

## Section 15: Findings and Conclusions

### KEY POINTS FROM THE REPORT

Phases 1 and 2 of the 5-County Regional Transportation Study analyzed the future transportation needs in the 5-County region and identified potential strategies to address those needs. The study was a stakeholder-driven process that involved elected officials, city and county staff, residents in the region, and a wide range of transportation stakeholders.

This report serves as a snapshot in time. In the future, policy statements and identified strategies will need to be analyzed and potentially adjusted to react to changes. As previously stated in the report, the following challenges lay ahead as KDOT, the MPOs and their local partners look to implement strategies to improve the transportation system:

#### The Future Brings Change

Transportation technology is changing quickly and the transportation system must adjust to these changes. Current in-vehicle technology, such as GPS, has changed the way that users determine their trip routes. More advanced technology, such as vehicle to vehicle communication, will most likely be implemented in the next 30 years. This technology will change the way that vehicles operate and may increase the amount of capacity on existing roadways.

Road management technologies, such as those employed by KC Scout, will continue to evolve, giving drivers more travel information and allowing for less congestion because of more efficient lane usage. Active lane use control should be considered on congested freeways, particularly on those routes where there is limited right-of-way for additional lanes. This new strategy may include hard shoulder running, High-Occupancy Vehicle/High-

Occupancy Toll lanes, speed harmonization with the use of variable speed limits, queue detection, and the ability to dynamically close lanes to address incidents on the roadway.

In addition to new technologies, demographics will change substantially in the future. The new generation of young professionals generally wants to live in more urbanized areas and depend less on personal automobiles. The growing population of senior citizens will also need other transportation options as they age. A multimodal transportation network will be needed to meet the demands of these individuals.

This study analyzed strategies on key corridors as well as the interaction between corridors. Analyzing a system together allows planners to see the interaction between corridors and identify how strategies can affect regional mobility and may be able to limit the needs for projects that have duplicate results.

#### Future Role of Roadways

The 5-County region has a robust system of interconnected freeways, other highways, and arterial streets which create its transportation network. The roadway system serves commuter trips, freight movement, transit, bicycle and pedestrian trips, and provides links to activity centers. Highways and arterial streets will continue to be the backbone of the future transportation system. Due in part to funding limitations, the future will see a broader range of strategies implemented on the roadway system in addition to key capacity improvement projects. These will include Transportation System Management (TSM) strategies like ramp metering and expanding the KC Scout ITS traffic management system, and active lane-

use control. Also, Transportation Demand Management (TDM) strategies such as providing Park & Ride facilities and expanding transit service will provide residents with more transportation options and help address peak period congestion.

#### Future Impacts of Freight Movement

The 5-County region is a vital national freight hub due to a strong goods movement transportation network with relatively few bottlenecks. Kansas City is considered the second largest rail center in the nation and is served by five Class I rail carriers. The region is also one of the top five trucking centers. The construction of the BNSF Intermodal Facility in Edgerton, along with associated development, will have a significant impact on the movement of goods by truck in the region. When fully operational, the intermodal facility will generate over 7,000 truck trips per day with the majority of those trucks moving north on I-35.

#### Future Role of Public Transit

Transit will play an important role in the future transportation system for the 5-County region, particularly in moving commuters during the morning and evening peak travel periods. An enhanced transit system will improve the movement of travelers both regionally and locally, connecting them to major activity centers such as universities, hospitals, shopping areas, sports arenas, and major employment centers. Enhanced transit will serve not only commuters, but also those travelers who are transit dependent (i.e. young, old, low income, disabled, or otherwise unable to drive).

#### Future Role of Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities are an integral part of

a future transportation system. As land use changes to more mixed development and as more of the population focuses on a healthier lifestyle, there is a growing need for alternatives to automobile travel. While bicycle and pedestrian facilities will not fully address the needs of people traveling regionally, the regional system needs to accommodate and plan for these types of facilities to eliminate the barriers created by natural features and major highways and to support regional transit service. Future Role of Economic Development in Transportation Transportation investments have a significant impact on economic development. Future transportation investment decisions should continue to consider economic impacts.

