# 6A. Strategies and Objectives

The freight transportation system is the backbone of California's economy; however, its unintended societal and environmental consequences can be significant. As such, the implementation of the CFMP must focus on improving goods movement and the quality of life for Californians.

This chapter serves as the implementation portion of the CFMP. The beginning of this chapter outlines several programs, policies, and operational improvements to support and achieve the CFMP's seven goals and corresponding objectives identified in **Chapter 1**. Additionally, this chapter will review the freight investment strategy approach, which highlights region-based strategies that clearly articulate the funding priorities for the seven core regions in California.

As described in **Chapter 1**, the CFMP goals and objectives were created through a rigorous consensus-driven process with the CFAC, comprised of freight leaders and stakeholders from both the public and private sectors throughout the state. This chapter builds upon that effort and identifies several strategies to help the State reach these goals and objectives. Many of these strategies are in progress and are led by various public and private agencies and entities, while others have yet to begin.

These strategies will be a CFAC and freight-stakeholder starting point for discussing how and what to pursue to meet the seven CFMP goals. Identifying roles, responsibilities, performance metrics, and targets assigned to these strategies will be determined. Caltrans intends to explore the implementation of these strategies through present and future research. However, this future endeavor should be completed after FHWA's CFMP approval.

## Goal 1 - Multimodal Mobility

Strategic investments to maintain, enhance, and modernize the multimodal freight transportation system to optimize integrated network efficiency, improve travel time reliability, and achieve congestion reduction.

**OBJECTIVE MM-1: IDENTIFY CAUSES AND SOLUTIONS TO FREIGHT BOTTLENECKS**

*Objective also supports*: Economic prosperity, environmental stewardship, safety and resiliency, and connectivity and accessibility

**Strategy MM-1-A: Create a multimodal freight bottleneck list for priority corridors**

- Eliminate bottlenecks along California's key multimodal trade corridors. It would begin with quantitatively identifying bottlenecks, regardless of mode. They could be prioritized based on factors including but not limited to congestion, reliability, and safety. The analysis would identify interconnected bottlenecks, which should be treated as one large bottleneck needing a solution.

**Strategy MM-1-B: Conduct alternatives analysis – Determine if the highway build-out is the best solution**

- When conducting freight corridor major investment studies, include an analysis of an alternative to a highway capacity project, such as the feasibility of a rail project, operational or ITS improvements, or another strategic investment. Include last mile connectivity to intermodal rail facilities in the analysis.

**OBJECTIVE MM-2: INVEST STRATEGICALLY TO OPTIMIZE SYSTEM PERFORMANCE**

*Objective also supports*: Economic prosperity, safety and resiliency, asset management, and connectivity and accessibility

**Strategy MM-2-A: Identify the most congested freight corridors and facilities; prioritize for improvement**

- Using a standard set of performance measures, identify the state's most congested freight corridors. Once the initial quantitative analysis is complete, this strategy could employ a GIS-driven Jenks Natural Breaks Classification to identify the most congested segments. When this process is completed, overlay the Caltrans freight project list and identify nearby freight facilities impacted by (or potentially causing) the congestion.

**Strategy MM-2-B: Conduct a dedicated truck lane feasibility study**

- Investigate the feasibility of developing dedicated freight lanes, including truck-only toll, alternative fuel corridors, or truck bypass lanes. Dedicated freight lanes may reduce congestion and bottlenecks, enhance access and mobility, improve reliability and efficiency, reduce environmental impacts, and facilitate intermodal integration. They may also improve safety by separating trucks from passenger cars, thereby reducing traffic conflicts and related congestion, and maximizing the efficiency of freight movement. Furthermore, separating trucks from automobile traffic may ease congestion, especially near border crossing areas. If tolls become a reliable funding source, the revenue could be systematically reinvested to improve transportation infrastructure facilities and mass transit systems to enhance traffic flows and minimize conflicts.

**Strategy MM-2-C: Explore variable tolling for passenger vehicles and trucks to maximize peak capacity**

- Conduct a feasibility study to determine the viability of the identified congested corridors (MM-2-A) and bottlenecks (MM-1-A) for a variable tolling pilot project, as well as overall economic impact analysis on cost of goods and services. Caltrans could use economics as a demand management tool by varying toll prices based on congestion levels, in addition to including considerations for equity and sustainability in the analysis. Effectively, tolls may allow passenger and/or freight vehicles to purchase travel reliability within the corridors.

