

7.0 TRANSPORTATION MANAGEMENT

I. Introduction/Current State of Transportation Management in KC Region

The Kansas City region has invested considerable effort and resources in the design and implementation of its regional multimodal transportation system. As a result of this investment, Kansas City historically has enjoyed an expansive, safe and reliable network that, when compared to peer cities, has performed at a high level and has remained relatively free of congestion. Recent years, however, have begun to tell a different story with issues such as higher-than-average growth rates in levels of congestion, environmental constraints, volatile energy prices, homeland security concerns, limited travel alternatives, and dwindling financial resources challenging the ability of the transportation system to meet the needs of the region.

In the Kansas City metropolitan area, transportation decision makers increasingly have focused attention on the use of transportation management in responding to these challenges. Transportation management is an integrated approach to maximize the performance and efficiency of the existing transportation system through the implementation of multimodal, intermodal, and often cross-jurisdictional systems, services and projects. Such strategies are generally less costly than major capacity improvements and may increase or constitute cost-effective alternatives to major highway and transit capital projects. In addition, transportation management strategies are generally viewed as having positive impacts on air-quality and energy consumption when compared with more capital-intensive alternatives.

Transportation management strategies include a broad range of activities that generally fall into two categories: Transportation System Management (TSM) and Transportation Demand Management (TDM). TSM strategies are physical improvements focused on increasing the performance and efficiency of the existing transportation system, such as freeway management, traffic signal coordination, transit-signal priority, ramp metering and high-occupancy vehicle (HOV) lanes. TDM strategies are intended to reduce or shift the demand for travel and include alternative work schedule programs, programs to encourage transit use or carpooling, and telecommunications. Other transportation management strategies include intelligent transportation system (ITS) techniques such as traveler information services, automatic vehicle location, freight management and incident management programs that improve regional coordination and collaboration for emergency response.

At their core, most transportation management strategies are related to the idea of congestion management through improved system performance and have proven to be solid investments, even when applied on an individual basis. It is clear, however, that they can make a more significant impact when they are implemented as part of a more comprehensive approach. In recognition of this, the Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) — the most recent authorization of the national surface transportation program — updated the Congestion Management System (CMS), introduced in 1991 under the Intermodal Surface Transportation Efficiency Act (ISTEA), to a Congestion Management Process (CMP). This change was intended to recognize that congestion

management is best addressed by a comprehensive and cooperative process among transportation stakeholders.

MARC has developed a CMP to meet the unique needs of the Kansas City metropolitan area. The CMP includes ongoing methods to provide information on the performance of the transportation system and on alternative strategies to alleviate congestion and enhance mobility. The CMP emphasizes effective management of existing facilities through the use of travel demand and operational strategies. It also provides valuable input and assessment capabilities to planning efforts such as the long-range transportation plan, the development of the Transportation Improvement Program (TIP), and regional studies of the transportation system at the corridor or activity-center level.

All projects in *Transportation Outlook 2040* were screened through the regional CMP network and all applicants were asked to describe the strategies from the MARC CMP Toolbox that were incorporated in the project scope. Priority was given to projects on congested segments of the CMP network and to those that incorporated multiple CMP toolbox strategies.

The comprehensive and coordinated approach brought to the area of congestion management by the CMP also characterizes transportation technology investments made in the region. The Regional Intelligent Transportation Systems (ITS) Architecture for the Kansas City metropolitan region is a specific regional framework for documenting and ensuring institutional agreement and technical integration for the implementation of ITS projects in the region. The documentation of the regional integration among transportation systems enables comprehensive planning and deployment activities while also supporting the sharing of information and coordination of activities that enables efficient and effective operations.

A key element of transportation management in Kansas City is the Kansas City Scout freeway-management system, a cooperative bistate effort led by the Kansas and Missouri departments of transportation. Of the management strategies deployed in the region, Scout is the most comprehensive effort aimed at optimizing the performance of the transportation system. The Scout system manages traffic on more than 100 miles of continuous freeways in the Kansas City metropolitan area, as well as the majority of I-70 between St. Louis, Mo., and the Kansas/Colorado border.

