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RAMP MANAGEMENT AND THE TRAFFIC MANAGEMENT PROGRAM

Getting Started

Chapter 1: Introduction

Chapter 2: Ramp Management and Control Overview

Chapter 3: Ramp Management and the Traffic Management Program

Chapter 4: Preparing for Successful Operations

3.1 Chapter Overview

Ramp management should not be viewed as a program separate from an agency's traffic or freeway management program. In reality, ramp management strategies should be derived directly from a traffic or freeway management program and, as such, should be consistent with overall agency and regional policies, goals, objectives and strategies. Typically, a ramp management strategy represents just one of several elements that work together to comprise a traffic management program, which in turn supports the larger goals and objectives of an agency. Therefore, the ramp management and control techniques and strategies should support a traffic management program. Techniques and strategies that are not supportive should not be considered for implementation.

The overview of ramp management and control concepts and strategies presented in Chapter 2 provides the foundation needed to understand how or if ramp management fits into an agency's traffic management program. Based on this understanding, practitioners may elect to follow the recommended process for selecting, developing, implementing, and maintaining ramp management techniques and strategies outlined in this handbook.

Chapter Organization

- 3.2 Traffic Management Program Development
- 3.3 Organizational Support
- 3.4 Chapter Summary

This chapter, together with Chapter 4, describes how ramp management fits into an agency's overall program and structure, including the traffic management program, from the perspective of the individual(s) that will be implementing and operating ramp management strategies (e.g., Traffic Supervisors and Managers). Chapter 4 focuses on the issues and activities that are necessary to support ramp management and control, and that the manager can control. This chapter, on the other hand, focuses on how ramp management fits in with the broader agency program and the issues and activities that are necessary to support ramp management and control that the manager can influence, but not control. In other words, this chapter focuses on the issues and policies that relate to the manager's supervisor, upper management, and other regional officials, who are responsible for setting policies and procedures for agency and regional programs, including the traffic management program. The topics discussed in this chapter will likely affect the selection of ramp management techniques and strategies, and therefore elements described in this handbook need to tie back to this chapter to determine if elements of a ramp management strategy support broader agency and other traffic management goals and objectives.

Chapter 3 begins with a discussion of the activities that comprise traffic management program development, an element of which will be ramp management. Subsequent issues covered in this chapter include:

- ▶ Strategic and business planning.
- ▶ Regional and departmental transportation planning.
- ▶ The multi-year transportation program plan.
- ▶ Differences in the roles and responsibilities between ramp management and the overall traffic management program.
- ▶ Organizational support needed to effectively support ramp management activities.

Chapter 3 Objectives:

- ▶ Objective 1: Understand how ramp management can fit into an agency's overall program, including the traffic management program – from the perspective of the Traffic Manager.
- ▶ Objective 2: Understand the issues, activities and policies that are needed to support ramp management and control.
- ▶ Objective 3: Understand the activities that comprise traffic management program development.

3.2 Traffic Management Program Development

A 'program' is a coordinated, inter-related set of strategies, procedures and activities (such as projects), all intended to meet the goals and objectives articulated in vision statements and policies.¹ At the most basic level, ramp management efforts must support the vision and mission of the agency. Ramp management should be considered as an element of the overall traffic management program, not as something that operates in parallel to or separate from it. The strategies developed for ramp management need to be considered as ways to meet the goals and objectives articulated in the agency strategic planning process.

Figure 3-1 shows the activities that should be conducted when developing or enhancing a traffic management program, of which ramp management is a part. This funnel diagram depicts the traffic management program within the context of the broader transportation planning process and the institutional environment as represented by the stakeholders. The process begins with the development of the vision, policies and goals and definition of required services. This is followed by the development of the Concept of Operations and establishment of performance measures. From this stems decisions regarding improvements, management systems, and staffing requirements. These actions lead to results and performance measurement, which ultimately comes full circle and flows back to the top of the funnel – which influences the policies, goals, and objectives and starts the process all over again. These activities are discussed in detail in Sections 3.2.1 through 3.2.9 of the Federal Highway Administration (FHWA)'s *Freeway Management and Operations Handbook*.

3.2.1 Roles and Responsibilities

As mentioned previously, ramp management does not operate as a separate entity. When developing ramp management activities, one should look at how ramp management fits in with overall agency goals and objectives. Effective ramp management is an on-going process.