**OBJECTIVE MM-3: DEVELOP, MANAGE, AND OPERATE AN EFFICIENT, INTEGRATED FREIGHT SYSTEM**

*Objective also supports*: Economic prosperity, environmental sustainability, safety and resiliency, and asset management

**Strategy MM-3-A: Implement detection on priority corridors to identify problem areas across modes, particularly targeted to truck data**

- Evaluate the existing ITS network, identify system gaps, determine priority improvements, and develop an implementation strategy. Roadside technology can provide valuable information regarding truck trips and techniques to improve freight efficiencies. Caltrans and its partners should support the deployment of truck trip planning software and technology such as real-time traveler information systems, marine terminal appointment and reservation systems, load matching at inland hubs, and truck stop reservation systems. By integrating ITS into rest areas, traffic information can be pushed to travelers by providing smart truck parking and/or reservation systems.

**Strategy MM-3-B: Construct railroad grade separations at high-volume roadway crossings where feasible; prioritize crossings that facilitate the movement of trucks**

- Develop a statewide inventory of priority grade separation locations, develop an implementation strategy, estimate the construction cost, identify, allocate, and leverage federal, state, regional, and local freight funds, identify the funding gap and advocate for additional private funding.

- Consider local agency and community's needs and priorities for access, connectivity, and land use development, updating grade crossing operations and safety policies for evaluating and demonstrating the need for freight rail grade separation projects, estimating construction and environmental risks besides costs, long-term operation and maintenance costs, and providing a project life-cycle benefit/cost analysis.

**Strategy MM-3-C: Implement systems management approach and active traffic management (ATM) technologies to support efficient and safe freight operations**

- Develop an ATM plan to improve the surface transportation system's trip reliability, safety, and throughput by deploying operational strategies that dynamically manage and control travel and available capacity based on prevailing and anticipated conditions. Examples of ATM technologies are adaptive ramp metering, adaptive traffic signal controls, dynamic lane reversals, shoulder lanes, and speed limits.

**Strategy MM-3-D: Expand freight travel information availability**

- Broadcast freight travel information widely to the trucking community, including the expanding Smart Truck Parking (STP) pilot along I-5. Similarly, Caltrans could develop a program to share real-time traffic data with carrier company dispatchers and increase the number of dynamic messaging signs statewide.

**Strategy MM-3-E: Give priority in the freight plan to projects implementing state-of-the-art and demonstration technologies**

- Increase the focus on pilot and demonstration projects to help mitigate the impacts of freight travel to communities. Such projects could entail supply chain digitization and its

integration with freight ITS. Likewise, freight mobility challenges in the State are so significant that traditional improvements alone will not meet future challenges.

**Strategy MM-3-F: Coordinate with other states and regions to improve multi-jurisdictional freight corridors to reduce delay, increase speed, improve reliability, and improve safety**

- Develop a multi-state/multi-jurisdictional freight group under the Western Association of State Highway and Transportation Officials (WASHTO) umbrella. Other AASHTO regions have organized and regularly convened these groups to secure federal discretionary funding for multi-jurisdictional freight projects.

**OBJECTIVE MM-4: IDENTIFY CAUSES AND SOLUTIONS TO REMOVE FREIGHT RAIL NETWORK BOTTLENECKS**

*Objective also supports*: Economic prosperity, environmental stewardship, healthy communities, safety and resiliency, and connectivity and accessibility

**Strategy MM-4-A: Identify freight rail projects and funding strategies that create freight rail efficiencies**

- Work with seaports, terminal operators, rail carriers, shippers, regional agencies, and communities to support efforts to improve rail operational efficiency through practices such as technology improvements, facilitation of longer trains, and partnerships with Class I railroads to implement mainline improvements. This action will require investment leveraging and is suitable for public-private partnerships.

**Strategy MM-4-B: Identify projects that reduce freight/passenger rail conflict**

- Invest in shared rail corridor improvements to minimize delays to both freight and passengers. In most cases, the Class I corridors in California are owned by either the UPRR or BNSF. However, in some cases, the rail infrastructures are owned by public entities, such as the Alameda Corridor Transportation Authority (ACTA), Orange County Transportation Authority (OCTA), LA Metro, and Caltrain. Mutual solutions, such as double tracking in key areas, may create win-win scenarios. The focus should be on minimizing conflicts and delay in high-priority corridors. Further discussion of freight and passenger rail conflicts and opportunities is included in the California State Rail Plan.

