

Executive Summary

Summary

Capital Improvement costs will most likely change as time passes and costs will need to be updated periodically. The timing of the major expenditures for Turnpike widening may vary as needs develop and will have a major impact on yearly expenditures. The decision to continue widening I-70 will be influenced by both

Historical and Projected Total Vehicle 5-Year Annual Trend Data

Year	Existing						Projected		
	1958	1968	1978	1988	1998	2008	2010	2020	2030
Traffic Volumes	4,141,263	8,453,978	12,510,793	17,569,053	29,393,539	32,461,007	33,074,691	34,314,027	35,553,363
Vehicle Miles Traveled	244,725,985	438,479,304	555,916,639	784,370,639	1,233,797,563	1,377,318,186	1,393,917,348	1,406,118,659	1,418,319,971
Toll Revenue	\$4,505,145	\$10,839,583	\$18,540,846	\$34,663,558	\$60,617,787	\$79,510,717	\$84,009,084	\$102,993,819	\$121,978,553

Since its inception, the use of the Turnpike continues to rise. The table above shows existing and projected traffic use and revenues. Projections were based on years 2004-2008.

economic conditions and toll revenues. Increases in fuel prices pose a challenge to KTA and have some impact on travel demand.

The schedules for yearly expenditures shown in chapter 11 of the report represent our best estimates based on the collection of data at the time of preparation of this report.

Looking to the Future

Technology Trends

The KTA continues to monitor trends in the toll industry in order to assist with its own strategic planning activities. Intelligent transportation system related improvements are in the process of being implemented.

By the end of 2010, as a result of recent fiber optic installation, real-time surveillance will be available at 21 of the 22 toll plazas. Similar to the cameras currently operating, the new cameras will be primarily focused on toll plaza operations. The functionality allows the cameras to provide surveillance of operations at toll plazas, along with the ability to view the adjacent interchange and some of the Turnpike main line.

Trucks and Freight Movement

Freight makes up a significant portion of the traffic and revenue to the Kansas Turnpike Authority (41% in 2008). In 2008, truck traffic on the Turnpike represented 13% of the total traffic or more than 4 million vehicles. The total number of commercial vehicles grew by more than 500,000 vehicles in the last 10 years. By 2030, truck traffic is expected to grow by more than 2 million vehicles. This trend is consistent with national trends. Providing a safe and efficient system for the movement of freight is important to the Turnpike and good for the state of Kansas.



The KTA is a safe and efficient system for freight movement in the state of Kansas.

Introduction

The next 10 years will be a critical period for the Kansas Turnpike Authority, one marked by an ongoing need for sustained investment in maintaining the safety and effectiveness of the high-quality roadway that the KTA has provided its customers since 1956.

In fact, a 2010 assessment of Turnpike needs over the next decade has identified a growing need for:

- Upgrading Turnpike bridges;
- Improving drainage facilities and guardrails; and
- Designing additional lanes along I-70 to maintain a level of service C or better, with major construction occurring sometime after 2020.

The 2010 Long Term Needs Study report represents an 8-month study by the KTA to evaluate the current and future condition of the Turnpike system and to determine what investments should be made to keep the Turnpike system functioning at the desired level of service (level C or higher) over the next 10 years. More information on level of service can be found in chapter 6 of the report. In the process, the assessment identified major needs that must be addressed, including:

- Pavement replacement of I-70 from East Lawrence to the Lawrence Service Area.
- Bridge rehabilitation or replacement depending on the condition of the structure.
- Continual pavement rehabilitation and on-going maintenance of the Turnpike infrastructure.