The Traffic Manager needs to:

- ▶ Make sure new projects are proposed.
- ▶ Advocate for sufficient resources to operate and maintain these projects.
- ▶ Act as a proponent for the adoption of other important capital projects in future plan updates.

To achieve this, the Traffic Manager must provide input into the strategic and business planning and the transportation planning and programming processes. This is an iterative two-way process where one must advocate for the ramp management projects and strategies that are needed and that reflect the agency strategies, goals, and objectives. Knowing where to interface in the process so that these goals and strategies can be furthered requires an understanding of the program and process.

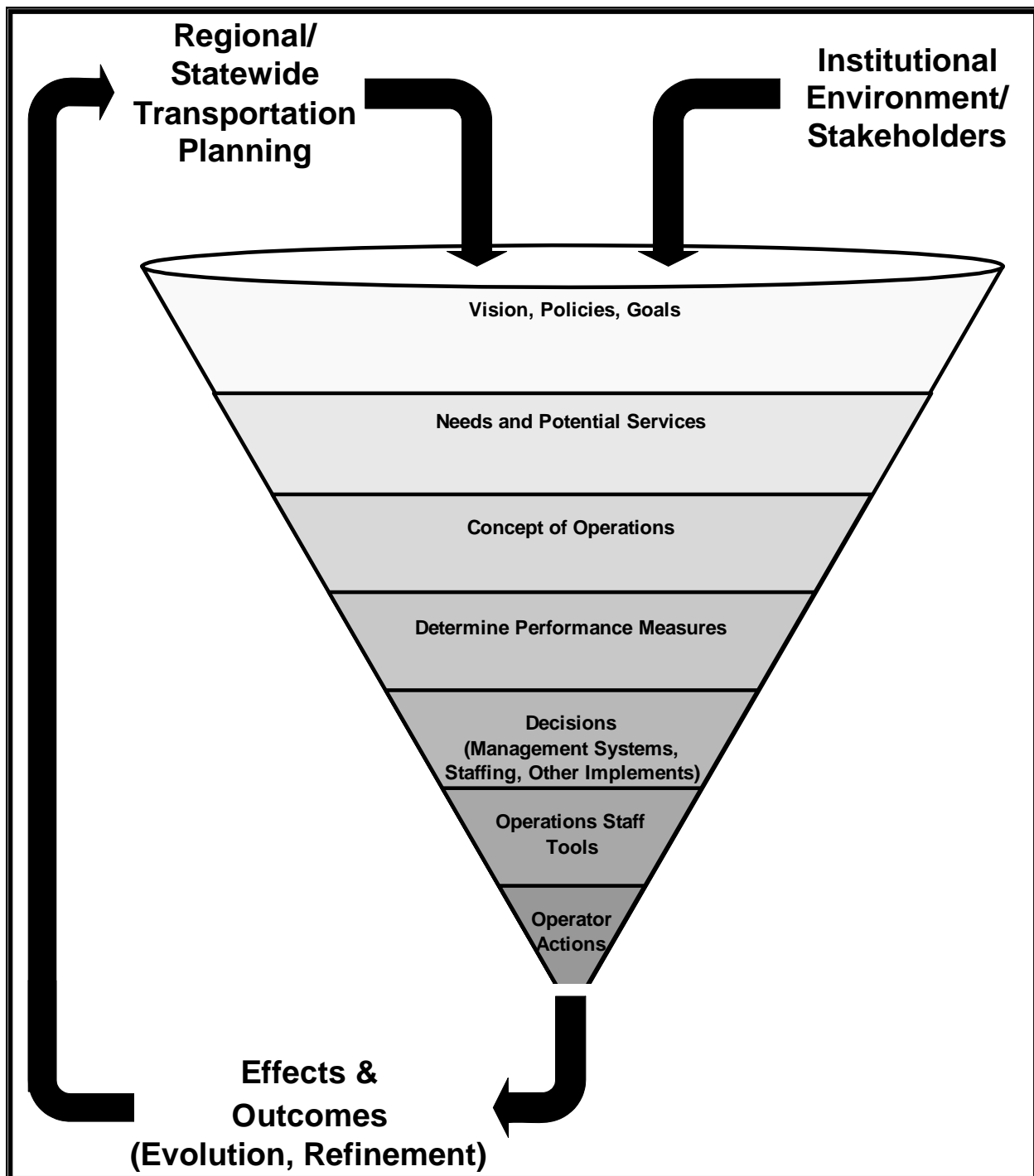


Figure 3-1: Traffic Management Development Program Process¹

Ramp management is an element of the freeway management program, which in turn is an element of the overall traffic operations program. As such, the roles and responsibilities of the people who are implementing ramp management actions are included in these other two, higher-level programs. The people who will manage and operate the ramp management elements of the program will either operate other elements of the program, such as surveillance, incident monitoring, and Dynamic Message Signs (DMS) operation, or work hand-in-hand with those who do. However, it depends on the agency as to how those specific roles and responsibilities are defined. See related information regarding organizational structure in Section 3.3.1 of this chapter.

Many ramp management strategies are implemented through individual capital improvement projects. A key to the successful advancement of new ramp management projects and services is to understand how projects are selected for funding. Developing ways to champion the project within and outside of the agency positions the new ramp management project in such a way that it is more likely to be funded. A champion at the management level would best serve the project because of his or her stature within the agency and knowledge of the benefits of the new project. In addition, a management-level champion can ensure that the project remains in the overall plan and program if budget cuts are required.

The manager responsible for ramp management activities has a similar role to any other manager in the traffic operations arena in providing efficient traffic management. There is not a large difference in the roles and responsibilities for ramp management and control and other elements of the traffic operations program, except that ramp management activities are often more visible and may be more controversial than other elements of the program. Therefore, one needs to be more focused on the institutional, political, and public involvement impacts associated specifically with ramp management.

When adding ramp management capabilities and elements, there will be new issues that have not been dealt with previously. In many cases, ramp management contains ramp metering, which is generally controlled in the Transportation Management Center (TMC). Ramp management strategies are usually initially implemented through capital projects, and ramp management personnel must be involved in the design and construction role. However, responsibility for the overall design of a ramp management project could be handled at the TMC itself, or at the Traffic Operations, Intelligent Transportation Systems (ITS), or Traffic Design divisions. The actual construction is almost always managed in the construction group with support from experts in the TMC and Traffic Operations or Design divisions to assist with inspection. The addition of new ramp metering equipment also requires more intensive maintenance efforts. The Traffic Manager must build a strong relationship with the Maintenance Division so additional devices can be properly maintained.