Using technology such as cameras, sensors and electronic message boards, Scout monitors the freeway system to automatically detect traffic problems and incidents and quickly relay urgent traffic information to motorists. Scout also uses this information to coordinate more efficient emergency response to incidents and to dispatch regional motorist assist services to help clear roadways, reduce congestion, and aid travelers.

Scout also recently implemented additional strategies to improve the performance and efficiency of the system. These include a pilot corridor of ramp metering along Interstate 435 that aims to reduce congestion by managing freeway access and improving mainline traffic flow, and the launch of the "My KC Scout," an Internet service that provides customized,

current information to devices such as mobile phones or computer e-mail regarding freeway travel, weather, public safety and other vital information impacting the region. A similar system, specific to the freight industry, was also recently deployed.

While the Scout system works to manage the freeway system, the region has implemented an initiative to address the arterial system as well. Operation Green Light is a cooperative effort among more than 20 local government stakeholders to improve the coordination of traffic signals on major routes throughout the Kansas City area, especially those that cross city and state boundaries. This helps reduce unnecessary delay, improve traffic flow, reduce emissions that contribute to air pollution and climate change, and improve incident response. While the initial phase of the project includes over 600 traffic signals, the project eventually will include over 1,500 locations throughout the region, and is expected to be integrated with the Kansas City Scout freeway-management system to provide increased traffic management and incident-response capabilities. Additionally, several local jurisdictions maintain arterial traffic management centers that are integrated with Operation Green Light and extend similar benefits to the local arterial network.

The Kansas City region has used its strong transportation infrastructure to help establish it as a center for freight-related business over the last several decades. Improving the performance and efficiency of the regional transportation system will be an important element in sustaining this momentum and increasing the region's presence in the freight industry. To add to the benefits of both the Scout and Operation Green Light systems, the region has been working on two freight-related technology deployments, the Trade Data Exchange (TDE) and the Cross-Town Improvement Project (C-TIP). The TDE is designed to provide real-time cargo visibility and security while increasing efficiency in the supply chain. C-TIP coordinates cross-town traffic to reduce empty truck movements between intermodal terminals in the Kansas City area through tracking intermodal assets and wireless distribution of information to truckers. In addition to the supply chain and congestion-reducing benefits of C-TIP, the project should also provide environmental benefits.

Public transportation is another area where transportation management can play a vital role. Both the Kansas City Area Transportation Authority (KCATA) and Johnson County Transit (JCT) are investing in automatic vehicle locator (AVL) systems. By providing real-time information on the location and schedule adherence of transit vehicles, this technology represents a backbone from which other technologies can be deployed. KCATA has already implemented the use of information signs to provide "next-bus" information for its Metro Area Express (MAX) bus rapid transit service and is actively pursuing a system that would provide schedule information directly to devices such as mobile phones. JCT is also investigating similar applications, as well as the use of bus-on-shoulder operations to improve transit service.

As mentioned previously, transportation management also focuses on strategies to improve performance through reduced demand (TDM). As the central TDM element in the Kansas City area, the MARC RideShare program offers assistance and information to individuals and employers about efficient and affordable commuting alternatives such as carpooling and

vanpooling, transit, and flexible work schedules. These efforts result in increased vehicle occupancy and reductions in the demand on the system. They also contribute to lower amounts of vehicle miles driven in the region. Additionally, the program manages a Guaranteed Ride Home service that provides commuters with transportation in the event of an emergency.

Another approach to reducing demand is the use of high-occupancy-vehicle (HOV) and managed-lane facilities. These strategies can lessen congestion while increasing the amount of persons moved during peak-hour traffic. Benefits produced by HOV strategies are similar in nature to other TDM efforts and can be increased by combining them with transit and ridesharing programs to provide a more comprehensive approach.

Historically, the feasibility of HOV lanes has been considered at a corridor level rather than at the regional level. However, with renewed interest in maintaining our existing system and the impact of energy prices on commuting patterns, MARC recently completed a regional study¹ to enhance the understanding of a potential regional approach to HOV and managed lanes. The study made a number of recommendations about beneficial incremental improvements, such as consideration of pricing strategies, transit bus on shoulder operations, and expansion of Kansas City Scout to all major freeways. The study also documented the feasibility of a regional approach to HOV and managed lanes.

