KANE COUNTY

2030 TRANSPORTATION PLAN

ADOPTED OCTOBER 12, 2004

Kane County
2030 Transportation Plan

Adopted October 12, 2004

Prepared By:

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Acronyms and Abbreviations

ADT	Average Daily Traffic
ATC	Aurora Transportation Center
BLOS	Bicycle Level of Service
BNSF	Burlington Northern Santa Fe
BRRP	Bridge Rehabilitation and Replacement Program
BRT	Bus Rapid Transit
CATS	Chicago Area Transportation Study
CLAF	County Limited Access Freeway
CMAQ	Congestion Mitigation and Air Quality
CRIP	Comprehensive Road Improvement Plan
CSD	Context Sensitive Design
E-E	External-External
E-I	External-Internal
EJ&E	Elgin, Joliet and Eastern Railway
EWCCA	East-West Corporate Corridor Association
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
HBO	Home-Based Other
HBW	Home-Based Work
HOV	high occupancy vehicle
IC	Illinois Central
IDOT	Illinois Department of Transportation
I-E	Internal-External
ISTEA	Intermodel Surface Transportation Efficiency Act
ISTHA	Illinois State Toll Highway Authority
ITE	Institute of Transportation Engineers
ITEP	Illinois Transportation Enhancements Program
ITS	Intelligent Transportation Systems
KCCOM	Kane County Council of Mayors
KCDOT	Kane County Division of Transportation
KCPCC	Kane County Paratransit Coordinating Council
LOMFT	Local Option Motor Fuel Tax
LOS	Level of Service
MD-W	Milwaukee District West
MOS	Minimum Operable Segment
NHB	Non-Home Based

NHS	National Highway System
NIPC	Northeastern Illinois Planning Commission
NWKC	Northwest Kane County
OCS	Outer Circumferential Commuter Rail Service
OGL	Operational Green Light
OTC	Ogilvie Transportation Center
PPA	Planning Partnership Area
RTA	Regional Transportation Authority
RTP	Regional Transportation Plan
SAM	Sugar Grove, Aurora, Montgomery
SMFT	State Motor Fuel Tax
SOV	Single Occupancy Vehicle
SRA	Strategic Regional Arterial
STAR	Suburban Transit Access Route
STP-L	Surface Transportation Program – Local
STP-R	Surface Transportation Program - Rural
T	truck
TAZ	traffic analysis zone
TCM	Transportation Control Measure
TCP	Transit Corridor Planning
TCRP	Transit Cooperative Research Program
TDM	Travel Demand Management
TEA-21	Transportation Equity Act for the 21st Century
TMA	Transportation Management Association
TOD	Transit Oriented Development
TRB	Transportation Research Board
TSM	Transportation System Management
UP	Union Pacific
UP-W	Union Pacific West
v/c	volume to capacity
VHD	vehicle hours of delay
VHT	vehicle hours of travel
VMT	vehicle miles of travel
WUF	West Upper Fox

Section 1

Introduction

SECTION 1

Introduction

A long range (2020) transportation plan for Kane County was first completed in 1996. Since that time, the county has undergone significant change that warrants an update of the earlier plan. This transportation plan was developed for forecast year 2030 and incorporates the planning efforts completed to date. Also included in the planning process was an extensive community outreach program to incorporate planned improvements defined by the local agencies. This report endeavors to describe the planning process established to bring together the prior long-range plan along with several recent planning initiatives to formulate a transportation framework capable of supporting future development in Kane County and to describe the resulting 2030 transportation plan. The report also highlights the effect of the collaborative transportation plan and provides an implementation plan including a revenue and expenditures forecast completed to assist with the determination of projects to be incorporated in the fiscal program.

1.1 Regional Setting

Kane County is one of the six collar counties surrounding the Chicago metropolitan area. Located in the far west suburbs of Chicago, the county has a land area of 522 square miles. With its unique blend of agricultural lands to the west and the more urbanized areas located adjacent to the Fox River to the east, Kane County exists as a desirable place to live, work, and enjoy the recreational options throughout the County. Figure 1-1 shows the location of Kane County and surrounding areas.

The county measures approximately 30 miles north to south and 18 miles east to west with 16 townships and 28 municipalities. In 2003, the population of Kane County was 441,570, and there were 256,840 persons employed in the county. Kane County is divided into three principal land use areas with a north/south orientation, the urban corridor in the east, critical growth area in the center and agricultural/village area in the west.

Kane County is within commuting distance of Chicago and other regional employment centers such as Rockford, Schaumburg, and Oak Brook. O'Hare International Airport lies 18 miles to the east.

1.2 Purpose of the Study

The primary objective of this study was to develop a balanced transportation plan that responded to both existing deficiencies and projected countywide development trends. The plan is multi-modal; that is, it incorporates considerations for public transit, paratransit, bicycle, and pedestrian facilities together with those for motor vehicles. The plan can be implemented, with proposals staged in a logical sequence, and methods of financing identified. Finally, the plan was developed in a manner that facilitates future updating or modification as development continues and conditions change.

1.3 Overview of the Planning Process

The principal steps involved in formulating the 2030 transportation plan incorporates:

1. Consolidation of on-going (or recently completed) studies.
2. Identification of gaps left in recent or on-going studies to be filled in order to provide a complete picture of the transportation system.
3. Extension of the planning horizon from 2020 to 2030 and forecast socioeconomic data required to establish future travel demand.
4. Evaluation of alternative transportation elements and selection of a set of proposals comprising a recommended plan.
5. Conduct financial analysis by comparing revenues to plan costs.

1.4 Plan Development Process

Figure 1-2 is a flow chart showing the sequence of activities involved in arriving at a 2030 transportation plan for Kane County.

The plan development process began with formulation of 2030 socioeconomic assumptions, which were the main driver in predicting future travel volume and patterns. The socioeconomic forecasts were input to the transportation demand model along with other assumptions about the make-up of the transportation system (existing and committed facilities). The resulting 2030 travel forecast was then assigned to the Existing plus Committed highway system to portray deficiencies that would occur without further system improvement.

Concurrent with the travel forecasts, the study team and public participants developed a concise statement of the plan's objectives, and the strategies that allowed fulfillment of the objectives. These provided guidance as alternative transportation strategies were considered to provide for the indicated future travel demand.

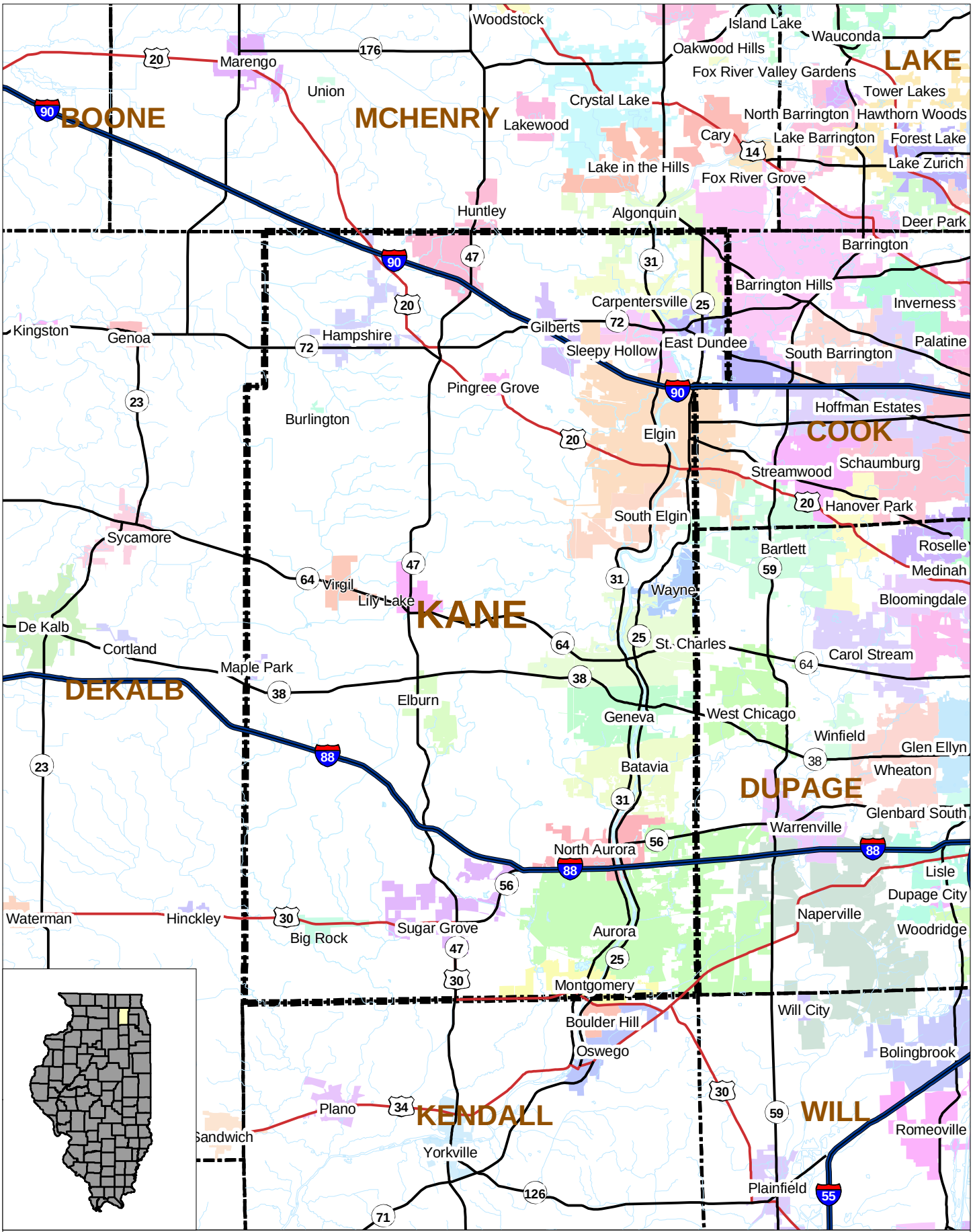
Transportation improvement strategies are not a single type of action, but embrace a combination of techniques covering the full spectrum of improvement opportunities. A number of prior studies have been recently completed relating to different forms or types of transportation improvements. These are identified in the boxes on the right-hand side of Figure 1-2. Plans and reports pertaining to each of these alternative strategies were reviewed, summarized and incorporated into the planning process.

The various potential alternatives and packages of improvements were evaluated for effectiveness in accommodating future demand and fulfilling the transportation goals. Costs were determined for each option and the projects screened and prioritized based on the availability of financial resources. The planning process yielded a transportation plan that is financially attainable and can be implemented.

Public input was solicited at key points throughout the plan development process as shown in Figure 1-2.

Section 1

Figures



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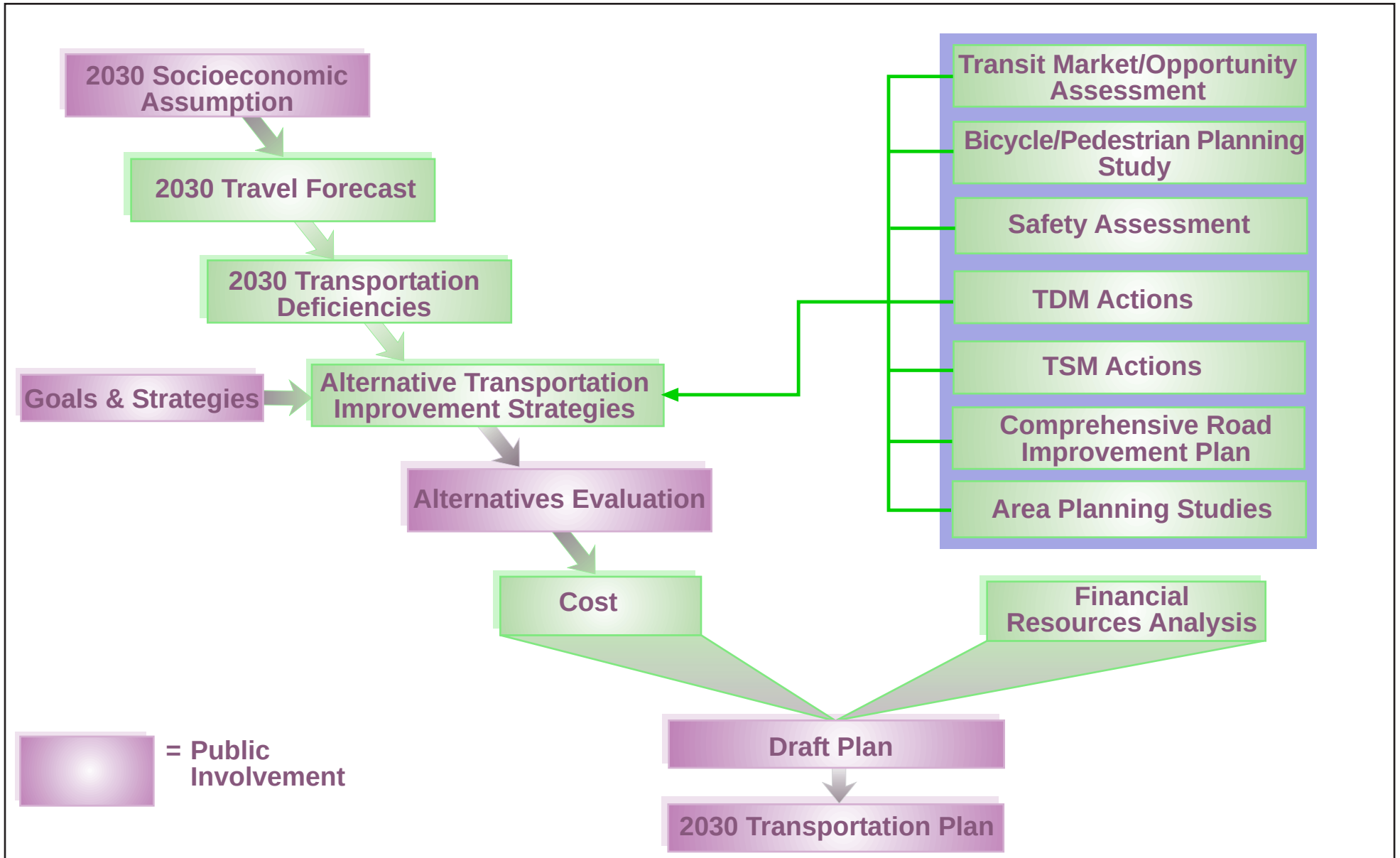

Plan Development Process

Figure 1-2
Kane County 2030 Transportation Plan

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Section 2

Prior and On-Going Studies

SECTION 2

Prior and On-Going Studies

This section of the report presents an overview of prior and on-going studies that are relevant to the 2030 Transportation Plan. Synopses of these documents including plan maps where available are contained in Appendix A.

2.1 2020 Transportation Plan

The *Kane County 2020 Transportation Plan* was prepared by Bucher, Willis, & Ratliff and commissioned by Kane County Division of Transportation (KCDOT) in July 1996 to indicate the transportation infrastructure needs to support future land development. The Plan identified Transportation Control Measures (TCMs) that can be useful in achieving planning objectives, identified long-range transportation needs, and recommended feasible strategies which address these needs.

Travel forecasts indicated that the Existing plus Committed transportation facilities in Kane County were not sufficient to support future land use development. Recommended transportation strategies and projects, comprised of TCMs, transit enhancements and roadway improvements, were developed to satisfy projected future demand. However, even after the additional strategies and projects were tested, congestion was predicted to continue on small segments of north-south routes and on Fox River Bridge crossings. The plan suggests that this remaining congestion be addressed by additional capacity projects, higher use of public transportation, or the acceptance of congestion.

Six transportation revenue scenarios were estimated providing a range of resources between $247 million and $510 million over a 25-year planning period. The report concluded that this level of financial resources would not cover all of the needs identified in the plan. As such, the County needed to prioritize plans and programs.

In the area of public transit, the plan supported and encouraged commuter rail system extensions, new express transit service, increased fixed route system service, and countywide paratransit service. Pace and Metra public transit systems were funded separately, primarily from transit fares and sales tax assessed within the RTA region.

Maps of the 2020 Transportation Plan including the roadway, transit, and bikeway elements are included in Appendix A.

2.2 Public Transit Studies

Three important studies in the area of public transit were completed recently. They are described below briefly in chronological order.

2.2.1 Metra Suburban Transit Access Route (STAR) Line

The Metra STAR Line was planned to be a commuter rail line in northeastern Illinois designated to address suburb-to-suburb commutes. The STAR Line combines the commuter rail studies of the Northwest Corridor Study and the Outer Circumferential Commuter Rail Feasibility Study (OCS) by connecting the northwest and western suburbs. The OCS commissioned by Metra and prepared by T.Y. Lin International Bascor in April 1999 was initiated by Metra to examine the feasibility of an OCS along the Elgin, Joliet and Eastern Railway (EJ&E) corridor. In contrast to Metra's suburb-to-downtown Chicago market, this rail line would most likely serve suburb-to-suburb market, as well as, some of the traditional downtown Chicago market via transfer to existing Metra lines. The purpose of the study was to determine if commuter rail service is physically and operationally feasible along the rail line, and the likely cost of such service. Although the rail line, itself, would not be located in Kane County, the 6-mile wide corridor spills over into Kane County along the county's eastern border. A map of the corridor and proposed stations is shown in Appendix A.

Considering the data currently available, it would appear that there is some potential for OCS to be viable. In general, there were no "fatal flaws" revealed which would preclude commuter service from being implemented along the EJ&E Railway. However, because the EJ&E stretches for over 100 miles through northeastern Illinois and the costs of initiating operations along the entire length all at once would be prohibitive, part of this effort would be to determine which "core segment" would be the first to begin operations. The Metra STAR Line identifies an initial operations segment running from Joliet north to Hoffman Estates, where it connects along the Northwest Tollway to O'Hare Airport.

2.2.2 West Suburban Commuter Rail Feasibility Study

Metra, the Commuter Rail Division of the Regional Transportation Authority (RTA), initiated this feasibility study to determine whether it could run a viable commuter rail service from Burlington (in Kane County) to Chicago using Illinois Central (IC) tracks and portions of existing Metra routes. This study commissioned by Metra and prepared by T.Y. Lin International Bascor in June 2000 broadly evaluated the line's physical and operational feasibility, and estimated order-of-magnitude costs for potentially providing commuter rail service along the study corridor. There were no estimates of commuter railroad patronage.

Based on this report's summary evaluations, the study recommended that no further analysis of the West Suburban Service be pursued at this time (2000). Metra concluded that, given the significant and potential obstacles, no further study of the potential West Suburban Service would be pursued, unless either some significant circumstances along the corridor change or alternative solutions were found to address the issues raised in this study. A map of the corridor and the proposed stations is shown in Appendix A.

2.2.3 Pace Vision 2020—Moving into the Future

Pace's Vision 2020 prepared in July 2002 represents a blueprint on how to provide efficient suburban mobility in the future, and describes how Pace intends to achieve this objective.

The plan presented express routes on major roadways connecting with smaller, community-based services at regional and community transportation centers. Along with the ability to

move quickly throughout the region, the plan envisioned a network of services to move people to their specific destinations–workplaces, homes, entertainment, or community events. It called for a network of new services, infrastructure improvements, and a decrease in travel times.

2.2.4 Kane County Transit Opportunity Assessment Study

This report prepared in October 2002 by a consortium of consultants headed by Land Strategies, Inc. and commissioned by KCDOT defined niche markets for transit use in the urban, suburban, and rural environment, typically dominated by the automobile.

There was an extensive discussion of land use and travel characteristics, as well as public transportation services already available in Kane County. The report also described current Pace and Chicago Area Transportation System (CATS) paratransit, vanpool, and ridesharing programs and presented a priority listing (County priorities) of potential Metra commuter rail service extensions. A map of the potential Metra extensions is shown in Appendix A.

Transit Supportive Programs (Employer Sponsored Programs and Transportation Management Associations (TMAs)) were discussed as was Transit Supportive Land Planning.

Transit recommendations were made based on a comprehensive system of transit opportunities required to provide transportation options for the citizens. These options can be realized by requiring government agencies and employers to cooperate with CATS and Pace in their carpool and vanpool efforts; encouraging and supporting communities to adopt land use planning policies to support walking, biking and transit; and establishing a comprehensive county-wide system of transit opportunities. This would include establishing Transportation Hubs, Transportation Centers, and park-n-ride lots strategically placed throughout the county to support the multi-modal transit system that includes walkers, bicyclists, taxi service, carpool, vanpool, a variety of bus service, light rail, and commuter rail.

2.2.5 Kane/Kendall Commuter Rail Extension Feasibility Study – Phase One and Two

These reports commissioned by Kendall County Board and prepared by Parsons Brinkerhoff in August 2001 and August 2002 investigated the feasibility of extending the existing Metra-Burlington Northern Sante Fe (BNSF) commuter rail line through Kane County and into Kendall County. Phase One was a feasibility study of two alternatives, and Phase Two was a refinement and expansion of the feasibility study.

The Phase One study concluded that extension of commuter service beyond the current stop at the Aurora Transportation Center (ATC) would be feasible, but that expected daily ridership west of Oswego would fall off sharply. Financial feasibility of the proposed extension would be in the intermediate range of projects in terms of cost effectiveness.

Only the "Minimum Operable Segment" (MOS) was carried forward for refinement in Phase Two. The Phase Two ridership forecasts developed by CATS were about double those developed in Phase One using a sketch planning technique. Although the Phase Two refinements also resulted in an approximate 40 percent increase in the MOS capital cost

when compared to Phase One, the project would still have a lower cost per mile than other comparable projects in the Chicago metropolitan area.

The study concluded that, by all measures, the MOS extension appears to be a feasible project, and should proceed into the next phase of study. A map of the proposed extension and stations is shown in Appendix A.

2.3 Kane County Bicycle and Pedestrian Plan

The broad objectives of the *Kane County Bicycle and Pedestrian Plan*, which was commissioned by Kane County Forest Preserve, Kane County, and Kane County Council of Mayors and prepared by Edwards and Kelcey (adopted in December 2002) were to collect all previous bicycle and pedestrian planning studies, comprehensively identify all existing, proposed, and conceptual bikeways, and strategically plan for bikeway projects to create a countywide network. This network would improve public safety, encourage alternative modes of transportation, and increase recreational opportunities in the county. A map of the proposed bikeways is shown in Appendix A.

The inventory revealed that Kane County has an extensive trail system along abandoned railroad rights-of-way (rails to trails) and the Fox River. To a much lesser extent, there are on-street facilities, such as paved shoulders and curb lanes, used by experienced cyclists.

This plan recognized that no single type of bicycle facility accommodates all types of bicyclists, and therefore recommends design standards for various types of facilities. The plan described design guidelines extracted from leading technical sources.

The public generally recognizes pedestrian facilities to be limited to sidewalks; however, they encompass a much broader scope of services and facilities. They include, but are not limited to, traffic control devices, curb ramps, grade separations (overpasses and underpasses), crosswalks, and traffic calming features intended to encourage pedestrian travel.

The first strategy was the construction of physical improvements to the bikeway and sidewalk network to connect people with popular destinations and origins. The second strategy was to have municipalities adopt policies and programs to encourage the development of bicycle and pedestrian facilities during roadway design and construction, and to encourage bikeway connectivity to the existing trail system.

The expanding bikeway network allows the use of bicycles as a safe transportation option. Also, a safer environment with connections between origins and destinations encourages walking for short errands and improves access to transit. Bicycles and walking are considered integral parts of the transportation system and can be used in place of automobiles to meet air quality improvement goals. Bicycle and pedestrian facilities have many positive effects on the community; they are environmentally sound, reduce congestion and associated air pollution, and provide health benefits.

2.4 Paratransit Coordination Study

The Kane County Division of Transportation commissioned a study on paratransit prepared by Multisystems (adopted in January 2003) to learn about the paratransit needs in Kane County and to develop recommended approaches to coordinate the existing services to best meet those needs.

Some paratransit service is currently provided in the county, primarily through local dial-a-rides and service agencies. Major client groups include seniors, individuals with developmental disabilities or mental illness, and patients or residents of specific facilities. Transportation services are available primarily on weekdays, during typical business hours, to those who qualify.

Unmet transportation needs were identified through the analysis of existing services and discussions with users and stakeholders. The lack of transportation options in certain areas and during off-peak hours especially affects paratransit users' ability to make work trips.

Key findings of the study were as follows:

- There is a gap between what transit and paratransit services are available and what people are aware of.
- There are areas of the County without any paratransit services, especially the six townships in the southwest part of the County.
- Where paratransit services are available, the hours are often too short or there is not enough service to be able to get a ride when needed.
- County and municipal borders defining services are not always consistent with the travel needs of residents.

Recommendations of the study represent a range – or a continuum – of options as follows:

- Establishment of a Kane County Paratransit Coordinating Council (KCPCC) (October 2003)
- Development of a Coordinated Marketing Program (September 2004)
- Implementation of a User-Side Taxi Subsidy Program
- Eastern Kane Regional Dial-A-Ride Service

Based on all of the information gathered in the project, a set of potential coordination strategies was formulated.

2.5 Transportation Planning Area Study

2.5.1 Existing Transportation Conditions and Forecasts of Future Travel Demand

CH2M HILL prepared this report for the KCDOT in May 2001. The purpose of the report was to bring together the background data and forecasts that will guide development of transportation recommendations in Kane County.

The report presents a summary of existing transportation facilities in Kane County including public transit and non-motorized along with streets and highways. In 1990, approximately 2.8 percent of total work trips made by Kane County residents were made using rail or bus.

A traffic forecasting model was developed and calibrated by the KCDOT with assistance from CH2M HILL. The work closely followed modeling efforts completed by CATS in 1996 for the *Kane Country Sub-Area Study* (2020 Transportation Plan). Examination of present travel desires showed the heaviest concentration of travel is in a north/south direction in the eastern portion of the county. In general, travel demand in Kane County drops off considerably toward the western parts of the County.

Existing highway travel performance was analyzed based on traffic service, congestion and safety. Only six to seven percent of the county highways were rated as "congested," all in the easternmost portion of the county. In terms of traffic safety, 15 of the 307 miles of county highway exhibited crash experience that was classified in the "actual greatly exceeds expected" category.

Travel forecasts to the year 2020 were developed based on projections of population and employment growth provided by the Northeastern Illinois Planning Commission (NIPC). The data predict an overall increase in county population from approximately 317,000 in 1990 to 552,000 in 2020. Households are projected to increase from 107,000 to 199,000, and employment from 174,000 to 211,000 over the same time period. The largest growth in population is projected for the Gilberts and Huntley areas. Large growth in employment is forecast to occur in northern Kane County, mainly concentrated in the areas near US 20 and I-90.

The travel forecast indicated that daily vehicle miles of travel (VMT) in Kane County would grow by 93 percent. For all highways, 56 percent of the route miles and 61 percent of the lane-miles would be congested in 2020. For county roads alone, 41 percent of the route miles and 47 percent of the lane-miles would be congested. Congestion would spread west into the critical growth area of the county. While only about one-quarter of Kane County experienced congestion in 1996, the area would expand to cover three-quarters of the county in 2020.