#### Financial Resources are Limited

Due to the complexity of projects in urbanized areas, costs associated with the implementation of solutions that add capacity to highways (addition of lanes, new or enhanced interchanges, etc) can be very expensive. For example, the Johnson County Gateway Interchange project will have a cost that exceeds \$580 million at full build out; an amount equal to more than half of the total dollars allocated to expansion projects in the 10-year T-WORKS program. With limited funding and a growing number of these types of projects being identified, it is increasingly important to attempt to increase the lifespan of each corridor as constructed. Doing that will mean not having to incur the expense of a large project until it is completely necessary. Using innovative techniques such as hard shoulder running and active lane use control, as well as implementing transit and traveler information, and expanding the influence of ridesharing, alternative work hours and telework, the lifespan of a corridor that is only congested during the peak periods can be increased.

Often, new projects are identified because of the potential for a key economic development opportunity that requires access to the transportation system. KDOT has worked hard to create funding programs, such as the Economic Development Program, that allow flexibility to respond to these types of projects. In addition to KDOT’s funding program, which only has limited resources, innovative financing, such as STAR Bonds or Transportation Development Districts, should be considered with projects that are adjacent to new development.

Historically, the cost to operate and maintain the transportation system has not always been considered fully when projects are identified and evaluated. KDOT and the local communities must expend resources each year to maintain and operate their transportation systems. During their local consultation efforts, KDOT found that the highest priority among participants was to maintain the system that we have at its current high level. These costs, and the additional maintenance costs needed for new or enhanced roadways, must be considered during the project identification and evaluation process. Finally, advances in fuel economy and alternative fuels will require many changes to the current transportation funding. Since current State and Federal transportation systems are generally funded using motor fuel taxes, the increase in fuel economy, or the use of other energy sources to fuel vehicles, is anticipated to lead to additional funding challenges for governments. These entities must find other ways to fund the transportation system in order for the system to meet the demands of their constituents.

### How Should This Report Be Used?

The 5-County Study was created through a partnership between KDOT and the MPOs who worked closely with cities, counties and other stakeholders. The recommendations of this report are intended to help the region make progress toward the 9 Desired Outcomes. All parties should put these outcomes at the forefront as they further develop and implement the strategies in this report.

#### KDOT

The Kansas Department of Transportation will be scheduling the update of its Long Range Transportation Plan (LRTP). The 5-County Study will provide important input to the LRTP regarding the Kansas City metro area and surrounding counties.

Goal setting and the identification of future strategies in the LRTP should distinguish the many differences between urbanized areas and rural areas.

There are many process steps completed through the 5-County Study that could be implemented statewide. This includes: the use of a transportation toolbox; identifying a broad range of issues; tying goal statements to evaluation methodology; and using diverse metrics to select appropriate strategies.

In addition to using this information for the LRTP process, it is recommended that the output from this study be used as part of the project selection and scoping process in the 5-County region.

Since a few of the key corridors in the study cross the state line into Missouri, a discussion with MoDOT regarding the results of the study is recommended.

#### Metropolitan Planning Organizations

KDOT staff works closely with MARC and Lawrence-Douglas County MPO staff on their planning processes. This will continue after the 5-County Study, with specific attention focused on the Metropolitan Transportation Plans. The Lawrence/Douglas County MPO is near completion of their MTP update. As their process has progressed, they have worked to make sure there are consistencies between both studies (specifically as it relates to network connection points and the identification of regional transit along I-70).

MARC will begin updating their MTP in 2013. Because of this, MARC will be able to use this study as input to their planning process. This will include using the list of strategies identified in this study and providing general project descriptions.

#### Kansas City Scout

Many of the systems management strategies identified in this study would be implemented as part of the KC Scout traffic management system. Because of this, it will be important to have targeted conversations with KC Scout about the study and its results. Since this study provides direction on the regional goals for this system, the output should be used for the identification of future sites for technology upgrades.

