

## 8.1 The Map Is Not the Territory

*A 19th century scientist and philosopher named Alfred Korzybski once said that “the map is not the territory.”*

From the vantage point of 2007, stakeholders and KDOT staff have done their best to chart a course for Kansas transportation between 2010 and 2030. Some of the important challenges and trends can be plotted with great certainty – such as the importance of preserving the system, the need for a safer transportation system, rapidly emerging economic opportunities, and changing demographics. Inevitably, however, we will come to places that are not on the map. They could arise as unforeseeably as the Internet did in the 1990s – with the same incalculable effect on our lives.

This chapter, drafted in late 2007, represents transportation leaders’ views about unmapped territory, that is anticipated to grow in significance during the next 20 years.

### **Climate change and transportation infrastructure design**

At present, the long-term impact of climate change on Kansas is uncertain. However, KDOT is building pavements and bridges today that will have a likely lifespan of up to 100 years. Prudent risk management suggests that KDOT should pay close attention to the design consequences of potential climate change impacts including wider temperature variations, increased precipitation, more powerful wind loads, and storm surges. Revised engineering standards and practices may be needed to ensure infrastructure is built to withstand these forces.

### **Environmental sustainability**

Transportation affects the human and natural environment in many ways. Transportation construction projects, for example, may disrupt sensitive ecosystems, streams, wetlands, historic resources or communities, while trucks and cars emit pollutants that can harm air and water quality. KDOT has always met or exceeded applicable federal and state regulations that are intended to manage the environmental impacts of transportation. As our knowledge about environmental



*Pelicans at Cheyenne Bottoms near Great Bend.*

concerns and strategies for managing them grows, KDOT and its stakeholders can expect to have new options available for avoiding, minimizing or mitigating environmental impacts that could alter the cost and form of future transportation solutions. For example, growing concern about environmental sustainability is leading KDOT to develop more environmentally friendly maintenance and operations practices, such as vegetation management techniques that are bringing more natural vegetation to the roadsides along Kansas highways.



## ENVIRONMENTAL SUSTAINABILITY RECOMMENDATIONS

**KDOT should work to develop a clear and comprehensive environmental policy.**

**It should address:**

- Agency Operations-materials, equipment, fuels, and practices;
- Projects-placement, design, scale, and relationship to the environment; and
- Systems-relative roles, priorities, and the integration of different transportation systems to provide the best performance and promotion of environmental sustainability.

### **Transportation security and emergency management**

The Kansas transportation system and the people who operate it are increasingly expected to play vital roles in preparing for, responding to and recovering from natural disasters such as the Greensburg tornado in 2007. Likewise, awareness is growing about the important supporting role that transportation plays in keeping our nation safe from terrorists. In Kansas, keeping agricultural products safe from malevolent threats to the nation's food supply includes thinking about the ways that food is shipped. Like other states, Kansas is strengthening its ability to protect critical transportation infrastructure and to provide adequate transportation emergency preparedness, response, and recovery capabilities.

KDOT can be better prepared for natural disasters, such as tornados or snow storms, and for terrorist threats on or off the transportation system if it takes an “all-hazards” approach to emergency management. One element of that approach is the development of an interoperable communications system made more readily available to local emergency responders so that different agencies can talk with each other via radios during emergencies. KDOT is working cooperatively to establish just such a comprehensive statewide interoperable radio system that will help save lives.

Developing an effective all-hazards emergency management program will require KDOT to invest in staff with new skills in risk management and emergency planning. It will require fostering new partnerships with federal, state, and local emergency responders and law enforcement agencies and adopting technologies such as advanced communications equipment.

#### **Viability of motor fuel taxes as a revenue source**

Concern about rising oil prices, increasing reliance on oil imports, and climate change is spurring interest in alternative fuels and more energy-efficient vehicles. Since taxes on petroleum are the primary source of funding for transportation, a substantial increase in use of alternative fuels or a significant improvement in fuel efficiency could reduce revenue from motor fuels taxes.