2.5.2 Delineation and Prioritization of Planning Areas

This report, commissioned by KCDOT and prepared by CH2M HILL in July 2001, describes the process used and the findings to delineate and prioritize areas designated for further study in Kane County.

At the county level, performance was evaluated by Planning Partnership Area (PPA) to classify the relative priority of transportation need of each area. This assessment served as a guide to identifying locations of concern, but was not sufficient to delineate and prioritize the planning areas. Therefore, a more detailed assessment was made by bounding the areas of influence of the individual performance measures and then layering each of the measures to highlight concentrations of performance issues. Areas that had a clustering of performance problems were delineated to define the planning areas and then compared to one another to prioritize the order of study. Those areas classified as having immediate

needs would be studied first and those areas designated to have longer-term needs would be studied at a later date.

Performance of the existing and future transportation system was described using measures of traffic service, congestion, and safety. The individual performance measures were summarized independently by areas of poor performance. This was done for six performance measures capturing the existing conditions, future conditions, and changes in performance between the base year and forecast year.

Areas where each individual performance measure exhibited poor performance were then layered together. When two independent layers overlapped the overlapping area darkened. The darkest areas in Kane County would be those areas with the highest concentration of poorly performing roadways.

The primary areas of concern in the Kane County Planning Area Study are those areas where rapid development is expected to occur. To identify these growth areas another layering was accomplished highlighting only future performance measures and changes in performance between existing and future.

Once the areas of poor performance had been identified through the PPA and layering techniques, areas warranting further study were delineated.

2.5.3 West Upper Fox (WUF) Planning Area

In August 2002, CH2M HILL prepared a study for the KCDOT that included transportation issues within the WUF planning area bounded roughly by the Kane-McHenry county line on the north, Sleepy Hollow Road on the east, Big Timber Road on the south and Illinois Route 47 on the west.

Projected traffic increases in the WUF area would be among the greatest in Kane County. Performance of transportation facilities under future (2020) conditions was measured to identify roadways that would operate poorly. Considering all roadways in the WUF area, including the tollway, 88 percent of lane-miles would be congested in 2020.

Two basic strategies were explored to improve transportation service in the WUF area. One strategy, referred to as the *arterial-based strategy,* would rely primarily on arterial improvements to upgrade transportation service. The second strategy, referred to as the *collector-based strategy*, would rely primarily on a collector roadway network to distribute local trips in the area.

With the collector-based plan, delay would be reduced and congestion would be lessened to approximately the same extent as with arterial-based plan. The proposed collector-based plan would also assist in establishing roads to connect future developments, and may even be partially or fully constructed by the developers.

Either the arterial-based or collector-based strategies would ease congestion on arterial highways in the WUF area. Both strategies also would be effective in accomplishing the project objectives.

The recommended plan for the WUF area would include improvements to both the collector and arterial systems to create a complete roadway network. The cost of the improvements

would be distributed among the state, county and municipal agencies, as well as, to future development creating a joint effort to improve transportation performance. Transit and pedestrian/bike trail improvements are also planned for the area. Additionally, the recommended plan would incorporate access management. The plan would recognize the importance of regional connectivity by incorporating improvements that are more regional in scope. A map of the recommended plan is shown in Appendix A.

The estimated cost for the recommended transportation improvements would be approximately $290 million. This includes $160 million for development of the collector road and $130 million to reconstruct arterials. The cost estimate excludes the cost of the regional connectors, transit improvements, and bike/pedestrian facilities.

2.5.4 Elgin Far West Planning Area

CH2M HILL reported on the Elgin Far West Area in January 2003; the report was prepared for the KCDOT. The Elgin Far West Area is expected to grow rapidly over the next 10 to 20 years with full build out expected by approximately 2020. The ultimate build out of proposed developments by 2020 would add approximately 17,600 weekday PM peak hour trips to the area's roadways. Developments anticipated for completion by 2010 will generate approximately 8,200 additional vehicle trips in the PM peak hour on a weekday.

The general transportation planning process used in the Elgin Far West area was similar to that developed and used earlier in the WUF Planning Area (above). The analysis method combined background traffic with site generated traffic from planned developments for two future time periods -- 2010 and 2020. The traffic from each of the developments was traced through the network, so that the impact of improvements could be apportioned back to the developer based on its relative impact on the roadway system.

Assignment of 2010 traffic to the existing roadway system showed that almost one-half of the study area intersections would operate at LOS F.

The 2010 (interim plan) incorporated approximately 16–route miles of new roads, made up of collector roads and the Corron Road extension, signalization of three intersections, two all-stop intersections, seven intersections with only geometric improvements, and 7.4 lane-miles of roadway widening.

The process used in developing the 2020 ultimate plan was generally the same as that utilized for the 2010 plan. The proposed improvements incorporated into the 2020 transportation plan include those described earlier for the 2010 interim plan along with signalization and geometric improvement of 11 intersections, all-way stop control at one intersection, further geometric improvements to 15 intersections, and widening of 7.7 lane-miles of roadway. With implementation of these projects, there would be just five intersections in the study area still operating at LOS F. A map of the ultimate plan is shown in Appendix A. Total cost of all projects included in the 2020 plan would amount to approximately $143 million at 2001 price levels.

A method was also developed to allocate attributable project implementation costs to proposed land developments in the Elgin Far West area. Costs were allocated by first determining the percentage of total traffic generated by each development at a particular location and applying this percentage to the total project improvement cost for that location.

The City, County, and State would be responsible for approximately thirty six percent of the improvement cost. This is directly proportional to the volume of background traffic on the future network. The planning process calls for incrementally improving the network to reach an acceptable Level of Service (LOS). The 2020 Plan was used to determine the appropriate allocation of costs to land developments. The 2010 Interim Plan helped to identify projects that should be completed first.

2.5.5 Sugar Grove, Aurora, Montgomery (SAM) Planning Area

In April 2004, CH2M HILL prepared a study for KCDOT including transportation issues within the SAM planning area bounded roughly by the Kane-Kendall county line on the south, Edgewater Drive on the east, the Illinois Tollway (I-88) on the north and Dugan Road on the west.

Performance of transportation facilities in the SAM area under future conditions (2020) was measured to identify roadways that would operate poorly. Considering all roadways including the tollway, 70 percent of lane-miles would be congested.

The process followed in developing a transportation plan in the SAM area was to first address a system of collector roads and then augment this with improved arterials.

The collector-based plan which would account for 54 percent of the area's lane-miles, would improve local connectivity by adding an in-fill network to link land uses throughout the area, but the addition of collector roads alone would do little to improve the regional connectivity. Daily system-wide delay and congestion would be reduced.

Once the collector road network had been established, modeled arterial improvements were added to create a network having sufficient capacity to meet anticipated traffic demand. The candidate roadway improvements were stratified into categories of major, secondary, or regional significance and cost estimates were determined for each of the individual improvements.

The recommended plan for the SAM area would encompass a full range of transportation solutions. Improvements would be made to both the collector and arterial systems to create a complete roadway network. The cost of the improvements would be distributed among the county and municipal agencies, as well as, to future development creating a joint effort to improve transportation performance. Transit and pedestrian/bike trail improvements are also planned for the area. Additionally, the recommended plan would incorporate access management. A map of the recommended plan is included in Appendix A.

The plan would also recognize the importance of regional connectivity by incorporating improvements with a more regional scope. The proposed Prairie Parkway was also identified as another potential regional improvement affecting the SAM area, but since the project was not yet finalized, the Prairie Parkway was not considered in the development of the area plan. When a preferred alignment of the Prairie Parkway has been selected, the SAM plan can be reevaluated to address changes in land use and traffic patterns.

Estimated total cost of the recommended transportation improvements (construction and right-of-way) in the SAM area would amount to approximately $360 million. This includes approximately $230 million for development of the collector road network. Widening the

arterials, as opposed to full reconstruction would save $60 million, for a total construction cost of $300 million. The cost estimate excludes the cost of regional connections, transit, and bike/pedestrian facilities.

2.5.6 Northwest Kane County Planning Area

In September 2003, CH2M HILL initiated a study for the KCDOT including transportation issues within the Northwest Kane County (NWKC) planning area bounded roughly by the Kane-Dekalb county line on the west, the Kane-McHenry county line on the north, and Ellithorpe Road on the south. The eastern border of the planning area extends to IL 47 for most of the area, but extends to Coombs Road from Plank Road to Big Timber Road incorporating Pingree Grove.

Performance of transportation facilities in the NWKC planning area under future conditions (2030) was measured to identify roadways that would operate poorly. Considering all roadways including the tollway, 56 percent of lane-miles would be congested.

The process followed in developing a transportation plan in the NWKC area was to first address a system of collector roads and then augment this with improved arterials.

The collector-based plan would improve local connectivity by adding an in-fill network to link land uses throughout the area, but the addition of collector roads alone would do little to improve the regional connectivity. Daily system-wide delay and congestion would be reduced.

Once the collector road network had been established, modeled arterial improvements were added to create a network having sufficient capacity to meet anticipated traffic demand. The candidate roadway improvements were stratified based on level of improvement and cost estimates were determined for each of the individual improvements.

The recommended plan for the NWKC area would encompass a full range of transportation solutions. Improvements would be made to both the collector and arterial systems to create a complete roadway network. The cost of the improvements would be distributed among the state, county, and municipal agencies, as well as, to future development creating a joint effort to improve transportation performance. Transit and pedestrian/bike trail improvements are also planned for the area. Additionally, the recommended plan would incorporate access management. A map of the recommended plan is shown in Appendix A.

Estimated total cost of the recommended transportation improvements (construction and right-of-way) in the NWKC area would amount to approximately $540 million. This includes approximately $225 million for development of the collector road network. Widening the arterials, as opposed to full reconstruction would save $115 million, for a total construction cost of $425 million. The cost estimate excludes the cost of regional connections, transit, and bike/pedestrian facilities.

All performance and cost estimates are based on the draft NWKC plan. The NWKC plan will be finalized in the fall of 2004.

2.5.7 Kane County Impact Fee Program

The Impact Fee Study performed by CH2M HILL in cooperation with the KCDOT was intended to fulfill the Illinois legislative requirements authorizing Kane County road improvement impact fee.

Peak period traffic counts for intersections on county highways were obtained and analyzed to determine LOS at each location. Intersections operating at LOS E or LOS F were deemed to be deficient. The enabling legislation precludes use of impact fees to correct these existing deficiencies.

Forecasts of land use, population and employment for 2013 and 2023, developed by the Kane County Development Department, were used to determine future travel growth. The indicated intersection and roadway improvements were assembled into a Comprehensive Roadway Improvement Plan (CRIP) and were submitted for public and governmental review. A map and list of the CRIP projects are included in Appendix A.

Trip generation and trip length characteristics by land use category were applied along with estimated roadway construction costs to determine the unit amount of impact fee to be assessed by type of development.

Projections of impact fee revenue and expenditure by PPA were developed.

Section 3

Transportation Goals and Strategies

SECTION 3

Transportation Goals and Strategies

This section of the transportation plan is designed to set the context for specific individual decisions, which the County must make regarding future transportation facilities or actions. The principles controlling these decisions are arranged in several major categories similar to those established earlier in the Kane County 2020 Transportation Plan, and by the CATS. The major categories are:

- Cooperative Planning
- System Efficiency
- Personal Mobility
- Quality of the Environment

A broad, overall goal is postulated for each major category of the plan. This is followed by more specific strategies. No effort has been made to prioritize goals or strategies.

3.1 Mission Statement

To provide and maintain a safe and efficient transportation system while sustaining the County's vision and values.

3.2 Goals and Strategies

3.2.1 Cooperative Planning Goal

Coordinate local and regional transportation planning to provide a transportation system that accommodates both existing and future travel demands and supports local and regional land use plans and policies.

Strategies:

- Utilize the relationship between land use and transportation to direct coordinated development and efficient use of resources.
- Preserve and protect potential and existing rights-of-way for transportation systems.
- Balance the need for additional capacity with the need to preserve and maintain the local area's character while applying Context Sensitive Designs (CSDs).
- Encourage Transit Oriented Development (TOD) and Transit Corridor Planning (TCP) methods to new developments where appropriate.
- Encourage public involvement as part of the transportation planning process along with an updated website to keep the public informed.

3.2.2 System Efficiency Goal

Reduce congestion while preserving the County's transportation system and its carrying efficiency.

Strategies:

- Institute Transportation System Management (TSM) strategies to optimize traffic operations and safety.
- Investigate and utilize relevant TCM and institute Travel Demand Management (TDM) strategies to improve traffic mobility and to optimize system efficiency.
- Provide continuous routes between activity centers and improved access to Tollway facilities.
- Design major roadways to minimize curb cuts and local street intersections.
- Examine methods to minimize commercial truck traffic on residential routes.
- Provide capacity improvements to support recent growth and projected growth.

3.2.3 Personal Mobility Goal

Develop a balanced intermodal transportation system that adds to the available travel options, and increases personal mobility and offers alternatives to the Single Occupancy Vehicle (SOV).

Strategies:

- Develop a comprehensive network of safe, local and regional bicycle and pedestrian facilities through coordinated planning efforts at local and regional levels.
- Promote a safe, convenient and efficient public transportation system to serve local and regional trips that is both cost-competitive and time-competitive with the SOV.
- Provide convenient, affordable, and ADA accessible transportation options to serve local and sub-regional trips for the elderly and disabled.
- Promote safe, compatible development near airports to support private, recreational and business flying needs.

3.2.4 Quality of the Environment Goal

Maintain and improve the quality of the environment while providing transportation services to growing areas.

Strategies:

- Reduce the current levels of vehicle emissions while maintaining regional mobility and supporting the Illinois EPA's Mobile 6 initiatives.
- Increase the use of innovative alternatives to SOV travel.

- Investigate and utilize relevant TCMs to improve and protect the air and environmental quality of Kane County.
- Design and construct transportation improvements in a manner and method that preserves and protects the natural resources of Kane County.
- Implement all aspects of the Kane County Stormwater ordinance during design and construction of transportation projects.

3.3 Planning Assumptions

Using the goals and strategies, the development of the Kane County 2030 Transportation Plan considers certain assumptions. These assumptions help define the parameters used at the onset of the planning process and put into context the factors that would existing during the planning period.

- The Transportation Plan was based on the year 2030 forecasts for population and employment as prepared by the NIPC. The 2030 forecasts serve as the planning horizon for the study. The Kane County traffic demand model with the socioeconomic forecasts will serve as a basis for developing the future forecasted traffic.
- The NIPC 2030 socioeconomic forecasts generally reflect projected land use activity from the municipalities throughout Kane County. In addition, the forecasts also consider regional transportation improvements. These regional improvements are related to the socioeconomic forecasts by relating mobility and accessibility factors that the improvements represent. No adjustments have been made to the regional forecasts developed by NIPC (November 2003) within Kane County.
- Overall demographics and income levels will not change dramatically relative to the rest of the Chicago metropolitan area. As an example, car ownership trends by household would remain relatively consistent by demographic group and that trip generation rates would not change significantly from rates referenced in year 2000.
- Public transportation in Kane County would continue to operate at current levels of service. Public transportation services from Metra, Pace, and paratransit services would continue to serve Kane County residents at current levels of service. It is anticipated that the public transportation system would capture the same proportional share of travel demand in the future as it does in year 2000.
- Federal, state, and local revenues will remain somewhat constant. This would imply that the ability to finance transportation improvements would be similar to the County's existing funding levels. If Kane County would support additional revenue sources, then the available funding would increase accordingly.
- LOS D (defined by the Highway Capacity Manual) was the planning LOS performance threshold that is commonly used in urban areas used to determine acceptable performance levels. Drivers on facilities operating at LOS D would experience a slight reduction in travel speed. At intersections, the influence of congestion and resultant delay are noticeable.

Section 4

Land Development and Access

SECTION 4

Land Development and Access

4.1 Land Use and Access Management

The Federal Highway Administration (FHWA) defines access management as "the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed." Properly implemented access management will improve traffic operations, increase highway safety and minimize adverse environmental impacts. Unplanned land development and uncontrolled access connections reduce highway safety and capacity, and result in early obsolescence of the roadway. Unregulated access increases accidents, delay, and congestion for users of the highway systems within Kane County.

Access management in Kane County is controlled by the KCDOT *Permit Regulations and Access Control Regulations* approved by the County Board on January 14, 2004 and implemented by February 2004. These regulations provide updated policies and detailed procedures for permitting access to County highways.

The guiding philosophy of the Access Control Regulations is to "provide safe, efficient transportation systems compatible with land use" by controlling access on roadways to minimize curb cuts and local street intersections and maintaining existing roadway capacity. The highest degree of access control is applied to the County Limited Access Freeways (CLAFs)[1] and major arterial roads with less access control on minor arterial and collector roads.

The regulations apply different degrees or levels of access control depending on the type and operational characteristics of the highway in question, in combination with the type and intensity of the land use generating the need for access. Therefore, the desirable intersection spacing and access guidelines vary according to the type of highway and proposed land use. Three levels of access control are described in the regulations.

Level 1 – High level of access control based upon conservative parameters of driver behavior, vehicle performance characteristics and a high margin of safety. This level of access control is applied to major access points on Strategic Regional Arterials (SRAs), CLAFs and high-speed rural highways.

Level 2 – Moderate level of access control based on normal or median parameters for both driver behavior and margin of safety. This level of access control is applied to minor access on all highways and major access on urban/suburban arterials.

[1] Note that the term "freeway" used here does not correspond with this functional classification as described later in the report. County Limited Access Freeways (CLAF) consist of portions of five major arterial roadways in the county (Fabyan Parkway, Kirk Road, Dunham Road, Orchard Road and Randall Road).

Level 3 – Minimum guidelines typically representative of physical or geometric constraints or considerations, not based on driver or vehicle performance criteria. This level of access control is applied to all minimum use access on County highways.

The use of a particular access control guideline is based on the type of land use generator and the classification of highway on which the generator is located. The operating speed of the subject highway is built into the individual access guideline. Table 4-1 is a guide to application of the various levels of access control.

TABLE 4-1
Access Guidelines Application Matrix

Traffic Generation Movements Per Day	Highway Classification			
	Urban/Suburban	Rural Highway	CLAF & SRA Commercial	CLAF & SRA Residential
Minimum Use				
<10 movements	Access Level 3	Access Level 3	Access Level 3	Access Level 3
Minor Access				
<150 movements	Access Level 2	Access Level 2	Access Level 2	Access Level 2
Major Access				
>150 movements	Access Level 2	Access Level 1	Access Level 1	Access Level 1

Notes:

1. "Major Access" includes all commercial accesses and public streets classified as collector or above which includes most subdivisions.
2. The County Engineer may in his/her professional discretion elect to apply a different priority level or deviate above or below the standard for a given priority level based on unique property, site development, highway design and/or traffic conditions.

Source: KCDOT Permit Regulations and Access Control Regulations, Table 1, Page 2-15.

4.1.1 Location of Access Points

Guidelines were also established regarding the location of access points. The first guideline provides that access points be located so that ingress and egress maneuvers will not severely degrade safe and efficient traffic movements and operations on the County highways. The locations should provide adequate sight distance by avoiding placement of access points on a horizontal curve or just below a crest of a vertical curve. If the sight distance is not adequate for specific movements those movements will not be allowed. Whenever possible, access should be provided via existing cross streets in lieu of additional County highway access points and will be prohibited when a property abutting a county highway has frontage on one or more roadways and reasonable access can be provided from the roadway. New access locations should be aligned with access points for existing development on the opposing side of the highway. Adjacent access points should be spaced to insure that conflicting movements do not overlap and that safe and efficient traffic movements and operations will be maintained. The distance between adjacent access points should be spaced far enough apart as to provide for full left turn tapers and storage bays for both access points to the county highway. The county may require joint or shared access facilities. Access points in the vicinity of interchanges, interchange ramp terminals, crossroads, frontage roads, and service drive

connections shall be restricted to minimize hazardous and congested conditions. Finally, access points shall be located to provide safety and convenience for pedestrians, bicyclists, and other users of the roadway right-of-ways.

4.1.2 Number of Access Points

A set of guidelines is specified for the number of access points to be provided. Each development or property regardless of the number of parcels is limited to one access point. When subdividing existing developed parcels to create new lots, no additional access will be permitted. An additional access point may be permitted if it is demonstrated that the LOS at the primary access point would be substantially improved and the additional access point will not adversely affect traffic safety or operations on the county highway. If the approved access is signalized, no additional full access points are allowed. A right turn only access point may be permitted, provided that the property owner demonstrated the need and complies with all other policies. The access guidelines for abutting property located at the intersection of two county highways provide that the access point shall be permitted on the county highway with lower volumes. For corner lots at an intersection where only one of the abutting roads is a county highway, access should be provided to the other intersecting road rather than the county highway.

4.1.3 Internal Circulation

Providing adequate internal circulation within a development aids in the operation of major facilities. The county recognizes this need by specifying a guideline that when property abutting a county highway is to be developed, direct access to the county highway shall not be used in lieu of an adequate internal traffic circulation system. Access will not be permitted if internal traffic patterns are not acceptable based on overall traffic circulation, drive-in reservoir and parking space capacities, internal turning movements, and projected trip/ parking generation rates. No access shall be permitted if such access would require backing or turning maneuvers onto a county highway or would result in parking on a county highway or within the right-of-way of a county highway.

4.2 Transportation Connectivity

The phrase "transportation connectivity" refers to the continuity of the roadway system within each of the functional classifications and the compatibility of design and capacities of the roadways within the county. To insure continuity, the requirements for main line capacity, functional classification, roadway design and access must be balanced into a roadway system which will provide continuous travel paths and avoid abrupt transitions between these elements along the length of the roadway.

System continuity along an individual roadway may address the alignment, functional classification, the length of the roadway, and the roadway cross section. The methodology for estimating lane requirements for the 2030 roadway system are initially based on a segment-by-segment assessment of traffic volume and capacity derived from the computerized travel demand model. System continuity requires the selection of a basic number of lanes for a reasonable length of roadway between logical termini.

The connectivity of streets is also a major concern for public transit, and emergency and public service vehicles. Collector streets should be through streets, not winding cul-de-sacs, to provide efficient access for buses, paratransit vehicles, and emergency and public services. The design should afford adequate intersection geometrics to accommodate the turning movements of buses, fire trucks and public service vehicles.

4.3 Street Standards

4.3.1 Design Requirements

County regulations call for design of access points and accompanying highway improvements complying with the county requirements. The standards and specifications set forth in these regulations are to ensure a safe and efficient highway system for the motoring public. Design features addressed in the regulations are design speed, intersection and driveway sight distance requirements, access design widths and standards, radius return, angle of intersection, islands, medians, driveway profile, culverts, mailbox turnouts, shoulders, curb and gutter, bikepaths, sidewalks, cross-section and materials, traffic control and on-site design elements.

This section discusses general aspects of road design criteria that should be applied to proposed roads as each project becomes more defined. The recommendation of future roads alone is not enough to ensure adequate transportation infrastructure. These planned improvements must be constructed to design standards to ensure public safety and appropriate investment of public resources. Road included in this plan should be designed and constructed to the specifications set forth by the Illinois Department of Transportation (IDOT). This section provides a general description of preferred practice for road design in Kane County.

4.3.2 Functional Classification

The proper application of road design criteria depends in part on the functional classification of the road. Not all roadways are created equal. They not only vary in width and design, but also in the function they are intended to perform rather than by their cross section or traffic volume. The functional classification of a road describes the character of service the road is intended to provide. The various functional classifications serve two competing functions to different degrees, access to property and travel mobility. Each road will provide varying levels of access and mobility depending on its intended function. When a system is viewed in whole, the objective is to realize an optimal balance between access and mobility functions. The following are definitions for the four general road functional classifications.

- **Freeways and Expressways** are limited access facilities characterized by their ability to quickly move large volumes of traffic with minimal disturbances. All access to freeways is via ramps and all crossings are grade separated. Freeways provide for high-speed long distance trips.
- **Principal and Minor Arterials** are highways which are generally characterized by their ability to quickly move relatively large volumes of traffic with less provision for access to adjacent properties. Arterial highways provide for high-speed travel and longer distance trips.

- **Collector roads** are characterized by a relatively even distribution of access and mobility functions. Traffic volumes, speeds, and trip lengths are typically shorter on collector roads than on arterials routes.
- All public roads and streets not classified as arterials or collectors are classified as **local roads**. Local roads and streets are characterized by numerous points of direct access to adjacent properties. Speeds and volumes are low and trip distances short.

Figure 4-1 shows the schematic relationship between access and mobility functions of streets and highways. The highest classification (freeways) is intended solely for traffic movement and does not provide access to abutting land uses except at interchanges. The lowest category (local street) allows unrestricted access, and is not intended to accommodate through traffic. Classifications between these extremes perform a combination of functions with varying emphasis on traffic movement or access. Most of the roads included in this long-range plan are principal and minor arterials.

4.3.2.1 Typical Sections

The general design criteria for the design of a road depends in part on it functional classification and its location, either urban/suburban or rural. The typical cross-section describes requirements for width of traveled way, median type and width, curb or shoulder treatment, sidewalks, bicycle lanes, clear zones, and grading.

Urban/Suburban Arterials and Collectors

Typical cross-sections for Urban/Suburban arterial roads and collector roads are shown in Figure 4-2. A large number of commercial driveways and possibly pedestrian or bicycle traffic can be expected along these facilities. Center turn lanes are recommended wherever there are frequent entrances into high-volume commercial driveways. Where center turn lanes are not provided, left-turn lanes should be provided at all major intersections. In locations with an expectation of higher speeds and with higher volumes, it is recommended that right-turn lanes also be provided.

Parking should be prohibited along arterials. Signalized intersections should be spaced one-quarter mile apart at a minimum. For SRAs, half-mile spacing of signalized intersections is preferred. Sidewalks to accommodate both pedestrians and bicycles may be provided to separate them from vehicle traffic.

Rural Arterials and Collectors

Typical cross-sections for rural arterials and collector roads are shown in Figure 4-3. In rural areas with widely dispersed access points, a rural cross-section is recommended. For higher-volume roads through less developed rural areas, a divided cross-section is recommended. Signal spacing on rural arterials should be maximized with a minimum of one-quarter mile spacing.

4.3.2.2 Intersection Channelization

Channelizing an intersection refers to the provision of lanes dedicated to each movement, through vehicles, left turners, and right turners. Many existing intersections provide for exclusive lanes only for high-volume turning movements. As new projects are designed and

constructed, the KCDOT, as a matter of policy, is providing full channelization at intersections. Doing so provides separate lanes for the through, left, and right movements. This separation enhances vehicle safety, increases intersection capacity, and provides for more flexibility when setting signal timings. Providing for full channelization does require additional right-of-way than a more restricted design and may present challenges for pedestrian movements.