#### Local Transit Operators

The local transit operators were included throughout the study process and they should be informed of the results of the study, so that they can use this output as part of the transit system planning process. Many of the transit recommendations that were identified will require cross-agency coordination. As a result of this process, cross-agency implementation plans should be considered for all identified regional routes.

#### Cities/Counties

Throughout the process, City and County staff and officials were included and provided essential feedback. As the process comes to a close, these participants should be informed of the results. As these communities move forward with identified strategies, they should work closely with partner cities in order to make sure there is a unified set of strategies for a corridor as a whole.

As municipalities seek assistance from MPOs in the form of State or Federal dollars, the MPOs should consider strategies identified within the 5-County Study as those of priority in project selection. Policies may be enacted that require substantial local resources for projects that aren’t included in the strategy list (along the identified corridors).

Cities and Counties should consider the context of new land use development and its relationship with the transportation strategies recommended in this report. The concept of “place making” should be incorporated into land use decisions to capitalize on the community’s vision, assets and potential.

#### Coordination

The coordination cannot stop once the project is over. There are many complicated challenges ahead that will require coordination, such as:

- MAP-21 requires the implementation of statewide performance metrics. KDOT will work closely with the MPOs in creating these metrics. It is important that there be coordination in how measures are identified and targets are set.
- Sharing of data between agencies. There are currently multiple travel demand models in the 5-County region. This includes the TransCAD model specifically created for this study, the MARC EMME/2 Model which is

used for their region (including the Missouri counties), the Lawrence/Douglas County MPO TransCAD model, plus various city models. It is important that the study participants coordinate to identify the best use of these models.

In addition to the model data, each of the agencies has access to data that could be of assistance to their partners. Partnerships should continue to be cultivated between professional specialists at each agency so that they can collaborate on data gathering.

- Project Financing and Ownership. The next step in project development for the identified strategies is to have cross-agency discussions about how these projects would be financed and what agency would take the lead.
- This report provides recommended policies and strategies that have been identified, evaluated and approved by each of the partnering agencies. Each agency has a different role to play in ensuring that the lessons learned from this process are continued in future planning and policy-making efforts.

Table 15-1, on the following pages, shows the major findings and conclusions from the 5-County Study.