3.2.2 Planning and Decision-Making

The state and federal planning and decision-making process for implementing a transportation project is complex. Transportation decision-making follows a tiered government structure starting at the national level, filtering through state and regional levels, and culminating at the

agency level. The authority for transportation decision-making spans all these tiers and may involve several agencies within the same level. There are also several planning horizons involved in the investment decision-making process. These range from strategic long-range planning (20+ years) and program and system planning (3-20 years) to day-to-day operations planning (1-3 years) and day-to-day operations (real-time to 1 year). A graphical representation of this is shown in Figure 3-2. One of the most critical elements of getting strategies implemented is for the Traffic Manager to have a thorough understanding of this planning and decision-making process. Without it, he lacks the proper tools to see projects come to fruition. Further discussion regarding the decision-making process can be found in Section 2.3 of the *Freeway Management and Operations Handbook*, and is summarized briefly below.¹

National Level

At the national level, decisions are made regarding national transportation policy and legislation is developed that provides a high-level commitment to programs, policies and research in transportation. The federal programs provide the impetus for advancing the state-of-the-art with new and innovative technologies and practices. For instance, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) was the beginning of major federal funding for ITS projects. From 1992 to 1997, it was the U.S. Department of Transportation (USDOT)'s charge to foster the deployment of ITS products and services nationwide. ISTEA's successors, the 1998 Transportation Equity Act for the 21st Century (TEA-21) and the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) reinforced the federal commitment to manage and operate the nation's transportation system.² TEA-21 and SAFETEA-LU further advanced ITS applications and deployment through mainstream funding under the federal aid program.

There are other functions that occur at the national level. For example, Section 5206 of TEA-21 mandated the development of a National Architecture whose standards and protocols would provide continuity and interoperability in the use of ITS technology across the United States. Another function of the national tier is technology transfer. For example, FHWA is not only responsible for creating the planning, design and implementation requirements, but also orchestrate the development and distribution of handbooks like this one and training courses for local agencies around the country. Guidance and training materials developed at the national level can be invaluable. The Traffic Manager must be aware that these resources exist and are available for use.

