



California Department of Transportation  
Division of Traffic Operations

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# MANAGED LANE SYSTEM PLAN GUIDELINES

## Introduction

The California Department of Transportation (Caltrans) is committed to increasing the use of managed lanes throughout the State of California. A managed lane is an exclusive or preferential use lane that uses various operational and design strategies in order to continuously achieve an optimal condition. Managed lanes use operational strategies such as access control, vehicle eligibility, and tolling, or a combination thereof. These strategies are determined based State and regional goals and objectives for the transportation system, including, but not limited to, safety, regional and interregional consistency, impacts on freeway performance, enforcement needs, sustainability considerations, and community support. Strategies may be adjusted at any time to meet required performance standards or to address other managed lane or freeway performance issues. Managed lanes include the following:

- High-occupancy vehicle (HOV) lanes.
- High occupancy/toll (HOT) lanes. These are HOV lanes that may also be accessed by tolled vehicles.
- Express toll lanes (ETL). All vehicles pay a toll to access these lanes; discounts may be offered for certain classes of vehicles, such as HOV.
- Bus lanes. These lanes are used by transit buses and other common carriers.
- Truck lanes. These lanes are used to separate commercial vehicles from general purpose traffic. They may be tolled.
- Part-time lanes, where the shoulder is designated as a lane at certain times of the day; these lanes are usually reserved for HOV or bus use.

Managed lanes are tool that California can use to achieve multiple goals in a corridor, including improving efficiency in moving more people in fewer vehicles, reducing vehicle miles traveled (VMT) and VMT growth, meeting Federal Performance Management targets, and managing congestion.

The purpose of these guidelines is to provide guidance to Caltrans staff and regional transportation agency partners on the development of a Managed Lane System Plan (MLSP) and clearly state Caltrans' expectations for an acceptable MLSP. The MLSP is a comprehensive analysis of a managed lane system in a district and should address multiple needs. The outcome will be recommended projects and strategies that will be documented in appropriate system planning documents and advanced in the planning process for funding. These guidelines present a flexible methodology and approach intended to be helpful to districts in developing a MLSP. The scope and work activities related to this process can and should be tailored to the district or region and its partners based on available time, resources, and expertise.

## What Is the Purpose of a Managed Lane System Plan?

AS required by Deputy Directive 43R1 (DD-43R1), Managed Lane Facilities, each district that currently operates, or expects to operate, managed lanes on the State Highway System (SHS) within the next 20 years must prepare an MLSP, in cooperation with regional transportation agencies and other stakeholders. The MLSP shall contain a list of each managed lane facility that is currently in operation or planned for operation within the next 20 years.

The application of managed lanes on the SHS requires coordination and collaboration with a variety of internal and external partners to ensure success. The MLSP is a planning document that outlines the overall vision of the managed lanes network for the district and region, how it will operate, and how it fits in with other operational strategies. It provides a comprehensive long-term strategy for the prioritization, planning, and development of managed lanes based on the following:

- Mobility
- Accessibility
- Multimodal system connectivity, including transit and freight networks
- Financial planning
- Right of way Impacts
- Funding for operations and maintenance and reinvestment in travel choices in the corridor
- Environmental and climate impacts
- Agency and stakeholder coordination.
- Public input
- Engaging low-income and disadvantaged communities
- Impact on Federal System Reliability Performance Management Targets

## The Role of System Planning

System Planning or Multimodal System Planning refers to a set of collaborative transportation planning processes undertaken by Caltrans and its partner agencies to identify, analyze, and document existing and desired future conditions for a transportation system, corridor, or element within the SHS, in accordance with State and federal directives and goals. System Planning results in a variety of plans, programs, and strategies that are prepared at the statewide, district, regional, inter-regional, and local levels. These include corridor plans, congestion management plans, the Interregional Transportation Strategic Plan (ITSP), District System Management Plans (DSMP), and Active Transportation Plans. System Planning processes also involve planning for modal operations, sustainability, complete streets, bicycle and pedestrian travel, transit, rail, freight, livability, climate change, and other aspects of the State's multimodal transportation system.