Table 15-1: Study Findings and Conclusions

Desired Outcome	Findings	Conclusions
<b>Mobility</b>	<ul style="list-style-type: none"> <li>A statistically significant survey of residents in the 5-County region showed that maintenance of roads within cities was the most important issue during the next 10 years. Maintenance of roadways between cities ranked as the third most important issue.</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance of existing streets and highways should continue to be funded and delivered before other strategies are considered.</li> </ul>
	<ul style="list-style-type: none"> <li>A survey of residents in the 5-County region showed that traffic flow on highways and major roads was the second most important issue to address over the next 10 years.</li> </ul>	<ul style="list-style-type: none"> <li>Transportation investments must address congestion on the region's roadways.</li> </ul>
	<ul style="list-style-type: none"> <li>Vehicle technology is changing and will increase the number of vehicles per lane.</li> </ul>	<ul style="list-style-type: none"> <li>Roadway travel lanes will have higher capacity in the future.</li> </ul>
	<ul style="list-style-type: none"> <li>The Kansas City metropolitan area has more lane-miles of freeway and more lane-miles of arterial streets per 1,000 population than other peer cities such as Dallas/Fort Worth, TX, Denver/Aurora, CO, Minneapolis/St. Paul, MN, and St. Louis, MO.</li> </ul>	<ul style="list-style-type: none"> <li>Other major metropolitan areas are developing a more balanced transportation system or accept higher congestion.</li> </ul>
	<ul style="list-style-type: none"> <li>Annual hours of delay per automobile commuter in the Kansas City metropolitan area is less than other peer cities such as Dallas/Fort Worth, TX, Denver/Aurora, CO, Minneapolis/St. Paul, MN, and St. Louis, MO.</li> </ul>	<ul style="list-style-type: none"> <li>Other metropolitan areas have more congestion than the Kansas City metropolitan area.</li> </ul>
	<ul style="list-style-type: none"> <li>The congested lane-miles of roadway in the 5-County region will increase from approximately 1,000 lane-miles in 2010 to approximately 2,500 lane-miles in 2040 without future transportation investments.</li> </ul>	<ul style="list-style-type: none"> <li>Federal, state and local transportation funding programs are a critical need for the future.</li> <li>A wide variety of transportation strategies will be needed to address congestion.</li> </ul>
	<ul style="list-style-type: none"> <li>Peer cities such as Dallas/Fort Worth, TX, Denver/Aurora, CO, Minneapolis/St. Paul, MN, and St. Louis, MO are using a variety of transportation strategies to address growing congestion</li> </ul>	<ul style="list-style-type: none"> <li>A variety of strategies, such as Transportation System Management, Transportation Demand Management, and new Capacity, should be considered as decisions are made regarding transportation investments.</li> </ul>
	<ul style="list-style-type: none"> <li>Recurring congestion occurs on the region's major roadways during peak commute times. For the rest of the day, roadways have adequate capacity for year 2040 traffic.</li> <li>Commuters are repeat travelers.</li> </ul>	<ul style="list-style-type: none"> <li>Fund and encourage other transportation options for the morning and evening commute.</li> </ul>
	<ul style="list-style-type: none"> <li>Non-recurring congestion due to crashes and vehicle breakdowns, construction/maintenance activities, and other incidents have a significant impact on traffic flow, particularly in the Kansas City metropolitan area. KC Scout reported 7,373 incidents on the metro area's freeways. With the benefit of the KC Scout traffic management system, it took an average of 22 minutes to clear incidents and six minutes to restore normal traffic flow.</li> </ul>	<ul style="list-style-type: none"> <li>The KC Scout traffic management system provides significant benefits to the area and should be expanded, along with motorist assist, along key Kansas highways.</li> </ul>
	<ul style="list-style-type: none"> <li>Some freeways, such as segments of I-35 and I-435, have limited potential for more right-of-way which will make it difficult to construct additional lanes.</li> <li>Forecasted growth in rail traffic indicates an increase of 36% from 2007 to 2030.</li> <li>The BNSF Intermodal Facility will become a major generator of freight rail and truck traffic. Just the intermodal site is expected to generate 7,000 truck trips per day when fully developed.</li> </ul>	<ul style="list-style-type: none"> <li>Look at strategies such as active lane use control, use of the shoulder as a driving lane during peak periods, and HOV/HOT lanes for these freeway segments.</li> <li>A significant increase in truck volumes, particularly on I-35, is expected. Most of the trucks will use the roadway system during non-peak hours of the day. This volume of trucks will overload the capabilities of the vehicle inspection stations on I-35.</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>KDOT's Strategic Highway Safety Plan (SHSP) seeks to drive strategic investments that reduce traveler casualties and the emotional and economic burdens of crashes, utilizing the 4Es (education, enforcement, engineering and emergency medical services).</li> <li>The "Destination Safe" Coalition is a regional transportation safety program that includes four of the five counties included in this study (minus Douglas County). The Coalition provides a means for various community sectors (law enforcement, engineers, safety advocates, public health officials, citizens, trauma room nurses, transit coordinators, public works managers, emergency services providers, bike/ped advocates, local officials, planners and others) to discuss transportation system safety in the Kansas City region.</li> <li>Many of the crashes on the region's freeway system are related to congestion.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to implement the recommendations of the SHRP and the Destination Safe Coalition.</li> <li>Implement strategies that reduce congestion.</li> </ul>

