

# 4 OPERATIONS AND MANAGEMENT



## 4 OPERATIONS & MANAGEMENT

Operations & Management (O&M) is an integrated approach to optimize the performance of existing and programmed infrastructure through the implementation of multimodal, intermodal, and often cross-jurisdictional systems, services, and projects.<sup>1</sup> O&M functions are primarily concerned with addressing congestion and safety.

The cost of congestion in the United States is estimated to exceed \$ 87 billion annually.<sup>2</sup> With the cost of highway construction continuing to increase, building more roads is only part of the solution. In fact, leading researchers recommend using a balanced and diversified approach to addressing congestion. A mixture of programs, policies and projects, in line with a regions funding, commitment, location and type of problems, is the best approach. While the Texarkana region may not experience the same level of congestion as larger areas, it can still be very disruptive to the local economy and our daily lives. The 2030 Committee Texas Transportation Needs Report estimates that solving the congestion problems in the state's urban regions would generate more than \$ 6.50 in economic benefits for every \$ 1.00 spent on the effort.<sup>3</sup>

With 43,000 deaths occurring on our nations highways each year, the equivalent of two Boeing 747-400 jetliners with 416 passengers crashing every week with no survivors, safety is an issue that everyone should be concerned about.<sup>4</sup> In fact, safety is addressed at every phase of delivering a project from planning to design to maintenance. There are many opportunities within Operations & Management to address safety. Whether by increasing the visibility of signs, improving sight distance, or correcting driver behavior with traffic calming devices, the end result is a reduction in the frequency of something going wrong or in the severity of the consequences when it does go wrong.

Federal legislation requires MPOs to integrate O&M into the transportation planning process. SAFETEA-LU also requires that O&M be included in a regions transportation goals and objectives.

---

<sup>1</sup> Management & Operations in the Metropolitan Transportation Plan: A Guidebook for Creating an Objectives-Driven, Performance-Based Approach. U.S. Department of Transportation and Federal Highway Administration. November 2007. Report No. FHWA-HOP-08-007.

<sup>2</sup> Urban Mobility Report 2009. Texas Transportation Institute, Texas A&M University System, College Station, Texas. July 2009. Available: [http://tti.tamu.edu/documents/mobility\\_report\\_2009\\_wappx.pdf](http://tti.tamu.edu/documents/mobility_report_2009_wappx.pdf)

<sup>3</sup> 2030 Committee Texas Transportation Needs Report. Texas 2030 Committee, Austin, Texas. February 2009. Available: <http://texas2030committee.tamu.edu/>

<sup>4</sup> Incorporating Crash Costs into Highway Cost Analysis. Ray, Malcom H. and Conron, Christine E. September 2009. Association of American State Highway and Transportation Officials – Value Engineering Conference, San Diego, CA.

## **O&M GOALS**

The following goals have been identified for the operation and management of the regional transportation system:

1. Improve the performance of the existing transportation system in order to relieve congestion and
2. Maximize the safety and mobility of people and goods.

## **O&M STRATEGIES**

The following strategies will be implemented to address operations and management in the Texarkana region:

- Build a strong linkage between planning and operations
- Increase regional partnerships among managers with responsibility for the daily operations of the transportation system, and
- Improve regional decision making and planning by considering increased investments in operations related activities/projects.

## **REALISTIC SOLUTIONS**

Small urban areas like Texarkana can expect some level of congestion and some number of safety issues to occur. However, programs can be implemented, policies can be adopted, and projects can be completed that will allow us to manage these challenges more effectively. The key is to identify solutions and funding sources that meet the needs and goals for our region.

### **Improve the Existing System**

There are several relatively low cost, strategies that can be deployed to improve the existing transportation system. The list includes improving incident response (removing disabled vehicles from the road), improved signal timing and signal coordination, improved intersection design, and adding short sections of roadway. These programs require innovation and continued monitoring, but they pay off in a more efficient, safer and more reliable transportation system.

### **Add Capacity**

As an area experiences growth, the increase in personal trips and freight movements must be accommodated. Often this means adding more travel lanes to existing roads or building new roads. Key corridors in a region can greatly benefit from an expanded roadway network, especially when combined with an expansion of public transportation services.

## **Change Usage Patterns**

It is possible to significantly reduce the level of congestion an area experiences by individuals and small groups of people making small changes in their current travel routine. Most of the recurring congestion in the Texarkana area lasts for a relatively short period of time. This means that if a small percentage of the roadway users voluntarily shifted the time of their trip out of the “rush”, it could make a noticeable improvement for certain locations and corridors.

## **Provide Choices**

The modern day American lifestyle is based on choice. A greater number of choices in both routes and modes would allow travelers and shippers to customize their travel plans. Expanding transit services and providing safe areas for people to bicycle and walk would give individuals the option to use a different mode of travel. Adding new roads and bridges to the existing system provides alternate, if not more direct, routes for people to choose from.

## **Diversified Development**

Many regions are encouraging denser development with a mix of retail, entertainment, and residential property. This type of development generally results in a shorter trip to access goods or services which means people may choose to walk or bike rather than drive.

## **IMPLEMENTATION APPROACH**

The Texarkana MPO will increase the linkage between planning and operations through partnerships and improved decision making within the following nine (9) functional areas identified by the USDOT:

- Transportation Planning Process
- Data Sharing
- Performance Measures
- Institutional Arrangements
- Regional ITS Architecture Update
- Regional Concept for Transportation Operations
- Funding and Resource Sharing
- Congestion Management Systems, and
- Regional Transportation System Management & Operations Projects<sup>5</sup>

---

<sup>5</sup> Getting More by Working Together: Opportunities for Linking Planning and Operations – A Reference Manual. U.S. Department of Transportation and Federal Highway Administration. November 2004.

