HWY%20101/NO_CO_CORRIDOR_STUDY.PDF
TAMC Investment Plan for Transportation Sales Taxes in Monterey County (2008)	50% of available funds are going to safety and congestion relief project, 25% to local road and street maintenance, and 25% to alternative driving options. Projects in the near term include widening SR 156 and interchange improvements at U.S. 101/SR 156 (above), U.S. 101 Harris Road Interchange (interchange construction) and U.S. 101 San Juan Road Interchange (interchange construction and expressway to freeway upgrade-under way).	http://www.tamcmonterey.org/programs/plan/pdf/Investment_Plan.pdf

Title	Description	Source
U.S. Highway 101 Traffic Calming and Gateway Study (2010)	This study examined the need for traffic calming measures on U.S. 101 in the Crescent City, CA region (Northern California). It also included a discussion of techniques to create a better gateway on the route for Crescent City.	http://www.dnltc.org/wp-content/uploads/2014/11/U.S.-101-Final-Report-v1.pdf
Know About Freight Surveys (2010)	This slideshow presented findings and suggestions derived from a O/D freight survey in KernCOG. This may provide useful information if AMBAG is looking to conduct truck counts or surveys in the U.S. 101 Corridor.	http://www.slideserve.com/jesse/freight-studies-joel-falter
Airport Boulevard Interchange Project (2005)	This is an initial environmental study on the reconstruction and upgrade of the roads and ramps at U.S. 101/Airport Boulevard in Salinas. The study notes that this is one of two major access points for trucks from the Salinas industrial and agricultural hub, with trucks representing 20% of all vehicles at the two interchanges. Accident rates at the intersection are slightly above state norms.	http://www.dot.ca.gov/dist6/environmental/envdocs/d5/us101_airportblvd.pdf
Transportation Concept Reports	Fact Sheets offer a starting point for information on connecting routes to U.S. 101 in the study area.	http://www.dot.ca.gov/hq/tpp/corridor-mobility/d5-page.html
San Joaquin Valley Interregional Goods Movement Plan (2012)	Detailed description of logistics patterns in the SJV. Some of the goods/processing facilities could impact freight flows on U.S. 101. East-west connectivity is again identified as a major constraint, along with limited rail service.	http://www.sjvcogs.org/pdfs/2012/2012-06-14%20Task%204.pdf
Analysis of Economic, Environmental, and Social Impact of Rail Service in Santa Maria Valley 2013 (2013)	A shortline RR in San Luis Obispo County, SMVRR serves a number of customers along its 14 miles route (connecting with Union Pacific). This line keeps prices down for customers, reduces long-haul truck trips, and limits air pollution in the corridor. Business is expected to grow in coming years.	Santa Maria Valley Railroad – file in CS Library
Electric Vehicle Infrastructure for the Monterey Bay Area, AMBAG (2013)	Electric vehicles would help meet air quality standards in the Central Coast Region. Private companies such as Fresh Express and Dole Fresh Vegetables are highlighted as organizations with large numbers of vehicles that may be open to some conversion efforts.	http://www.ambag.org/sites/default/files/documents/Electric%20Vehicle%20Infrastructure%20for%20the%20Monterey%20Bay%20AreaFNL%20DELIVERABL.pdf