**OBJECTIVE MM-5: IDENTIFY FREIGHT RAIL NETWORK OPERATIONAL IMPROVEMENTS AND MODE SHIFT OPTIONS**

*Objective also supports:* Economic prosperity, environmental stewardship, healthy communities, safety and resiliency, asset management, and connectivity and accessibility

**Strategy MM-5-A: Support short line railroad improvements through infrastructure upgrades and advanced technologies**

- Short line railroads and spurs are often overlooked as transport solutions. This strategy would develop a short line rail improvement plan to encourage track upgrades, industrial rail access improvements, advanced technologies, and clean alternative

energy considerations to improve system efficiency (increase speeds, reduce emissions) and promote cost-effective truck shifts to rail. It would also assist shippers in obtaining access and improved services by developing new rail spurs.

**Strategy MM-5-B: Support tax credits and/or loan programs for short line railroads**

- California could consider a state tax credit or loan program to help offset short line railroad maintenance and expansion costs. These costs often exceed the financial capacity of short lines, and as a consequence over the long term, service degrades.

## Goal 2 - Economic Prosperity

Grow the economic competitiveness of California's freight sector through increased system efficiency, productivity, and workforce preparation.

**OBJECTIVE EP-1: PROMOTE ECONOMIC DEVELOPMENT BY INVESTING IN FREIGHT INFRASTRUCTURE PROJECTS AND OPERATIONAL IMPROVEMENTS**

*Objective also supports:* Multimodal mobility, safety and resiliency, asset management, and connectivity and accessibility

**Strategy EP-1-A: Reduce transportation costs by eliminating bottlenecks and recurrent delays, making operational improvements, and accelerating rapid incident response on priority freight corridors**

- Enhance existing incident management program to clear incidents quickly and to re-route traffic when necessary. These tactics should be employed with new operational ATM improvements detailed in Strategy MM-3-C.

**Strategy EP-1-B: Collaborate with the freight industry to identify critical projects and develop strategic investment strategies, including public-private partnerships**

- Identify mega-projects critical to the State's economy but cannot be completed through existing funding streams because of cost or eligibility issues. Work with the CFAC to develop these projects and identify/position them for public-private partnerships.

**Strategy EP-1-C: Measure the throughput of pass-through freight and identify friction points**

- Undertake a commodity flow study to understand how pass-through cargo traverses the State. California's U.S. global gateway role has resulted in significant statewide freight movement and economic growth. To mitigate these impacts, Caltrans should undertake a commodity flow study to understand how pass-through cargo traverses the State. When this analysis is combined with freight congestion and bottleneck analysis, the cost of pass-through freight can be measured.

**Strategy EP-1-D: Advocate for additional funding appropriations for freight infrastructure investments and operational improvements**

- Actively engage and encourage Caltrans public and private sector partners to advocate for increased freight funding levels and project-level appropriations. When appropriate, Caltrans should actively participate and champion these efforts.

**OBJECTIVE EP-2: PROMOTE FREIGHT PROJECTS THAT ENHANCE ECONOMIC ACTIVITY, FREIGHT MOBILITY, UNIQUE CAPABILITIES, RELIABILITY, SYSTEM RESILIENCY, AND GLOBAL COMPETITIVENESS**

*Objective also supports:* Multimodal mobility, safety and resiliency, and connectivity and accessibility

**Strategy EP-2-A: Encourage the creation of regional freight advisory committees at regional/county transportation agencies**

- Encourage/support the development of regional Freight Advisory Committees designed to support each region's perspective freight issues and to feed issues to the CFAC.

**Strategy EP-2-B: Support funding to completion and then funding and partnership with GOBiz to implement CSFAP Action Item 6.A. "Competitiveness Data Development and Utilization."**

- There is a need for data and information to support the freight transportation system's competitiveness and to set the State's competitiveness target or targets. The type of information needed includes a suite of quantitative metrics to measure and track California's freight industry competitiveness, analyses of the costs and benefits of State actions, and an ongoing benchmarking of the State's freight industry.

**OBJECTIVE EP-3: INCREASE WORKFORCE AVAILABILITY AND TRAINING**

*Objective also supports*: Connectivity and accessibility

**Strategy EP-3-A: Identify and actively advocate for workforce mobility, accessibility, and training needs and job training programs through collaboration with the freight industry and California's higher education system**

- Facilitate an ongoing dialogue between the CFAC and the California Workforce Development Board. Creating a two-way dialogue among State agencies can help inform the future workforce development programs focused on the freight industry. Undertake a series of mobility studies to uncover gaps in workforce accessibility. This effort could be paired with travel demand management strategies to reduce the impact of passenger vehicles on freight flows near major logistics centers.
- Expand the availability of training programs or degrees at the community college and university level, including but not limited to logistics, global supply chain management, supply chain technology, and logistics management.
- Encourage technology transfer from California's world-class research universities to support freight technology development. Discoveries can be made by continuing to fund cutting-edge sustainable freight transportation research from California's talented, high-skilled knowledge base through programs such as UC-Davis STEPS and USC METRANS.