4.3.2.3 Right-of-Way

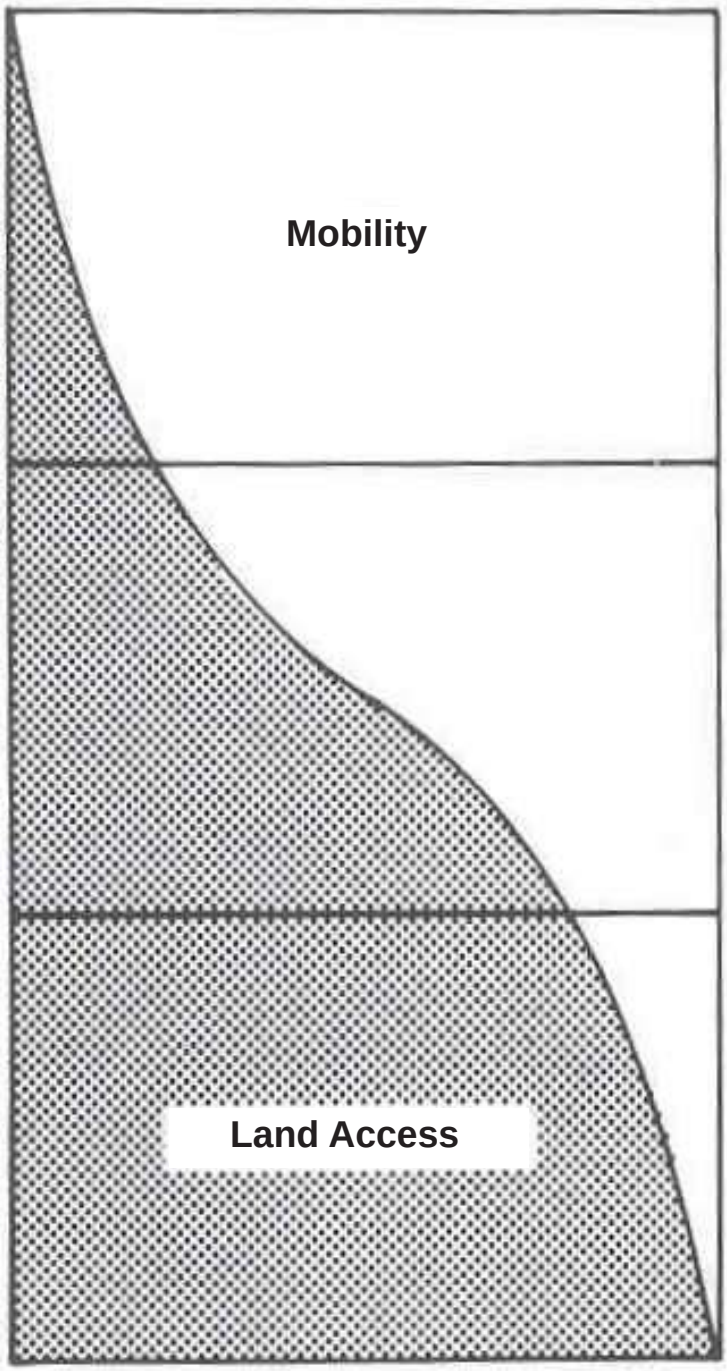
Right-of-way guidelines have been defined by functional class to ensure appropriate land acquisition for future widening of roadways. These definitions incorporate land for the road cross-section including the traveled way, median, parking, shoulders, sidewalks, drainage, and grading. The right-of-way guidelines also establish adequate set backs from the roadways. Acquisition of right-of-way could occur before widening is warranted, allowing land to be set aside before development occurs. Often, early acquisition is the most cost effective way to preserve right-of-way for road widening. The Table 4-2 shows right-of-way guidelines for County roads by road functional classification.

TABLE 4-2
Minimum Right-of-way Guidelines for County Roads by Road Functional Classification

Functional Classification	Right-of-Way
SRA's and County Freeways	170 feet to 200 feet
Principal Arterials	120 feet to 150 feet
Minor Arterials	120 feet
Collectors	80 feet to 120 feet
Local	66 feet to 80 feet

Section 4

Figures

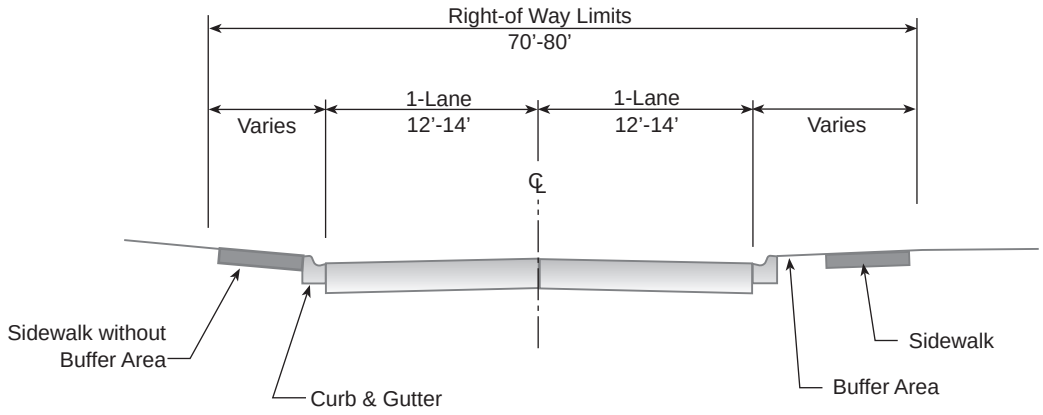


Source: A Policy on Geometric Design of Highways and Streets 2001

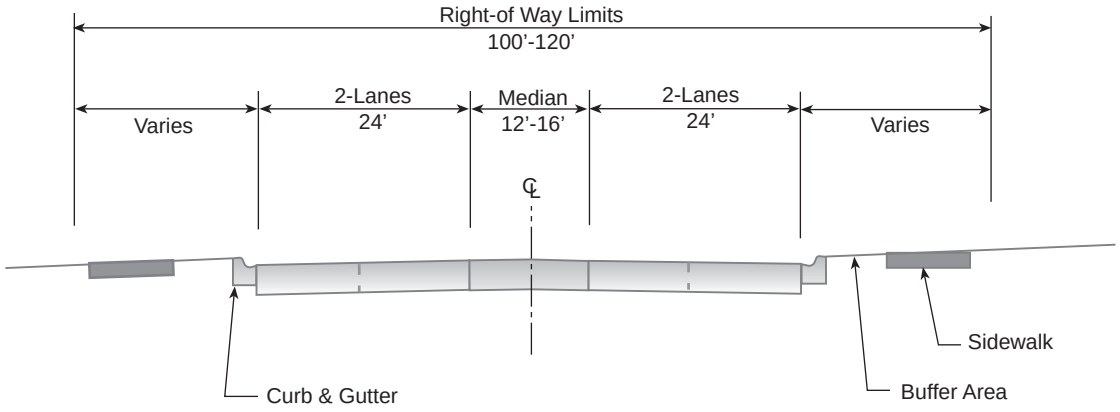
Access and Mobility Function of Highways

Figure 4-1
Kane County 2030 Transportation Plan

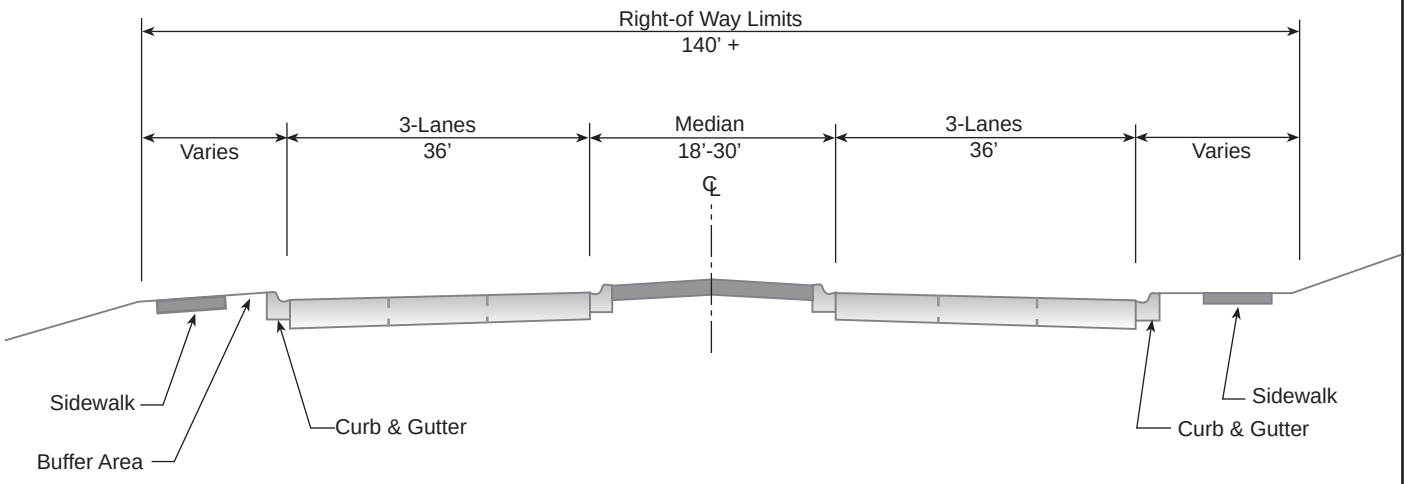
T161525.AA.07(.05) Access_Mobility 11-13-01 lg



Two-Lane Urban Collector



Five-Lane Urban Arterial



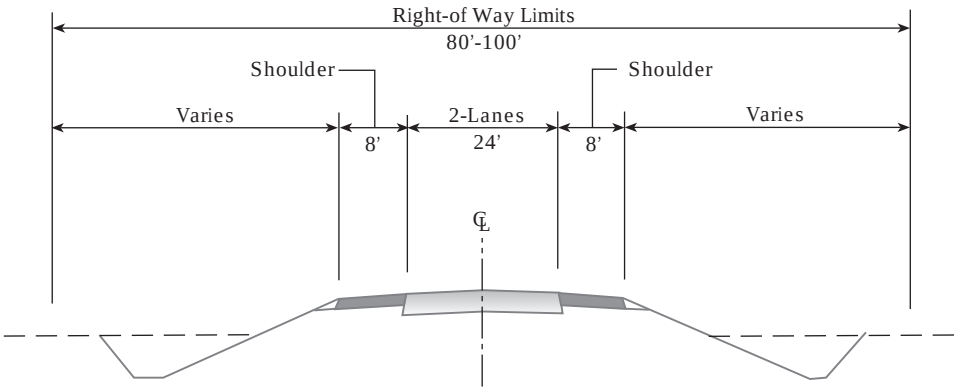
Seven-Lane Urban Arterial

Urban/Suburban
Typical Cross-Sections

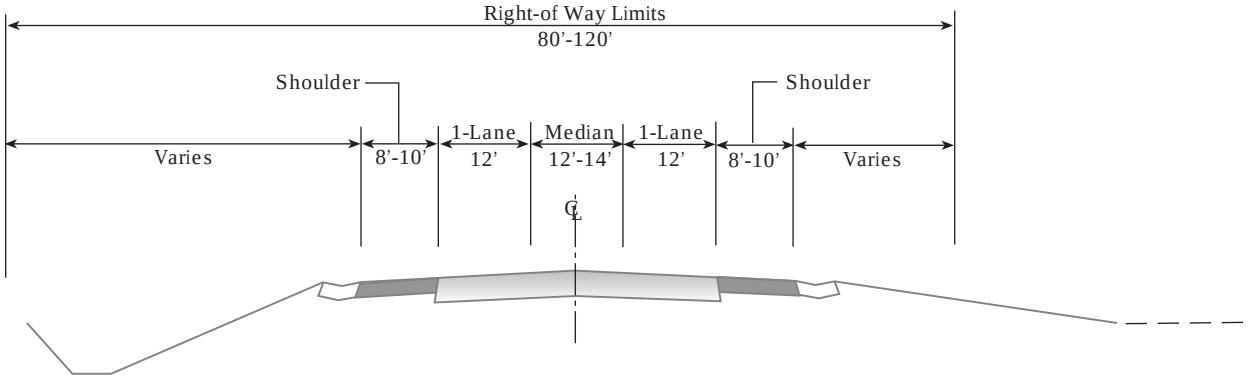
Figure 4-2
Kane County 2030 Transportation Plan

CH2MHILL

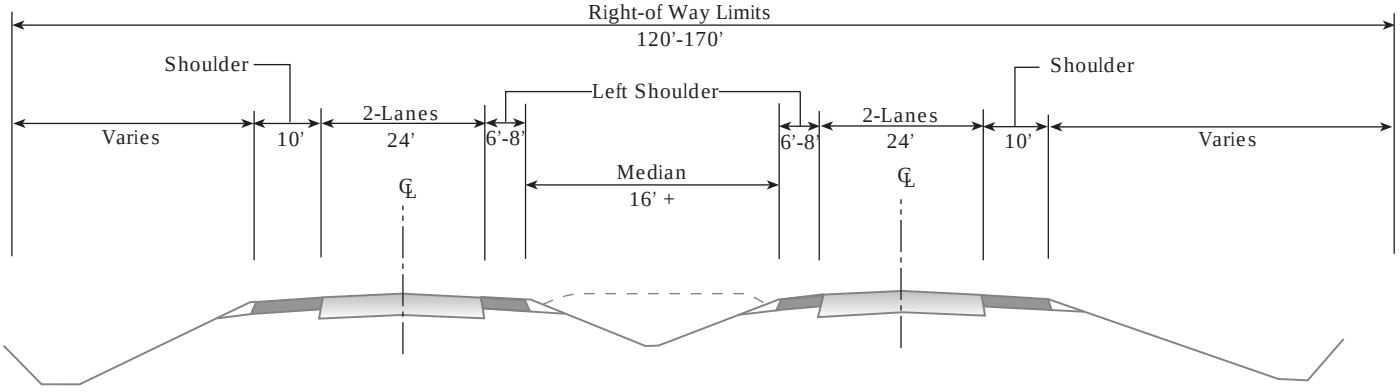
T180820.AA.03 CrSec 4-1 03-10-04 lg



Two-Lane Rural Collectors



Three-Lane Rural Arterial



Four-Lane Rural Divided Arterial

KANE COUNTY ILLINOIS

CH2MHILL

Rural
Typical Cross-Sections

Figure 4-3
Kane County 2030 Transportation Plan

Section 5

Transportation System Planning

SECTION 5

Transportation System Planning

5.1 The Role of Functional Classification

Creation of a system whereby different roadways are engineered to handle varying types of demand is essential in circulation planning. The purpose of having a functionally classified highway system is not only to recognize existing travel patterns, but to reinforce and control them so that there is some established order in the county's traffic flow. If a smoothly functioning system cannot be established, then drivers seeking short cuts on less congested routes will constantly be diverting on neighborhoods streets that are not designed to handle heavy traffic. Principles of functional classification in Kane County were discussed generally in the preceding section.

5.2 Level of Service

Traffic service is usually measured in terms of LOS. For roadway segments, average delay and speed enter into the LOS determination along with other factors. LOS measures the quality of traffic service, and may be determined for each roadway segment on the basis of delay, congested speed, volume to capacity (v/c) ratio, or vehicle density by functional class. The various levels of service for roadway segments are defined as follows:

LOS A describes primarily free flow operation at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification.

LOS B represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification.

LOS C represents stable operations; however, ability to maneuver and change lanes in mid-block locations may be more restricted than at LOS B, and longer queues, adverse signal coordination, or both, may contribute to lower average travel speeds of about 50 percent of the average free-flow speed for the arterial classification.

LOS D borders on a range in which small increases in flow may cause substantial increases in delay, and hence decreases in arterial speed. Average travel speeds are about 40 percent of free-flow speeds. LOS D is often used as a limiting criterion for design purposes.

LOS E is characterized by significant delays and average travel speeds of one-third of the free-flow speed or less. LOS E is sometimes accepted as a limiting for design criterion when restricted conditions make it impractical to consider a higher LOS.

LOS F characterizes arterial flow at extremely low speeds, below one-third to one-fourth of the free-flow speed. Intersection congestion is likely at critical signalized locations with high delays and extensive queuing. LOS F is never used as a design standard. It represents a condition that is intolerable to most motorists.

For segments the LOS is based on the v/c ratio. Extreme congestion is considered to be LOS F with a v/c greater than 1.0. Severe congestion corresponds with LOS E, which has a v/c greater than 0.79 but less than one. Moderate congestion corresponding with LOS D has a v/c greater than 0.66 but less than or equal to 0.79.

For signalized intersections, both LOS and v/c ratio are indicative of an intersection's operation. LOS is defined in terms of control delay per vehicle. Control delay includes a vehicle's initial deceleration delay at a signal, queue move-up time, stopped delay, and final acceleration delay. Overall intersection LOS range from A (less than 10 seconds of control delay per vehicle) to F (greater than 80 seconds of control delay per vehicle), see Table 5-1. LOS C or D for the entire intersection and for individual movements is generally considered desirable for peak hour operation in urban/suburban areas. The v/c ratio compares the demand flow rate of traffic approaching an intersection to its practical capacity. This is also a measure of the operating characteristic of a signalized intersection. Intersections with critical v/c ratios approaching or slightly exceeding 1.0 represent locations where queues develop and vehicles wait through more than one cycle to clear the intersection. For planning level analysis, the target v/c is less than 0.90.

TABLE 5-1
LOS Criteria for Signalized Intersections

LOS	Control Delay per Vehicle (seconds/vehicle)
A	≤10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

Source: *Highway Capacity Manual HCM2000*, Transportation Research Board (TRB), Exhibit 16-2

For unsignalized intersections, LOS is also used to measure intersection operations. However, LOS thresholds for unsignalized intersections are different than those for signalized intersections. Overall intersection LOS for unsignalized intersections range from A (less than 10 seconds of control delay per vehicle) to F (greater than 50 seconds of control delay per vehicle), see Table 5-2. The LOS for a two-way stopped controlled intersection is based on the minor leg or stopped approach. For a planning level study, intersections with a LOS D or better are considered acceptable.

5.3 Congestion Management

Traffic congestion and travel delay are among the most visible manifestations of an area's transportation problems. Drivers experience congestion for the most part as a personal annoyance although traffic congestion is a problem that wastes time, consumes energy resources, and contributes to deficient air quality. Businesses are adversely affected by congestion if it discourages potential clients or customers.

TABLE 5-2
LOS Criteria for Unsignalized Intersections

LOS	Control Delay per Vehicle (seconds/vehicle)
A	0 – 10
B	> 10 – 15
C	> 15 – 25
D	> 25 – 35
E	>35 – 50
F	> 50

Source: *Highway Capacity Manual HCM2000*, TRB, Exhibit 17-22

Traffic congestion is typically confined to the morning and evening peak hours of travel, but a large proportion of daily travel normally occurs during these peak periods.

Expanding the capacity of roadways is not the sole solution to congestion. Congestion may be alleviated by actions taken to improve both the supply side and demand side of the transportation equation—referred to as TSM and TDM.

New roadways, bridges, and highways built to relieve congestion satisfy deficient supply (capacity) of the roadway system and also provide for latent and diverted travel demand. The use of alternate modes and land use regulation also contribute to an overall program to manage traffic congestion. Other supply-side actions may include expansion/channelization of critical intersections, access control, traffic control/surveillance systems, and traffic calming.

Congestion is most prevalent during weekday morning and evening peak hours and is most evident at intersections, which are the constricting points in the roadway system. Intersection modifications such as provision of turn lanes, channelization to separate conflicting traffic movements, or improved signing, marking and signalization are a few of the relatively low price/impact solutions to intersection congestion problems.

5.4 Access Management

Management of access to area roadways is yet another method of improving the ability of the system to satisfy mobility requirements. Properly implemented access management will result in improvements to traffic operations, increase highway safety and minimize adverse environmental impacts.

Each new driveway that is located on an arterial reduces the arterial's traffic carrying capacity. After several new driveways have been installed, it often becomes clear that turning traffic has a negative impact on traffic speeds on the arterial. Studies indicate that average travel speeds during peak hours are considerably higher on well managed roads

than on roads that are less well managed, even though the two types of roads carry approximately the same number of vehicles.[1]

Specific techniques applied in access management are addressed in Section 4 of this document.

5.5 Travel Demand Management (TDM)

TDM is not one action, but rather a set of actions or strategies, the goal of which is to encourage travelers to use alternatives to driving alone, especially at the most congested times of the day. The term TDM encompasses both alternative modes to driving alone and the techniques, or strategies, that encourage use of these modes.[2]

TDM alternatives include familiar travel options such as:

- Carpools and vanpools
- Public and private transit (including buspools and shuttles)
- Bicycling, walking, and other non-motorized travel

TDM alternatives also can include "alternative work hours," program options that reduce the number of days commuters need to travel to the worksite, or that shift commuting travel to non-peak period times of the day. Some such programs are flexible work schedules, compressed workweek, and telecommuting.

The primary goal of most TDM programs is to reduce commute trips in a particular area and/or at a particular time of day. Program effectiveness varies widely by program type, by site, and by the TDM strategies chosen. In general, the success of a TDM program depends heavily on the extent to which individual employers support the program.

5.6 Transportation System Management (TSM)

TSM is the concept of more efficiently using existing transportation systems by means other than large-scale construction. Just as TDM strategies are aimed at managing transportation *demand,* TSM strategies are directed at managing the transportation *system*. Some categories of actions that comprise TSM are:

- Physical improvements to roadways, intersections and interchanges such as lane or shoulder widening, channelization, grade separations, and removal of restrictive segments that prevent full utilization of capacity
- Traffic control and surveillance systems
- Preferential or exclusive lanes for transit and/or high occupancy vehicles (HOVs)

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[1] *Access Management Handbook*, prepared for the Iowa DOT, the Safety Management System (SMS) Coordination Committee, and the Access Management Task Force, by the Center for Transportation Research and Education (CTRE), Iowa State University, Ames Iowa, October, 2000.

[2] *A Guidance Manual for Implementing Effective Employer-Based Travel Demand Management Programs*, prepared for FHWA by Comsis Corporation and ITE is association with Georgia Institute of Technology, K.T. Analytics, Inc. R.H. Pratt, Consultant, Inc. Final Report, November 1993

- Provisions for parking and loading
- Pedestrian and bicycle facilities

5.7 Traffic Calming

Traffic calming is another important element in transportation planning. As defined by the Institute of Transportation Engineers (ITE), traffic calming is;

The combination of many physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users.[3]

More broadly defined, traffic calming applies to a number of transportation techniques developed to reduce motorist speed, decrease traffic volumes, increase safety for pedestrians and cyclists, and to educate and increase awareness of the traveling public. Some of the "tools" applied in traffic calming are:

- Speed humps and bumps
- Roundabouts
- Turn restrictions and one-way operation
- Forced-turn channelization
- Median barriers and diverters
- Cul-de-sacs
- Landscaping / tree-lined streets
- On-street parking

As reported by ITE, traffic calming can involve changes in street alignment, installation of barriers and other physical measures to reduce traffic speeds and cut-through volumes in the interest of street safety, livability, and other purposes. Traffic calming assists in making streets an attractive place to slow down. Reductions in traffic speed and volume, however, are just means to other ends such as traffic safety and active street life.

5.8 Effect of Land Use Policies on Transportation

It has been proposed that land use policies be utilized to mold transportation demand in Kane County. Worthy transportation objectives for shaping land use patterns and site design features in the interests of transportation efficacy and impact mitigation include (Transit Cooperative Research Program [TCRP] Report 95, 2003):

- Reductions in VMT, pollutant emissions, and energy consumption
- Increased transit use and productivity
- Pedestrianization of activity centers

In general, research confirms association between (land use) density and vehicle travel. At higher densities, use of alternative modes – particularly transit and pedestrian travel – is higher. Per capita passenger vehicle trips and VMT are lower.

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[3] I.M. Lockwood, *ITE Traffic Calming Definition*, ITE Journal, Vol. 67, July 1997, pp 22-24

A number of studies have shown a relationship between population density and per-capita auto travel, with less per-capita vehicle travel at higher densities. There is wide disparity, however, as to the potential effect that could be achieved. One study reported that doubling population density would result in localized travel reduction of from 5 percent to 10 percent. (Transportation Research Board (TRB), Record 1780, Ewing and Cervero, 2001). Yet another study concluded that doubling suburban density might produce 25-30 percent less VMT (per household or per capita) if urban transportation alternatives are provided. (Holtzclaw, 1990 and 1994) Regardless of the magnitude of effect, however, there is general consensus regarding the positive relationship between land use density and transportation.

Higher densities are associated with lower proportions of travel by SOV, and most strongly linked with higher use of bus and walking modes.

The Conceptual Land Use Strategy adopted by the Kane County Board is the framework for the 2030 Land Resource Management Plan. The land use strategies are given for three areas within the county – the Urban Corridor Area located in the easternmost portion of the county along the Fox River; the Critical Growth Area located west of the Urban Corridor generally in the center of the county; and the Agricultural/Rural Area in the westernmost portion of the county.

Priority Places have been designated within the Critical Growth Area. These areas of 5,000 to 10,000 residents, which can combine a mix of uses, compact design, a sense of place, pedestrian, bicycle and other transportation alternatives and important links to the countywide greenway system.

Two of the *Smart Growth Principles* on which the plan for Priority Places is based are to create walkable neighborhoods and provide a variety of transportation choices. It is acknowledged that communities are beginning to implement new approaches to transportation planning, such as better coordinating land use and transportation; increasing the availability of high quality transit service; creating redundancy, resiliency and connectivity within the transportation networks; and ensuring connectivity between pedestrian, bike, transit and road facilities.

The CATS 2030 Regional Transportation Plan (RTP) recommends that special emphasis be placed on the land principles of TOD. TOD is the design and development of land around transit stations and bus stops that encourage people to use public transportation.

The purpose of TOD is to build active and convenient communities that link people to jobs as well as to commercial, retail and entertainment centers. The RTP encourages communities to embrace TOD principles to support existing transit service and to encourage transit investment.

Section 6

Existing Transportation Facilities and System Performance

SECTION 6

Existing Transportation Facilities and System Performance

6.1 Introduction

An important prerequisite to transportation planning is an understanding of the components and performance of the existing transportation system. A description of "existing" transportation facilities and operations in 1997-2001 was reported in *Kane County Transportation Planning Area Study – Existing Transportation Conditions and Forecasts of Future Travel Demand*. The report describes the existing transportation system in Kane County and presents a summary of travel demand, travel desire patterns, and performance. The inventory of facilities, operations and performance of highways in Kane County was updated to 2003 in preparation of the CRIP for the Transportation Impact Fee Study. Further modifications were made in preparation of this report in particular to updates in the functional classification of roadways.

6.2 Existing Highway System

Major freeways serving Kane County include the Northwest Tollway (I-90) and the East-West Tollway (I-88), both radiating from Chicago. Three U.S. highways and 11 state highways also serve the county.

