

Recommended Roadway Plan

Section 6 - Financing Transportation Improvements

Financing Transportation Improvements

6.1 Introduction—Financing Improvements

The development of the Kane County 2040 Transportation Plan addresses the anticipated infrastructure needs based on the projected growth in development. Along with identifying the needs, it is imperative to balance those needs with available financial resources. A strategic planning process requires that priorities be established to allocate the limited resources to the competing needs. The Kane County 2040 Transportation Plan considers a broad spectrum of needs based on, at first, a financially unconstrained basis, and then subjects the roadway improvements to a prioritization process that forms the basis for a financially constrained plan.

6.2 Funding for Transportation Projects

Funding for streets and highways within Kane County come from a variety of sources including federal, state, and local resources. A majority of state programs are financed from federal funds with additional revenues from the State Motor Fuel Tax (SMFT). Local programs rely on state subsidy of motor fuel tax revenue, property and sales taxes, local fees and federal assistance through metropolitan planning organizations.

A majority of capital projects are financed with federal funds with the federal share for eligible projects at 80 percent and a “local” match of 20 percent by the requesting agency. The resources for the “local match” typically are provided via local motor fuel tax revenue, property taxes, impact fees, area legislators, Kane County, and other units of governments or private industry.

The guidelines set forth in 1991 with the Intermodal Surface Transportation Efficiency Act (ISTEA) specified that Long Range Transportation Plans provide a financial analysis that demonstrates an implementation schedule for long-range projects. Under ISTEA, most federal funding was divided into specific program categories that restricted the use of the funds. As stipulated in Transportation Equity Act for the 21st Century (TEA-21), which was signed into law in 1998, there were fewer restrictions placed on federal funding so that funds dedicated for highways may be used for non-motorized facilities, historic preservation, and aesthetic improvements.

6.3 Financial Resources

6.3.1 A Comparison of Revenues and Costs

The seven primary funding sources from which Kane County receives a majority of the revenue are listed below. In addition, the County may apply for additional revenues through a variety of programs depending on the proposed project. These other funding

resources are included as reference. All fund source amounts are quoted for the year 2010, to line up with construction project cost estimates.

- **MFT** - The State of Illinois collects \$0.19 per gallon of gasoline and \$0.215 for diesel sold in the state. A distribution formula is used to allocate these funds to Counties based upon the number of registered vehicles within the County. The revenue from MFT is approximately \$6.7 million annually for Kane County.
- **Local Option Motor Fuel Tax (LOMFT)** - The State of Illinois legislation provides an option for specified counties to add up to four cent of additional tax per gallon of motor fuel to be used for transportation. Kane County has enacted a four-cent LOMFT, which generates \$8.25 million annually.
- **Local Revenues for Property Taxes** - The primary source of local revenues is from property tax levies. Property taxes generate \$5.4 million annually.
- **Surface Transportation Program - Local (STP-L) funds** -The STP program is one of the main efforts of the Kane County Council of Mayors (KCCOM), and provides the most direct avenue for local governments to receive federal funding for Local Surface Transportation Projects. Approximately \$5.0 million are available for the Kane County Council of Mayors annually. All municipalities within the boundaries of the KCCOM are eligible and encouraged to apply for the STP dollars.
- **Surface Transportation Program - Rural (STP-R) funds** - STP funds allocated to counties for rural highways. Kane County's allocation annually is approximately \$0.9 million.
- **Impact Fee Program** - Kane County imposes an impact fee on new residential and non-residential developments in the County. Kane County's impact fee program generates approximately \$1.0 million annually.
- **Sales Tax Revenues** - Kane County receives approximately \$10.6 Million annually from sales tax revenues.
- **General Obligation Bonds**
 - Kane County issued MFT bonds for roadway capital improvements for \$40 million in 2001 that expire in 2021.
 - Kane County issued Sales Tax bonds for roadway capital improvements for \$40 million in 2009 that expire in 2014.

Kane County has several other revenue sources that can generate additional funds annually. In addition, there are other funding programs that the KCDOT has access to either through shared funding agreements or through direct allocation. These sources of funding are as follows.

- **Congestion Mitigation and Air Quality (CMAQ) Improvement Program** - The program funds transportation projects that help non-attainment areas meet the requirements of the Clean Air Act Amendment. The program funds projects that will reduce congestion and/or provide an air quality benefit. The program is financed with federal dollars through CMAP.