**OBJECTIVE EP-4: PROMOTE THE STATE'S COMPETITIVE LOGISTICS ADVANTAGES**

*Objective also supports:* Multimodal mobility, and connectivity and accessibility

**Strategy EP-4-A: Identify incentives for the retention, expansion, and new development of logistics industry facilities (warehouses)**

- Develop a comprehensive assessment of available State and local economic development incentives. The focus of this assessment should be to evaluate the current practices of Caltrans and how they fit within the bigger picture of economic development.

**Strategy EP-4-B: Identify the needs and gaps of the agricultural goods movement system to improve the safe and efficient movement of agricultural goods to, from, and through California**

- Partner with local and regional agencies in developing local and regional goods movement plans and studies.

## Goal 3 - Environmental Stewardship

Support strategies that eliminate, reduce, avoid and/or mitigate adverse environmental and public health impacts of the freight transportation system while promoting and enhancing public health and ecological restoration in the planning process.

**OBJECTIVE ES-1: CONTINUE TO INTEGRATE ENVIRONMENTAL HEALTH CONSIDERATIONS INTO FREIGHT PLANNING, DEVELOPMENT, IMPLEMENTATION, AND OPERATIONS OF PROJECTS AS FEASIBLE**

*Objective also supports:* Economic prosperity, safety and resiliency, and connectivity and accessibility

**Strategy ES-1-A: Promote the use of sustainable pavement types that enhance the movement of goods while reducing environmental impacts**

- Wherever feasible, implement the use of sustainable pavement types that reduce impacts on the environment, re-charge the State's aquifers, mitigate the negative impacts of seasonal drought, and reduce runoff.

**Strategy ES-1-B: Encourage freight mode shift to rail and water to reduce VMT and GHG emissions from roadway freight transport where and when viable**

- Support the State Rail Plan by prioritizing projects that promote a mode shift to rail.
- Support intermodal facilities throughout the State per the State Rail Plan to create efficient mode transfer points and increase rail and marine freight transportation network access.
- Support the transition to clean locomotives and clean shipping vessels when transitioning from truck to rail and water modes.

**OBJECTIVE ES-2: MINIMIZE AND, WHERE POSSIBLE, ELIMINATE TOXIC AIR CONTAMINANTS, CRITERIA POLLUTANTS, AND GHGS EMITTED FROM FREIGHT VEHICLES, EQUIPMENT, AND OPERATIONS**

*Objective also supports:* Safety and resiliency and economic prosperity

**Strategy ES-2-A: Develop a standardized performance-based metric used for monitoring and reducing GHG emissions and criteria pollutants of freight vehicles, equipment, and operations**

- Freight fleets operating from public and private organizations use different approaches to measuring emission performance-based metrics. By standardizing this requirement, outcomes should remain consistent while reducing the costs incurred through labor-intensive corrections and regulatory fines.

**Strategy ES-2-B: Standardize medium and heavy-duty vehicle and equipment charging standards and protocols**

- Promote standardized near-zero and zero-emission technologies that promote operator and public safety and avoid costs and confusion associated with having numerous charging standards for all alternative fueling types. Standardized charging protocols and infrastructure can reduce costs related to the deployment of zero-emission vehicles and accelerate the deployment of vehicles. Consider lessons learned from the deployment of light-duty plug-in electric vehicles/plug-in hybrid electric vehicles.

**Strategy ES-2-C: Decarbonize the commercial freight fleet**

- Help establish proof of concept of zero-emission commercial freight vehicles by employing such technology where feasible within the State of California's fleet.
- While transitioning to a fully, renewable energy grid, facilitate access to low-carbon fuel options such as renewable diesel in the interim.

**Strategy ES-2-D: Explore decarbonization of last-mile delivery to decrease the freight system's impact on air quality in dense urban environments**

- Promote better curb space utilization by working with local governments to encourage strong parking pricing programs in the urban core to limit curbside commercial freight parking competition. This action intends to reduce VMT and emissions generated by "cruising for parking" and engine idling activities.
- Consider utilizing congestion or dynamic pricing in densely urbanized areas to create low-or zero-emission zones to manage demand for cleaner mile delivery.
- Support research and funding for emerging forms and infrastructure for low-carbon last-mile delivery, such as cargo bike delivery programs and drones.
- Support research on emerging efficient forms of last-mile delivery management, such as various distribution warehouse location models to reduce VMT and trips, off-hour deliveries, consolidation centers, and efficient siting of lockers and pick-up points. Create statewide development standards for urban areas to facilitate more efficient last-mile deliveries proactively. These standards would likely recommend that the developer consider the following: building a centralized delivery location, secure storage room, lockers, enforcement techniques, and a smart loading dock appointment system.