### Relationship between the MLSP and other System Planning Documents

The DSMP is the long-range policy planning document that describes how the district envisions the transportation system will be maintained, managed, and developed over the next 20 years and beyond. Corridor plans identify and recommend transportation strategies and improvements in coordination with regional partners, resulting in a range of recommended projects and strategies that achieve Caltrans goals and objectives. The MLSP shall be used to provide project and program input on managed lanes into the DSMP and corridor plans and the area's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) document. During the development of the MLSP, all appropriate System Planning documents, particularly the RTP/SCS, DSMP, and corridor plans, shall be reviewed and integrated as appropriate to ensure identified corridor needs and planned improvements are accurately considered in the managed lanes system.

### MLSP Development Approaches

Districts have the option of developing their own MLSP, in coordination with regional partners, or to use an MLSP developed by regional partners, provided the district has been an active participant in the development of the plan and agrees with its recommendations. DD-43R1 gives the districts' Division for Planning and Modal Programs the responsibility for developing and maintaining the MLSP; the district Division of Traffic Operations plays a major supporting role. An MLSP can be developed in three (3) distinct ways: Creating a new MLSP, updating an existing MLSP, or a hybrid approach combining existing studies that result in a single more comprehensive MLSP. The process outlined in these guidelines applies to these approaches.

### Governance

System Planning is conducted through partnerships with a variety of agencies and groups leading to the development of a comprehensive system plan that includes roles, responsibilities, and implementation steps. The roles and responsibilities of each agency should be outlined during the initiation and development of the MLSP and can vary depending on level of interest and legal responsibility.

In the case of managed lanes, there are often responsibilities assigned to both Caltrans and to regional transportation agencies. Caltrans is the owner and operator of the SHS and sets overall policy and procedure for the planning, development, and operation of managed lanes. Some regional agencies have been granted statutory authority, with Caltrans' concurrence, to establish and collect tolls on certain HOT lanes or express toll lanes. Beyond those specific facilities, Caltrans and regional transportation agencies may obtain tolling authority for HOT lanes or express toll lanes from the California Transportation Commission pursuant to Streets and Highways Code section 149.7. Caltrans is required (per section 21655.6 of the Vehicle Code) to obtain the approval of the appropriate transportation planning agency or county transportation commission prior to establishing managed lanes on the SHS.

Responsibilities also extend to funding sources. Caltrans controls certain fund sources, such as the State Highway Operation and Protection Program and the Interregional Transportation Improvement Program (ITIP). Local and regional agencies control their own funding, such as the Regional Transportation Improvement Program (RTIP), and local transportation sales tax measures.

It is important to identify roles and responsibilities, and to establish a process or strategy to develop and accept the final MLSP. The process could include the input of a combination of technical experts, policy leads, and ultimately the approving management group. For example, the following teams or committees could be formed to develop a system plan: a Technical Advisory Committee (TAC) of knowledgeable staff of the representative agencies to conduct the technical work; a Policy Advisory Committee (PAC) to provide higher level planning direction; and a steering committee to ultimately recommend the final MLSP for approval.

### Implementation Plan

An implementation plan is necessary to outline roles and responsibilities of the key elements, strategies, and individual projects identified in the MLSP. The implementation plan should be developed by the TAC and reviewed by the steering committee. It should outline a series of activities and projects that once completed should achieve the overall vision and benefits targeted by the team developing the MLSP and identified in the final MLSP. A key element is the monitoring of the MLSP to ensure implementation is successful which should be conducted by representatives of the partner agencies. Another important element is the continuous reassessment of performance measures and assumptions to determine if an update of the plan is needed due to unforeseen changing conditions regarding the infrastructure, funding availability, and policies. Roles and responsibilities for implementation can be identified in an agreement between the agencies such as a Memorandum of Understanding. Additional agreements, such as toll facility agreements or concepts of operations, may be required as individual managed lane projects are implemented.

### Key Elements of a MLSP

Caltrans expects the following key elements to be considered within the MLSP, regardless of the lead agency:

- Clear demonstration of State, regional, and local collaboration
- Short, medium, and long-term planning horizon
- Specific system objectives
- Multimodal considerations for and approaches to address transportation system issues
- Performance measures for identified or recommended projects and strategies
- Consideration and application of a range of performance metrics for the set of recommended projects and strategies. Examples include those outlined in Chapter 7 of the 2017 Regional Transportation Plans (RTP) Guidelines, project

specific performance measures as outlined in the Statewide Transportation Improvement (STIP) Guidelines, and other plans such as the Rail Plan or Asset Management plan.