- **Illinois State Toll Highway Authority (ISTHA)** - ISTHA finances projects on its toll highway system.
- **IDOT** - IDOT finances projects on the state highway system.
- **Highway Bridge Program (HBP)** - The program provides assistance for the rehabilitation of bridges. The program is financed with federal dollars through IDOT.
- **National Highway System (NHS)** - Funds from the program may be used for all types of transportation improvements, including construction, reconstruction, operational improvements, and planning. The roadways designated in the NHS are major routes of national significance, including interstates, expressways, and those surface arterial roads which are a critical link in the regional transportation system. The program is financed through the FHWA.
- **Illinois Transportation Enhancements Program (ITEP)** - The program was designed to broaden the transportation focus from Interstate and highway project to making our communities more livable. The program is financed through IDOT with federal money from SAFETEA-LU.
- **Grade Crossing Commuter Rail** - The program helps finance improvements to improve safety at railroad crossings and to improve rail operations for transit operators and surface conditions for street traffic. The program is financed through IDOT-DPT with a matching share from FTA.
- **Operational Green Light (OGL) Capital Improvement Program** - The program supports public transportation projects by providing safe and convenient stations, parking, and access. The program is financed through IDOT-DPT.
- **Access to Transit Capital Improvement Program** - The program provides funding for multi-modal access to mass transit as a component of the Operation Green Light program. The program is financed through IDOT-DPT.
- **Rail Safety Program** - The program supports improvements at railroad crossings. The program is financed through the Federal Railroad Administration (FRA).
- **Truck Access Route Program** - The program provides financial assistance with the incremental cost of improving local highways to meet the additional weight and geometric modifications for truck accessibility. The program is financed through IDOT.
- **Bike Path Grant Program** - The program provides support for acquiring, constructing, and rehabilitating public non-motorized bicycle paths and directly related support facilities. The program is financed through IDNR.
- **Federal Recreational Trails Program** - The program provides funding for acquisition, development, rehabilitation, and maintenance of both motorized and non-motorized recreational trails. The program is financed through IDNR.
- **Grade Crossing Safety Protection Program** - The program assists with the cost of installing necessary improvements with the objective of reducing accidents at

railroad/highway crossings. The program is financed through Illinois Commerce Commission (ICC).

- **Community Planning Grant** - The program provides technical assistance for transit planning to local governments. Projects with an explicit transit focus are financed through the RTA. Projects focused on the integration of land use and transportation, or on transportation modes other than transit (such as bicycle and pedestrian planning) are funded by CMAP.
- **Transportation, Community and System Preservation Program (TCSP)** - A comprehensive initiative of research and grants to investigate the relationships between transportation and community and system preservation and private sector-based initiatives.
- **Safe Routes to School (SRTS)** - The SRTS Program supports projects and programs that enable and encourage walking and bicycling to and from school. The program applies to schools serving grades Kindergarten through 8th grade.
- **Highway Safety Improvement Program (HSIP)** - This program's goal is a significant reduction in traffic fatalities and serious injuries on all public roads. Highway safety improvement projects correct or improve a hazardous road location or feature, or address a highway safety problem.
- **High Risk Rural Roads Program (HRRRP)** - This program supports construction and operational safety improvements on roadways functionally classified as a rural major or minor collector or rural local road that have fatal and incapacitating injury crash rates higher than the statewide average for those functional classes of roads.
- **Job Access Reverse Commute (JARC) / New Freedom (NF) Program** - The JARC/NF program is available to local governments, transportation agencies, and the CTA, Metra and Pace for operating and capital projects derived from the Regional Transportation Authority's (RTA) Coordinated Public Transportation Human Services Transportation Plan (HSTP) that enhance mobility for seniors, people with disabilities, and low income populations, address reverse commute markets and/or provide access to jobs.

Additionally, the County is investigating future funding alternatives such as project staging, cooperative planning, intergovernmental agreements, etc. Enabling legislation in the Illinois Highway Code authorizes counties to construct and operate a toll bridge over and across any navigable or non-navigable waters. The County has considered constructing and operating the Longmeadow Parkway Bridge Corridor as a toll bridge over the Fox River. This provides an opportunity for a unique funding approach, wherein funding and local match would be provided by users via tolling, along with municipal participation with dedication of right-of-way, counties (Kane and McHenry), State, and private developers with land donations and road construction.

6.4 Projected Revenue Summary

In evaluating the potential revenues available to the KCDOT aggregated to the 2040 planning horizon, a scenario including \$2 million in federal funding, as a general annual

estimate, was evaluated. (The County has prior funding commitments from the federal government and may also receive additional federal funds in future, and actual federal funding is subject to change.) This scenario considers the extrapolation of the current sources of revenues, including the impact fee program, and would yield \$1,314 million over the 30 year planning period.