It is proposed to take advantage of as many of these opportunities as possible by implementing the Regional Concept for Transportation Operations (RCTO) within the transportation planning process (TPP).

Linking the various operational functions to the TPP could be accomplished in four (4) phases. Phase I would involve the creation of the Texarkana Regional Operations & Management Panel (TROMP), by engaging operating agencies and other stakeholders at the regional level. Phase II would involve the development of goals and objectives by the TROMP through a series of discussions and workshops. In Phase III, the TROMP would identify performance measures, and the data needed to support them. These performance measures would be used to evaluate progress toward the goals and objectives. Phase IV would employ various methods in an ongoing process of identifying areas that need to be addressed and developing recommendations from the TROMP that would be considered for implementation by participants.

Opportunities in the areas of data sharing, institutional arrangements, the regional ITS architecture, identification of regional operations and management projects and funding and resource sharing could all be identified and implemented through recommendations from the TROMP.

## **Potential Members**

It is proposed that initial membership of the TROMP consist of managers and decision makers from local and State transportation agencies responsible for day-to-day operations, the MPO, and public safety entities such as the Office of Emergency Management.

## **Areas of Opportunity**

### ***Non-recurring Incidents***

Since the majority of congestion is caused by non-recurring incidents, i.e. crashes, breakdowns, weather events, etc., it makes sense to address these factors in the O&M areas by identifying available data and strategies to address each one, thereby improving the overall O&M of the transportation system.

The Texarkana Office of Emergency Management (OEM) is responsible for developing, maintaining and implementing a comprehensive emergency management plan which is in full compliance with all state and Federal guidelines and requirements. The emergency management staff is also charged with responsibility for Homeland Security issues at the local level.



The objectives of the emergency management program are to protect public health and safety and preserve public and private property from the effects of hazardous events. OEM has the primary role of identifying and mitigating hazards, preparing for, responding to, and managing the recovery from emergency situations that affect the community.

We, as individual citizens and as a united community, have a responsibility to prepare ourselves and our families to cope with emergency situations and manage our affairs and property in ways that will aid the government in managing emergencies and assisting those who cannot help themselves. The OEM assists the citizenry in carrying out these responsibilities by providing public information and instructions prior to and during emergency situations.

### ***Traffic Signal Improvements***



One of the components of the transportation system that offers an opportunity to address both congestion and safety is traffic signals. Recent projects by TxDOT resulted in the installation of signals at new locations, the upgrade of signals at existing locations and the removal of signals at locations where they were no longer warranted. These types of activities could be pursued on a regional basis with cooperative efforts to cross over the multiple jurisdictional boundaries that exist in our area.

In contrast to many other roadway improvements, traffic signal improvements generally involve only minimal traffic disruption, relatively low costs, and little risk. The public generally reacts very favorably to traffic signal retiming projects, making them win-win situations for both the public agency and their customers. The FHWA estimates that the overall benefit-to-cost ratio of traffic signal timing optimization projects approaches 40 to 1. That is, for every \$ 1 invested in optimizing the timing of traffic signals, \$ 40 is returned to the public in time and fuel savings. Traffic signal operations can be substantially improved by implementing an aggressive yet relatively low-cost management system that will minimize traffic delay, pollution and fuel consumption.

### ***Intelligent Transportation System***

An Intelligent Transportation System (ITS) is considered a principle strategy for improving the management and operation of the transportation system. The term “intelligent transportation system” means electronic communications, or information processing used to improve the efficiency or safety of surface transportation.

In November 2002, Kimley-Horn and Associates, Inc., under contract to TxDOT – Atlanta District, began the process of developing the State of Texas Regional ITS Architecture and Deployment Plans – Atlanta Region.<sup>6</sup> The final plan was

---

<sup>6</sup> “State of Texas Regional ITS Architecture and Deployment Plans – Atlanta Region”, Texas Department of Transportation, November 7, 2003.

delivered to TxDOT in November, 2003. The stakeholders in this plan include: AHTD, Ark-Tex Council of Governments (ATCOG), 911 Services, the Cities of Atlanta, Marshall, and Texarkana, TX-AR, the Texarkana MPO, Texas Department of Public Safety (DPS), FHWA, Louisiana Department of Transportation and Development, TUTD, TxDOT-Atlanta District, and TxDOT Traffic Operations Division (Austin). This plan outlines the deployment plan for implementing the various components of an ITS system for the Atlanta Region, which encompasses the Texarkana MPO study area.

The Atlanta District already had video detection systems operating at several intersections and a CCTV camera in place at one location that is used to monitor fog levels and help determine when it is advisable to close a particular facility to traffic. Video detection capabilities continue to be expanded as existing traffic signals are upgraded and signals are installed at new locations. Other ITS components currently in use in the region include a Road Weather Information System (RWIS) station that collects road weather data and multiple Smart Curves that provide advance warning to drivers. Computer aided dispatch systems are being utilized by the Texas DPS and area emergency responders.

There were three levels of market packages identified for implementation. A market package is an ITS service, including the systems or equipment as well as the agency or agencies involved in managing the service. The market packages were categorized into high, medium and low priorities by the stakeholders. The stakeholders identified thirty-seven (37) market packages as being applicable to the Atlanta Region. Some of the high priority market packages include Network Surveillance, Regional Traffic Control, Incident Management System, Transit Vehicle Tracking and Emergency Response. It should be noted that the prioritizations are not directly related to a deployment timeframe of some number of years, but are based on the ability to deliver a particular service or functionality. Copies of the plan can be obtained by contacting the Traffic Operations Division of TxDOT in Austin.