There are roughly 550 miles of highway (excluding local roads) in Kane County. Figure 6-1 is a map of the existing highway system by jurisdictional classification; Interstate (including Illinois State Tollways), U.S. Highway, Illinois State Highway, and Kane County Highway. Table 6-1 summarizes the mileage of existing highway in each jurisdictional classification. County highways make up 311 route miles, or 27 percent of the existing highway system.

TABLE 6-1
Mileage of all Highways in Kane County by Jurisdiction Classification

Jurisdiction	Route Miles	Lane Miles
Interstates	47	211
U.S. Highways	30	68
State Highways	165	432
County Highways	311	702
Total	553	1,413

Functional classifications of highways in Kane County were discussed earlier in Section 4. Functional classifications extend from freeways, expressways and principal arterials

(primarily traffic service) to minor arterials, collectors and local streets (primarily service to abutting land uses. Figure 6-2 depicts the functional classification of highways in Kane County, and Table 6-2 shows the existing mileage of highways by functional classification. Functional class of just the Kane County highways is shown in Table 6-3.

TABLE 6-2
Mileage of Highways in Kane County by Functional Class—2003

Functional Class	Route Miles	Lane Miles
Freeways and Ramps	61	256
County Freeways and SRA	142	413
Principal Arterials	206	473
Minor Arterials	213	453
Collector	511	1,065
Total	**1,133**	**2660**

Note: Excludes local streets.

TABLE 6-3
Mileage of Kane County Highways by Functional Class—2003

Functional Class	Route Miles	Lane Miles
County Freeway and SRA	48	176
Principal Arterials	83	165
Minor Arterials	165	331
Collector	14	29
Total	**310**	**701**

The CATS 2010 *Transportation Development Plan* includes a SRA system that is integrated with the county highway system. The SRA system has been developed to serve as a second tier to the freeway system with a focus on throughput capacity. The system is planned to be a comprehensive transportation network that can handle long distance regional traffic. There are 1,340 designated miles of SRA routes in the Chicago metropolitan area of which 91 miles are located in Kane County. Parts of the County highway system that are also designated as an SRA are as follows:

- Orchard Road/Randall Road
- Fabyan Parkway
- Kirk/Dunham Road

6.3 Public Transportation

In Kane County, public transportation service is provided by Metra and Pace, operating divisions of the RTA. Metra operates commuter rail service throughout the region; three of its lines—the BNSF Line, the Union Pacific West (UP-W) Line, and the Milwaukee District West (MD-W) Line—serve Kane County. Pace, RTA's suburban bus division, operates a variety of services including fixed route bus service, express bus service, dial-a-ride paratransit service, and vanpool/subscription bus service. These transportation services are part of one of the largest transit systems in the country. Figures 6-3 and 6-4 show the locations of Metra and Pace routes and stations in Kane County.

The BNSF Line extends nearly 38 miles west from Chicago's Union Station to Aurora. This is the most heavily used line in the system, handling more than 53,000 passengers on an average weekday with over 80 percent of the trips made on peak hour/peak direction trains. There is one station on this line in Kane County, the ATC.

The UP West Line extends nearly 36 miles west from Chicago's Ogilvie Transportation Center (OTC) to Geneva. Trains run from Chicago, west through Cook County, the center of DuPage, and into eastern Kane County. The line carries approximately 26,000 passengers on a typical weekday, with over 80 percent of the trips made on peak hour/peak direction trains. Currently there is one station on this line in Kane County - Geneva.

The MD-W Line extends nearly 40 miles west-northwesterly from Chicago's Union Station to Big Timber Road in Elgin. The line carries approximately 23,000 passengers on a typical weekday with just fewer than 80 percent of the trips made on peak hour/peak direction trains. There are three stations in Kane County – Big Timber Road, Elgin, and National Street.

Pace's fixed route bus service in Kane County is primarily provided by routes located in the cities of Elgin and Aurora. In total, 33 routes service Kane County. Dial-a-ride service provides curb-to-curb transportation to the general public, with special emphasis on the limited mobility population. At present, this service is offered in many parts of Kane County, including the townships of Aurora, Dundee, Burlington, Hampshire, Plato, Rutland, St. Charles, and Geneva, and the cities of Batavia and Elgin. Other special services are provided exclusively for persons with severe mobility disabilities as required by ADA regulations. These special transportation services are provided in portions of Aurora, Batavia, Dundee, Elgin, St. Charles, and the Sugar Grove Township.

6.4 Non-Motorized Travel

Another transportation option available to commuters in Kane County is bicycle and pedestrian paths. These paths provide commuters with an alternative to motorized transportation. Furthermore, when paths connect to rail and bus stations, public transportation becomes more easily accessible and ridership increases. Currently, Kane County offers a variety of bicycle and pedestrian paths, and many of these paths connect to rail stations and bus stops.

There are approximately 223 miles of trails in Kane County that provide opportunities for Kane County residents to complete a variety of tasks; however, they are used predominately for recreation. In addition, bicycle and pedestrian accommodations exist on some of the

county-maintained roads. These accommodations include 4-8 foot paved shoulders or wide curb lanes. Figure 6-5 illustrates current bicycle and pedestrian routes in Kane County.

6.5 Rustic Roads

A Rustic Roads program has been established in conjunction with the Kane County Development Department and consistent with the 2020 Long Range Plan to protect some of the rural roads and scenic vistas for future generations while incorporating new development and transportation improvements as subtly as possible. The Rustic Road program promotes the following:

- A Sense of Place by preserving community identity and quality of life
- Resource Preservation, by protecting the significant scenic natural and historic resources within road corridors
- Recreation by providing enjoyment for those who drive for pleasure and sightseeing
- Economic Development by generating tourist revenue through the promotion of the scenic beauty of the county

The Kane County Board adopted the Rustic Roads program in July of 2000. The program applies to roads located in unincorporated Kane County and can include municipal roads through intergovernmental agreements. A Corridor Management Plan is developed which defines the significant features of the road corridor that should be protected and enhanced while continuing to address traffic and safety issues. Table 6-4 illustrates the features of Rustic Roads. The first Rustic Road, Thurnau Road, was designated in March 2004. The second Rustic Road, Brundige Road, has been proposed for inclusion in the program. Expected completion date is November 2004. The county anticipates continued implementation of the program.

TABLE 6-4
Features of a Rustic Road

Natural Features	Built Features
Expansive views, such as those that overlook stream valleys	Churches and old cemeteries
Unusual land forms, ridgelines, ravines, narrow valleys, and rock outcrops	Farmsteads
Water	Architecturally and/or historically significant buildings
Woods	Monuments, memorials, statues, historical markers
Wildflower glades, evergreen groves, flowering native trees, and shrub masses	Concrete automobile club guideposts
Other areas of native vegetation	Railroad and accessory features
	Designed landscapes
	Roadway pavement, drainage, bridges, tunnels, and other features
	Local activity centers, such as farm supply stores, village stores, inns, mills, factories, and institutions

6.6 Travel Demand Model

6.6.1 Background

The Chicago Area Transportation Study developed a transportation model of the Kane County transportation system in 1996. After the model was tested and calibrated by CATS, it was applied in the development of the 2020 Transportation Plan.

The Kane County travel demand model was updated in 2000 for use in the Transportation Planning Area Studies. The update utilized new population and employment forecasts by the NIPC assuming the CATS O'Hare (ORD) scenario.

The model was applied again in 2003 for use in developing the CRIP for impact fees. Land use assumptions and population and employment forecasts utilized this latest application were based on 2020 and 2030 projections developed by the NIPC and interpolated for intervening years.

6.6.2 Methodology

The travel demand forecasting process utilized in Kane County relies on a series of mathematical models incorporating three primary components; 1) trip generation; 2) trip distribution and 3) trip assignment.

The CATS developed a traffic analysis zone (TAZ) system as part of the *Kane County Sub-Area Study, July 1996*. The zone system consisted of 1,379 TAZs representing the Chicago metropolitan area. Of these, 780 TAZs were located within Kane County. See Figure 6-6. This is a finer breakdown than the CATS regional zone structure. Figure 6-7 depicts the zone system utilized for the entire metropolitan area showing the larger external zones outside of Kane County and the external stations on the periphery of the area.

The trip generation model translates land use and demographic information into the number of trips created by an area. Four trip purpose categories were used to predict the number of daily vehicle trips: Home-Based Work (HBW); Home-Based Other (HBO); Non-Home Based (NHB): and truck (T). Estimated trips were calculated based upon TAZ land use information, including population and employment, by type.

The trip distribution model estimates where trips will be made within the study area. The primary objective is to distribute the total number of trips produced in each TAZ among all possible destination zones. The distribution model used for this study is commonly known as the gravity model. The gravity model assumes that trips between a zone of production and all other TAZ's is proportional to the number of attractions in all possible destination TAZ's and inversely proportional to some function of the impedance (expressed as travel time) between the TAZ's. The number of attractions in a TAZ is correlated with the number and type of employees in the TAZ.

Trip assignment models assign the distributed volumes of vehicle trips to individual network links representing roadway segments. An equilibrium trip assignment model was used in this study. This process is an optimization procedure that searches for the best combination of the current and previous assignment iterations. Equilibrium is said to be achieved when no trip can reduce travel time by changing paths.

The basic outputs of the travel demand modeling process are travel forecasts, estimated traffic volumes on each segment of the road network. These volume estimates are used to indicate whether the transportation system can adequately serve future developments.

6.6.3 Existing Traffic Demand

The existing traffic model used in Kane County was developed and calibrated in 2000 using the TRANPLAN suite of programs by the KCDOT. The model development and calibration process is described in detail in *Development and Calibration of Kane County Transportation Systems Planning Model* prepared for the Division of Transportation in 2000. The work closely followed earlier CATS model development reported in *Kane County Sub-Area Study, Ju1y, 1996*. The travel demand model developed for this project was determined to meet or exceed the accepted criteria for validation/calibration of a tool of this type.

Figure 6-8 shows ranges of existing (2003) Average Daily Traffic (ADT) on highways in Kane County. The 2003 ADT values were based on maps published by the IDOT Office of Programming and Planning and expanded peak period traffic counts made in 2002 as part of the *Transportation Impact Fee Study*. The Illinois State ADT data was also supplemented with additional counts provided by the county. Higher volume highways are located predominantly in the easternmost portion of the county. The heaviest traveled routes include the I-90 and I-88, Randall Rd., the Carpentersville/Dundee/North Elgin area and Tri-cities area.

Commercial vehicle (truck) traffic is also an important consideration in the analysis of current transportation facilities and in developing future plans. The IDOT provided data regarding the daily volume of heavy commercial vehicle traffic on state and federal routes in Kane County. As would be expected, the Tollways carry a large percentage of commercial traffic, but truck traffic was also heavy on portions of IL 47 and IL 64.

6.7 Existing Travel Desires

Examination of travel desires is especially useful in planning transportation facilities. This analysis technique considers the travel desires of motorists regardless of the underlying traffic network. By assigning traffic to a network resembling a spiderweb that is unconstrained in terms of roadway availability and capacity, the trips follow a direct path from origin to destination. The travel desires are shown as bands with the width of the band proportional to the traffic volume on that link.

In order to portray travel desires, the 780 CATS TAZs within Kane County were aggregated into 15 larger zones. The trip table also was compressed to conform to the modified zone structure. Connecting the centroids of adjacent zones created a "spiderweb" network. A graphic portrayal of travel desires was produced by assigning the base year (2003) daily vehicular trips to the spiderweb network (Figure 6-9).

The prominent travel desire is oriented in a north/south direction in the eastern part of the county through urbanized areas along the Fox River, which coincides with the largest concentration of development in the County. Travel demand is greatest in the northern and southern portions of this corridor with a slight decrease in demand between St. Charles and Elgin. The north-south travel desires appear to be a combination of trips originating in and

destined to locations in the urban corridor, as well as regional trips traveling through the County. In general, travel demand drops off considerably toward the western parts of the County. Another trend is the travel desire pattern between Kane and surrounding counties. The following list highlights some of these travel patterns:

- Northwest-southeast direction in the northern portion of the county between Kane County and McHenry and Cook Counties.
- East-west direction in the central portion of Kane County along the eastern border between Kane and DuPage Counties.
- Northeast and southwest direction in the southern portion of the county between Kane County and Kendall and DuPage Counties.

This set of travel desires indicates the importance of examining travel demand in relationship to the surrounding Counties. Notably, the existing travel desires in the northeast portion of the County appear to be heaviest. The roadway system that is in place accommodates these travel desires as follows:

- The Northwest Tollway and US 20 support northwest-southeast directional movement in the northern portion of the county.
- IL 64, IL 38, and Fabyan Parkway support the east-west directional movement in the central portion of the county.
- I-88/IL 56/US 30 and IL 59/US 34 support the northeast-southwest directional movement in the southern portions of the county.

6.8 Performance Measures

Performance measures were established to assess the ability of the transportation system and its components in meeting set performance goals. This type of technical evaluation was used to evaluate system conditions in the study base year and for the year 2030. Three categories of performance were used to analyze performance:

- Traffic service measures
- Congestion measures
- Traffic safety measures

The basic tool used in calculating the performance measurements for both the existing and future transportation networks was the travel demand model.

6.8.1 Traffic Service Measures

Traffic service measures match a calculated performance value such as speed or travel time to a corresponding level of congestion. VMT is a facility-based measure indicating system usage. It is the product of traffic volume over a specified length of highway. Vehicle hours of travel (VHT) is a user-based measure indicating the travel time spent from origin to destination. Summing the travel times of vehicles using a segment of highway produces VHT. Another traffic service measure is vehicle hours of delay (VHD). The delay function (VHD) can be calculated for each link by comparing the travel time produced at desirable speed for a

particular roadway as defined by its functional classification to the congested time that results from the traffic assignment. VHD is a product of traffic volume multiplied by the change in travel time. The system-wide delay can be calculated by summing delays for all links. Separate summaries may be produced by functional class or by individual route.

Another measure used to evaluate traffic performance is travel speed. Travel speed is a measure that evaluates the operating characteristics of a facility. The travel speed measure can be determined by comparing the VMT and VHT by roadway segment.

6.8.2 Congestion Measures

Congestion is generally measured in terms of LOS and v/c. Definitions of LOS for both roadway segments and intersections were presented earlier in Section 5. As explained, LOS on roadway segments is described by operating speed and delay experienced by motorists. For purposes of long-range planning, the ratio of v/c is often used as a surrogate measure to estimate the level of congestion on each facility segment in the travel model output. This measure of congestion is reflective of driver comfort and the degree of maneuverability within the traffic stream. The levels of v/c assumed to represent the approximate degree of congestion are presented below. Table 6-5 describes the v/c ratios used for the level of congestion categories.

TABLE 6-5
Level of Congestion Measures

Level of Congestion	Max v/c
Little or none	>0.66
Moderate	0.79
Severe	1.00
Extreme	>1.00

Source: Highway Capacity Manual, TRB Special Report 209, Table 7-1. Levels of congestion correspond generally with LOS C or better through LOS E

6.8.3 Traffic Safety Measures

Among transportation performance criteria, traffic safety is most universally accepted. A quantitative index or measure of safety performance is appropriate, therefore, as one of the basic performance measures for the Kane County transportation system.

Safety is often discussed only in general or qualitative terms. To include safety as a more useful performance measure, it is desirable to quantify safety in readily understandable terms. Of course, any effort to quantify safety must be fully supportable. Highway safety can best be characterized by the number of highway crashes and the resulting injuries and fatalities that might occur or be expected to occur over a given time period. Developing a highway safety performance measure thus becomes an exercise in relating basic transportation system features and attributes to an expected number of highway crashes. There are a number of basic, well-established principles relating highway safety to elements of the highway. These

include 1) the relationship of vehicular traffic volume to crash frequency and 2) differences in the safety performance of different highway types.

6.9 Existing Traffic Performance Analysis

The traffic performance analysis of the existing Kane County highway system relied on data related to travel demand and existing facilities, as well as, measures of effectiveness derived from the county's travel demand model.

6.9.1 Existing Traffic Service Measures

The traffic service measures of VMT, VHT, and VHD on all highways stratified by functional classification, as well as, county roads only are summarized in Table 6-6. In examining the traffic performance of all highways, principal arterials, which account for only 28 percent of the lane-miles within the county, were found to carry the bulk of traffic (approximately 50 percent of VMT) and experience approximately 52 percent of VHD. The same trend is increased by 50 percent when looking exclusively at the county roadway network. For county highways alone, principal arterials were only 26 percent of the system, but carried approximately 72 percent of traffic and experienced 89 percent of the VHD.

TABLE 6-6
Traffic Performance – 2003

	VMT		VHT		VHD	
Functional Class	**Miles**	**%**	**Hours**	**%**	**Hours**	**%**
2003 All Highways						
Freeways and Ramps	2,446,911	27	43,467	18	994	15
County Freeway and SRA	2,554,148	28	73,753	30	1,824	27
Principal Arterials	1,901,738	21	56,353	23	1,518	23
Minor Arterials	711,079	8	22,517	9	580	9
Collectors	1,454,211	16	50,807	20	1,745	26
Totals	9,068,087	100	246,896	100	6,661	100
2003 County Highways						
County Freeway and SRA	1,233,610	71	36,548	71	667	86
Principal Arterials	201,550	11	5,759	11	73	10
Minor Arterials	289,641	17	8,803	17	30	4
Collectors	20,308	1	636	1	1	< 1
Totals	1,745,108	100	51,747	100	771	100

6.9.2 Existing Congestion Measures

Congestion on all highways for 2003 based on daily traffic is illustrated in Figure 6-10. Only roadway segments that were found to be operating at LOS D, E, or F are shown. The congestion level has been designated in three categories related to levels of service as follows:

- Moderate Congestion (LOS D)
- Severe Congestion (LOS E)
- Extreme Congestion (LOS F)

When considering all highways in Kane County, only 18 percent of route miles and 23 percent of lane-miles were classified as congested. For just county roads, only 12 percent of route miles and 17 percent of lane-miles were deemed to be congested. Only 6 percent to 7 percent of the county highways were congested with a concentration of these roadways in Carpentersville/Dundee/Elgin, St. Charles/Geneva, and Aurora.

Table 6-7 shows the length and percentage of route miles and lane-miles at each LOS for all highways and for county highways only.

TABLE 6-7
Congestion – 2003

	Route Miles		Lane Miles	
Level of Service	**Miles**	**%**	**Miles**	**%**
2003 All Highways				
A	635	57	1,325	50
B	173	16	399	15
C	104	9	298	11
D	70	6	218	8
E	81	7	250	10
F	58	5	145	6
Total	1,121	100	2,635	100
Total Congested*	209	18	613	24
2003 County Highways				
A	230	74	460	65
B	26	8	63	9
C	18	6	56	8
D	20	6	76	11
E	9	3	21	3
F	8	3	25	4
Total	311	100	701	100
Total Congested*	37	12	122	18

*LOS D, E and F

6.9.3 Existing Safety Measures

In October 2001, the Kane County Transportation Committee directed the staff of the KCDOT to proceed forward with an on-going analysis of safety enhancements in five areas located in the easternmost portion of the county. In response to this directive, the KCDOT prepared a separate memorandum for each study area as part of the *County Wide Safety Enhancement Plan.* The categories and types of recommendations incorporated into each study area plan are as follows:

Speed Limit Reductions

Intersection Improvement Modifications

- Traffic signal installation and channelization
- Addition of protective only left turn signalization
- Installation of left and right-turn lanes
- Inclusion of pedestrian signalization with traffic signals
- Reconfiguration of existing timing scheme, red light enforcement and supplemental signing
- Installation of temporary traffic signals
- Increased turning radius to facilitate safer turning movements by trucks

Sight Distance Improvements

- Removal of vegetation
- Provision or relocation of stop bars and supplemental signing
- Re-grading of berms
- Acquisition of easement or additional right-of-way to eliminate an existing intersection sight distance obstruction

Roadway Maintenance/Repairs

- Re-paving roadway/end sections
- Replacement of existing guardrail
- Patching potholes
- Re-striping

Additional Warning/Regulatory Signs/Markings

- "Blinker" type signs to replace existing stop/warning signs at various locations
- Additional advisory signs such as chevrons, curve ahead, deer crossing, advisory speed, etc.
- Placement of reflective pavement markings
- Placement of additional pavement markings

- Traffic calming
- Reduction of speed limits
- Installation of barrier medians

6.9.4 Existing Public Transportation System Performance

In 1990, approximately 2.8 percent of the total work trips made by Kane County residents were made using rail or bus. Other means of transportation (taxicab, bicycle, etc.) constituted 0.8 percent of total work trips. Between 1980 and 1990, the proportion of work trips made by rail or bus declined by about 1 percent, while the proportion of work trips made by other means of transportation remained the same (*Kane County Transportation Planning Area Study – Transit System Performance*).

Although the proportion of trips made by rail and bus use declined between 1989 and 2002, the overall number of transit riders increased. As another example, in Kane County, Metra ridership increased 62 percent from 1989 to 2002. Table 6-8 shows the overall change in weekday boardings for each station in Kane County from 1989 to 2002.

TABLE 6-8
Change in Weekday Boardings from 1989 to 1999 in Kane County

Station	1989	2002	Percent Change
Aurora	1056	1646	+56%
Geneva	1290	1698	+32%
National Street	255	551	+116%
Elgin	465	554	+19%
Big Timber Road	33	581	+1661%
Total	**3099**	**5030**	**+62%**

Source: Commuter Rail System Station Boarding/Alighting Count, Summary Results Fall 2002

The ability of commuter rail lines to serve residential areas is often limited by the number of available parking spaces. Parking for automobiles is available at all Metra stations in the county, and many stations offer bicycle storage. Metra considers parking capacity to be exhausted when utilization exceeds 85 percent. In the county, Aurora, Geneva, and Elgin all exceed 85 percent of parking capacity. Average daily usage of parking spaces at these three stations combined is approximately 99.9 percent.

Pace, the RTA's suburban bus division had annual ridership of over 38 million riders in 2000. It provides commuter and local services within Kane County. Services include fixed route, dial-a-ride, park-n-ride to Metra stations and paratransit.

The 1996 Pace Comprehensive Operating Plan identifies a long-range business plan for the delivery of bus transit service in northeastern Illinois. As a rule, a combined density of 4,000 persons (employed and/or residing) per square mile is a criterion for a successful fixed route operation. Feeder bus services for commuter rail lines need a density of 2,500 persons per

square mile. Only the Aurora and Elgin areas meet these thresholds in Kane County. Relationship of the present Pace bus service area with combined year 2000 population and employment density is shown in Figure 6-11.

The average weekday ridership for the Pace system is 9,205 in Kane County. Thirty-three fixed route services operate in the county, 16 in the Aurora area and 17 in the Elgin area (Table 6-9). This transit service provides both intra-community service and links between neighborhoods and Metra rail stations.

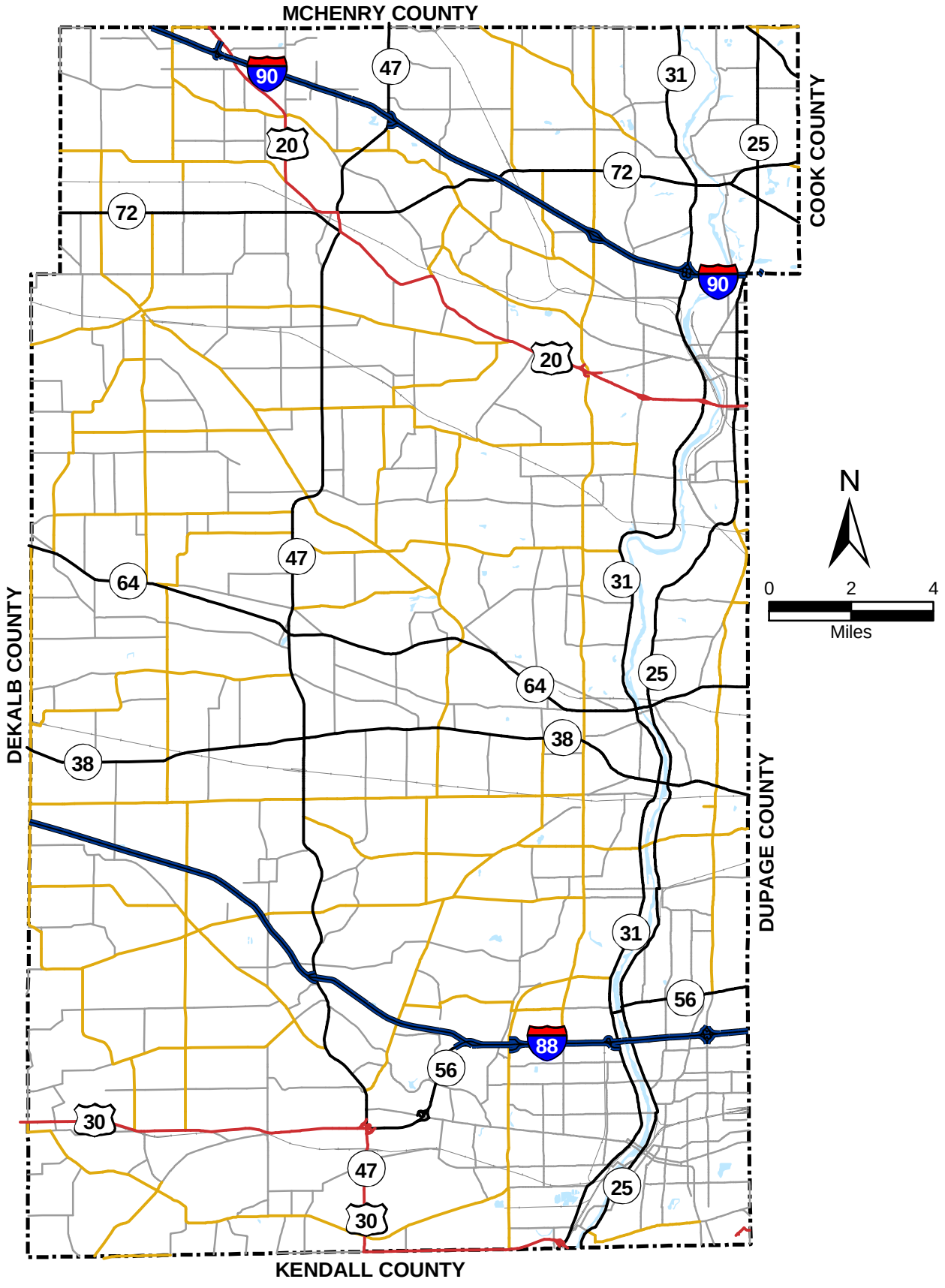
TABLE 6-9
Fixed Route Service

Area	Number of Routes	Average Weekday Riders
Elgin	17	4601
Aurora	16	4604
Total	**33**	**9205**