6.5 Transportation Expenditures

KCDOT expenditures can be categorized in the following categories, maintenance, operations and administration, bond repayment, and capital for capacity improvement projects.

- **Facility Maintenance** - The County is responsible for maintaining about 315 miles of roadways. The annual cost of resurfacing and general road maintenance is \$17.65 million. Maintenance of the facilities includes resurfacing, restriping, deicing materials, and bridge repairs.
- **Operation and Administration** - The County has a budget of \$4.9 million annually for operations, fuel, personnel and other support costs.
- **Bond Repayment**
 - The County issued \$40 million in MFT bonds for capital improvements. The annual debt payment on the bonds is \$3.495 (expires 2021).
 - The County issued \$40 million in Sales Tax bonds in 2009. The annual debt payment on the bonds is \$8.4 million (expires 2014).
- **Capacity Improvements Projects** - The County is responsible for the expansion of its system to support the travel demand. Capacity improvement projects include the widening of existing facilities, development of new facilities, and improvements on control and channelization at intersections.

Total annual expenditures excluding recent capacity enhancement projects in FY 2010 are approximately \$34 million, for a total need of \$1,178 million over the 30 year planning period. This cost excludes any additional capacity projects developed as part of transportation plan.

As highlighted in Section 5, an unconstrained set of roadway improvements were established to respond to the recent and forecasted residential and commercial growth in the County by 2040. In response to this growth, KCDOT will have infrastructure needs that will exceed the financial resources the County anticipates in the future. The ability to fund the operation and maintenance of existing facilities and provide for funding of capital improvements in the future will be a major challenge. The Transportation Plan takes into consideration the projected needs and limited resources to develop an implementable plan that meets goals and objectives set forth by the planning process.

6.6 Capital Improvement Needs

6.6.1 Cost Model

Cost estimates were either developed or referenced from other studies for roadways, transit improvements, pedestrian and bicycle facilities. For roadways, the project cost estimates were developed from a combination of three sources: project cost taken directly from Impact Fee CRIP, construction and right-of-way cost estimations using the SRA cost methodology, or with a freeway methodology. Note that since the projects being considered in Kane County are pre-Phase 1 types of improvement, the cost estimating methodology need not be as detailed as for preliminary engineering. Costs have been updated to 2010 dollars.

First, the cost items that are to be used are described, and then the methodology, documentation, and quality control procedures are explained.

6.7 CRIP Projects

The cost for projections identified from the Impact Fee Program were the same cost as were published in the CRIP dated 2007. If a CRIP project was considered a part of a larger project the cost from the smaller project was rolled into the overall cost.

6.8 Roadway Cost Methodology

6.8.1 Construction Costs

The following cost methodology was used for the proposed arterial improvements. The construction cost methodology utilizes the following items: roadway reconstruction, new structures, structure widening, intersections, interchanges, engineering, and contingencies. All cost estimates are for the year 2010.

6.8.1.1 Roadway

The roadway cost item is measured in miles. It is meant to include the costs of upgrading the existing roadway to the proposed cross section, and constructing segments on new alignment. The roadway costs include reconstruction of the existing roadway due to the limited service life of the existing pavement, as well as the costs for earthwork, drainage, landscaping, etc. As a general guideline for widening projects, a unit cost of 1.2 million per lane-mile for reconstruction was assumed and confirmed by County staff.

The length of roadway to be measured is the centerline length, including through intersections and interchanges, but excluding segments on long bridges (longer than 500 feet).

New construction had a cost estimate of 4 million per mile for a two-lane cross section and a 7 million per mile for a four-lane cross section.

6.8.1.2 Structures

Cost of each new or widened structure should be estimated separately, except when part of an interchange. Estimated costs for interchanges will include all associated structures.

There may be situations where it appears that an existing structure can remain in use, perhaps with some widening. An example is the situation where one of the roadways can use an existing structure, while a new structure is constructed for the other roadway. However, due to the limited service life of structures, it should be assumed that some of these structures would be replaced. The smaller, more inexpensive structures should nearly always be replaced.

New Structures

Table 6-1 shows the estimated costs of new structures in millions of dollars, based on the number of lanes on the structure and the number of lanes spanned by the structure. If a median is carried by the structure, its width should be converted to an equivalent number of lanes. Similarly, medians that are spanned should be included. Shoulder and sidewalk widths should not be added, however, since they are already assumed to be included in the structure costs.