Desired Outcome	Findings	Conclusions
<b>Safety</b>	<ul style="list-style-type: none"> <li>• KDOT’s Strategic Highway Safety Plan (SHSP) seeks to drive strategic investments that reduce traveler casualties and the emotional and economic burdens of crashes, utilizing the 4Es (education, enforcement, engineering and emergency medical services).</li> <li>• The “Destination Safe” Coalition is a regional transportation safety program that includes four of the five counties included in this study (minus Douglas County). The Coalition provides a means for various community sectors (law enforcement, engineers, safety advocates, public health officials, citizens, trauma room nurses, transit coordinators, public works managers, emergency services providers, bike/ped advocates, local officials, planners and others) to discuss transportation system safety in the Kansas City region.</li> <li>• Many of the crashes on the region’s freeway system are related to congestion.</li> </ul>	<ul style="list-style-type: none"> <li>• Continue to implement the recommendations of the SHRP and the Destination Safe Coalition.</li> <li>• Implement strategies that reduce congestion.</li> </ul>
<b>Regional Prosperity</b>	<ul style="list-style-type: none"> <li>• The 5-County region is the fastest growing region in Kansas. A number of high impact developments are being constructed or are planned that will impact the transportation system.</li> <li>• The average household in the Kansas City metropolitan area spends between 14% and 27% of their income on transportation costs.</li> <li>• Funding for transportation facilities is often not considered when planning for major developments.</li> <li>• Transportation investments have a significant impact on the state’s economy by providing more reliable travel times, logical access to businesses and by creating jobs.</li> </ul>	<ul style="list-style-type: none"> <li>• Transportation decisions must include an understanding of the impacts of planned developments.</li> <li>• Land use decisions must include an understanding of transportation issues.</li> <li>• As fuel costs increase, household budgets are impacted and different decisions will be made regarding how the transportation system is used.</li> <li>• Coordination between land use planning and transportation planning is critical. Steps should be taken to enhance coordination.</li> <li>• Continue the practice of including economic impacts in the decision making process for transportation investments.</li> </ul>
<b>Efficient Use of Financial Resources</b>	<ul style="list-style-type: none"> <li>• Transportation needs outweigh available transportation funding.</li> <li>• Fuel prices have a significant impact on traveler behavior. As fuel prices significantly increase, travelers reduce travel by personal vehicle and increase their use of transit, carpooling, trip chaining and bicycling.</li> <li>• A study by the Mid-America Regional Council determined that if 40% of the region’s population growth were accommodated in existing centers along established corridors, the region could save over \$3 billion in infrastructure costs.</li> <li>• Fuel efficiency standards for passenger cars and light trucks will require higher gas mileage.</li> </ul>	<ul style="list-style-type: none"> <li>• Lower cost system management and demand management strategies need to be considered as part of an overall transportation investment plan.</li> <li>• With the assumption that fuel costs will increase in the future, more transportation options are desired and should be planned and implemented.</li> <li>• Continued sprawling development patterns come with a high cost for transportation and other infrastructure.</li> <li>• Alternate sources of revenue will need to be developed within the timeframe that was studied.</li> </ul>
<b>Choice</b>	<ul style="list-style-type: none"> <li>• The Kansas City metropolitan area has by far the fewest public transportation miles per capita (47 miles per capita) than other peer cities such as Dallas/Fort Worth, TX, Denver/Aurora, CO, Minneapolis/St. Paul, MN, and St. Louis, MO (91-229 miles per capita).</li> <li>• A survey of residents in the 5-County region shows 53% of respondents would use transit if a more extensive regional system were in place.</li> <li>• The region is served by five transit agencies.</li> <li>• The K-10 Connector transit service that connects Lawrence and Overland Park has a daily ridership of nearly 700. Cost per mile is approximately nine cents compared with 55 cents per mile for travel by automobile.</li> <li>• “Bus-on-Shoulder” (BOS) transit is operated along I-35 in Johnson County when mainline traffic is traveling below 35 mph. Since the inception of BOS there has been a 12% increase in ridership on this route.</li> </ul>	<ul style="list-style-type: none"> <li>• As other cities in the Midwest have grown, they have developed transportation systems that offer more choices to travelers, particularly commuters.</li> <li>• There is a desire in the region for a more robust transit system.</li> <li>• Expand ongoing efforts to coordinate these systems to develop a regional transit system.</li> <li>• Making transit options more attractive will bring more “choice riders” to this mode of transportation.</li> <li>• Continue support for regional transit services such as the K-10 Connector and potential service along I-70.</li> </ul>