**OBJECTIVE ES-3: PROMOTE LAND USE PLANNING PRACTICES THAT PRIORITIZE MITIGATING NEGATIVE FREIGHT PROJECT IMPACTS UPON THE ENVIRONMENT.**

Objective also supports: Healthy communities

**Strategy ES-3-A: Support freight technology development and fuels data collection and analysis**

- Encourage better data collection methods and coordination efforts with partner agencies with robust resources dedicated to this effort, such as the California Energy Commission (CEC), California Air Resources Board (CARB), research institutes such as the University of California System, and the Transportation Research Board (TRB). This work could help uncover best practices and the pros and cons of various technologies to inform policymakers. Innovations in the freight industry are closely tied to the private sector and their protected data; thus, strong public-private and interagency collaboration are necessary to gain adequate insight into the industry's research and development of sustainable technologies and clean fuels.

**Strategy ES-3-B: Promote the use of low-carbon renewable fuels development and support fuel efficiency and emissions reduction requirements for moving goods to support prosperity by sustainable means by decreasing GHG emissions while increasing goods movement**

- Encourage the development and availability of renewable energy resources and low-carbon fuel to enhance low-emission diesel requirements for those in the goods movement sector.

**Strategy ES-3-C: Promote land uses that are conducive to protecting the environment while supporting freight operations**

- Work with local economic development and planning agencies to identify locations along rail spurs and inland waterway routes to create shovel-ready development opportunities for freight-intensive uses. When siting future freight uses in these areas, the focus should be on locating the highest and best use of these strategic locations.
- Collaborate with CARB to utilize their freight handbook document that identifies best practices for the siting, design, and operation of freight facilities that minimize exposure to air toxins, incorporate clean technologies and alternative fueling infrastructure, and maximize the capacity of transportation infrastructure.

**Strategy ES-3-D: Create incentives to attract private investment in innovative, transformative, and new technological goods movement systems through pilot programs or major energy projects**

- Advocate for incentive programs that position the State as a natural choice for private-sector transportation innovation projects, in particular for projects that support zero emission technologies that help the state achieve emission goals.

**Strategy ES-3-E: Incentivize freight projects that minimize GHG, criteria pollutants, and other emissions**

- Increase the importance of minimizing emissions as part of future freight project evaluation processes. This could be accomplished by putting more weight on performance measures that align with the air quality State Implementation Plan.

## Goal 4 - Healthy Communities

Enhance community health and wellbeing by distributing the benefits of the goods movement system equitably across California's communities while making sure the environmental and public health costs of the system are not disproportionately borne by goods movement communities.

**OBJECTIVE HC-1: PRIORITIZE SOCIAL EQUITY FOR FREIGHT-RELATED PROJECTS BY DEVELOPING ALTERNATIVE METHODS THAT AVOID OR MITIGATE NEGATIVE IMPACTS ON OR NEAR EXISTING COMMUNITIES ADJACENT TO HIGH-VOLUME FREIGHT ROUTES AND FACILITIES**

*Objective also supports*: Environmental stewardship and economic prosperity

**Strategy HC-1-A: Implement projects in freight corridors that are specifically targeted to avoiding, reducing, or mitigating freight impacts on the environment and communities**

- Incorporate public health data sources when analyzing a freight project's potential impact. Direct Caltrans Local Development Review function to request and comment on this analysis when reviewing freight projects using a health equity lens.
- Prioritize projects that will facilitate a reduction in GHG emissions and criteria pollutants in communities disproportionately burdened by pollution, as identified using CalEnviroScreen.
- Strategically plan for and/or divert heavily used freight routes to alternative routes that are further removed from residential neighborhoods.
- Develop environmentally conscious and coordinated land use policies in conjunction with freight goods movement plans. Examples could include reducing conflicts by establishing buffers between industrial and sensitive land uses, influencing location and design decisions through zoning tools, preserving existing industrial land uses, and promoting context-sensitive site and building design solutions.
- Conduct comprehensive alternative route assessments to avoid bringing negative impacts to communities of newly proposed alternative routes, and be fully considerate of ecologically sensitive areas and habitats.