State and Regional Level

At the state and regional level, a short- and long-term mechanism exists for planning and funding. This tier focuses on strategic transportation planning that may include projects that focus on the long-term. The agencies involved at the state and regional level include state government, Metropolitan Planning Organizations (MPOs), municipalities, and other operating agencies that develop short- and long-term transportation plans.

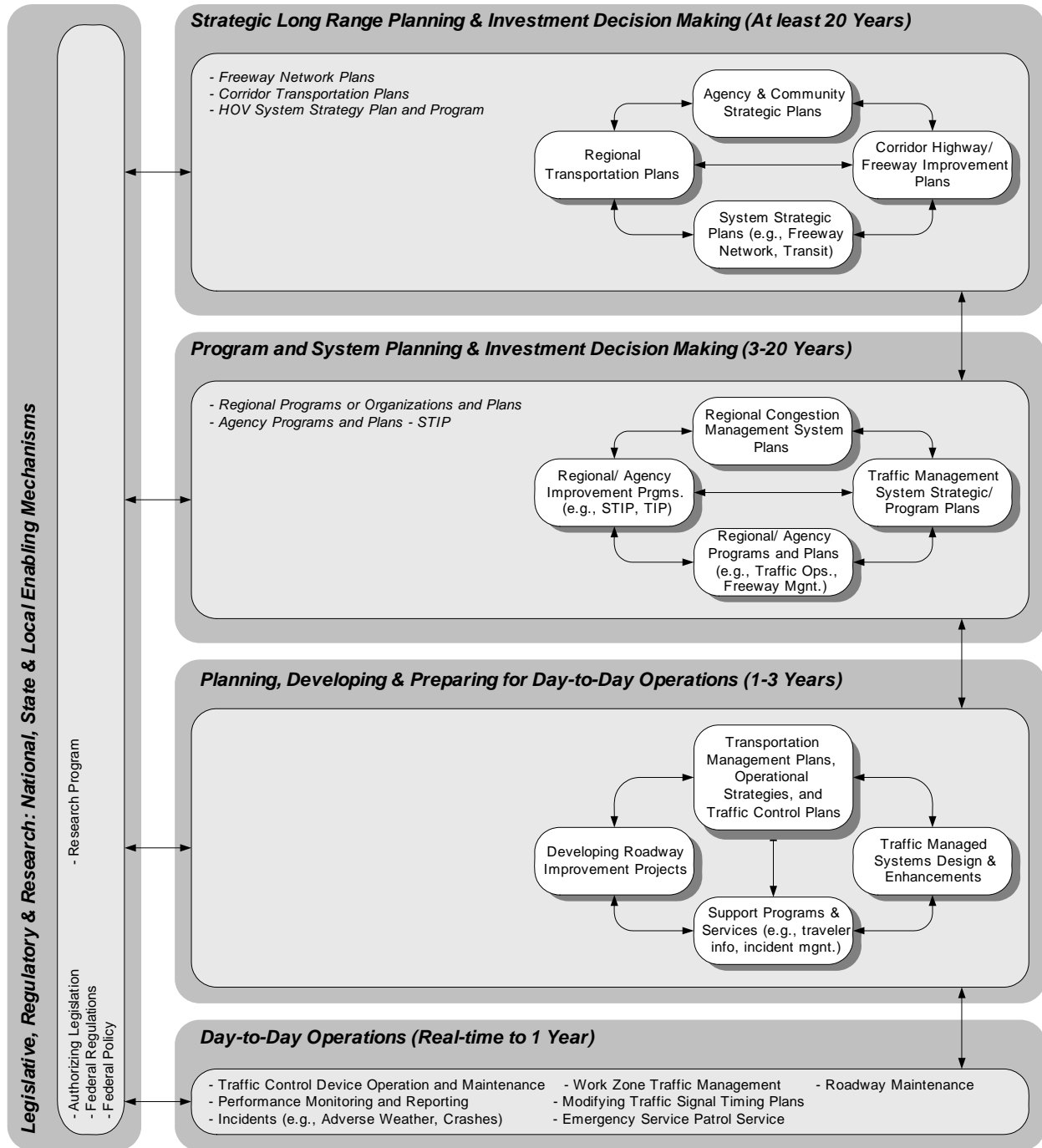


Figure 3-2: Transportation Tier Diagram¹

¹ This figure was adapted from Figure 2-1 of the *Freeway Management and Operations Handbook*.