Source: Pace Ridership Data, January 2001

Section 6

Figures

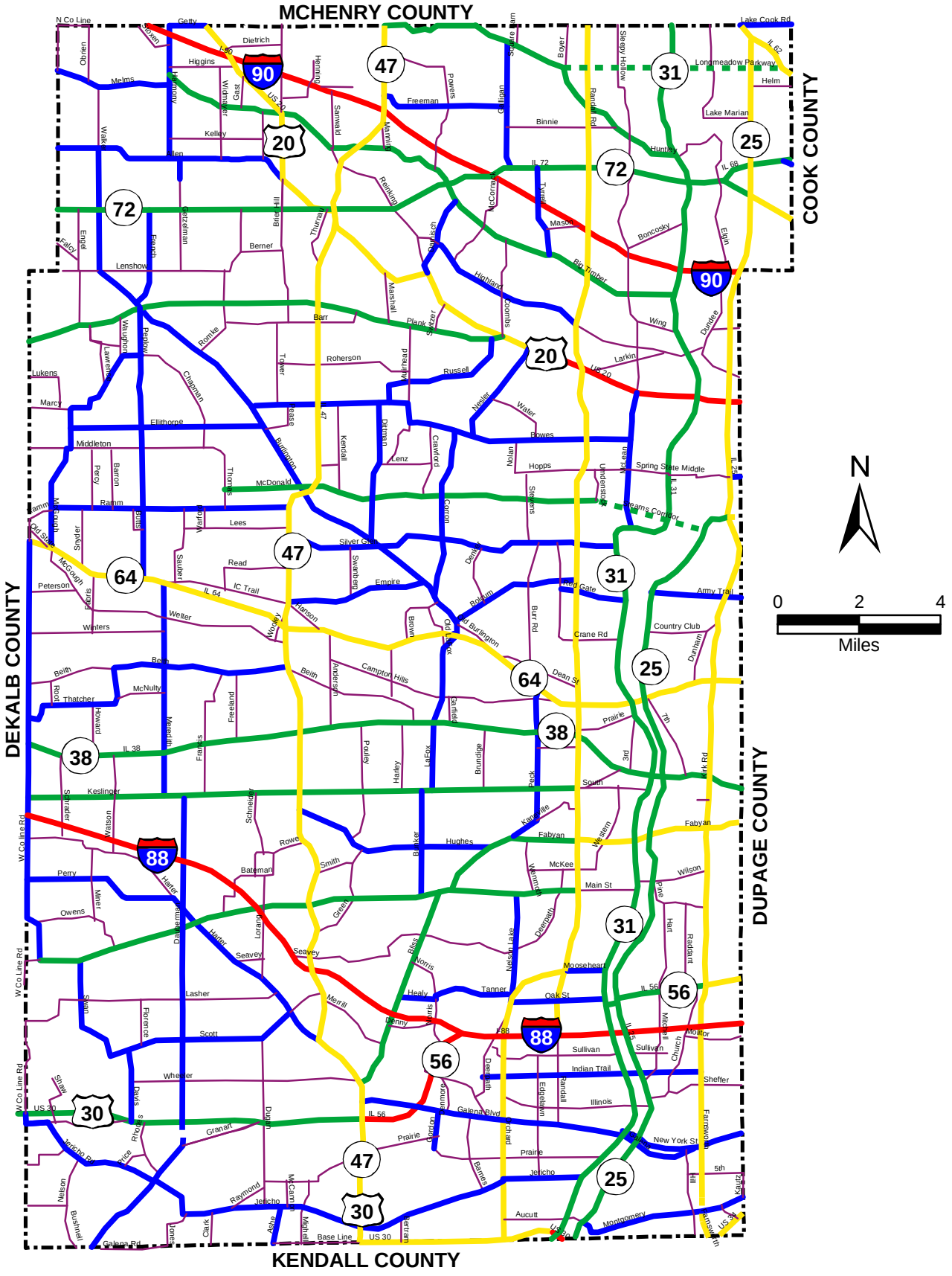


Kane County Roads

- Interstate
- U.S. Highway
- State Highway
- County Highway
- Other

Jurisdictional Classification of Existing Highways - 2004

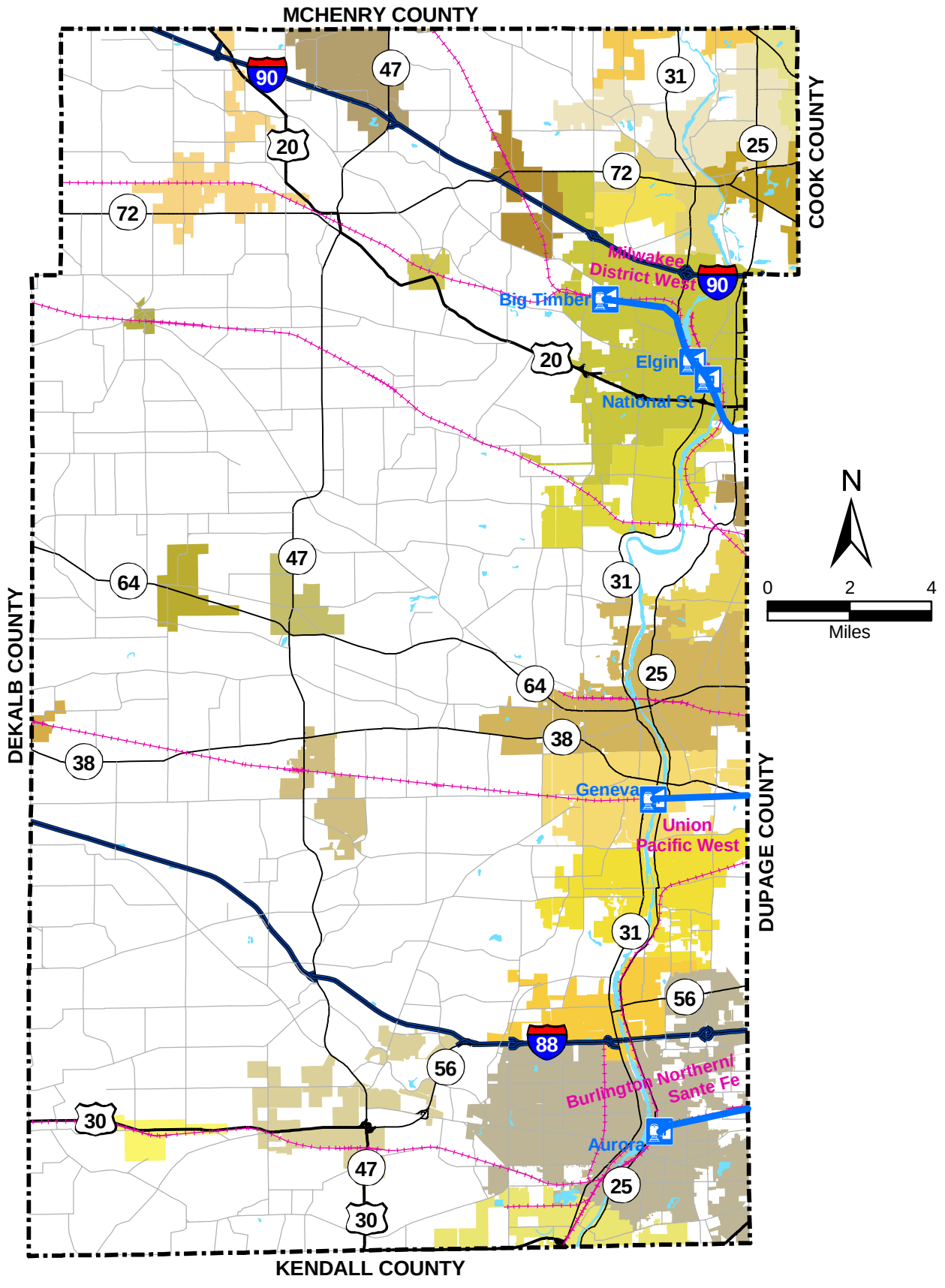
Figure 6-1
Kane County 2030 Transportation Plan



Expressway
SRA
Proposed SRA
Principle Arterial
Proposed Principle Arterial
Minor Arterial
Proposed Minor Arterial
Collector

Roadway Functional Classification
Adopted by Kane County Board
January 2004

Figure 6-2
Kane County 2030 Transportation Plan



Existing Rail Service Lines

Existing Metra Stations

Railroad

2004 Metra Rail Service

Figure 6-3
Kane County 2030 Transportation Plan

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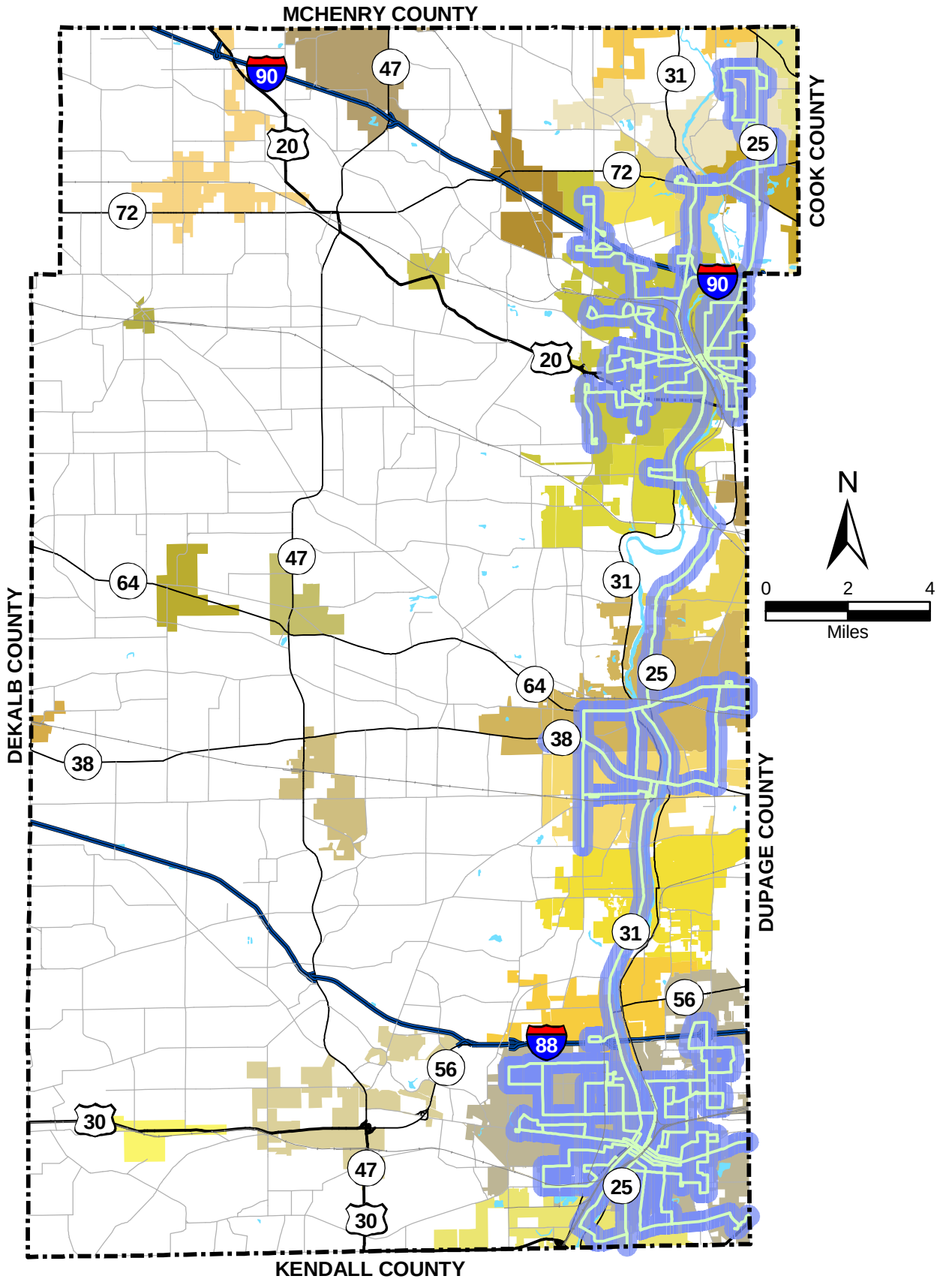

2004 Pace Bus Service

Existing Pace Bus Service

Pace Bus Service Area

CH2MHILL

Figure 6-4
Kane County 2030 Transportation Plan

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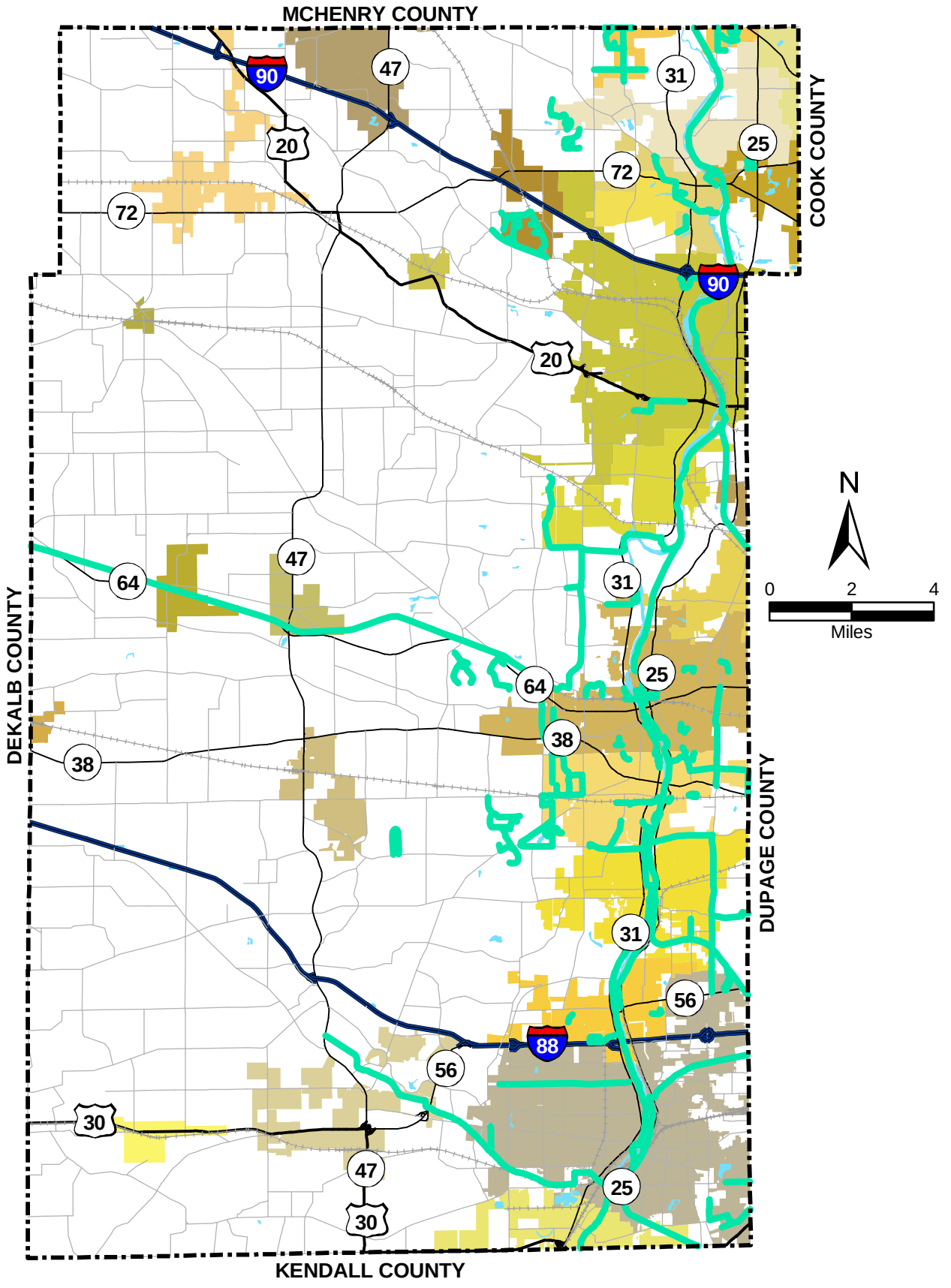

2004 Bicycle and Pedestrian Trails

Existing Bicycle and Pedestrian Trails

Figure 6-5
Kane County 2030 Transportation Plan

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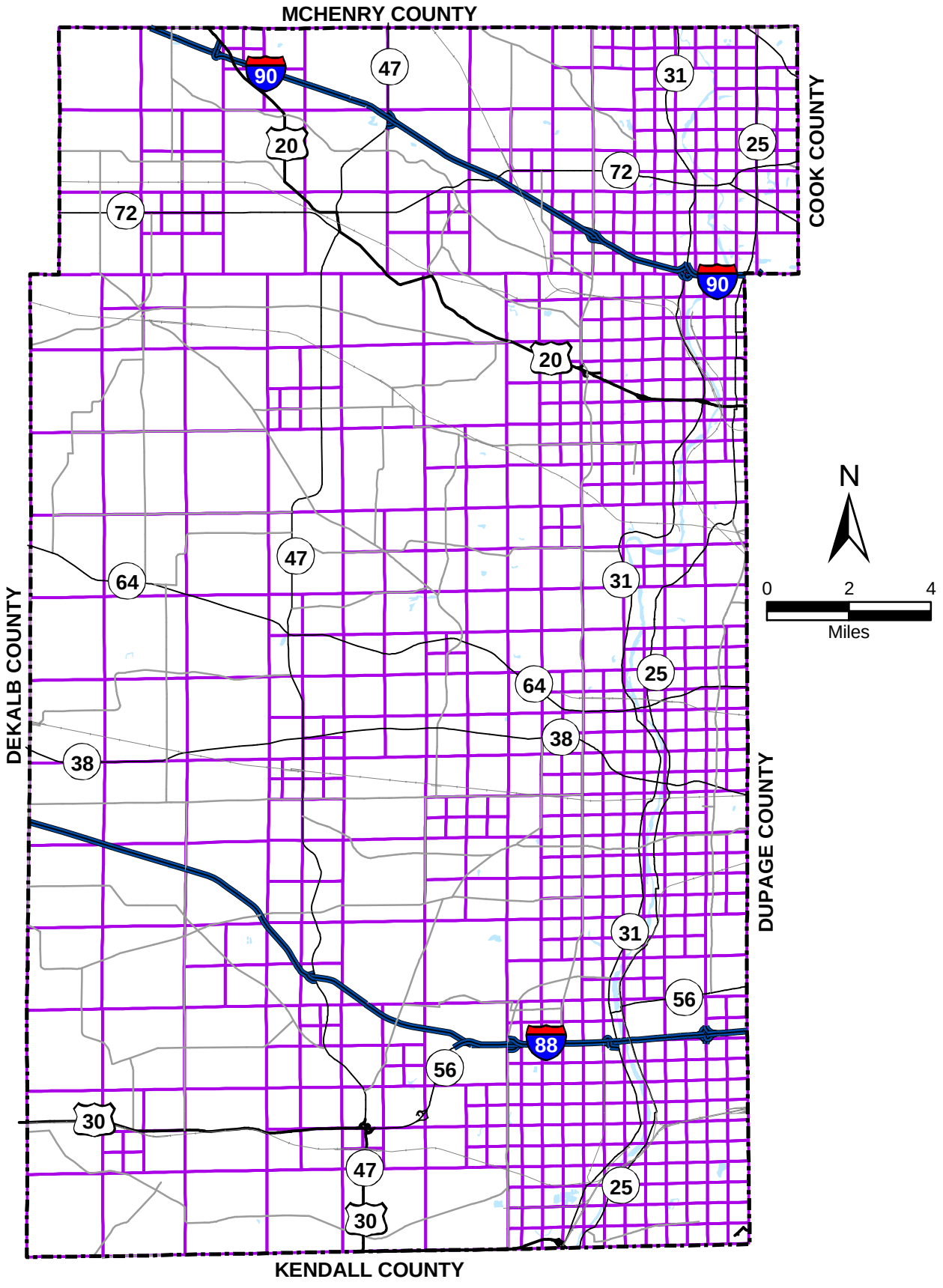

Kane County Traffic Analysis Zones

Traffic Analysis Zone

Figure 6-6
Kane County 2030 Transportation Plan

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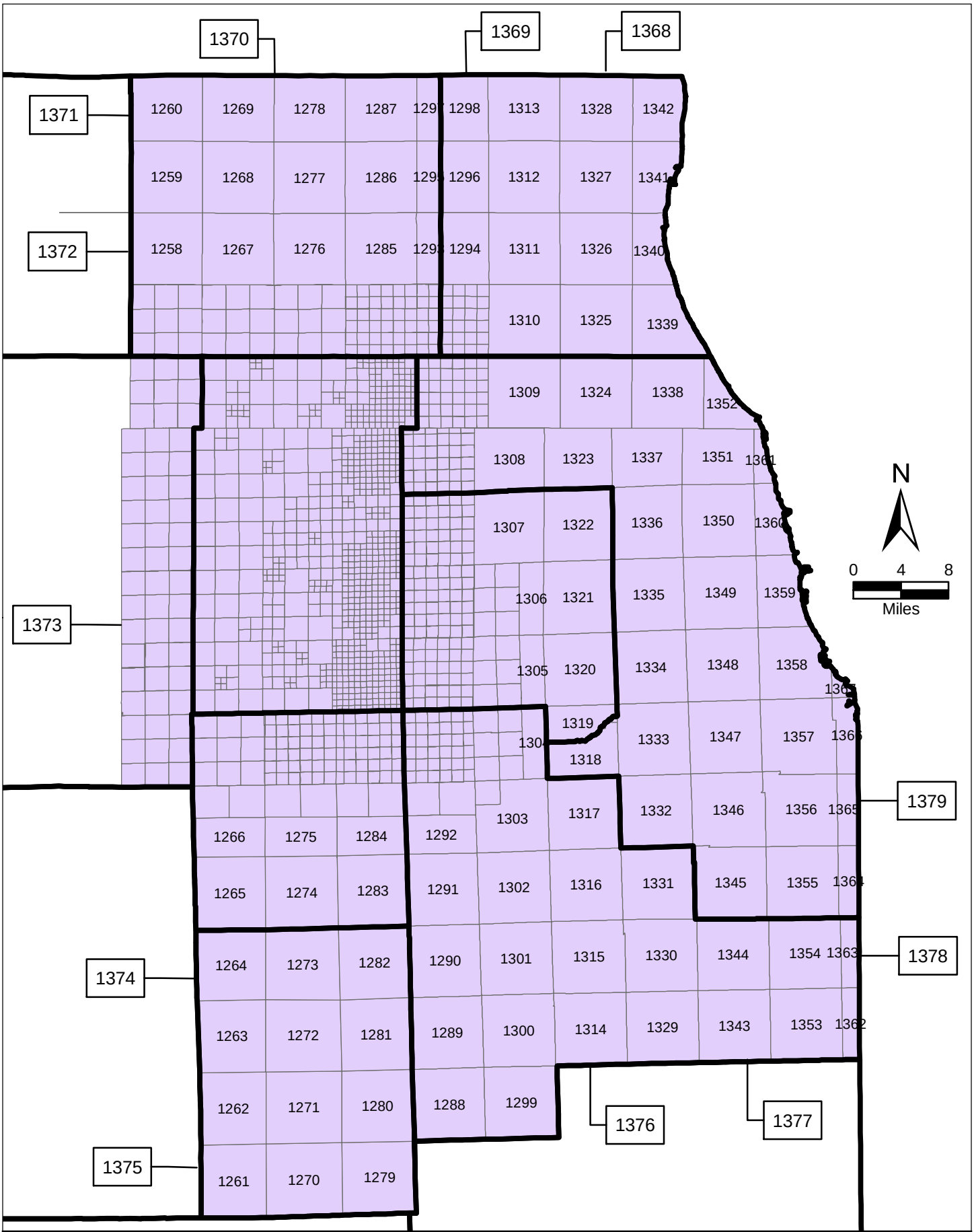

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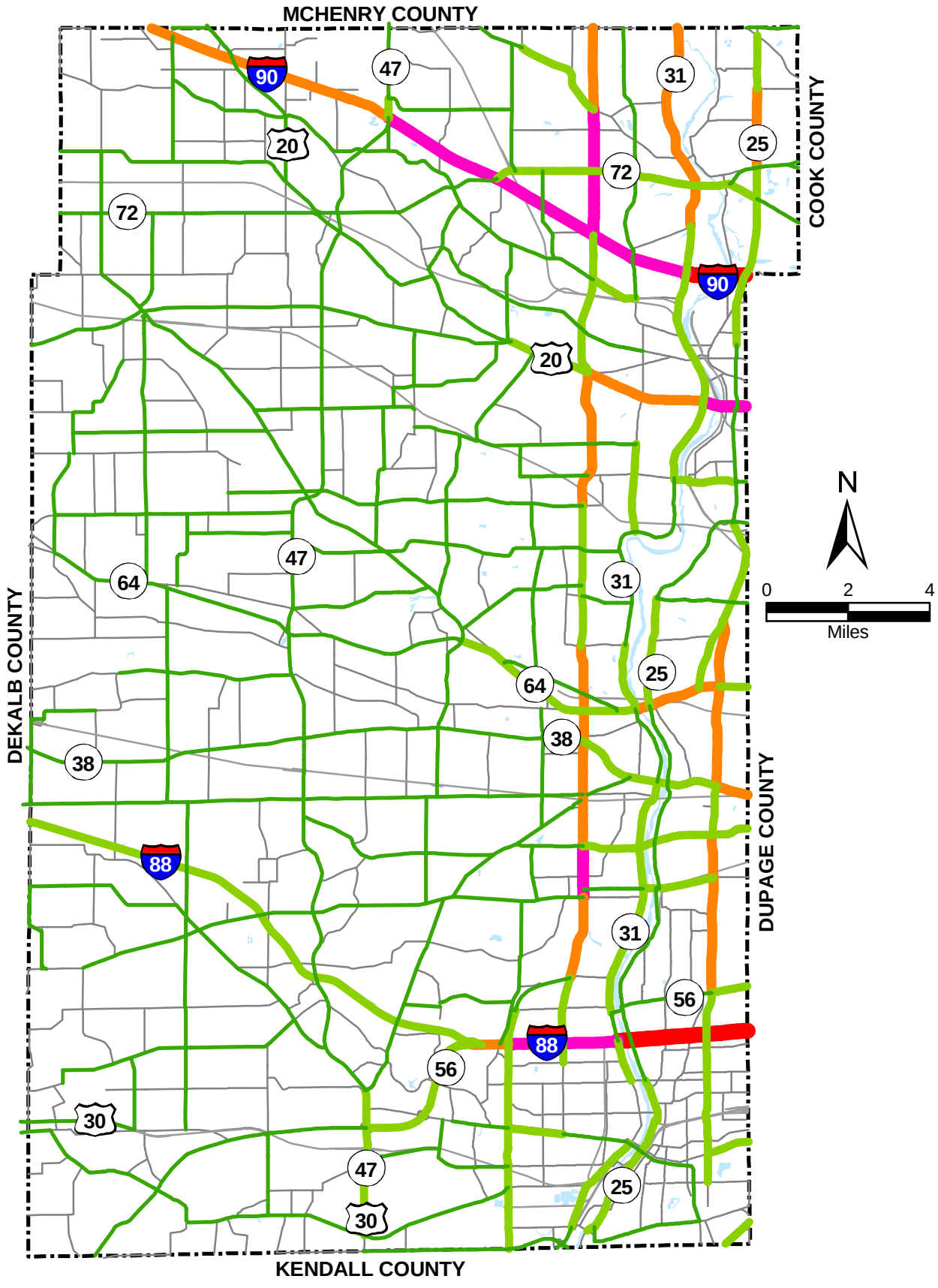