Capital Improvement Cost Summary

Improvement	Year 2010 Cost	Expected Year of Construction	Construction Cost Index	Adjusted Total Cost
Kansas River Bridge (6-Lane) - Contract No. 5005	\$ 25,000,000	2010	*	\$ 25,000,000
	\$ 22,000,000	2011	*	\$ 22,000,000
Pavement Replacement (M.P. 204.3 to M.P. 210.7)	\$ 14,000,000	2010	1.000	\$ 14,000,000
	\$ 9,000,000	2011	1.031	\$ 9,279,000
System Upgrades				
- Variable Message Boards/ with Cameras	\$ 2,500,000	2014	1.125	\$ 2,812,500
- Emporia Service Area - Conv. Store & Restaurant	\$ 7,000,000	2015	1.156	\$ 8,092,000
- Guard Rail/Slope Grading	\$ 2,000,000	2015	1.156	\$ 2,312,000
- Guard Rail/Slope Grading	\$ 2,000,000	2016	1.187	\$ 2,374,000
- Guard Rail/Slope Grading	\$ 2,700,000	2017	1.218	\$ 3,288,600
- Guard Rail/Slope Grading	\$ 2,300,000	2018	1.250	\$ 2,875,000
- South Topeka (177) Toll Plaza - Facility Upgrade	\$ 4,000,000	2017	1.218	\$ 4,872,000
- South Wichita (42) Toll Plaza - Facility Upgrade	\$ 6,000,000	2018	1.250	\$ 7,500,000
Six Lane Widening				
- East Lawrence to K-7 (Preliminary Design)	\$ 2,000,000	2017	1.218	\$ 2,436,000
- East Lawrence to K-7 (ROW Acq. & Final Design)	\$ 4,500,000	2018	1.250	\$ 5,625,000
- East Lawrence to Tonganoxie-Eudora (OH Bridges)	\$ 4,000,000	2018	1.250	\$ 5,000,000
- East Lawrence to Tonganoxie-Eudora (Construction)	\$ 40,000,000	2019	1.281	\$ 51,240,000
- East Lawrence to Tonganoxie-Eudora (Construction)	\$ 38,000,000	2020	1.312	\$ 49,856,000

There are substantial future needs identified to keep the Turnpike operating effectively at a high level for the next ten years.

- Increased capacity on I-70 east of East Lawrence as traffic approaches 38,000 vehicles per day.

The report details recommendations for keeping the Turnpike operating efficiently, organizing them into three broad categories:

Capital Improvement Needs – Include major enhancements to the system that may not be feasibly financed solely through toll revenues. Examples include new or upgraded interchanges and Turnpike widening projects. More details on specific near-term Capital and General Improvement needs and costs can be found in chapter 8 of the report.

Operations and Maintenance – Maintenance considerations involve the periodic and routine repairs performed by Turnpike personnel on the entire system. Operations include all administrative activities performed by the various Turnpike departments in the daily operations of the Turnpike system. Funds are allocated annually for these tasks in the Operation and Maintenance Account. Details of the components of the operations and maintenance costs can be found in chapter 9 of the report.

Replacement Reserve Fund – Includes major, extraordinary items such as bridge deck replacements, asphaltic concrete overlays, and equipment purchases. Funds are allocated annually for such purposes in the Replacement Reserve Fund. More details on the Replacement Reserve Fund can be found in chapter 10 of the report.

Capital Improvement Needs

Summary of Capital and General Improvements

Capital and general improvement costs discussed in chapter 8 of the report are summarized in the table shown. Costs have been adjusted to the projected year of expenditure by use of a projected index based on ten years of past values of the Engineering News Record (ENR) construction cost index relative to a base year of 2010 and are adjusted for inflation. For more information see the appendix of the report.

Operations and Maintenance

Operations and maintenance of the Turnpike involve a wide variety of activities and functions that are crucial to the vitality of the system. These key activities not only serve those who use the Turnpike, they also play an important role in its success. Tolls must be collected, revenues deposited and the Turnpike must be effectively administered to best use its available resources to provide safe, efficient and cost effective transportation to its customers. Details of the components of the operations and maintenance costs can be found in chapter 9 of the report.

Replacement Reserve Needs

Bridges

There are a total of 355 bridges in the Turnpike system which includes 178 overpass bridges, 152 mainline bridges, and 25 culverts meeting bridge length criteria. Overpass bridges include toll plaza interchange bridges.

As bridge decks deteriorate over time, routine maintenance procedures cannot adequately repair the deficiencies, therefore, more extensive repairs or replacements are needed. Depending on the severity of the deficiencies and the general overall condition of the structure, typical repair procedures involve partial-depth repairs, overlays or complete replacement.

There are also a number of bridges on the Turnpike system that do not meet current standards for vertical and horizontal clearances. Trucks and farm implements have gotten larger over the

past few decades so the clearances on the bridges limit the flow of these oversized vehicles. Significant costs are involved to bring the clearances up to current standards. Additional right of way may also be required for these improvements.