**OBJECTIVE HC-2: CONDUCT MEANINGFUL OUTREACH AND COORDINATION EFFORTS WITH OTHER AGENCIES FOCUSED ON ENVIRONMENTAL JUSTICE COMMUNITIES DISPROPORTIONATELY BURDENED BY THE FREIGHT TRANSPORTATION SYSTEM IN URBAN AREAS AND RURAL AREAS BY IDENTIFYING AND DOCUMENTING THEIR NEEDS**

*Objective also supports*: Environmental stewardship

**Strategy HC-2-A: Partner with metropolitan planning agencies, tribal organizations, and community groups to identify conveniently located and accessible public facility venues and relevant times for hosting engaging public workshops**

- Work with key community stakeholders to plan outreach opportunities that are convenient, accessible, and timely for stakeholders. Collaborate where possible with existing community events so that stakeholder time is respected.

- Contract with local community-based organizations to staff the outreach process when possible. Write contracts so that food and childcare services are offered to outreach attendees during the meeting to increase convenience for stakeholders to attend.
- Document conversations and feedback from public workshops to identify barriers and resulting recommendations for mitigation methods to reduce the adverse effects of freight-impacted communities.
- Implement findings in planning activities.

**Strategy HC-2-B: Establish development standards to avoid and mitigate environmental and social impacts of freight on communities**

- Work with State agencies and professional organizations such as the American Planning Association, Transportation Research Board, and/or the Urban Land Institute, and utilize existing plans and guides to develop a freight land use design guide. This guidebook would help local communities implement standards that minimize the environmental impacts of freight. These standards may include providing appropriate buffers, designating truck routes to avoid residential neighborhoods, implementing multimodal safety measures to reduce intermodal conflicts on roadways, and requiring cleaner trucks (the highest EPA standard available at the time of development approval), etc.

**Strategy HC-2-C: Leverage partnerships to strengthen the outreach process**

- Partner with community-based leaders of environmental justice communities to conduct and assess the economic, environmental, and social impacts of freight to these communities.
- Partner with private freight stakeholders to bring reliable service of goods to a spectrum of geographies and facilitate symbiotic relationships with affected communities, particularly those that may be disadvantaged and lacking in resources and/or employment opportunities.

**OBJECTIVE HC-3: PROMOTE NOISE AND OTHER POLLUTION ABATEMENT STRATEGIES ASSOCIATED WITH THE MOVEMENT OF GOODS ALONGSIDE RESIDENTIAL AREAS AND SENSITIVE HABITATS NEAR FREIGHT CORRIDORS**

*Objective also supports*: Environmental stewardship

**Strategy HC-3-A: Promote abatement best practices in freight projects**

- Work with local governments to encourage fixed, time-based vehicle size restrictions in their curbside parking. By prioritizing different modes or movements by the time of day, an urban core can strategically address curbside parking demand to, in turn, reduce VMT and emissions generated by "cruising for parking" and engine idling activities. In rural areas this includes identifying alternative truck routes that bypass disadvantaged communities and neighborhoods

## Goal 5 - Safety and Resiliency

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

**OBJECTIVE SR-1: REDUCE RATES OF INCIDENTS, COLLISIONS, FATALITIES, AND SERIOUS INJURIES ASSOCIATED WITH FREIGHT MOVEMENTS**

Objective also supports: Multimodal mobility

**Strategy SR-1-A: Expand the system of truck parking facilities**

- Execute the 2020/21 California Truck Parking Study recommendations to expand existing public and private sector truck parking facilities and develop new parking facilities in strategic locations.

**Strategy SR-1-B: Promote public-private partnership for the implementation of truck stop and shipping terminal vehicle charging or charge-in-motion**

- Support ARB, PUC, and Energy Commission efforts to work with electric utilities, technology providers, truck stops (and NATSO), and freight terminals to employ electric charging terminals along crucial freight corridors. Likewise, Caltrans should continue to study inductive charging opportunities within its right-of-way.

**Strategy SR-1-C: Develop design guidelines for truck routes that consider other modes**

- Utilizing logistics land use guides, develop a context-sensitive roadway design document that supplements Caltrans' Complete Streets guidance.

**Strategy SR-1-D: Prioritize projects that address high-crash and truck-involved locations**

- Collaborate with California Highway Patrol and use standard performance measures to identify commercial vehicle crash hot spots statewide. Use this information to improve State and regional prioritization efforts and to focus safety-related funding efforts.

**OBJECTIVE SR-2: UTILIZE TECHNOLOGY TO PROVIDE FOR THE RESILIENCE AND SECURITY OF THE FREIGHT TRANSPORTATION SYSTEM**

*Objective also supports:* Multimodal mobility, economic prosperity, and asset management

**Strategy SR-2-A: Expand the number and scope of cargo security screenings**

- Work with State and Federal homeland security partners to ensure that future transportation design decisions near the sea, air, and land ports of entry account for future space requirements for cargo screening facilities.