- Recommendations and prioritization of multimodal improvements that feed into transportation funding programs and regional transportation planning
- Consistency with the principles of the federal Congestion Management Process and incorporation of the State Congestion Management Program goals for designated Congestion Management Agencies
- Consistency with the principles of the California Transportation Plan and including the Interregional Transportation System Plan, the Caltrans' Smart Mobility Framework, and California's Climate Change Scoping Plan
- Consistency with the goals and objectives of the regional transportation plan including the forecasted development pattern identified in the Sustainable Communities Strategy (SCS) and, when applicable, areas identified as high-priority for growth
- Policy considerations supporting regional or local planning frameworks such as local jurisdiction land use plans (including transit supportive land use plans), transportation elements of general plans, freight and goods movement plans, local climate action plans, and similar policies

Demonstrating and documenting that these key elements were addressed as part of the MLSP development will show the use of best practice in identifying projects and strategies that will achieve desired goals and objectives.

## Process for Developing the MLSP

There are eight (8) main steps which shall be followed when developing an MLSP. The process outlined here is in many ways identical to the corridor planning process as outlined in the "Corridor Planning Process Guidelines" developed by the Division of Transportation Planning. Users may wish to refer to that document for more specific details on the individual steps in the planning process.

### 1. Scope of the Effort

The initial step in developing an MLSP is to establish the team that will develop the plan, identify the issues and potential opportunities that will be considered, and come up with a comprehensive set of goals, objectives, and performance measures for the system that will guide the selection of solutions that address the system's issues and opportunities.

The agency leading the MLSP development will determine who should be involved as partners and stakeholders and identifying the resources and expertise that team members could devote to the MLSP development effort. If Caltrans is not going to be the agency leading the MLSP development process, the agency tasked with that role must ensure that Caltrans is designated as a full partner in the development effort.

The MLSP provides an opportunity to evaluate key issues, constraints, risks, and opportunities affecting the SHS in the region and to guide the development of the network. Items covered in the MLSP should include the following topics:

- **Managed Lane Performance:** Federal law requires Caltrans to act when managed lanes are degraded (the average speed in the lane drops below 45 mph during peak hour periods more than 10 percent of the time over a 180-day period).
- **Managed Lane Operations and Design:** Managed lanes use operational and design strategies such as vehicle eligibility, tolling, and access control to ensure that the lanes operate effectively. Roadway geometrics, the type of access control and the placement and design of access points can have an impact on safety and operations of the SHS. Enforcement of managed lanes is also critical to ensure successful operations.
- **Connectivity/Continuity:** Improvements or changes may be needed to provide a fully integrated and efficient managed lane network on the SHS and support multimodal connectivity. These could include park and ride facilities and transit infrastructure, projects to close gaps in the managed lane network, direct connectors between managed lane facilities or direct access ramps to the local street network.
- **Equity:** Environmental and economic equity should be evaluated when looking to develop or implement priced managed lanes.
- **Evolving Technologies:** Advancing technology with respect to trip planning, routing, mode choice and payment has the potential to change travel behavior. Technological advances are changing both how vehicles function and how they are used.

Building on existing planning efforts and discussions on current issues and opportunities, the MLSP development team needs to define a clear and relevant set of managed lane system goals and objectives. These goals and objectives will later be linked to performance measures. The development of these goals should be a collaborative effort with the various partners in the MLSP development process.

## 2. Gather Information

The MLSP should provide an overview of the existing and planned managed lane system on the SHS in the district or region (including features such as direct connectors and direct access ramps) based on current system inventory documents, other system planning documents, local and regional transit plans, and regional transportation plans. The overview should address how the managed lanes currently operate (hours of operation, occupancy requirements, if pricing is used, and access control). It should also include, as appropriate, other planned capacity and/or operational improvements planned on corridors such as part-time lanes and truck-only lanes. In addition to gathering information on travel times, volumes, delays, and bottlenecks and their extents, market analysis should be conducted which determines travel patterns (origins-destinations, time of day, day of the week, different transportation modes and mode choices in the corridor, trip purposes, socioeconomic characteristics, industry



concentrations, employment, etc.) The assessment of current conditions may require new data collection to fill identified data gaps.