Pavement

One of the most significant components of the Turnpike system is the pavement. It is the feature that most notably determines the customer's impression of the overall system and can influence their willingness to use the Turnpike. Timely pavement maintenance allows the KTA to provide a safe and efficient means of transportation for its customers.

Since the Turnpike is not a new facility and pavement resurfacing is performed on a routine basis, the annual pavement maintenance effort has been stable because the entire pavement has been resurfaced at one time or another. The age of the last resurfacing affects the amount of needed maintenance. Older pavement sections typically require more maintenance. Since these sections are constantly rotating within the resurfacing schedule, recent maintenance efforts have not significantly increased or decreased on an annual basis. Exceptions include the East Topeka to Lecompton section of the Turnpike. This section underwent a pavement replacement program in 1994. It was then resurfaced and widened in 2006 to accommodate three lanes of traffic in each direction. The section between the East and West Lawrence interchanges is currently under a major pavement replacement and widening program and is scheduled to be completed in late 2011. These two sections of the Turnpike should see a significant near-term reduction in maintenance costs in the future.

In 2010, the KTA anticipates the replacement of pavement from East Lawrence to the Lawrence Service Area. This pavement replacement program will be the last replacement program of the original concrete pavement (1956) on the Turnpike system.

Based on past experience and the effects of the pavement replacement program, it is anticipated that pavement maintenance needs will remain similar to historical trends.

Problems with drainage structure deterioration have increased steadily over the years. General maintenance problems, are attributed primarily to silting, weathering, erosion and damage from vehicles and equipment.

Drainage Structures

Problems with drainage structure deterioration have increased steadily over the years. General maintenance problems, are attributed primarily to silting, weathering, erosion and damage from vehicles and equipment.

Summary of Proposed Annual Replacement Reserve Needs

Year	Bridge Rehabilitation	Pavement Rehabilitation	Drainage Rehabilitation	Equipment Costs	Building Maintenance	Contingency	Total Costs
2010	\$2,665,000	\$7,500,000	\$500,000	\$1,869,000	\$500,000	\$1,000,000	\$14,034,000
2011	\$2,755,000	\$10,180,000	\$520,000	\$2,000,000	\$520,000	\$1,040,000	\$17,015,000
2012	\$2,845,000	\$12,850,000	\$1,500,000	\$2,140,000	\$540,800	\$1,081,600	\$20,957,400
2013	\$2,940,000	\$8,120,000	\$1,560,000	\$2,290,000	\$562,500	\$1,124,900	\$16,597,400
2014	\$3,140,000	\$3,660,000	\$1,622,400	\$2,450,000	\$585,000	\$1,169,900	\$12,627,300
2015	\$5,835,000	\$6,300,000	\$1,687,300	\$2,622,000	\$608,400	\$1,216,700	\$18,269,400
2016	\$7,250,000	\$7,060,000	\$1,754,800	\$2,806,000	\$632,800	\$1,265,400	\$20,769,000
2017	\$8,680,000	\$9,140,000	\$1,825,000	\$3,002,000	\$658,100	\$1,316,000	\$24,621,100
2018	\$10,130,000	\$15,250,000	\$1,898,000	\$3,212,000	\$684,500	\$1,368,600	\$32,543,100
2019	\$12,715,000	\$15,500,000	\$1,974,000	\$3,437,000	\$711,900	\$1,423,300	\$35,761,200
2020	\$14,800,000	\$9,740,000	\$2,053,000	\$3,678,000	\$740,000	\$1,480,200	\$32,491,200

The table shows proposed costs for all categories of the Replacement Reserve needs. For more information on each of these categories please review chapter 10 of the report. These recommendations are offered to sustain the condition and state of repair of the system and to meet the growing demands of increasing traffic. Historically, annual budgets for the Replacement Reserve needs have included a contingency budget for items other than bridges, pavement and equipment. In the past, one time or infrequent expenditures which cannot be anticipated are covered by this contingency budget.

In response to recommendations from the annual drainage structure inspections, KTA maintenance staff repair and maintain the structures.