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45,001 - 60,000
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Sources:
- Kane County Division of Transportation, July 2004

Average Daily Traffic
Existing Year 2003

Figure 6-8
Kane County 2030 Transportation Plan

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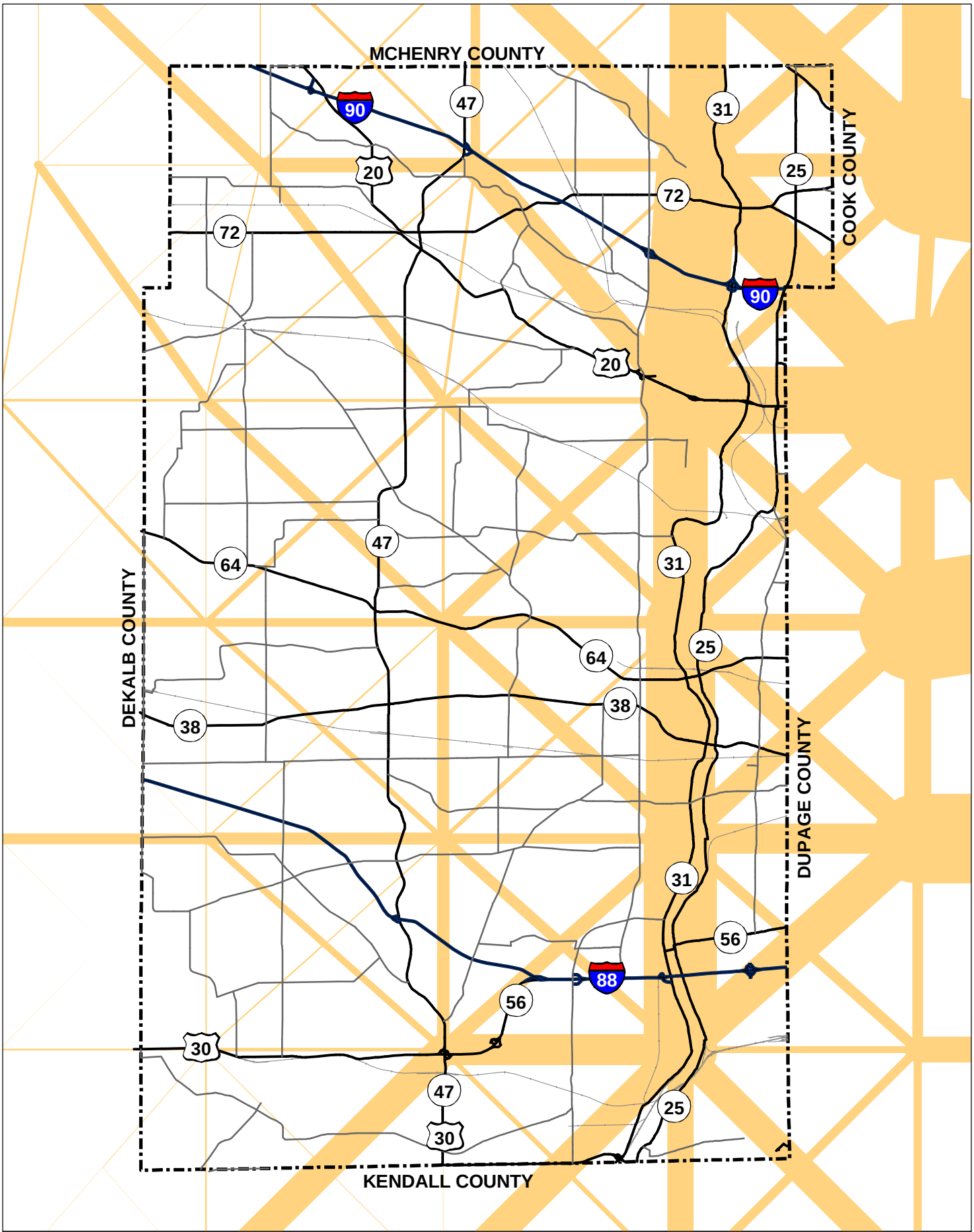

Figure 6-9
Kane County 2030 Transportation Plan

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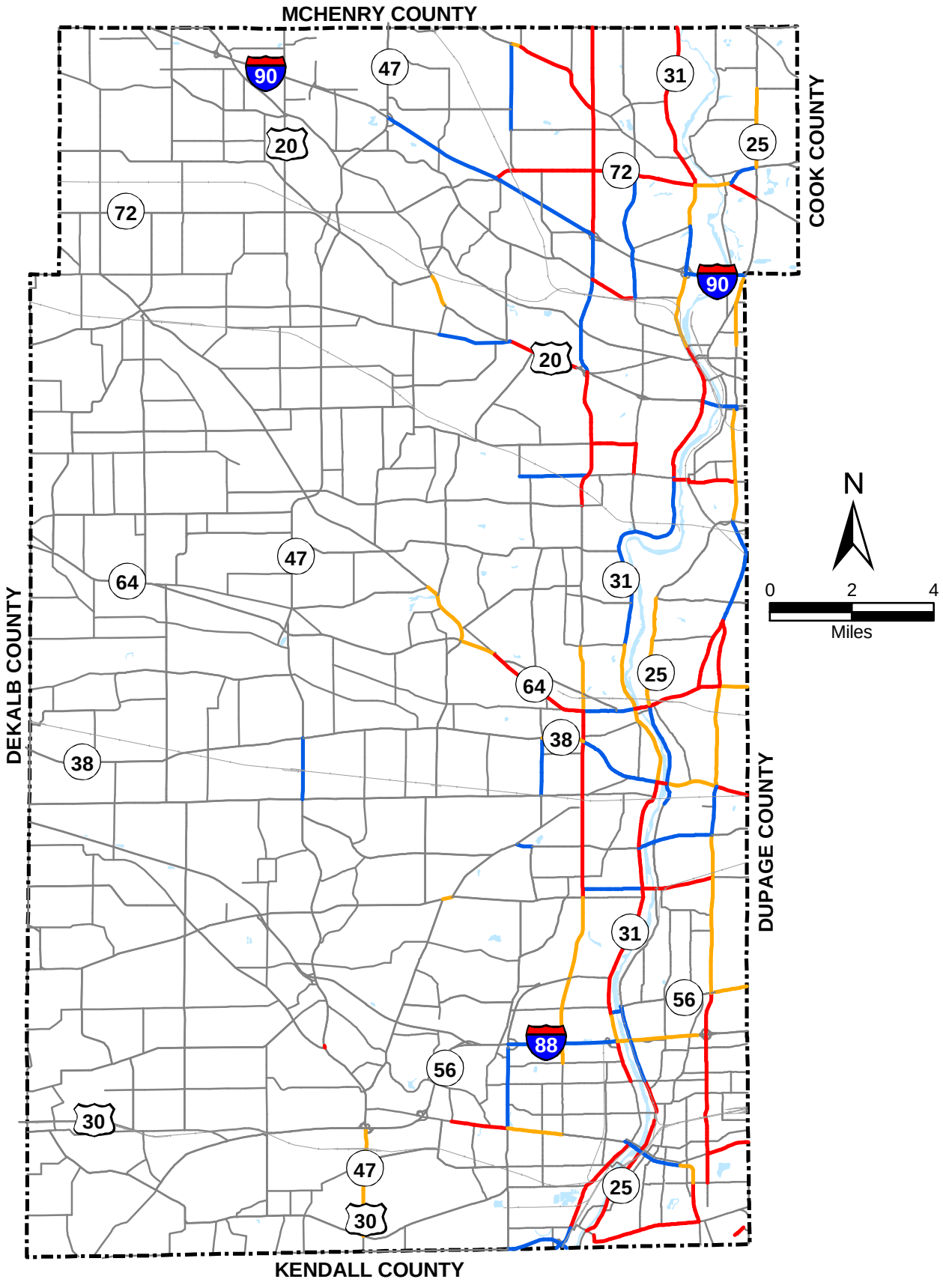

No Congestion
Moderate Congestion
Severe Congestion
Extreme Congestion

Existing Year 2003 Congested Roadway Segments

Based on Average Daily Traffic

Figure 6-10
Kane County 2030 Transportation Plan

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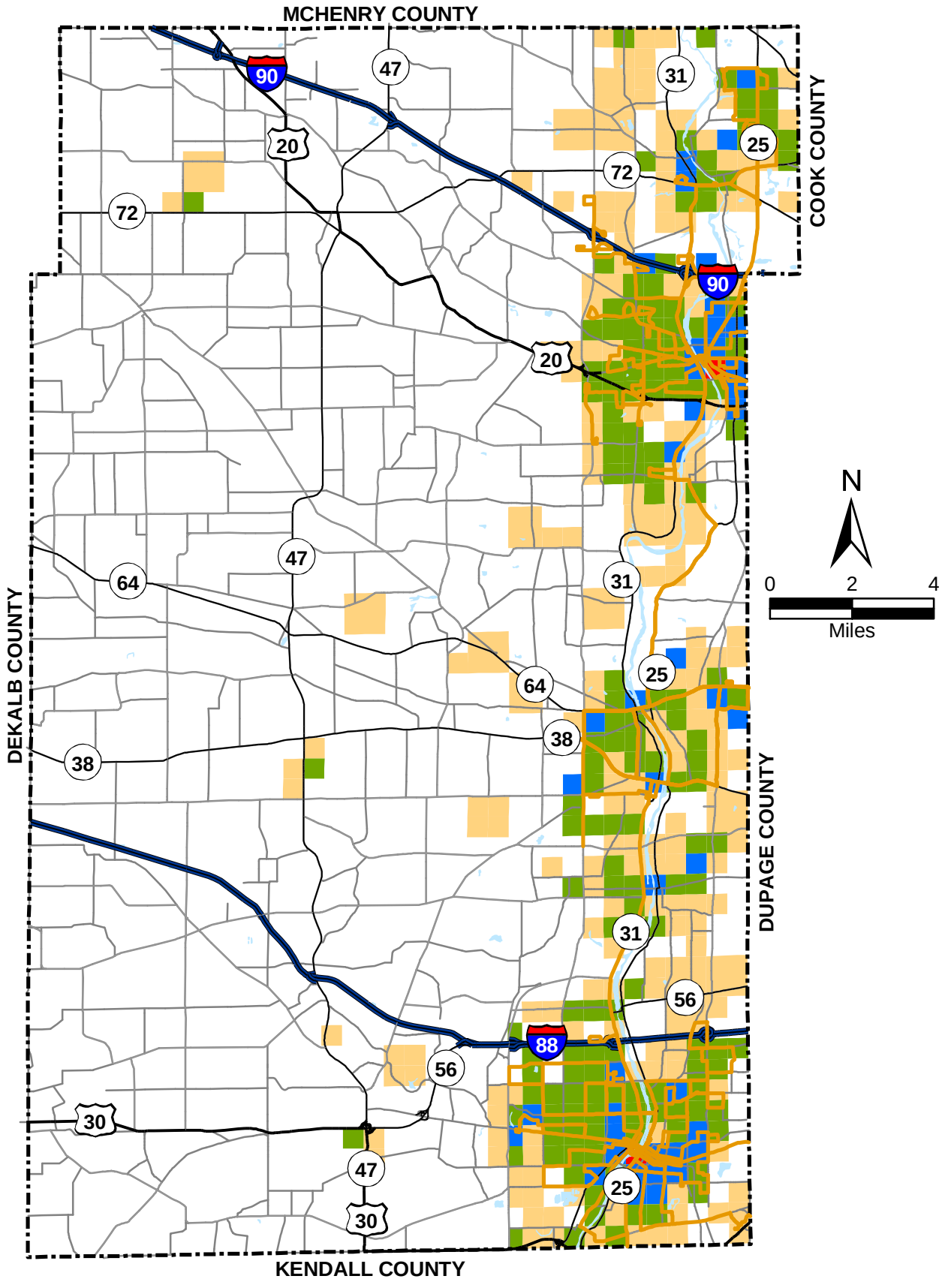

Population & Employment per Square Mile

- 1,001 - 4,000
- 4,001 - 10,000
- 10,001 - 30,000
- > 30,000

Existing Pace Bus Service

Pace Bus Service
2000 - Population and Employment Density

Figure 6-11
Kane County 2030 Transportation Plan

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Section 7

2030 Travel Forecast and Future System Performance

SECTION 7

2030 Travel Forecast and Future System Performance

7.1 Introduction

To examine the adequacy of Kane County's transportation system over the planning horizon, it is necessary to assemble a forecast for the rate of growth, type of growth, the location of growth, and household travel characteristics. In the preparation of this transportation plan, information on land use and population and employment was obtained from the NIPC. The 2030 forecasts were furnished by quarter-section for the entire Chicago metropolitan area.

The methodology used in the development of the Kane County travel demand model has been described earlier in Section 6. This section of the report describes the application of the model to forecast 2030 travel demand and the operational performance of the future system.

7.2 Population and Employment Forecasts

Forecasts of 2030 population and employment in Kane County were obtained from data developed by NIPC and released in November 2003. The forecasts, furnished by NIPC for each quarter-section were aggregated into TAZ's. Table 7-1 summarizes projected growth of population, households and employment from 2000 until 2030.

TABLE 7-1
Projected Growth of Population, Households and Employment — 2000-2030

	2000	2030	Percent Increase
Population	404,125	692,350	71.3%
Households	133,941	234,617	75.2%
Employment	206,107	342,684	66.3%

Source: 2030 NIPC Forecast, November 2003.

The distribution of projected 2030 population density in Kane County is shown in Figure 7-1. Forecasted growth of population between 2000 and 2030 is depicted graphically in Figure 7-2. To a large extent, TAZs with the greatest population in 2030 are also those that would exhibit the largest numerical population growth over the 30-year planning period. Forecasted population is heavily oriented toward the easternmost sectors of the County, east of Illinois Route 47.

Growth of employment in Kane County is illustrated in Figures 7-3 and 7-4. Forecasted employment density by TAZ is depicted in Figure 7-3, while estimated employment growth

in the period of 2000 to 2030 is shown in Figure 7-4. Both existing and forecasted employment is heaviest along the eastern, northern, and southern boundaries of the county.

The projections of population, households, and employment by TAZ are the basic tool used in developing forecasts of future travel. The estimated values were applied directly into trip generation relationships determined earlier in the transportation planning process.

The NIPC socioeconomic forecasts generally reflect development projections developed at a municipal level that are considered in reference to overall growth in the region. Projected development growth from some of the municipalities within Kane County is not entirely consistent with the County's *2030 Land Resource Management Plan*. Kane County's land use plan focuses on establishing Priority Places as shown in Figure 7-5. A Priority Place is a potential location where safe, healthy, and livable communities can be developed through the implementation of smart growth principles. A Priority Place location would represent a center of growth that would bring together a mix of land uses, compact development, and connects well with the County's transportation facilities.

7.3 Existing plus Committed Highway System

An Existing plus Committed traffic assignment network was developed for travel forecasting. The network consists of the existing highway system augmented by other roads or roadway improvements that are programmed or otherwise firmly committed for improvement in the near term. Committed roadway improvements utilized to develop the Existing plus Committed network are the widening of Orchard Road and McLean Road. Committed improvements would expand the existing highway system by approximately eight lane-miles.

Zone-to-zone travel impedance used in the initial 2030 travel forecast was obtained from Existing plus committed network travel times. Later in the transportation planning process, travel times were adjusted to reflect other roadway modifications incorporated into the future networks.

7.4 External-Internal (E-I/I-E) and Through (E-E) Travel Growth

External trip making consists of three distinct types of trip: Internal-External (I-E) trips that originate in a Kane County TAZ and have a destination outside of the county; External-Internal (E-I) trips which with an origin outside of the county and a destination within the county; and External-External (E-E) through trips that have neither an origin nor destination in Kane County.

In calibrating the base year model, external trips were derived from the 1996 CATS vehicular trip matrices for the entire metropolitan area and then increased to year 2003 values.

2030 forecasts of I-E and E-I trips were derived using a two-step process as follows:

1. For each trip interchange, the number of I-E and E-I base year trips was increased in proportion to the growth of vehicular trip ends at the internal terminus.

2. Total travel growth for the externals was scaled back to match the growth of total internal (I-I) trips, 1.36 percent.

The volume of 2030 E-E trips was calculated by extrapolating the 2000-2020 growth as indicated on CATS assignments for each through trip interchange.

7.5 2030 Vehicle Traffic Volume and Pattern

The traffic demand model was applied to forecast 2030 zone-to-zone vehicular travel based on population and employment growth described earlier and assuming implementation of the Existing plus Committed roadway network. It is projected that total daily vehicle trip making in Kane County would increase by 36 percent. The increase would not be uniform throughout the county. Areas that experience the most population and employment growth would also realize the greatest travel increase. Figure 7-6 shows the resulting forecast year 2030 estimated ADT and Figure 7-7 shows the projected change in ADT on Kane County highways during the period from 2003-2030.

The largest increase in traffic volumes would occur on the north/south arterials, primarily Randall Road and IL 47. Both roadways would experience traffic growth of more than 20,000 vehicle per day for most of the route. Other high growth areas would be the south central and north central portions of the counties surrounding the tollway facilities. The south central area would be expected to experience high growth on U.S. 30 and IL 56. The northern sections of the county would be expected to experience high growth along U.S. 20 and IL 72. In addition, high growth in traffic would be expected in the Tri-Cities areas on IL 64, IL 38, and Kirk Road.

Desire bands can also be used to provide a depiction of the pattern of travel growth. Figure 7-8 shows a combination of 2003 and 2030 vehicular travel desire bands. Travel growth is represented by the difference in bandwidth from the base year (2003) until the forecast year (2030). The heavy existing north-south travel desires that presently exist in eastern Kane County would be further magnified. There would also be significant travel increases in the vicinity of Sugar Grove as well as in the Upper Fox and Greater Elgin areas.

7.6 2030 System Performance

The traffic performance analysis of the future Kane County highway system relied on data described in previous sections of the report related to future travel demand and Existing plus Committed facilities, as well as, measures of effectiveness derived from the travel demand model. Performance is described by measures of traffic service, congestion, and traffic safety.

7.6.1 Traffic Service Measures

The traffic service measures applied in this analysis, described in Section 5, consist of VMT, VHT, and VHD. Table 7-2 summarizes 2030 traffic service measures separately for all highways and for county roads alone, stratified by functional classification. Similar to existing traffic conditions, principal arterials would carry a large share of the traffic burden (approximately 43.7 percent of the VMT) and would experience 46.4 percent of VHD, but

would constitute only 28.1 percent of the lane-miles. This trend also carries through for county roadways. County roads that are classified as principal arterials would carry about 54.5 percent of the vehicle travel and would experience 65.7 percent of the VHD, but would represent only 26.4 percent of the county road lane-miles.

TABLE 7-2
2030 Traffic Service

	VMT		VHT		VHD	
Functional Class	**Miles**	**%**	**Hours**	**%**	**Hours**	**%**
2030 All Highways						
Freeways and Ramps	5,087,304	25	104,674	17	16,480	17
County Freeway and SRA	5,447,386	27	180,994	29	30,466	31
Principal Arterials	3,891,956	19	129,273	20	19,416	20
Minor Arterials	2,142,567	11	72,106	11	7,311	7
Collectors	3,685,097	18	144,433	23	24,659	25
Totals	20,254,310	100.0	631,480	100.0	98,332	100.0
2030 County Highways						
County Freeway and SRA	2,479,889	53	86,974	55	14,989	65
Principal Arterials	817,888	18	27,271	17	4,170	18
Minor Arterials	1,284,779	27	42,007	27	3,836	17
Collectors	68,400	2	2,174	1	63	<1
Totals	4,650,956	100.0	158,426	100.0	23,058	100.0

7.6.2 Congestion Measures

Forecast 2030 levels of congestion on existing and committed highways based on ADT are shown in Figure 7-9. For the entire system, 57.3 percent of route miles and 61.7 percent of lane-miles would be congested (Table 7-3). For county roads alone, 52.6 percent of route miles and 58.4 percent of lane-miles would be congested. The areas found to be congested in 2003 would remain so in 2030, and in some locations would worsen as a result of the increase in travel demand. In year 2003, about a quarter of the county would be congested. In 2030, the congestion would spread west into the critical growth areas of WUF, NWKC, Sugar Grove, and west of Tri-Cities to Elburn, encompassing about three quarters of the county.

TABLE 7-3
Future Roadway Congestion

Level of Service	Route Miles		Lane Miles	
	Miles	%	Miles	%
2030 All Highways				
A	255	23	511	19
B	107	10	225	9
C	116	10	272	10
D	77	7	163	6
E	116	10	273	10
F	454	40	1,201	46
Total	1,125	100	2,645	100.0
Total Congested	647	57	1637	62
2030 County Highways				
A	89	28	178	25
B	29	9	59	8
C	31	10	61	8
D	21	7	42	6
E	35	11	78	11
F	110	35	299	42
Total	315	100.0	717	100.0
Total Congested	166	53	419	59

7.7 Conclusions and Comparisons

7.7.1 Existing and Committed Highway System

Table 7-4 shows the change in VMT, VHT, and VHD between 2003 and 2030 stratified by functional classification. For all roads, the VMT and the VHT would approximately more than double between 2003 and 2030. In addition, the VHD would increase by more than 13 times as a result of increased congestion. For county highways, the VMT and VHT would more than double and the VHD would increase 28 fold. This dramatic deterioration of traffic performance indicates that the existing and committed facilities, alone, would not adequately handle future travel demand.

The number of route miles and lane-miles at each range of LOS would shift. In 2003, most roadways were found to operate at LOS C or better. By 2030, most roadways would operate at LOS D or worse. Table 7-5 illustrates the projected change in route miles and lane-miles for the different classifications of LOS. For the entire highway system, congested lane-miles would more than double. While only 23 percent of Kane County experienced congestion in 2003, congestion would expand to cover 62 percent of the county in 2030.

TABLE 7-4
Comparison of Traffic Performance

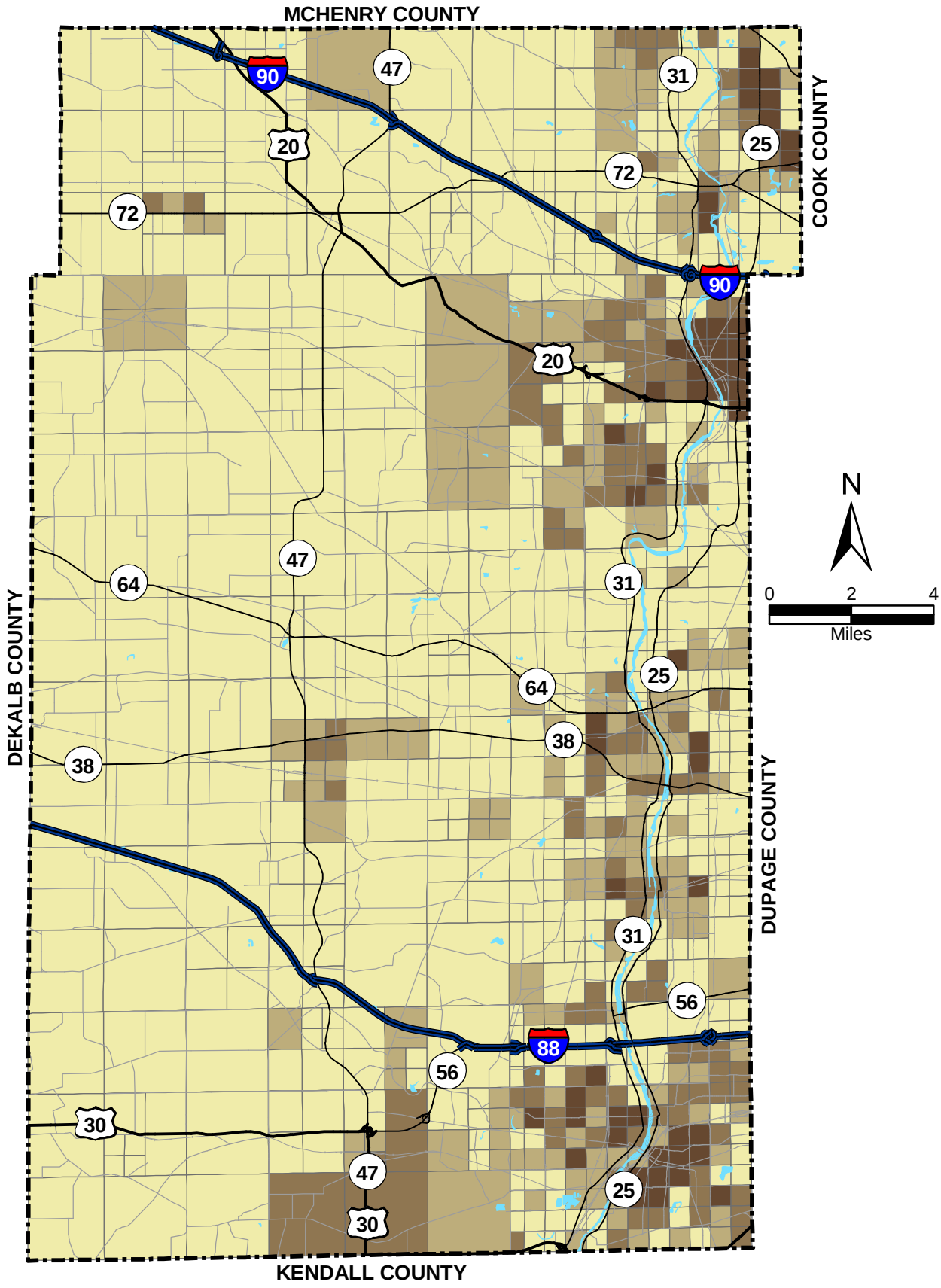
Functional Class	VMT		VHT		VHD	
	Δ Miles	Δ %	Δ Hours	Δ %	Δ Hours	Δ %
2003-2030 All Highways						
Freeways and Ramps	2,640,393	108	61,207	141	15,486	1,558
County Freeway and SRA	2,893,238	113	107,241	145	28,642	1,570
Principal Arterials	1,990,218	105	72,920	129	17,898	1,179
Minor Arterials	1,431,488	201	49,589	220	6,731	1,161
Collectors	2,230,885	153	93,626	184	22,914	1,313
Totals	11,186,222	123	384,583	156	91,671	1,376
2003-2030 County Highways						
County Freeway and SRA	1,246,279	101	50,426	138	14,322	2,147
Principal Arterials	616,338	306	21,512	374	4,097	5,612
Minor Arterials	995,138	344	33,204	377	3,806	12,687
Collectors	48,092	237	1,538	242	62	6,200
Totals	2,905,847	167	107,680	206	22,287	2891