### 3. Baseline Assessment

A baseline assessment is conducted to clearly outline existing system performance and trends. The results are then interpreted to highlight the relationship between identified deficiencies and their causes. The system should be assessed for mobility, safety, travel time reliability, sustainability, and multimodal connectivity. This task also includes performance assessment for the future baseline (do nothing or no build). A reassessment/adjustment of the performance measures from the scoping effort step may be necessary based on the study of the current conditions and future potential scenarios.

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The assessment would involve collecting and documenting a range of system-wide performance measures, such as degradation, that illustrate existing conditions. Identification of traffic bottlenecks and measures related to mobility, travel time reliability, and safety are important indicators of managed lane system performance. These indicators serve to illustrate and quantify the magnitude of managed lane system issues noted in the team's initial scoping

### 4. Identify Potential Projects and Strategies

Based on the review of the existing and planned network and using the review of issues and opportunities as a guide, the next step is to identify potential managed lane projects and strategies. These should be identified with enough detail to allow for meaningful analysis. Project-level identification and evaluation should begin with existing plans and studies, as well as the performance assessment, gaps identification, and diagnosis of the causes of congestion, safety, and reliability issues. New analysis may be necessary if there are gaps in existing plans or knowledge or if existing data is out of date. Potential projects and strategies could include:

- Operational improvements such as changes to vehicle occupancy requirements, the introduction of pricing on existing managed lane facilities, or changes in access control or the hours of operation.
- Supporting elements such as new or expanded park and ride or transit facilities.
- Capital improvements to existing managed lane facilities, such as expansion or reconfiguration, direct connectors between managed lane facilities and direct access ramps between the managed lane facilities and the local street network.
- New capital improvements such as new managed lane facilities (with or without pricing). Capital improvements could also include associated projects such as part-time lanes or truck-only lanes.

## 5. Analyze Improvement Strategies

Possible improvement projects and strategies may be grouped into scenarios to be evaluated. An Analysis Plan may also be developed to scope the analysis effort and to identify resources required for the analysis. The Analysis Plan should be consistent with planning horizons, analysis tools, and performance measures previously identified. A system analysis is then conducted to evaluate the effect of potential investments on system performance. During the analysis, assumptions made in the scoping step may be reassessed and modified if necessary. A comparison of the existing conditions with a future no build and a future with build may be useful in assessing improvements.

A sketch-level, initial financial feasibility assessment may be conducted for any priced managed lanes that are identified as a potential improvement, if such analysis has been determined to be within the scope of the MLSP. This would include an estimate of net revenue from the lanes and the capital cost of developing the facility (or implementing the pricing component if it is proposed for an existing managed lane). Costs and revenues for existing priced managed lanes in the region may be used to assist in this sketch-level analysis.

Specific items that should be included in the analysis for an MLSP include the following:

- **Managed Lane Performance:** Frequency of degradation should be noted as well as any causes for degradation that could be addressed by capital or operational improvements or changes.
- **Managed Lane Operations and Design:** Operational strategies (occupancy requirements, pricing, hours of operation) and design elements (access control, new access points) should be clearly identified. Potential non-standard design features should be noted. Enforcement needs for managed lanes should also be considered.
- **Connectivity/Continuity:** Locations (such as district or other jurisdictional boundaries) where there are or will be changes in operational strategies such as pricing, occupancy requirements, or hours of operation should be examined. Opportunities for multimodal connectivity need to be explored.
- **Equity:** Would implementation of pricing have a disproportionate impact on low-income users? Would a capital project to add managed lanes have a benefit or an impact on air quality to environmental justice communities adjacent to the facility? Are there other plans or services that could mitigate those impacts?
- **Evolving Technologies:** While technological changes are difficult to forecast with accuracy, general trends, such as connected and autonomous vehicles and ridesharing services, can be identified and should be explored.