Railroads that are spanned can be treated as having two equivalent lanes per rail line. The widths of medium-sized rivers can also be converted to equivalent numbers of lanes for cost estimation purposes.

Table 6-1 also supplies costs for short structures used for spanning minor watercourses. For new structures longer than 200 to 250 feet, the estimated construction cost should be based on the bridge deck area, in square feet, as noted in the table.

TABLE 6-1
Cost Estimate for New Roadway Construction/Reconstruction

Equivalent Number of Lanes Under	Cost (\$ Millions per mile)		
	Equivalent Number of Lanes Over		
	2–3 Lanes	4–5 Lanes	6–7 Lanes
2 to 5	1.7	3.4	5.1
6 to 7	3.4	5.1	6.8
Structures Over Minor Waterways	1.75	1.75	2.5

Note:

Structures that are part of interchanges are not costed separately. Equivalent lanes refer to travel lanes and medians only. See text. For extra long bridges (over 200 feet), use \$200 per square foot of assumed deck

Widened Structures

The cost for widening existing structures is \$200 per square feet of deck area being added to the bridge. The widths of any medians, shoulders, and sidewalks should be included when determining the area of widening.

6.8.1.3 Intersections

Some at-grade intersections are to have costs attributed to them that are over and above the per-mile roadway costs, which have already, been described. The intersection costs are meant to allow for the costs of signalization and additional turn lanes and/or through lanes.

Only four types of intersections are to have additional costs attributed to them. They are:

- Intersections with another arterial
- Existing unsignalized intersections at which new signalization is proposed
- Intersection were additional turn lanes will be needed
- Newly proposed intersections at which signalization is also proposed, including turning roadway/cross street intersections

A full upgrade for an intersection includes upgrading the control at the intersection and adding all possible turn lanes. A partial upgrade is for intersections with some existing turn lanes. The cost is broken down further by four leg and three leg intersections. The intersection cost does not include reconstructing the through lanes and center of the intersection; this cost is included in the segment costs described above. No costs should be added for interchange ramp intersections, however, since those costs are included in the interchange cost estimate.

Costs of intersection improvements that are not listed above are not provided because they are determined not to be attributes to the highway improvement project, but rather to other improvements.

Table 6-2 lists the additional construction costs to be attributed to some at-grade intersections based on intersection type.

TABLE 6-2
Cost Estimate For At-Grade Intersections

Intersection Type	Additional Cost (\$ each)
4-leg full upgrade	1,300,000
4-leg partial upgrade	800,000
3-leg full upgrade	900,000
3-leg partial upgrade	500,000
At an interchange ramp	-0-
Other intersections	-0-

Grade-separated intersections have no applicable additional costs. This is because the costs for the structure, the turning roadway(s), and the cost for any signalization at the turning roadway intersection(s) should be treated as discussed previously.

6.8.1.4 Interchanges

Cost of new or modified interchanges should be estimated based on interchange type. These costs are in addition to the per-mile costs of the roadway through the interchange area, discussed previously. The interchange costs include all associated structures, retaining walls and any signalization of ramp intersections. Table 6-3 shows estimated interchange costs by interchange type. A partial interchange improvement is estimated at half the cost.

TABLE 6-3
Cost Estimate for Interchanges

Interchange Type	Cost (\$ Millions, each)
Single Point Diamond	18.0
Typical Diamond or Parclo	12.0

6.8.2 Right-of-Way Costs

As part of the cost estimate, a general cost per square foot was assumed for right-of-way acquisition. The right-of-way cost was taken from the Impact Fee Program at a value of two dollars per square foot. Right-of-way guidelines have been set to ensure that a minimum right of way is provided for each type of facility. The minimum right of way is shown in Table 2-2.

6.9 Freeway Cost Methodology

The freeway cost methodology was used for the proposed improvements on the freeway and tollway system included cost estimates for U.S. 20 and IL 56.

6.9.1 Construction Costs

The construction cost methodology utilizes the following items: pavement removal, new pavement, earthwork, drainage, erosion control, traffic control, lighting, signing/markings, typical utilities, structure widening, incidentals, engineering, and contingencies.

6.9.1.1 Pavement

The pavement cost is measured in square yards and includes pavement removal and new pavements for mainline and ramps. The unit price is \$6.50 a square yard for pavement removal and \$60.00 a square yard for new pavement. The improvements on the freeways assume widening and not full reconstruction of all lanes.