Stakeholders in the Kansas City area have made the decision to proceed with the implementation of a regional 511 traveler information system. 511 traveler information systems can integrate information about work zones, traffic incidents, weather, mode choices and other issues on the regional transportation system. By helping travelers identify their best transportation alternatives and avoid congestion and incidents, 511 systems can make significant improvements in system performance and safety.

II. Overview of Relationship between Transportation Management and *Transportation Outlook 2040* Policy Goals

Accessibility

Transportation management contributes to accessibility by providing methods to increase mobility through improved operation of regional transportation facilities and services, and by providing methods to disseminate information about the operation of transportation systems, which allows people to make more informed choices about their use of facilities and services.

Climate Change and Energy Use

Transportation Management can have a positive impact on greenhouse gas emissions and energy use by improving traffic flow, incident management, vehicle occupancy, and congestion relief through traveler information and transportation options.

Economic Vitality

¹ <http://www.marc.org/transportation/hovstudy.htm>

Transportation management supports economic vitality by providing methods to operate transportation facilities and services safely, effectively and efficiently in order to maximize the economic return from the region's transportation investments; optimize use of the existing system; improve access to jobs and labor markets; and improve regional connections to external markets.

Environment

Transportation management contributes to this goal by providing tools and techniques to minimize or mitigate the negative environmental impacts of operating transportation facilities and services, and to operate a balanced transportation system that supports adjacent land uses.

Place Making

Transportation management supports place making by providing a balanced multimodal transportation system that reduces travel demand, supports density and the integration of multiple land uses, and maximizes the use of existing infrastructure.

Safety and Security

Transportation management contributes to safety and security by providing tools and techniques to improve the safe operation of transportation facilities, including physical modifications to existing facilities; operations and management strategies; and public education, information and awareness activities.

System Performance

Transportation Management improves the efficiency of roadways by improving traffic flow and reducing the number of single-occupant vehicles on the roadways. Solutions range from removing bottlenecks at strategic locations to programs that encourage transit use and carpooling.

III. Transportation Management Strategies to Achieve *Transportation Outlook 2040* Policy Goals

- EXPANDING THE EFFECTIVENESS OF EXISTING TRANSIT OPERATIONS – Support the usability of existing services through technology, maintenance of transit-supportive infrastructure (sidewalks, trails, bike racks, etc.), and expanded and improved access to user information.
- Make more efficient use of existing roadways through operational improvements and strategies to reduce vehicle trips.
- REDUCE VEHICLE MILES TRAVELED (VMT)
 - a. Adopt regional VMT reduction goals.
 - b. Expand transportation options:
 - Develop specific performance measures for shifting trips from single-occupant vehicles to transit, walking and bicycling.
 - Direct additional resources to transit, bicycle/pedestrian facilities, and carpooling (e.g., RideShare).