**Strategy SR-2-B: Ensure consistent and effective safety and security requirements at all California ports**

- Strengthen the partnership between State, federal, and private stakeholders to ensure safe and secure access to goods moving to and from the State's sea, air, and land ports of entry.

**Strategy SR-2-C: Identify alternate freight routes to maintain freight movement at times of disruption by disaster**

- Conduct a Freight Resiliency study to ensure continuity of freight movement during and immediately following a disaster. This study would include bringing critical trade lanes online and ensuring relief materials reach California's residents and businesses. Existing evacuation routes and plans must be integrated into the proposed alternative routes study.

**Strategy SR-2-D: Promote technology to support monitoring of truck parking locations and areas where rail traffic commonly stops**

- Increase transportation security and decrease theft by placing cameras and other technologies in truck parking areas and near rail locations where intermodal trains frequently stop.

**OBJECTIVE SR-3: DEVELOP A FREIGHT RESILIENCY STRATEGIC PLAN**

*Objective also supports:* Economic prosperity and environmental stewardship

**Strategy SR-3-A: Develop resiliency vision, goals, and objectives**

- Work with agency partners to develop a vision for a resilient freight system. Goals and a series of objectives would support this vision. The Freight Resiliency Strategic Plan would focus on identifying future issues related to national disasters, sea-level rise, and the individual resiliency of significant trade lanes in California.
- Collaborate with State, regional, and local agencies to leverage funding opportunities for implementing climate resiliency work, adaptation plans, climate action plans, and/or master plans to increase the resiliency of assets against climate-related events.

**Strategy SR-3-B: Identification of high-priority safety concerns, critical and vulnerable infrastructure, and aspects of the State's key supply chains that have resiliency concerns**

- Increase the resiliency of California's key industry supply chains. Identify and prioritize improvements to improve safety and keep business moving – these improvements could include rebuilding, strengthening, or improving facilities.

**Strategy SR-3-C: Incorporate resilience strategies contained in port plans prepared according to Coastal Commission guidelines**

- Work with the State's port authorities to incorporate resiliency strategies as part of Caltrans roadway improvement plans – in particular, assist ports in preparing for increased sea levels.
- Collaborate with partners to develop Vehicle Grid Integration as a resiliency strategy. This capability allows battery-electric vehicles and other equipment to communicate

with the grid when charging, especially in places where trucks are likely to plug in for extended sessions, like truck parking sites. This technology could also promote resiliency for equipment like electric-powered Transport Refrigerator Units, particularly when shore powering at port terminals and warehouses.

## Goal 6 - Asset Management

Maintain and preserve infrastructure assets using cost-beneficial treatment as indicated in the State Highway System Management Plan (SHSMP), per the federal FAST Act, Streets and Highway Code §164.6, and Caltrans Director's Policy 35 Transportation Asset Management (DP-35), and other applicable state and federal statutes and regulations.

**OBJECTIVE AM-1: APPLY PREVENTIVE MAINTENANCE AND REHABILITATION STRATEGIES USING SUSTAINABLE BEST PRACTICES**

*Objective also supports:* multimodal mobility, safety and resiliency, and connectivity and accessibility

**Strategy AM-1-A: Ensure adequate and sustainable funding for the preservation and modernization of the freight system**

- Conduct a study to explore the existing freight system's long-term maintenance and operational costs. The results of this study should be integrated into long-term planning and funding strategies for the State. Expand the scope of freight system rehabilitation projects to include facility modernization, where possible and merited, to increase the range of available funding sources.

**Strategy AM-1-B: Identify maintenance and preservation needs on priority freight corridors**

- The maintenance and operation study identified in Strategy AM-1-A should use the corridors established in Strategy MM-1-A to focus investment in high-priority trade lanes that support the California economy.

**Strategy AM-1-C: Expand truck scale technology use: automated or technologically assisted weight enforcement (infrared cameras); expand weigh-in-motion (WIM) deployment**

- Identify locations for new installations of WIM stations throughout the State and prioritize implementation. Caltrans uses advanced technology along highways to create freight movement efficiencies and fulfill federal traffic mandates. Weigh-in-motion devices electronically verify compliance with weight requirements without pulling trucks out of and back into traffic at truck scale locations. Delays occur as trucks queue at the scales for weighing and verification. Technologies allowing trucks to bypass additional stops create a more efficient system.
- Currently, WIM systems are lacking near many port locations and in some areas where new corridors are growing. Truck scale technology allows for the efficient use of static scales and enforcement personnel without affecting traffic flow. In addition to improving safety, the technology helps reduce overloading and subsequent pavement damage.