Agencies at the local level are responsible for programming, design, and operation of their facilities. The process varies by state because there is a range of ways that agencies obtain project funding. It is at this level where the specific roadway improvement projects are developed that will be implemented according to the overall transportation goals. The process to obtain funding and support for ramp management projects, services, and activities requires that the Traffic Manager be prepared to have a proactive involvement in and across each tier. Knowledge about the decision-making process and the ability to assess how well the projects will meet the agency's needs is a critical skill that the Traffic Manager should have. Key questions that should be raised include:

- ▶ How do we address the deficiencies in our system?
- ▶ What ramp management projects will achieve this?
- ▶ How does this specific project fit into our overall plan and address our agency goals?
- ▶ What ramp management projects can we afford to include?

The complete list of projects will be prioritized based on cost effectiveness. This includes a financial constraint analysis based on what projects cost and how much funding is anticipated. The recommendation process can be highly competitive given that the costs of needed projects typically exceed the available funding. For example, achieving consensus on how to distribute the funding is one of the primary responsibilities of the Puget Sound Regional Council (PSRC). Each of the projects selected for funding will help to implement their long-range regional plan for the future.³ Funding for PSRC's selected projects are derived from three federal sources: Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), and Federal Transit Administration (FTA) funds.

The Sacramento Area Council of Governments (SACOG) defines the "life of a transportation project" as follows.⁴ This example demonstrates the various steps of SACOG's process to obtain project funding.

- ▶ Process starts with an idea (transportation need that has been identified). This first-step action can be by a citizen, private business, community group, or public agency.
- ▶ Then the idea must become adopted by a local agency. The idea should be refined and formed into a defined project with clear specifications.
- ▶ After local review, it may be financed at the local level. If state or federal funds are required, there needs to be a county review and incorporation into the Long-Range Transportation Plan (LRTP) and the Transportation Improvement Program (TIP).
- ▶ If approved for state funding, the project then gets incorporated into the regional TIP and is then considered for inclusion in the state TIP.
- ▶ The project can then move up for consideration for federal funding. These projects can provide for any mode (e.g., bus, rail, highway).
- ▶ Projects listed in the STIP and federal program are reviewed for requirement compliance. Approved projects are forwarded to state or federal authorities for final award of funds.

3.2.3 Strategic and Business Planning

An agency's Strategic Plan is a blueprint for achieving the agency's strategic objectives (second tier of Figure 3-2). For example, some strategic objectives may include safety, mobility, global connectivity, environmental stewardship, or security. An example of a mobility strategic objective would be to "advance accessible, efficient, inter-modal transportation for the movement of people and goods" and an outcome may be to reduce congestion in all modes. Implementing a ramp management strategy may help to support and achieve this strategic objective, but specific ramp management strategies are not yet identified at this stage.

A business plan outlines and documents a planned multi-year effort to sustain operations using sound and universally accepted practices and techniques. By understanding the business plan, the Traffic Manager is aware of the entire realm of possible alternatives and the management and operational implications of those alternatives.⁵ Ramp management strategies need to be developed in the context of business planning efforts and should be coordinated with all appropriate business plans.

The Traffic Manager provides input into these processes and develops actions and recommended projects based on their outcome. For example, a Traffic Manager can develop standard operating procedures so that the ramp management operation will better meet a goal or strategy. He may also develop a list of recommended projects that are considered in the planning and programming process. It should be noted that the direct actions that the Traffic Manager can take are the subject of Chapter 4 of this handbook.

Conversely, ramp management actions should not be undertaken in isolation or outside the strategic and business planning process. The formulation of ramp management strategies must be needs-based. Often, the strategic and business planning efforts consider needs at a high level. A needs assessment process for ramp management will often need to be performed at the program level. (Note: a needs assessment is always required at the Concept of Operations and project levels.)

Case studies on strategic and business planning are provided in Chapters 11 through 15 of the *TMC Business Planning and Plans Handbook*.⁶

“Ramp management strategies need to be developed in the context of business planning efforts...”