## 6. Select and Prioritize Solutions

Decisions are made on which system projects and strategies are promising for addressing the identified goals, objectives, and performance measures for the system. The recommendations are then given an expected implementation timeframe of either short-, medium-, or long-term horizons. The outcome is a recommended set of

multimodal solutions for the system that addresses the identified issues and opportunities and may include estimated implementation timeframes. The combination of promising projects and strategies may be summarized in a statement or document outlining how the system is expected to operate, including any recommended technical, organizational, and institutional arrangements necessary for the system improvements to realize their expected benefits. In some instances, it may be difficult for all agencies involved to agree on a prioritized list of projects recommended for the system. In addition, determining short-, medium-, or long-term timeframes will be speculative and greatly depend on the outcome of competitive discretionary programs, availability of funds, and year of programming.

Prioritization criteria could include, but are not limited to:

- Improvements to managed lanes and freeway performance
- Safety
- Constructability
- System connectivity
- Potential to encourage and support VMT reduction through increased transit usage or increased carpooling
- Benefit to cost ratio, including revenue generating potential

### 7. Publish and Implement the MLSP

The managed lane system planning process is documented with the publication of the MLSP. The adopted plan documents how the managed lane system is performing today (and estimates for the future), why it is performing that way, and recommends projects and strategies that support the goals and objectives agreed upon by the team that developed the plan. The MLSP may include an implementation schedule, as well as the identification of responsibilities of the various partner agencies; however, prioritizing projects may be difficult to achieve without knowing when funding will be approved. In addition, specific project selection criteria will dictate the type of projects funding programs will consider. In parallel, formal technical, institutional, and organizational arrangements may need to be initiated among the system partners. Recommendations can be advanced toward implementation upon approved funding. Table 1 provides a suggested outline for an MLSP.

Section	Content
System Plan Overview / Executive Summary	<ul style="list-style-type: none"> <li>• A summary of the MLSP's key messages, performance assessment, analysis results and recommendations.</li> <li>• Letters of commitment, MOUs, or other agreements from the partner agencies</li> </ul>
System Partnership and Scope	<ul style="list-style-type: none"> <li>• A clearly defined scope and team to guide the MLSP development process.</li> <li>• Agreement on the issues and potential opportunities that will be considered during the MLSP development process.</li> <li>• A comprehensive set of goals, objectives and performance measures for the managed lane system that will guide the selection of solutions that address the system's issues and opportunities.</li> </ul>
System Description & Performance	<ul style="list-style-type: none"> <li>• System information collected and organized to inform an understanding of the system context, as well as current and future conditions.</li> <li>• Identified current and future performance issues and trends.</li> </ul>
System Performance Analysis and Evaluation	<ul style="list-style-type: none"> <li>• Baseline and future performance assessment</li> <li>• Analysis approach</li> <li>• Evaluation of a broad set of solutions for the managed lane system that can address the identified issues and opportunities, including system analysis results.</li> </ul>
Recommended System Improvements	<ul style="list-style-type: none"> <li>• A recommended set of solutions for the managed lane system that can address the identified issues and opportunities.</li> </ul>

Table 1. Outline for an MLSP

As previously noted, the MLSP is to be used to provide project and program input into the DSMP, corridor plans, and the area's RTP/SCS document. The MLSP is not expected to require its own coverage under the California Environmental Quality Act (CEQA); any features included in the RTP/SCS or a future project will undergo such analysis as part of the CEQA review for that document or project. Adoption of an MLSP does not supersede the adoption of the RTP/SCS by the respective Metropolitan Planning Organizations. The adoption of the MLSP represents a consensus on candidate projects for future programming and funding opportunities and may become the basis for input to the RTP/SCS.

## 8. Monitor and Evaluate Progress

Ongoing reporting on managed lane system performance should be conducted to evaluate the effectiveness of recommended projects and strategies on performance over time. District and Headquarters Traffic Operations staff develop annual reports on managed lane usage and degradation; regional agencies also track the performance

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of priced managed lanes. System objectives may also be re-assessed and refined by the system team. The MLSP may also identify triggers or events that may necessitate an update of the document.

An MLSP should be updated every four years or at the discretion of the lead or partner agencies.