6.9.1.2 Additional Roadway Cost

Additional costs are identified for freeway projects. These costs are based on a percentage of the pavement cost. Table 6-4 shows the percentages for each category.

TABLE 6-4
Percent of Pavement Cost for Additional Freeway Items

Type	Percent
Earthwork	10%
Drainage	8%
Erosion Control	2.5%
Traffic Control	10%
Lighting	2%

TABLE 6-4
Percent of Pavement Cost for Additional Freeway Items

Type	Percent
Signing/Markings	3%
Typical Utilities	5%
Incidentals	20%

6.9.1.3 Structures

For the purposes of this cost estimate, it was assumed that the bridges would be widened. The cost for widening the bridge is the same as the roadway cost estimate methodology of \$200 per square foot. In addition to the direct cost, a structure incidental cost of 20 percent was added to cover miscellaneous items.

6.9.2 Right-of-Way

It is assumed for the purposes of this study that sufficient right-of-way exist to widen the freeways.

6.10 Engineering and Contingencies

For both the roadway and freeway cost a percentage of the total cost is added for engineering and contingencies. The engineering cost is 25 percent of the total construction cost. The contingency cost is 20 percent of the construction, engineering, and right-of-way cost combined.

6.11 Comparison of Revenues and Needs

With a goal of meeting the basic expenditures of operations and administration, facility maintenance, and bond repayment, the revenue scenario was compared to the projected needs. The revenue and needs projections are listed below in Table 6-5.

The scenario examines a comparison of revenues to expenditures with the assumption of an additional \$2 million in federal funds annually. As required by Kane County ordinance, 95 percent of the revenue generated by impact fees must be spent for capacity improvements by representative traffic districts. Historically, portions of revenue from state and local motor fuel tax have been used for capital improvements, but because of maintenance and operational needs, portions of these funds have been diverted to cover these costs. There would be sufficient funds to meet the operation and maintenance needs in comparison to the projected revenues with an additional \$136 million available for capital improvements. However, as mentioned earlier, the County has prior funding commitments from the federal government and may also receive additional federal funds in future. The actual funding available for capital improvements will therefore likely be more than \$136 million.

TABLE 6-5
Kane County General Revenues and Needs Forecast Estimates – FY 2010 – FY 2040

Projected Revenue	Annual Revenue	Inflation Factor*	30 year Cumulative Revenue
County Highway Levy	\$ 5,010,909	0%	\$ 150,327,270
County Bridge Levy	\$ 312,695	0%	\$ 9,380,850
County Highway Matching Levy	\$ 65,125	0%	\$ 1,953,750
Motor Fuel Tax - State	\$ 6,700,000	1%	\$233,058,773
Motor Fuel Tax - Local	\$ 8,250,000	1%	\$ 286,975,355
Impact Fee	\$ 1,000,000	2.5%	\$ 43,902,703
Council of Mayors Planning Funds	\$ 142,345	0%	\$ 4,270,350
Fees	\$ 225,000	2.5%	\$ 9,878,108
Other	\$ 100,000	0%	\$ 3,000,000
Interest (non federal only)	\$ 50,000	0%	\$ 1,500,000
STP-R	\$ 892,450	0%	\$ 26,773,500
Sales Tax Revenues	\$ 11,000,000	2.5%	\$482,929,735
Federal **	\$ 2,000,000	0%	\$ 60,000,000
Total Projected Revenue	\$35,748,524		\$ 1,313,950,394

Projected Needs	Annual Need	Inflation Factor	30 Year Cumulative Needs
Bond Payment	\$ 3,495,000	12 Years of repayment	\$ 41,940,000
Building and Grounds	\$ 569,200	3.2%	\$ 27,974,588
Equipment	\$ 740,100	30 Years	\$ 22,203,000
General Services	\$ 3,593,700	3.2%	\$ 176,620,304
Maintenance - General	\$ 2,949,700	3.2%	\$ 144,969,505
Maintenance - Highway resurfacing/stripping/other)	\$ 8,000,000	3.2%	\$ 393,177,625
Maintenance - Deicing Materials	\$ 1,000,000	3.2%	\$ 49,147,203
Maintenance - Bridge	\$ 5,700,000	3.2%	\$ 280,139,058
Total Project Needs	\$ 34,447,700		\$ 1,178,171,283

* Inflation factors determined based on KCDOT revenue and needs forecast. Percentage factors represent percent increase per year.

** This is a *general*, annual estimate. The County has prior funding commitments from the federal government and may also receive additional federal funds in future, and actual federal funding is subject to change.