- Continue to implement Smart Moves Regional Transit Vision.
 - Encourage local governments to include Smart Moves in their planning efforts and work with them to implement the plan.
 - Create a regional bicycle/pedestrian plan.
 - Provide incentives for roadway projects that improve access for bicyclists, pedestrians, and transit users of all ages and abilities (e.g., Complete Streets).
- c. Consider pricing strategies (e.g., pay-as-you-drive insurance and congestion pricing).
- d. Support place making.
- ACTIVELY MANAGE TRANSPORTATION SYSTEM
 - a. Use technology and communication strategies, coordinated through the Regional Intelligent Transportation Systems Architecture², to efficiently manage the region's transportation network.
 - a. Continue and expand Operation Green Light traffic-signal coordination.
 - b. Continue and expand Kansas City Scout freeway-management system.
 - c. Develop regional 511 communication resource.
 - d. Use regulatory and/or pricing strategies where deemed appropriate (HOV, HOT lanes, ramp metering).
 - e. Develop incident-management plans.
 - f. Explore opportunities to reduce emissions from the freight sector, including shifting freight from trucks to rail.
- INCREASE VEHICLE OCCUPANCY
 - a. Promote strategies which help to increase vehicle occupancy and reduce system-wide demand from single occupancy vehicles (SOVs).
 - b. Maintain and expand the RideShare program.
 - c. Conduct vehicle-occupancy studies to track data and trends over time.
 - d. Develop regional high-occupancy vehicle (HOV) study and designate future HOV corridors.
 - e. Increase transit, multimodal options.
- CAPACITY OR BOTTLENECKS IMPROVEMENTS
 - a. Use capacity and bottleneck improvements where appropriate to address system constraints, demand created through growth and development, recurring congestion and system delay.
- IMPROVE TRANSPORTATION SECURITY
 - a. Develop incident-management plans.
 - b. Maintain partnerships between Kansas and Missouri, and among regional enforcement entities and other potential security stakeholders.
- ENCOURAGE DEVELOPMENT STANDARDS THAT MINIMIZE NEED FOR TRANSPORTATION AND REQUIRE THE INTEGRATION OF AFFORDABLE, ACCESSIBLE AND ACTIVE MODES OF TRANSPORTATION
 - a. Coordinate planning and programming of projects around the centers and corridors model.
 - b. Advocate for principles based on the Creating Quality Places program.
 - c. Increase vehicle fuel efficiency and reduce the reliance on the personal vehicle.
 - d. Implement complete streets.
 - e. Support programming of funds for alternative fuel vehicles and retrofitting for older vehicles.

² <http://www.marc.org/transportation/ITS/index.htm>

- DECREASE SERIOUS INJURY AND FATALITY CRASHES
 - a. Monitor all crash statistics in the region.
 - b. Maintain partnerships between both states and among regional enforcement entities.
 - c. Educate the public on traffic-engineering issues.
 - d. Increase enforcement in priority safety areas (e.g., Click it or Ticket).
 - e. Enhance the use of and education about KC Scout, Operation Green Light and red-light cameras.
- f. IMPROVE TRANSPORTATION SECURITY
 - a. Develop incident management plans.
 - b. Maintain partnerships between Kansas and Missouri, and among regional enforcement entities and other potential security stakeholders.
- 1. CONDITION TRACKING
 - a. Coordinate with local, regional and state agencies to develop a process to track the condition of the regional transportation system.
 - b. Develop region-wide condition inventory of the Congestion Management Network.
- 2. DATA COLLECTION AND SHARING
 - a. Investigate opportunities for regional coordination in data collection, analysis, information dissemination and asset management.
- REDUCE TRANSPORTATION DEMAND
 - a. Reduce travel demand through the use of planning, public education and other factors that influence travel patterns.
 - b. Integrate transportation and land use (jobs and housing) in an effort to eliminate or shorten average trip distances.
 - c. Actively promote public education regarding alternatives to the single-occupant vehicle.
 - d. Development models and examples of private-sector opportunities (offset work schedules, telecommute, employer-sponsored vanpooling, etc.)
- MAINTAIN AND EXPAND REGIONAL TRANSIT SERVICE
 - a. Plan, develop and identify funding opportunities to support an expanded regional transit system (Smart Moves).
 - Leverage local plans, strategies and initiatives to help identify short-term opportunities.
 - Work in partnership with local governments and the region's transit providers to ensure coordinated and seamless operations and planning.
 - Develop and communicate clear local, regional and state options for financing and supporting expanded transit services.

IV. Transportation Management Evaluation of Project List

A major component of *Transportation Outlook 2040* is the identification of a list of regionally important projects to improve the movement of people and goods. Previous versions of the long-range transportation plan did not identify specific regional or multijurisdictional transportation system management or transportation demand management programs because they are not required to be represented as individual projects within the plan and are not part of the fiscal constraint analysis that must be conducted. For *Transportation Outlook 2040*, MARC did solicit information about these projects to gain a better understanding of the types of work being done in the region and to better establish regional transportation priorities.