TABLE 7-5
Comparison of Congestion

Level of Service	Route Miles		Lane Miles	
	Δ Miles	Δ %	Δ Miles	Δ %
2003-2030 All Highways				
A	-380	-60	-814	-61
B	-66	-38	-174	-44
C	13	13	-26	-9
D	7	10	-55	-25
E	35	43	23	9
F	396	683	1056	728
Total Congested	438	210	1024	167
2003-2030 County Highways				
A	-141	-61	-282	-61
B	3	12	-4	-6
C	13	72	5	9
D	1	5	-34	-45
E	26	289	57	271
F	102	1,275	274	1196
Total Congested	129	349	297	243

Section 7

Figures



Population Density (People Per Acre)

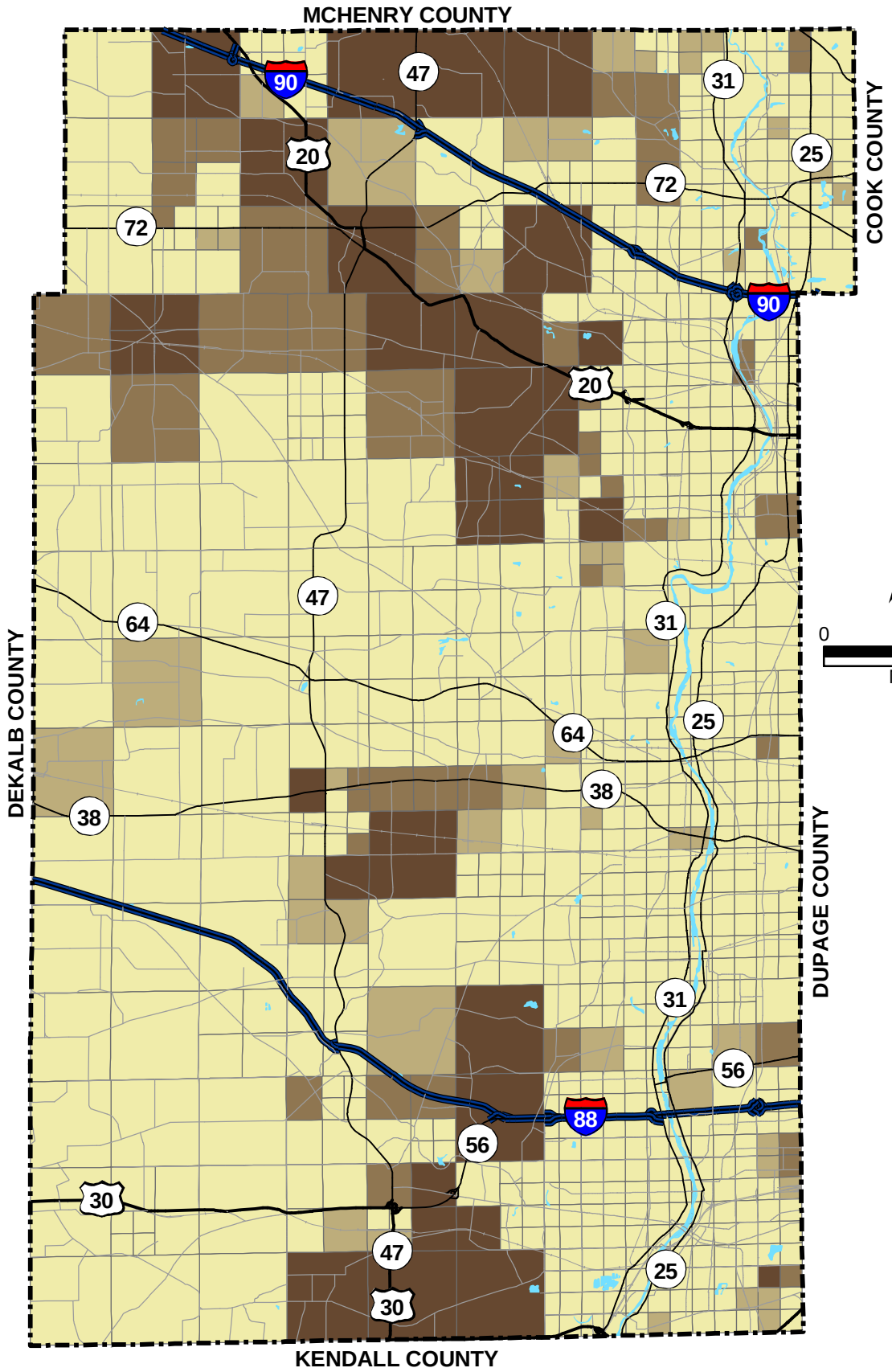
0 - 3 | 6 - 10

3 - 6 | 10 +

Sources:
- 2030 NIPC Socioeconomic Forecast, Nov 2003

2030 Population Density

Figure 7-1
Kane County 2030 Transportation Plan



Population Growth

- < 500
- 500 - 1000
- 1000 - 2000
- > 2000

Sources:
- 2000 U.S. Census
- 2030 NIPC Socioeconomic Forecast, Nov 2003

Population Growth 2000 - 2030

Figure 7-2
Kane County 2030 Transportation Plan

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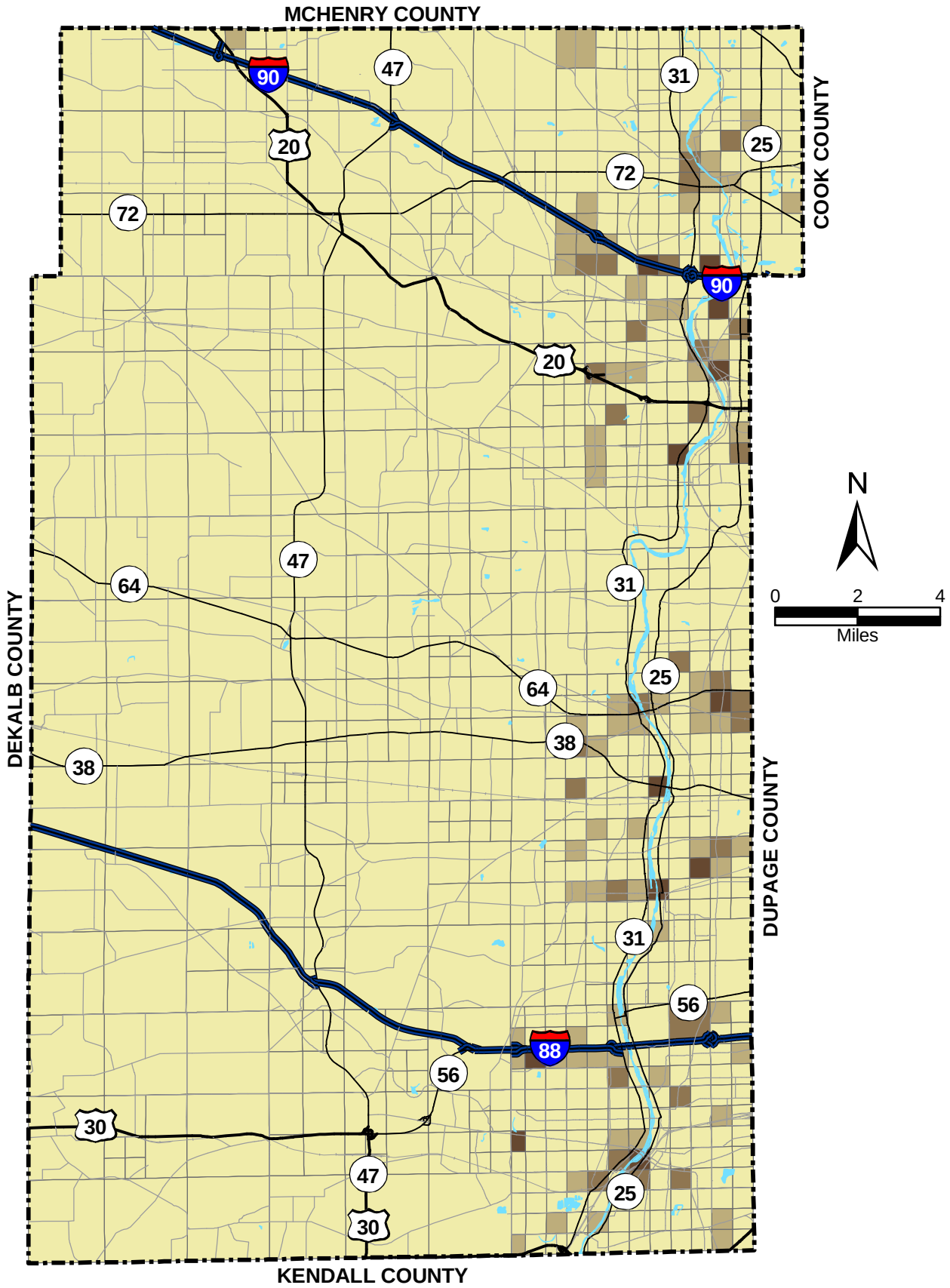

Employment Density (Employees Per Acre)

0 - 5
10 - 20
5 - 10
20 +

Sources:
- 2030 NIPC Socioeconomic Forecast, Nov 2003

2030 Employment Density

Figure 7-3
Kane County 2030 Transportation Plan

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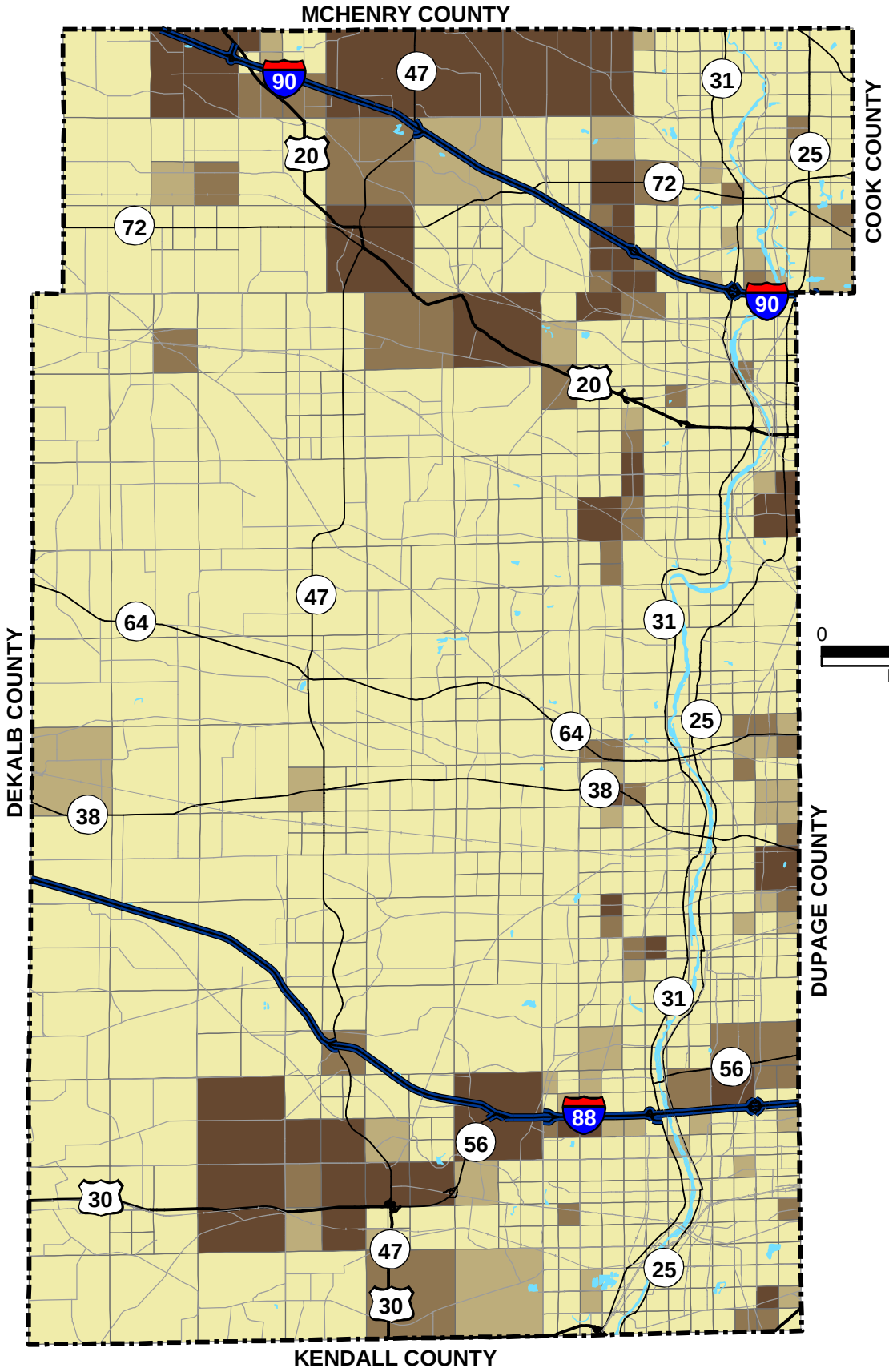

Employment Growth

- < 250
- 250 - 500
- 500 - 1000
- > 1000

Sources:
- 2000 U.S. Census
- 2030 NIPC Socioeconomic Forecast, Nov 2003

Employment Growth
2000 - 2030

Figure 7-4
Kane County 2030 Transportation Plan

CH2MHILL

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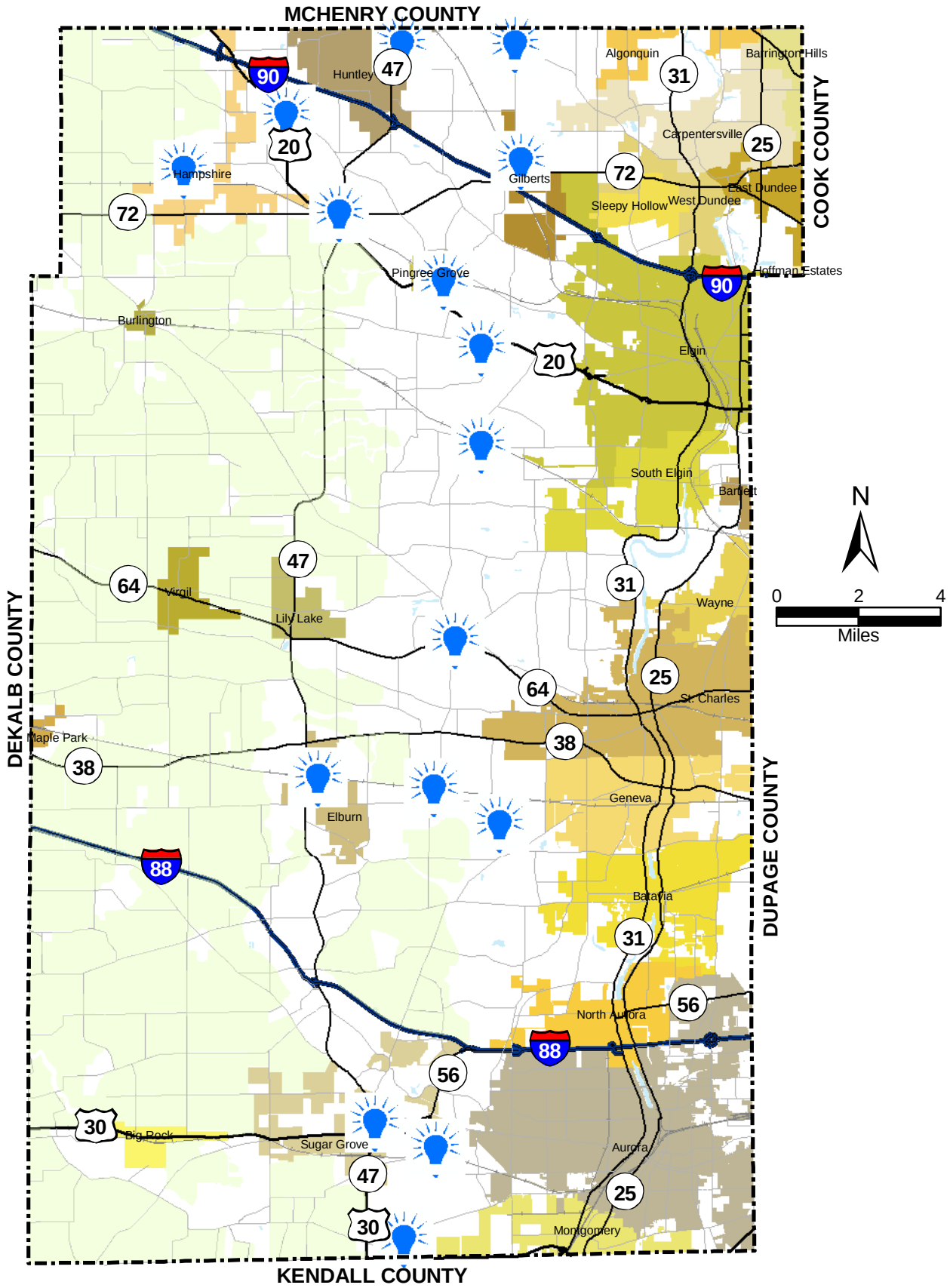

Priority Places

Priority Places

Proposed Agriculture Preservation (2030 Land Use Plan)

Figure 7-5
Kane County 2030 Transportation Plan

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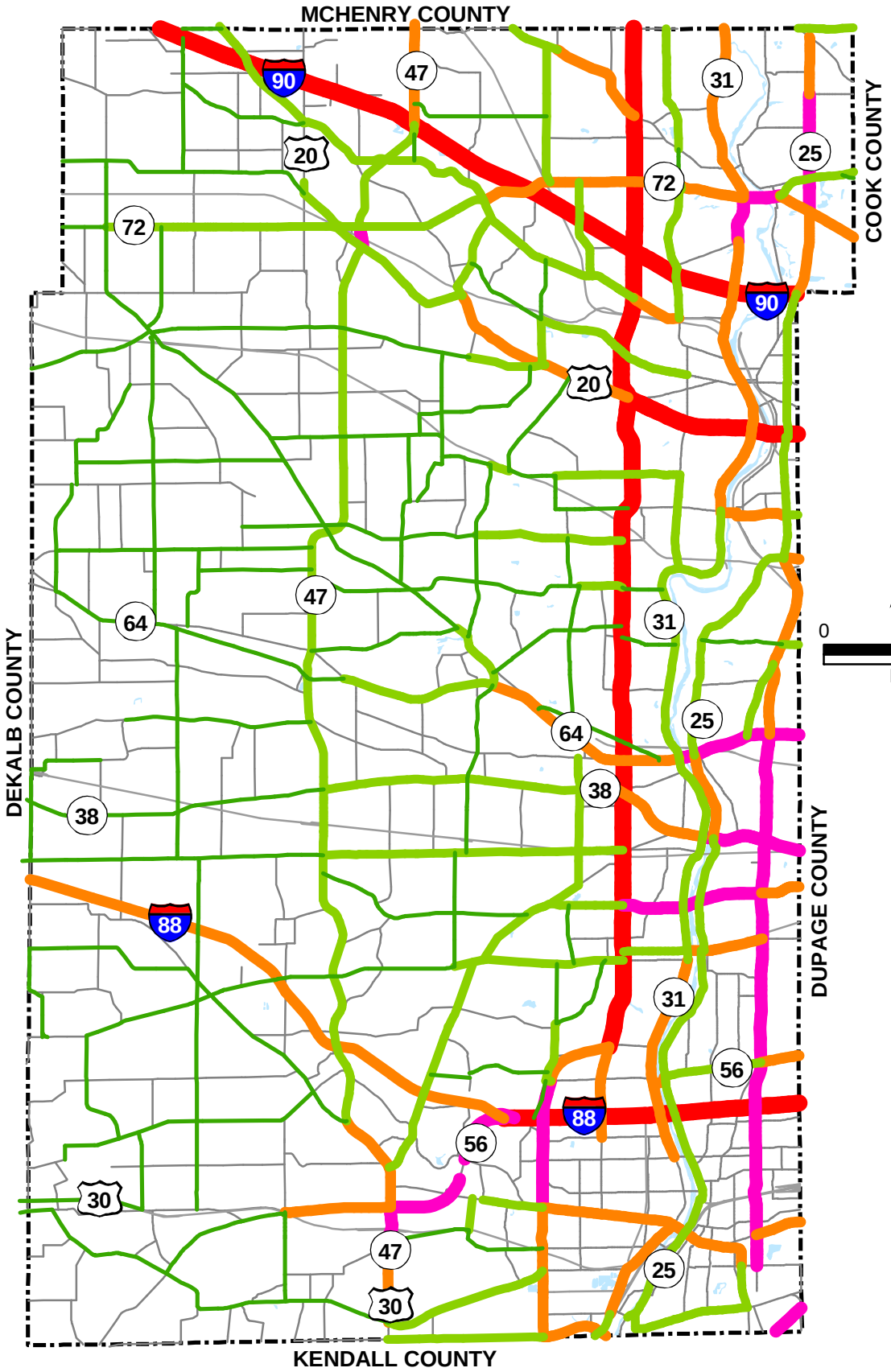

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45,001 - 60,000
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Average Daily Traffic
Forecast Year 2030

Sources:
- Kane County Division of Transportation, July 2004

Figure 7-6
Kane County 2030 Transportation Plan

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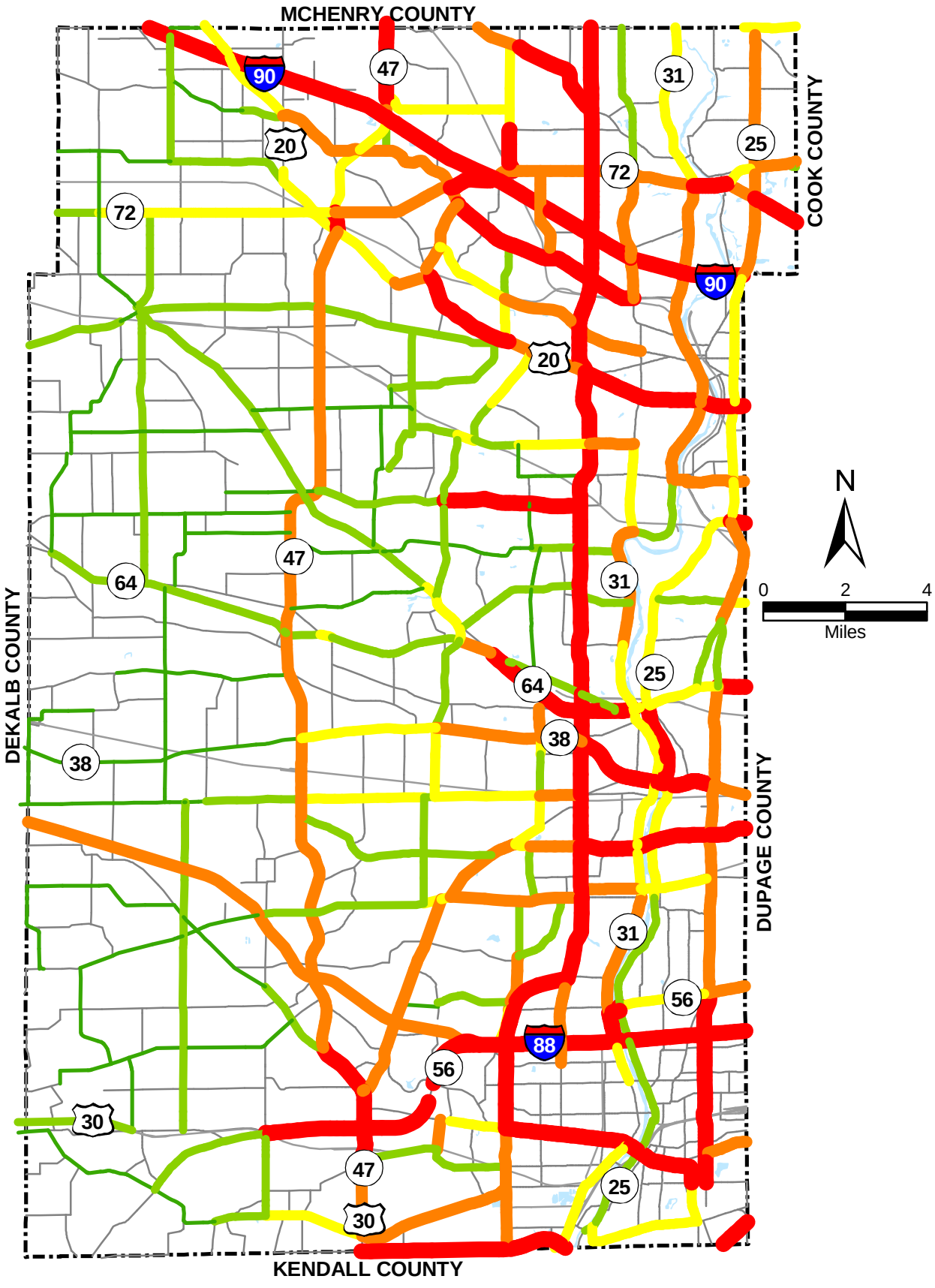