3.2.4 Regional or Departmental Transportation Planning

Programming is the formal inclusion of a funded transportation project into a document to give it official standing with the state and federal agencies. There are two types of program plans at the regional level: long-range and short-term. Long-range plans (typically 20-year plans) identify general types of projects. These projects do not include a high level of detail because the actual funding has not been determined. The short-term program defines projects that are typically in the one to six-year timeframe.

The regional program may include a wide variety of transportation projects, including road construction, road maintenance, transit capital (including light rail transit (LRT) and bus purchases), and the funds to operate transit services, bike and pedestrian programs, air quality improvement programs, traffic management projects and programs, and trans-

portation enhancement projects. Funding sources are identified so as to develop a constrained and unconstrained list of capital projects. These funding sources can be public or private.

In order to develop ramp management activities, input must be provided to guide the development of the long-range plan. From the large list of projects in the long-range plan, a short-term program is developed. The Traffic Manager then uses the short-term program to figure out what funding may be available. Primarily, capital expenditures must be included in the regional or departmental transportation planning process. However, operational aspects of ramp management fit in to these planning processes if they consider operational programs. This process is vital in order to make decisions regarding staffing and operations as well as capital expenditures. The Traffic Manager must also be involved with the regional planning process at the MPO level to get CMAQ or STP (surface transportation) funding. In some circumstances, ramp management may provide a more effective means of meeting transportation goals and objectives than any other investment. As such, ramp management should be considered in the alternatives analysis of the planning process.

The Traffic Manager's involvement in the planning process must be ongoing. The plans are updated at regular intervals (e.g., every one to three years) to reflect changing conditions and new planning priorities, based on growth and travel demand projections coupled with financial assumptions.

3.2.5 Multi-Year Program Plan

Multi-year program plans developed at the agency level can be for the short-term or mid-term. Both types of program plans provide agency personnel with information regarding what funding levels they can expect for their projects.

It is vital that the Traffic Manager understand how the multi-year programs are developed so that he can provide input into their development. This will ensure that projects of interest (i.e. ramp management projects) are going to receive funding. For example, many states use the annual or biennial program to document the guaranteed types of funding in the short-term. They also use the six-year program plan to show the vision for the near-term, but this may be subject to modification due to changes in priority or availability of funding sources.

The Traffic Manager or the manager responsible for ramp management activities must understand that there are different funding categories, such as safety, mobility, rehabilitation, capacity improvements, and preservation. Knowledge of this funding structure allows agency staff to determine how their program will be funded. Though the specific project-level details have not yet been developed, the Traffic Manager must understand which funding category would be appropriate. He must ask the question – “Where do my activities fit into the agency funding structure?”.

It is also an opportunity to look for cost-effective ways to tag onto other funded projects. For example, if the Traffic Manager would like to restripe the on-ramp for a new dual-lane ramp metering system, it would be advantageous to “piggyback” with a resurfacing project that is already

funded. With adequate knowledge of the funding structure, there may be more than one way to fund ramp management elements. The success of ramp management efforts partially depends on how savvy and creative the Traffic Manager is in obtaining needed funding.

Ramp management projects, especially ramp closures and ramp metering, are different than other types of projects. These types of projects require more extensive involvement with the public. It extends beyond the typical design and includes the operational facets of the project. These elements may include informing the public of strategies, obtaining support from the media and public officials as well as other local agencies, and establishing proper laws or regulations for enforcement. Agencies must be prepared to deal with and fund the public outreach efforts. Outreach activities are discussed in detail in Chapter 7 of this handbook.

3.2.6 Regulations and Policies

Ramp management strategies need to address, and usually conform to, existing regulations and policies. However, at times, policies and regulations may conflict with one another or may not be consistent with higher-level goals and objectives. Regulations and policies should be reviewed to make sure ramp management activities are consistent and to determine if any updates or amendments in regulations and policies are needed. The key is for the Traffic Manager to ensure that there is an appropriate support structure for accepted ramp management activities.

Reviewing current regulations for potential conflicts with ramp metering is vital and necessary. For example, some states have laws that require that all traffic signals have three signal heads. As some agencies do not use the yellow head for their ramp meter signals, this must be verified to ensure that there are no conflicts. Another example is that some states require traffic signals to go through a yellow change interval. This regulation must be amended for ramp meter signals because it conflicts with effective ramp meter operation.

Similar to laws and regulations, the agency's policies (how it conducts business) must also be reviewed as they pertain to ramp management operations. For example, when operating a TMC, one needs to assess how to handle the hours of operation. Are there any provisions in the human resources policies relating to staffing of split shifts? Would this be in violation of any union rules?