In addition to the projects and programs described earlier, the following projects were submitted by local governments through the process and were subject to the same project evaluation process as other project categories. The identified policy goals were used to develop a set of criteria that were used to measure the effectiveness of project submittals in helping the region achieve those goals. The Management and Operations Workgroup reviewed the project submittals, expressing support and noting that the list of submitted projects is not inclusive of all management and operations efforts currently in place or planned for the future.

Figure 7.1: Transportation Management Projects

Organization	Project Name	Construction Decade	Construction Cost
City of Gardner	Center Street and US 56 (Main St.) Intersection Improvements	2010 to 2019	\$275,000
City of Gardner	US 56 & I-35 Interchange Ramp Improvements	2010 to 2019	\$600,000
City of Kansas City, MO	Traffic Management System 2010 (KCMO)	2010 to 2019	\$25,000,000
City of Kansas City, MO	Traffic Management System 2020 (KCMO)	2020 to 2029	\$25,000,000
City of Kansas City, MO	Traffic Management System 2030 (KCMO)	2030 to 2039	\$25,000,000
City of Kansas City, MO	Performance-Based Intraurban Transportation Safety Program 2010	2010 to 2019	\$96,000,000
City of Kansas City, MO	Performance-Based Intraurban Transportation Safety Program 2020	2020 to 2029	\$96,000,000
City of Kansas City, MO	Performance-Based Intraurban Transportation Safety Program 2030	2030 to 2039	\$96,000,000
City of Kansas City, MO	Southwest Trafficway - Westport Rd to 43rd St	2010 to 2019	\$3,556,000
City of Shawnee	Shawnee Bicycle and Multi-use Trail Master Plan	2010 to 2019	\$10,160,000
City of Tonganoxie	General Access and Traffic Management - Driveway accesses	2010 to 2019	\$4,000,000
Clay County	Sign Reflectivity - Entire rural Clay County	2010 to 2019	\$225,000

Clay County	Striping Reflectivity - Entire rural Clay County	2010 to 2019	\$225,000
Johnson County Transit	Bus Rapid Transit - Shawnee Mission Parkway BRT Extension west - (Planning Study)	2010 to 2019	\$2,000,000
Johnson County Transit	Bus Rapid Transit - 87th/95th Streets in Lenexa BRT Service - (Planning Study)	2010 to 2019	\$2,000,000
Johnson County, Kansas - Public Works	Sunflower Western Corridor Study û K-10 to 159th St (Planning Study)	2010 to 2019	\$1,000,000
MARC	MARC RideShare program	2010 to 2019	\$0
MoDOT	MoDOT Corridors - Improve Pedestrian Mobility	2010 to 2019	\$20,000,000
MoDOT	MoDOT - Various Corridors to perform full depth pavement replacement	2020 to 2029	\$242,200,000
MoDOT	MoDOT - Various intersection improvements to improve traffic flow	2010 to 2019	\$10,000,000
MoDOT	MoDOT - Various corridors to improve bicycle mobility	2010 to 2019	\$20,000,000
MoDOT	MoDOT - KC Scout ITS Operations	2010 to 2019	\$45,580,000
MoDOT	MoDOT - Motorist Assist Operations (Missouri)	2010 to 2019	\$18,440,000
MoDOT	MoDOT - Various Corridor Improvements through Signal Synchronization/Coordination	2010 to 2019	\$6,000,000
Platte County	MO 45 - MO 9 Hwy to K Hwy	2010 to 2019	\$25,000,000
Platte County	MO 45 - K Hwy to I-435	2010 to 2019	\$10,000,000

V. Key Transportation Management Measures

- Transit ridership
- Transit vehicle revenue hours
- Vehicle miles traveled (VMT)
- Vehicle occupancy rate
- Network performance as percentage of posted speed
- Percent of lane miles congested.
- Congested travel as a percent of vehicle miles traveled
- Incident-response time
- Hours of delay per year by incident type
- Freeway incident duration
- Crash fatalities and injury rate
- Travel-time index
- Average travel speed
- On-time performance of transit system
- Portion of Operation Green Light network completed
- Portion of transit fleet equipped with automatic vehicle-locating capability
- Freeway mileage monitored by KC Scout