Despite the aging system, the KTA has been able to keep up with the needed repairs. However, some structures have deficiencies which are beyond the capabilities of general maintenance to repair.

In recent years, problems have been noted during the annual inspections regarding the condition of corrugated metal structures. Due to the age of the system and the effects of corrosion, most of the original metal pipe inverts are rusted and decayed, threatening the structural integrity of the pipe. The normal life expectancy of these structures, which is typically assumed to be 40 years, depending on the application, has now been exceeded. Replacement of these structures is recommended on an as needed basis. More information on the drainage structures and culverts can be found in chapter 10 of the report.

Future of I-70

Traffic analysis shows I-70 between Kansas City and Topeka handles the existing traffic well and will be able to accommodate future traffic, using the most recent five-year trends, for the next ten years. The recent widening projects and bridge replacements will keep the corridor operating well for years to come. It is projected, however, that I-70 will require widening from four-lanes to six-lanes to handle the expected increased traffic demand in order to maintain the desired level of service (level C or higher). Based on the existing traffic models and projected traffic growth trends, the recommendations for I-70 in the next ten years

include:

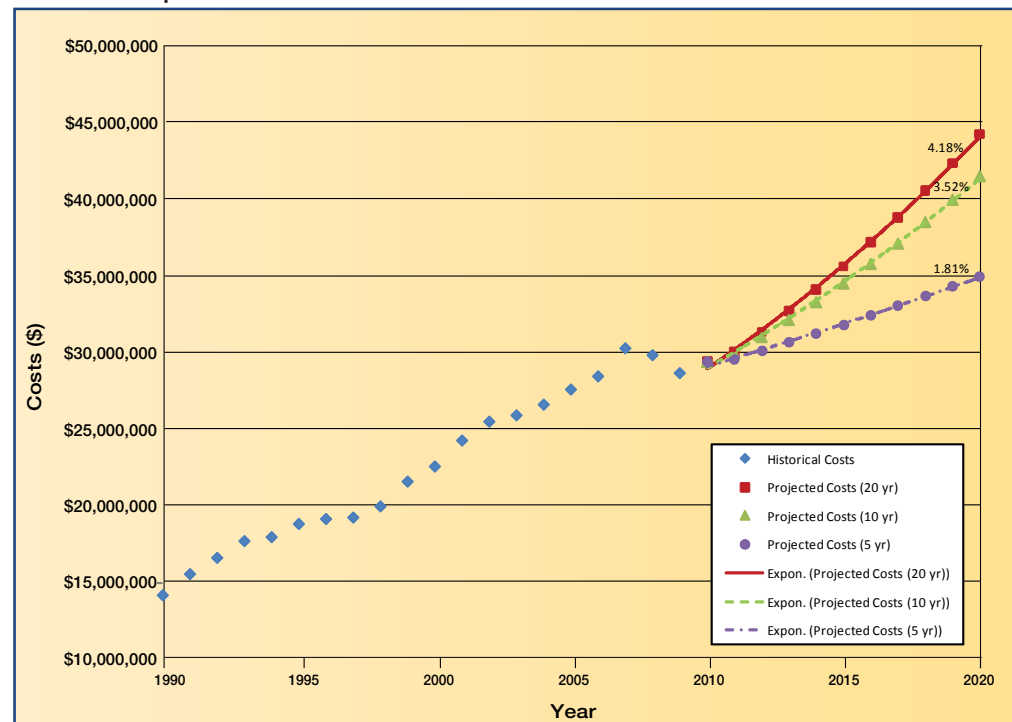
- East Segment (East Lawrence to K-7 Interchanges) should begin design of widening from four-lanes to six-lanes by year 2017.
- West Central Segment (Lecompton to West Lawrence Interchanges) should begin design of widening from four-lanes to six-lanes by year 2023.

Funding the Replacement Reserve needs is critical to the continued success of the KTA as it sustains the condition of the current roadway system and meets the growing demands of increasing traffic. Additionally, with the current economic uncertainty, funding the replacement reserve needs is a vital tool to meeting the improvement needs along the Turnpike.



Six-lane section recently widened along I-70.

Total Annual Operations Cost



This chart shows the existing and projected range of annual operations cost for the Kansas Turnpike Authority through 2020.