Desired Outcome	Findings	Conclusions
<b>Environment</b>	<ul style="list-style-type: none"> <li>A survey of residents in the 5-County region shows that 87% think that water quality and air quality are important considerations in planning for transportation improvements.</li> </ul>	<ul style="list-style-type: none"> <li>Future investment decisions should enhance air and water quality.</li> </ul>
	<ul style="list-style-type: none"> <li>The 5-County region had numerous days during 2012 when the air quality did not meet national standards.</li> </ul>	<ul style="list-style-type: none"> <li>Future investment decisions should enhance air quality.</li> </ul>
	<ul style="list-style-type: none"> <li>Sprawling development patterns lead to increasing environmental impacts.</li> </ul>	<ul style="list-style-type: none"> <li>Future investment decisions should enhance natural resources.</li> </ul>
<b>Public Health</b>	<ul style="list-style-type: none"> <li>A survey of residents in the 5-County region shows 68% believe that transportation projects should promote healthy lifestyles like biking and walking.</li> </ul>	<ul style="list-style-type: none"> <li>Transportation investment decisions should include appropriate active transportation improvements such as bicycle and pedestrian facilities.</li> </ul>
	<ul style="list-style-type: none"> <li>Lack of all-day transit in many areas makes it difficult for some citizens to have adequate access to medical facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Future transportation investments should add capacity to existing transit and paratransit services to meet the needs of a growing aging population.</li> </ul>
	<ul style="list-style-type: none"> <li>There is a concern for air quality impacts on health in the region.</li> </ul>	<ul style="list-style-type: none"> <li>Future investment decisions should enhance air quality.</li> </ul>
<b>Social Equity</b>	<ul style="list-style-type: none"> <li>A survey of residents in the 5-County region shows 35% of respondents don't believe that the existing transit service meets the residents' basic needs. 46% of the respondents don't believe transportation services for the elderly and disabled are adequate.</li> </ul>	<ul style="list-style-type: none"> <li>There is a desire in the region for a more robust transit system.</li> </ul>
	<ul style="list-style-type: none"> <li>A survey of residents in the 5-County region showed that 9% of respondents are dependent on transit or friends and relatives for transportation.</li> </ul>	<ul style="list-style-type: none"> <li>A significant percentage of residents have need for transportation options other than a personal automobile.</li> </ul>
<b>Livability</b>	<ul style="list-style-type: none"> <li>The Kansas City metropolitan area has lower population per square mile of land area (260) than other peer cities such as Dallas/Fort Worth, TX, Denver/Aurora, CO, Minneapolis/St. Paul, MN, and St. Louis, MO (305 to 714 people per square mile).</li> </ul>	<ul style="list-style-type: none"> <li>Less dense development presents many challenges including the need for longer roads, more congestion, and the ability to develop transit. Park &amp; Ride lots or structures should play a role in the future transportation system.</li> </ul>
	<ul style="list-style-type: none"> <li>Many communities are planning city centers with compact spaces, mixed-use development, and localized resources which can minimize the need for longer distance commuting.</li> </ul>	<ul style="list-style-type: none"> <li>The future transportation system will need to consider changing development patterns and provide more multimodal options.</li> </ul>
	<ul style="list-style-type: none"> <li>The National Household Travel Survey shows that the 16 to 34 year old age group wants to live in a more urban environment and have different desires for transportation. In 2009, people in this age group drove 23% fewer miles in their cars, using transit more, took 24% more bicycle trips and walked to destinations 16% more than did 16 to 34 year olds in 2001.</li> </ul>	<ul style="list-style-type: none"> <li>While these are national trends, these changes in transportation user's preferences should be part of the discussion as the future transportation system is planned.</li> </ul>
	<ul style="list-style-type: none"> <li>Bicycle and pedestrian facilities are an integral part of a future transportation system. As land use changes to more mixed development and as more of the population focuses on a healthier lifestyle, there is a growing need for alternatives to automobile travel.</li> </ul>	<ul style="list-style-type: none"> <li>As land use patterns change, the transportation system must change as well.</li> <li>Many cities have adopted Complete Streets policies that address multiple modes of transportation.</li> </ul>