Other specific issues to address include: Can you close a ramp part-time? What is the process to close a ramp temporarily? What enforcement policies need to be developed to support the overall operation of the ramp management program? Do existing regulations and policies allow for use of a ramp exclusively for special use vehicles, such as HOV or construction-related vehicles?

3.2.7 Concept of Operations

The Concept of Operations (Con Ops) is a key document that outlines the overall ramp management concept and explains the environment in which the system operates and how it will work once it is in operation. It is developed with all stakeholders during the needs assessment process

Ramp management activities...should be included as one element of a regional level Con Ops.”

and is based on the vision, mission, goals and objectives for the agency. Specifically, it explains the primary reason for implementing the ramp management project(s). It also documents the agency's responsibilities for operating the system and expectations for its performance and life cycle. The Con Ops describes the system's operational characteristics, facilitates an understanding of the goals, forms a basis for long-range planning, and presents an integrated view of the stakeholder organization and mission.

The Con Ops should be conducted at the regional or agency system level, such as for the entire freeway management or TMC system. Ramp management activities, including their relationship to other traffic management activities and elements, should be included as one element of a regional level Con Ops. The Con Ops should state the actions that will flow back into the program development process.

It is the agency's responsibility to develop a Con Ops. If ramp management elements are being added to an existing freeway management and operations program, it is necessary to make sure that the original Con Ops is updated to reflect the new ramp management strategies. Likewise, the interaction of how ramp management projects may affect other operational strategies, such as HOV lanes, must also be included as this relates to the existing conditions. Ramp management strategies such as terminal treatments or ramp closures may not need to be discussed in the Con Ops if they do not utilize ITS components.

There are many steps in the development of a Con Ops document. In general terms, this involves identifying the user needs, developing owner's policies, providing procedures and responsibilities, defining the interagency working relationship and agreements, defining the physical environment, and setting performance measures. For specific guidelines on how to prepare a Con Ops, please refer to the *IEEE Guide for Information Technology – Systems Definition - Concept of Operations (ConOps) Document*, IEEE Std. 1362-1998.⁷ *The TMC Concept of Operations* report is another resource.⁸

3.2.8 Performance Monitoring, Evaluation, and Reporting

Performance monitoring has a continuous and integral role in supporting ramp management activities. Performance measures need to demonstrate how well the ramp management strategies contribute to meeting the goals and objectives of the program (see Figure 3-1). The results should feed back into strategic and business planning, transportation planning and programming processes. Performance monitoring should also feed into day-to-day operation, operational planning, and decision-making, and thus signifies the importance of real-time performance data to gauge how ramps are performing as compared to the “norm”. In general, performance monitoring helps to provide “checks and balances” on the system and ensures continuous operational improvement.

Performance monitoring, evaluation, and reporting should be performed and continuously supported by operating agencies. It must occur throughout the life cycle of the facility, to identify ramps and adjacent arterial streets with sub-optimal performance, analyze corrective solutions, estimate associated costs and benefits, and determine actual improvement in performance and overall cost effectiveness.

Some key considerations in providing effective ramp management performance monitoring are to:

- ▶ Use Measures of Effectiveness (MOEs) that focus beyond freeway mainline traffic.
- ▶ Consider feedback from the system users as part of the evaluation, so as not to rely solely on the technical results.
- ▶ Limit the number of MOEs, particularly when initiating a new program.
- ▶ Select MOEs that are easy to measure and simple to understand.

Detailed information on how to conduct performance monitoring, evaluation, and reporting can be found in Chapter 9 of this handbook as well as in Chapter 4 of the *Freeway Management and Operations Handbook*.

3.3 Organizational Support

Agency upper management support for ramp management strategies is primarily derived from the actions discussed earlier in this chapter. Upper management must understand the reasons for managing ramps and how ramp management upholds the agency's overall goals and objectives before they will support it. This includes understanding legislation, policies and rules, the transportation planning process and products, strategic plans, and much more.

Funding mechanisms must be understood in order to position ramp management projects for inclusion and positive consideration. Budgets are required for staffing, training, and equipment maintenance. A key to remember is that the budget process flows two ways. Budgets are established through the agency programming effort. However, budget requirements need to be established at the operational level and fed back into strategic and business planning efforts as well as the agency programming efforts. This helps to ensure that not only the capital projects receive funding, but also that the required staff, training, and other resources needed to operate it are funded.