**Strategy AM-1-D: Fortified bridges and pavement design standards to accommodate heavy freight travel**

- Identify bridge rehabilitation and replacement needs and adapt the current bridge asset management program to focus on key freight corridors. All bridges along primary freight routes should be identified and separated by the various network categories for performance measurement. Assess freight bridge conditions and barriers to freight. The weight and dynamics of heavy-duty trucks, outdated design methods, poor-quality materials, and unsuitable construction and maintenance practices are known to reduce pavement longevity. Newer, longer-lasting materials and improved technologies are regularly being developed internally and externally. Pavement technological advances to increase durability and safety and minimize road noise and friction should improve system efficiencies, cost savings, and environmental impacts. Using new, better-performing materials could enhance the life of the transportation process. Identify that California has a lot of microclimates therefore, design requirements should be adopted according to those microclimate needs

**Strategy AM-1-E: Preservation of unique freight corridors and passageways**

- Identify system assets that provide unique capabilities to the freight system, such as the ability to move non-containerized cargo, HAZMAT cargo, oversized/overweight cargo, or cross-border freight. Prioritize projects to protect those assets, as long as they still serve a need or alternatives to replacements are too costly.

## Goal 7 - Connectivity and Accessibility

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

**OBJECTIVE CA-1: SUPPORT RESEARCH, DEMONSTRATION, DEVELOPMENT, AND DEPLOYMENT OF INNOVATIVE TECHNOLOGIES**

*Objective also supports:* Multimodal mobility, economic prosperity, environmental stewardship, safety and resiliency, and asset management

**Strategy CA-1-A: Freight plan priority for projects implementing state-of-the-art and demonstration technologies**

- Increase the focus on prioritizing pilot and demonstration projects to help mitigate the impacts of freight travel on California's residents using baseline and projected data. Likewise, freight mobility challenges in the State are so significant that traditional improvements alone will not meet future challenges.

**OBJECTIVE CA-2: PROMOTE INNOVATIVE TECHNOLOGIES AND PRACTICES UTILIZING REAL-TIME INFORMATION TO MOVE FREIGHT ON ALL MODES MORE EFFICIENTLY**

*Objective also supports:* Multimodal mobility, economic prosperity, and safety and resiliency

**Strategy CA-2-A: Research opportunities for freight technologies**

- Develop a freight technology research center within a state agency or university to help incubate innovations needed to meet future demand. Future freight technologies will be vital to solving the significant freight challenges that await California in the future.

**OBJECTIVE CA-3: COORDINATE WITH LOCAL AND REGIONAL PARTNERS ON FREIGHT FACILITIES, SITING, DESIGN, AND OPERATIONS**

*Objective also supports:* Multimodal mobility, economic prosperity, environmental stewardship, safety and resiliency, asset management

**Strategy CA-3-A: Freight transportation, transportation planning, and land use planning coordination**

- Promote good project design that addresses community concerns and potentially contentious approval processes for new and expanded freight facilities. Work with local agencies to prevent incompatible land uses and transportation alternatives that conflict with existing or future freight facilities. Tools, including GIS, can assist with many facets of planning. With current, accurate information, layers of data superimposed on each other can provide a visual idea of current and future scenarios. Freight can negatively impact communities, and the development of incompatible land use near large freight generators can influence the efficient flow of goods.

**OBJECTIVE CA-4: UTILIZE INLAND PORT FACILITY, SHORT-HAUL RAIL SHUTTLE, AND INLAND SEAPORTS TO LESSEN IMPACTS ON NEARBY COMMUNITIES**

*Objective also supports:* Multimodal mobility, economic prosperity, environmental stewardship, safety and resiliency, and asset management

**Strategy CA-4-A: Develop a competitive metric identifying the cost of transporting goods grown or manufactured in California to a common destination versus peer regions/states**

- Create a goods movement competitiveness metric identifying a single product and comparing the transportation costs of the product from California to its most common destinations with those of competing states.

**OBJECTIVE CA-5: IMPROVE TRUCK TRIP PLANNING, COORDINATION, OPERATIONS, AND MANAGEMENT**

*Objective also supports:* Multimodal mobility, economic prosperity, environmental stewardship, safety and resiliency, and asset management

**Strategy CA-5-A: Measure throughput of pass-through freight and identify externalities, such as impacts on communities and air quality**

- Explore avoidance incentives or disincentives at highly impacted areas that aim to limit pass-through traffic, thus allowing local businesses to operate more efficiently and minimizing impacts on local communities. While California sees significant economic benefits (e.g., jobs, sales tax) by serving as the nation's global gateway, there is an associated cost exerted by the significant pass-through freight moving by truck and train on the State and its residents. The resulting increase in congestion levels and emissions