Findings from recent national studies indicate that while motor fuels taxes may need to be supplemented by other revenue sources in the long-term, they will remain viable in the short- and medium-term. A 2006 Transportation Research Board study entitled “The Fuel Tax and Alternatives for Transportation Funding” concludes that fuel taxes will be a viable source of support for the Federal Highway Trust Fund for at least the next 15 years. A 2003 National Cooperative Highway Research Program study on alternative-fueled vehicles concludes that the market share of these vehicles is not expected to exceed two percent until 2020.

#### **A virtual - and real - solution to keeping I-70 traffic rolling**

KDOT is in the first phase of developing a “Virtual Traffic Operations Management Center” to track traffic flow the entire length of Interstate Highway 70. It will give KDOT and local jurisdictions the power to monitor I-70 traffic conditions statewide with cameras and roadway sensors. With advanced information, KDOT and its partners will be able to use the computer-controlled Dynamic Message Signs and 511 to solve problems faster and keep traffic moving on I-70.



Unless drastic increases in future oil prices and leaps in fuel technology occur, fuel efficiency or alternative fuels will not begin to erode fuels tax-generated revenues until after 2025.

#### **Advances in transportation technology**

Technology advances are changing the way Kansans travel. New vehicles often come equipped with onboard navigation systems and are engineered to avoid or minimize the impact of crashes. Likewise, technology is changing the way KDOT builds and operates the state's transportation system. Detailed satellite imagery, for example, is capable of providing powerful new information for highway designers, while real time information about congestion patterns can offer new ways to manage traffic.

Continued public and private investment and advances in these types of technologies will help KDOT and its partners operate the transportation system more effectively.

Improvements in safety technology - like crash avoidance systems and automated in-vehicle braking - will improve traffic flow on existing transportation infrastructure. In planning and project development, new geographic information systems will provide important data about issues such as traffic volumes, safety, or the environment to help planners and engineers create better project solutions.

#### **New models for project finance and delivery**

Kansas mostly relies on a traditional model for delivering projects in which KDOT plays a broad role in project design, construction, financing and operation. Private companies are largely relied upon to provide consulting, engineering and construction services for project elements. This approach is sometimes referred to as "design-bid-build" procurement. As the inability of traditional pay-as-you-go design-bid-build approaches to meet transportation infrastructure needs becomes apparent, non-traditional project delivery options are becoming more appealing.

Alternative approaches for project delivery can transfer some or all of the responsibilities traditionally held by state departments of transportation to private entities. Depending on how non-traditional project finance and delivery models are structured, they can stretch public funding for transportation infrastructure, help facilitate faster delivery of important projects, and minimize the state's financial and legal risks associated with major project delivery. But they also include significant tradeoffs that must be carefully considered, such as control over project design and execution.

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## 8.2 Conclusion

The last program under which the state operated – the CTP – set forth a blueprint that, once committed to, was not subject to revision. There were virtues to this approach, and those have been mentioned. However, a map can't foretell all that travelers will meet on a journey.

As 120 Kansans from all over the state met to discuss this LRTP over the course of a year, it became evident that they believed flexibility is necessary to meet the inevitability of a challenging future. Implementation of this LRTP by KDOT and its partners will ensure the right degree of flexibility to maintain the path Kansas transportation stakeholders seek even as new challenges arise.

***By 2030***, we will be nearer to having indisputable answers to questions about climate trends.

***By 2030***, we will know more about the status of our petroleum supply and about alternative sources of energy.

***By 2030***, we will know whether citizens have found new ways to move or if citizens will find new patterns of settlement that acknowledge that we will not be as mobile, or mobile in the same fashion, as before.

At that point, as we review the map that this long-range plan represents, we may find ourselves contemplating its wisdom, wondering at its naiveté – or some of both.

That is, we will know the territory.

Then, in all likelihood, we will draw another map.