Additional considerations are discussed in Section 2.4.1 to 2.5.5 of the *Freeway Management and Operations Handbook*.

“Funding mechanisms must be understood in order to position ramp management projects...”

3.3.1 Organizational Structure

The organizational structure within the agency needs to be assessed to ensure that it serves ramp management activities. There are many possible organizational structures. The exact structure should be devised to fit within the agency and regional organizational structure, given the selected ramp management strategies. One key is to provide an organizational structure that will not impede ramp management activities. The responsibilities for ramp management must be designated at the right level and in the right group.

Typically, the responsibility for the overall ramp management program will be shared among the planning, design, operations and maintenance staff within the organizational structure. This relationship is key to the success of the program. For example, the responsibility for ramp man-

agement and control typically falls in the agency's Traffic Operations or ITS Division. While it may be appropriate for the maintenance staff to be placed in the agency's Maintenance Division, there must be accountability by their supervisors for the operation of the ramp management program. Other agencies structure their organization such that both operations and maintenance staff responsible for ramp management elements fall under the same division. This helps to eliminate artificial barriers and conflicts in priorities because all functions are united under the same set of goals and objectives.

The organizational structures will vary from agency to agency. If there are separate divisions for each of the functions, then it is important to concentrate on the relationships among each division to ensure that they work well. This will help to minimize conflicts. Section 2.6 of *Freeway Management and Operations Handbook* discusses human relations. The Handbook states that "most of the institutional challenges and barriers are really about human relations."

The following are a few examples of how the organizational structure of ramp management is handled across the country:

- ▶ Houston's TRANSTAR consortium is a partnership of four government agencies that are responsible for providing Transportation Management and Emergency Management services to the greater Houston region. Ramp metering activities are operated out of the TRANSTAR center and there is one person who oversees the ramp management activities during the peak periods. Additional information about TRANSTAR can be found on their website at <http://www.houstontranstar.org>
- ▶ The Regional Transportation Commission of Southern Nevada (RTC) together with the Nevada State Department of Transportation (NDOT) has ramp meters along US 95 to help mitigate congestion, improve air quality and increase mobility. Freeway and Arterial System of Transportation (FAST) operators work out of RTC's control center to operate NDOT's ramp meters. In this case, a regional body under agreement to the state is operating the ramp meters. More information on this partnership can be found at RTC's website at <http://www.rtcsonthernnevada.com/rampmeters>
- ▶ In Seattle, the freeway operations group in the Washington State Department of Transportation (WSDOT)'s Northwest Region has the responsibility to operate the ramp metering system. They typically have one operator that monitors and operates the ramp meters during the peak periods. An engineer is also available to assist with operational decisions. This is an example of operating ramp meters from a DOT's district or regional office. More information on the WSDOT ramp metering system can be found at: <http://www.wsdot.wa.gov/regions/northwest/traffic/tsmc/RampMeters>
- ▶ A fourth example is operating the ramp management activities at a DOT headquarters. In Utah, the operations staff at the Salt Lake City Traffic Operations Center (TOC) are part of the central office organizational structure. Further information about Utah Department of Transportation's Traffic Management Division can be found at <http://www.udot.utah.gov/index.php/m+c/tid=191>

3.4 Chapter Summary

It is now clear that ramp management fits into the larger traffic management program and functions as an element of the freeway management program. Understanding that ramp management activities do not operate as a separate entity is a key factor. The Traffic Manager has a great level of responsibility in that he must be savvy in topic areas ranging from issues and policies to funding mechanisms to strategic and business planning. He must also understand how ramp management can affect current regulations and policies.

Within the agency organization, the Traffic Manager must work with upper management to increase their understanding and support for the strategies. Meeting the agency's overall goals and objectives is paramount. It is also vital to ensure that ramp management activities are operated within the appropriate organizational structure.

By following the guidance that is outlined in this chapter, the Traffic Manager will learn about the skills needed to influence and, hopefully in turn, advance their ramp management strategies. Though he will not have control over many of the areas (e.g., funding mechanisms), the knowledge gained from this chapter will make him better prepared. Chapter 4 discusses the issues that the Traffic Manager can control, such as staffing and interagency coordination.

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