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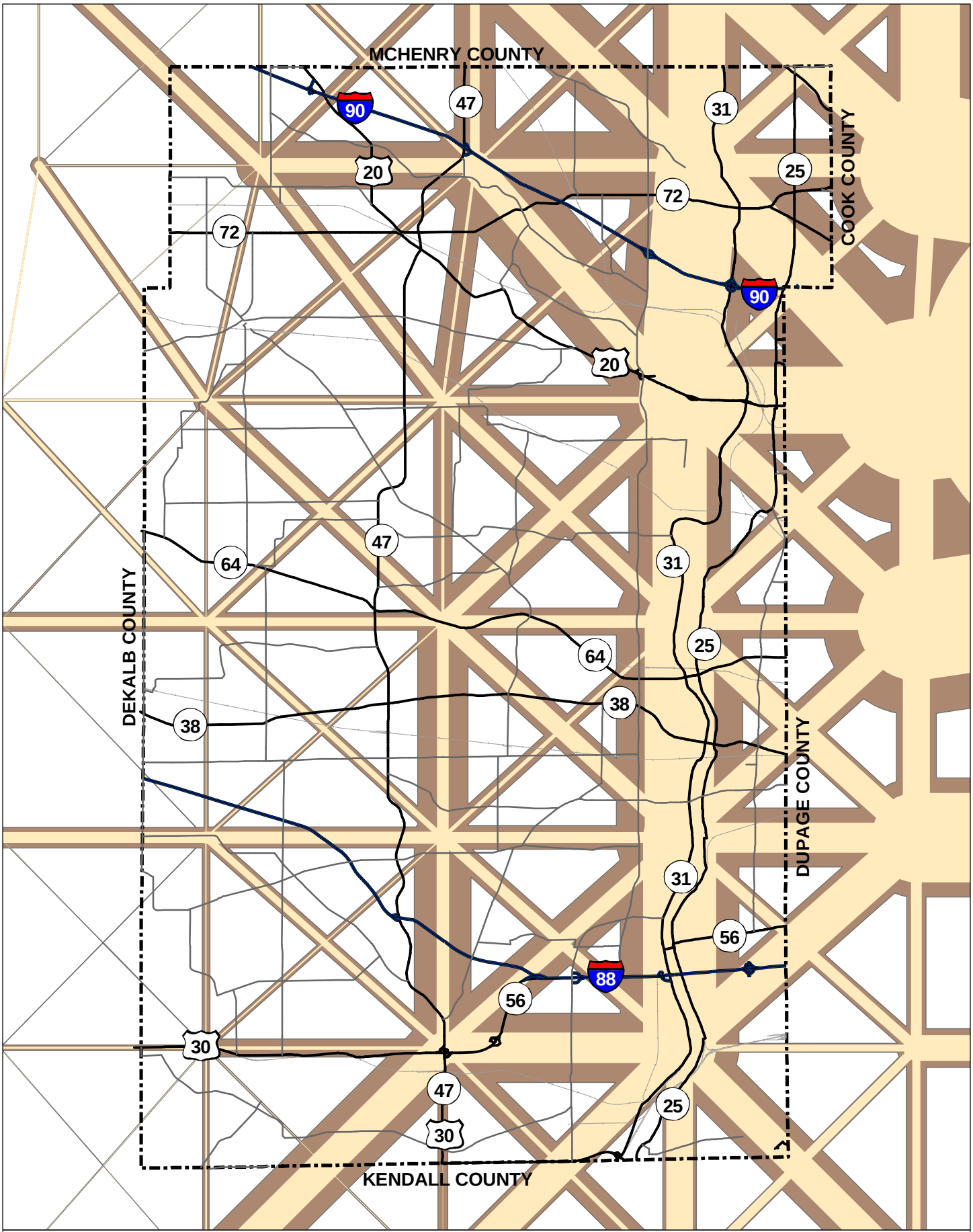
15,001 - 20,000
> 20,000

Change in Average Daily Traffic
2003 - 2030

Sources:
- Kane County Division of Transportation, July 2004

Figure 7-7
Kane County 2030 Transportation Plan



Future Travel Growth Desire Bands
2003 - 2030

Figure 7-8
Kane County 2030 Transportation Plan

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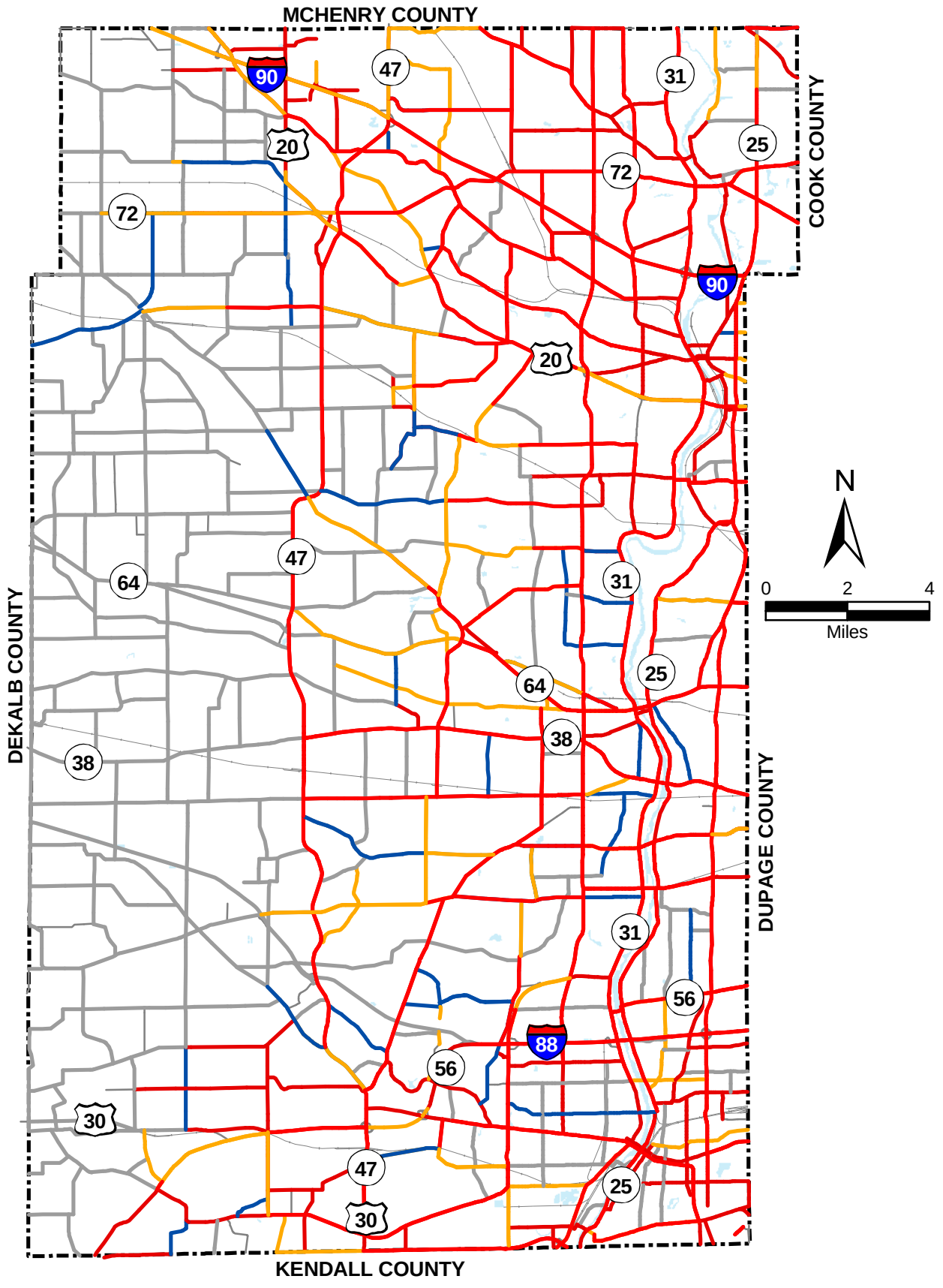


No Congestion
Moderate Congestion
Severe Congestion
Extreme Congestion

2030 Congested Roadway Segments

Based on Average Daily Traffic

Figure 7-9
Kane County 2030 Transportation Plan

Section 8

Improvement Strategies

SECTION 8

Improvement Strategies

8.1 Streets and Highways

A list of roadway projects was identified as part of the development of the transportation plan. Many of the projects were identified through previous planning efforts and some of the projects were identified from multiple sources. The improvements selected are for roadways, limited access freeways, SRAs, expressways, and tollways with a regional significance. Local projects will be discussed in Chapter 10. The projects were evaluated to determine their effectiveness at reducing congestion. The below mentioned plans and documents are summarized in Appendix A.

The initial set of improvements is the committed projects. The Existing plus Committed (E+C) has been alluded to earlier in Chapter 7 of this report. The committed improvements include widening or Orchard Road and McLean Road. The 2030 RTP projects include widening of the freeways and tollways, the Prairie Parkway, and three proposed regional Fox River Bridge Crossings (Stearns, Long Meadow, and Oak/IL 56). These projects have regional significance and are supported by CATS. In addition, several local bridge locations have been identified.

Many of the CRIP projects from this plan were intersection type projects. Since the CRIP is a 10-year plan, these projects are considered to be near term needs. Additional projects were identified from the SRAs planning studies. These improvements are primarily on the state system or along the Randall Road/Orchard Road corridor. Additional planned projects were identified from prior studies along with arterial roadway improvements that would address future locations of congestion.

In conjunction with the major improvements, Kane County has incorporated a strategy of planning for a system of collector roads. The collector roads would serve a dual function of providing mobility and access, while the major arterial improvements would primarily enhance mobility. The benefit of providing an efficient and continuous collector road system would be to improve mobility on arterials by providing better access to abutting land uses and connectivity to the roadway network. In addition, the collector roads would afford an alternative route whenever an incident occurs or during a special event.

8.2 Public Transportation

Several recent studies addressing public transportation issues and programs have been completed in Kane County. Synopses of each document are presented in Appendix A. The public transportation proposals described below have been developed from the findings presented in these documents.

8.2.1 Commuter Rail Routes

Potential expansion of the commuter rail lines would provide service along existing Metra lines and a number of freight rail lines. The expansion of services would include the development on new stations with parking to accommodate commuters. Where the proposed route would operate along freight rail lines that are owned by a railroad, Metra would be required to establish operating agreements for commuter rail service.

8.2.2 Fixed Route Bus Service

Fixed route bus service in Kane County is provided by Pace. The routes are located within the county and also provide connections to neighboring collar counties and rail transit routes.

As indicated in the *Kane County Transit Opportunity Assessment Study*, the existing Pace fixed route bus service is essentially confined to areas of the county with a combined residential and employment density of 4,000 persons per square mile. The Pace criteria established to provide fixed route service also have the additional requirements of:

- Eight contiguous quarter-sections (2 square miles) having population and employment of at least 4,000 persons per square mile; and
- A 6-square-mile area with 75 percent of the quarter sections having a population and employment density of at least 4,000 persons per square mile.

Pace has also developed *Vision 2020,* which represents a blueprint for future suburban mobility. The plan recommends express routes on major roadways that will connect with smaller community-based services at regional and community transportation centers. It calls for a network of new services, infrastructure improvements, and a decrease in travel times.

By providing fast and convenient transit services throughout Pace's suburban service area, Vision 2020 is expected to substantially improve mobility for all segments of the suburban population, assist communities in their pursuit of improved quality of life, and promote regional smart growth goals.

8.2.3 Paratransit

Paratransit provides transportation alternatives to the elderly and people with disabilities enhancing mobility for populations with special needs. Services can include Dial-A-Ride and Taxi subsidy programs and should be promoted through a joint effort among the County, municipalities, and transit agencies.

8.2.4 Supporting Transit Options

The Kane County Transit Opportunity Assessment Study also describes a wide range of options to support a comprehensive system of transit opportunities. Some of the recommendations are described below.

Transportation Hubs. Transportation Hubs would be an extension of the existing transportation facilities in downtown Elgin and Aurora. They would be comprehensive and full service centers that provide a full range of transportation opportunities. The Elgin and Aurora hubs require enhancement to include a system to support all forms of transit. It was

recommended that a plan be created to use the Geneva Metra Station as a Transportation Hub. There was also potential for a Transportation Hub in Huntley given its location on the Milwaukee West Line, its proximity to I-90, and that it is currently experiencing high population and employment growth.

Transportation Centers. Transportation centers would be smaller facilities with more limited transportation service. They would be used as connections between park'n'ride lots in smaller outlying local communities and Transportation Hubs. Transportation Centers were recommended at the existing Metra rail stations at Big Timber and National Street and the proposed Metra rail stations in Elburn, LaFox, Sugar Grove, Montgomery, Hampshire, South Elgin, St. Charles and one or two strategic locations in the Upper Fox Transit Area.

Park'n'Ride Lots. The Transit Opportunity Assessment Study recommended planning and development of a ubiquitous system of park'n'ride lots throughout Kane County. The RTP also recommended additional park'n'ride facilities to encourage increased transit use. The County was advised to work directly with CATS, Pace and the local communities to establish a system of potential park'n'ride users and locations.

HOV Lanes and Bus Rapid Transit. The Transit Opportunity Assessment and the Pace Vision 2020 both recommended the planning and development of HOV lanes and Bus Rapid Transit (BRT) within Kane County. BRT are buses that travel on an exclusive guide way and also can travel on roadways, similar to a typical bus. In some cases, right-of-way along existing or abandoned rail lines could be used for the BRT service.

8.2.5 Transit Supportive Land Planning

The RTP recommended that special emphasis be placed on the land-use principles of TOD. TOD is the design and development of land around transit stations and bus stops that encourage people to use public transportation. Its purpose is to build active and convenient communities that link people to their jobs as well as to commercial, retail and entertainment centers, in addition to reducing the need for multiple, longer-distance trips. The RTP recommended that TOD be pursued in all major capital projects and new transit service.

8.3 Transportation Demand Management

The process of transportation management follows a similar course as the laws of supply and demand, which are applied in business management. TSM relates to improving the supply side of transportation through strategies such as building and widening roads or improving signal timing. TDM is directed at increasing the passenger capacity of the transportation system by reducing the number of vehicles on the roads, particularly during peak travel periods. This is accomplished through a variety of strategies aimed at influencing mode choice, frequency of trips, trip length, and route traveled.

The CATS 2030 RTP supports the ongoing development and implementation of the region's congestion management plan, including TDM. Examples of TDM strategies that would reduce the demand for peak-period single-occupant vehicle travel are:

- Parking Management
- HOV Parking

- Rideshare Programs
- Employer Tax Incentives
- Flextime
- Telecommute

The plan states:

"These strategies are intended to better manage the demand placed on a fixed transportation supply. The strategies are aimed primarily at encouraging alternatives to traveling alone by auto with emphasis on more efficient travel planning with private vehicle use. The intended benefit is to contribute to reduced congestion and auto emissions. These strategies are typically voluntary in nature, and often rely on market-based or employer incentives to increase participation."

As indicated above, the success of any of these TDM strategies in reducing peak period traffic congestion will depend to a great extent on the level of employer participation or encouragement. Experience elsewhere has indicated that rideshare programs, for example, may reasonably be expected to reduce vehicle trips by from approximately 2 percent to 5 percent for a particular traffic generator, and given a moderate degree of outside support.

One form of TDM, which has been considered in the past in Kane County, is the TMA. This is an organization that provides a structure for developers, employers and public officials to cooperate in promoting alternatives to the single occupant vehicle.

The TMA of Lake County has successfully accommodated travelers along the busy, industrialized corridor at the border of Lake and Cook Counties. Along with fixed route bus service, the TMA operates 15 "shuttle bug" routes using smaller buses. The shuttle bugs provide service from selected Metra stations to and from approximately 33 companies located in the service corridor.

8.4 Transportation System Management

TSM is the concept of more efficiently using existing transportation systems by means other than large-scale construction. Just as TDM strategies are aimed at managing transportation *demand,* TSM strategies are directed at managing the transportation *system*. Some categories of actions that comprise TSM are:

- Physical improvements to roadways, intersections and interchanges such as lane or shoulder widening, channelization, grade separations, removal of restrictive segments that prevent full utilization of capacity
- Traffic control and surveillance systems (i.e. signal interconnects)
- Preferential or exclusive lanes for transit and/or HOVs
- Provisions for parking and loading

Existing TSM programs within Kane County include traffic signal interconnection, and the Tollway's I-Pass electronic toll system.

8.5 Non-Motorized Transportation

Some communities and park districts within Kane County have developed bicycle and pedestrian plans. The broad objectives of the *Kane County Bicycle and Pedestrian Plan* are to collect all previous bicycle and pedestrian planning studies, comprehensively identify all existing, proposed, and conceptual bikeways, and strategically plan for bikeway projects to create a countywide network. This network will improve public safety, encourage alternative modes of transportation, and increase recreational opportunities in the county.

The recommended plan recognizes that no single type of bicycle facility accommodates all types of bicyclists and therefore recommends design standards for various types of facilities. The plan also contains design recommendations for pedestrian facilities. It also investigates various design options to reduce conflict and improve safety both at intersections and mid-block crossing locations.

The plan proposes two strategies. The first strategy is the construction of physical improvements to the bikeway and sidewalk network to connect people with popular destinations and origins. The second strategy is to have municipalities adopt policies and programs to encourage the development of bicycle and pedestrian facilities during roadway design and construction and to encourage bikeway connectivity to the existing trail system. The objectives of physical improvements are to link bicycle and pedestrian destinations, increase pedestrian and bicyclist safety, improve trail network connectivity, support multimodal transportation, eliminate barriers that prevent bicycle trips, and develop future bikeway corridors.

Proposals for new or improved bicycle facilities in Kane County encompass regional trails, local trails, conceptual trails and transit links. The plan proposes expansion of regional trails or creation of new regional trails.

There are approximately 111 miles of planned bikeway facilities in Kane County. Most of the local trails are within parks or link major pedestrian destinations, such as schools, parks, Metra commuter rail stations, or recreation facilities. Another major function of local trails is to link neighborhoods to regional paths.

Conceptual paths are trails that, presently, local governments have insufficient funds to construct. Kane County park district and municipal officials have drawn approximately 301 miles of conceptual trails, or over three times the existing local trails or planned trails.

The expanding bikeway network allows the use of bicycles as a safe transportation option. Also, a safer environment with connections between origins and destinations encourages walking for short errands and improves access to transit. Bicycles and walking are considered integral parts of the transportation system and can be used in place of automobiles to meet air quality improvement goals. Bicycle and pedestrian facilities have many positive effects on the community; they are environmentally sound, reduce congestion and associated air pollution, and provide health benefits.

8.6 Summary

Overall the proposed transportation enhancements for Kane County include a comprehensive suite of improvements including roads, transit, non-motorized travel, and alternative strategies including TDM and TSM. The majority of travel, in particular commuter travel, is on the roadway system. The proposed improvements included widening of arterials and the tollways, creation of new corridors, realignments, and the promoting of a local collector road system. Transit improvements are also planned for Kane County to expand and improve the services provided by Metra and Pace. Non-motorized travel is planned to be expanded by connecting existing trails, improve the bicycle level of service (BLOS) for on-street trails, and develop conceptual trails. To support the transportation system alternative strategies are also explored to include the development and promotion of TDM and TSM practices.

Section 9

Financing Transportation Improvements

SECTION 9

Financing Transportation Improvements

9.1 Introduction—Financing Improvements

The development of the Kane County 2030 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 2030 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.

9.2 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 State Motor Fuel Taxes (SMFTs). Local programs rely on state subsidy of motor fuel tax revenue, property and sales taxes, local fees and to a lesser extent 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, general revenue, impact fees, area legislators, Kane County, park districts, and other units of governments or private industry.

The guidelines set forth in 1991 with the Intermodel 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.

9.3 Financial Resources

9.3.1 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.

- **SMFT** - The State of Illinois collects $0.19 per gallon of motor fuel 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 SMFT is approximately $6.3 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 two-cent LOMFT, which generates $4.2 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 $3.5 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 $0.5 million.

- **Impact Fee Program** - Kane County has instituted an impact fee program that will impose an impact fee on new residential and non-residential developments in the County. Kane County's impact fee program would generate approximately $2.7 million annually.

- **General Obligation Bonds** - Kane County issues bonds for roadway capital improvements for $40 million in 2001.

Kane County has several other revenue sources that can generate approximately $1.9 million 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 CATS.

- **Illinois State Toll Highway Authority (ISTHA)** - ISTHA finances projects on its toll highway system.

- **IDOT –** IDOT finances projects on the state highway system.

- **Bridge Rehabilitation and Replacement Program (BRRP)** - 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 TEA-21.

- **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).

- **Regional Technical Assistance Program** - The program provides technical assistance for transit planning to local governments. The program is financed through the RTA.

9.4 Projected Revenue Summary

In evaluating the potential revenues available to the KCDOT aggregated to the 2030 planning horizon, four scenarios were evaluated - see Figure 9-1. The first scenario only considers the extrapolation of the current sources of revenues, including the impact fee program, and would yield $896 million over the planning period. Scenario two includes all of the initial assumptions plus an additional two cents on the LOMFT for a total of four cents, which is the maximum allowable. The additional two cents would increase the total revenues for the KCDOT to $1,043 million. Scenario three includes all of the initial assumptions of the first scenario, but instead of the adding LOMFT, a ¼ cent sales tax is added to the revenues. The ¼ cent sales tax would be projected to yield approximately $11.0 million annually, and would increase the total revenues to 1,283 million over the planning period. The fourth scenario combines the additional revenue sources from the second and third scenarios and would result in total revenue for the KCDOT of $1,429 million.

9.5 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 about 320 miles of roadways. The annual cost of resurfacing and general road maintenance is $8.62 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 has issued $40 million in bonds for capital improvements. The annual debt payment on the bonds is $3.495 million.
- **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. Over the past 10 years the county has expanded the roadway system by approximately 3.7 lane-miles of new roadway per year.

Total annual expenditures excluding recent capacity enhancement projects is $17.0 million, for a total need of $706.0 million over the planning period. This cost excludes any additional capacity projects developed as part of transportation plan.

As highlighted in Section 8, an unconstrained set of roadway improvements were established to respond to the extensive residential and commercial growth in the County by 2030. 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.

9.6 Capital Improvement Needs

9.6.1 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 2001 dollars.

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

9.7 CRIP Projects

The cost for projections identified from the Impact Fee Program were the same cost as were published in the CRIP dated January 13, 2004. If a CRIP project was considered a part of a larger project the cost from the smaller project was rolled into the overall cost.

9.8 Roadway Cost Methodology

9.8.1 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.

9.8.1.1 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 1.1 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 2.2 million per mile for a two-lane cross section and a 4.5 million per mile for a four-lane cross section.

9.8.1.2 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 9-1 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 9-1 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 9-1
Cost Estimate for New Roadway Construction/Reconstruction

	Cost ($ Millions per mile)		
	Equivalent Number of Lanes Over		
Equivalent Number of Lanes Under	2–3 Lanes	4–5 Lanes	6–7 Lanes
2 to 5	1.0	2.0	3.0
6 to 7	2.0	3.0	4.0
Structures Over Minor Waterways	1.0	1.0	1.5

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 $75 per square foot of assumed deck

Widened Structures

The cost for widening existing structures is $150 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.

9.8.1.3 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 attribute to the highway improvement project, but rather to other improvements.

Table 9-2 lists the additional construction costs to be attributed to some at-grade intersections based on intersection type.

TABLE 9-2
Cost Estimate For At-Grade Intersections

Intersection Type	Additional Cost ($ each)
4-leg full upgrade	1,000,000
4-leg partial upgrade	600,000
3-leg full upgrade	400,000
3-leg partial upgrade	200,000
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.

9.8.1.4 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 9-3 shows estimated interchange costs by interchange type. A partial interchange improvement is estimated at half the cost.

TABLE 9-3
Cost Estimate for Interchanges

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

9.8.2 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 4-2.

9.8.3 Collector Road Cost

The cost of collector roads was determined using the planning area studies as a guide. The cost of collectors was taken as an average per route mile from the WUF and the SAM studies, both of which had a detailed cost analysis of the collector roads in the area. The resulting cost per route mile of 3.8 million includes construction of the through lanes, structures, intersections, engineering, right-of-way, and contingency.

9.9 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.

9.9.1 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.

9.9.1.1 Pavement

The pavement cost is measured in square yards and includes pavement removal and new pavements for mainline and ramps. The unit price is $6.00 a square yard for pavement removal and $52.00 a square yard for new pavement. The improvements on the freeways assume widening and not full reconstruction of all lanes.

9.9.1.2 Additional Roadway Cost

Additional costs are identified for freeway projects. These cost are based on a percentage of the pavement cost. Table 9-4 shows the percentages for each category.

TABLE 9-4
Percent of Pavement Cost for Additional Freeway Items

Type	Percent
Earthwork	10%
Drainage	8%
Erosion Control	2%
Traffic Control	10%
Lighting	2%
Signing/Markings	3%
Typical Utilities	5%
Incidentals	20%

9.9.1.3 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 $150 per square foot. In addition to the direct cost, a structure incidental cost of 20 percent was added to cover miscellaneous items.

9.9.2 Right-of-Way

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

9.10 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 20 percent of the total construction cost. The contingency cost is 20 percent of the construction, engineering, and right-of-way cost combined.

9.11 Comparison of Revenues and Needs

With a goal of meeting the basic expenditures of operations and administration, facility maintenance, and bond repayment, each of the four revenue scenarios were compared to the projected needs – Figure 9-2. A discussion is provided for each scenario that describes the overall financial condition and the potential revenues available for capacity improvements. The revenue and needs projections for the four scenarios listed below are detailed in Tables 9-5 through 9-8.

Scenario 1

The first scenario examines a comparison of revenues to expenditures with no additional revenue sources considered. 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 for this scenario portions of these funds have been diverted to cover operation and maintenance costs. For scenario 1, there would be sufficient funds to meet the operation and maintenance needs in comparison to the projected revenues with an additional $190 million available for capital improvements.

Scenario 2

The second scenario considers an additional two cents for LOMFT for a total of four cents. The added revenue offsets the need to divert all of the SMFT, and would allow approximately half of the SMFT to be spent on capital improvements. The revenues and projected needs would balance with $337 million available for capital improvements. The additional two-cent LOMFT would require approval by the County Board.

Scenario 3

The third scenario considers a ¼ cent sales tax for use on capital improvements instead of a two-cent LOMFT. The ¼ cent sales tax would generate approximately $11 million annually over the planning period. In an effort to balance revenues and needs, 29 percent of the revenue from the sales tax levy was diverted to offset operation and maintenance costs. The SMFT and LOMFT were reinstated to current levels for funding capital improvements. The revenues and projected needs would balance with $575 million available for capital improvements. The ¼ cent sales tax would require approval by County referendum.

Scenario 4

Scenario 4 is a combination of scenarios 2 and 3, which incorporates both a two-cent LOMFT and a ¼ sales tax in the revenue determination. The result is that projected revenues and needs would balance and $724 million would be available for capital improvements.

TABLE 9-5
Kane County Revenues and Needs Forecast through Year 2030 – Scenario 1

Projected Revenue	Annual Revenue	Expansion Factor*	27 Year Cumulative Revenue	% of Revenue for Capacity Projects	Capacity Projects Revenue	O&M Revenue
County Highway Levy	$5,050,700	5.00%	$276,117,357		$0	$276,117,357
County Bridge Levy	$262,800	5.00%	$14,367,046		$0	$14,367,046
County Highway Matching Levy	$54,600	5.00%	$2,984,934		$0	$2,984,934
Motor Fuel Tax - State	$6,246,200	1.96%	$219,542,903	3%	$6,586,287	$212,956,616
Motor Fuel Tax - Local Option	$4,167,500	1.96%	$146,480,267	10%	$14,648,027	$131,832,241
Impact Fee	$2,700,000	27	$72,900,000	95%	$69,255,000	$3,645,000
Council of Mayors Planning Funds	$48,400	2.80%	$1,914,783		$0	$1,914,783
Fees	$440,000	27	$11,880,000		$0	$11,880,000
Development Donation Accruals	$50,000	27	$1,350,000		$0	$1,350,000
Other	$1,050,000	27	$28,350,000		$0	$28,350,000
Interest (non federal only)	$275,000	27	$7,425,000		$0	$7,425,000
STP-R	$500,000	27	$13,500,000		$0	$13,500,000
Federal			$100,000,000	100%	$100,000,000	$0
Total Projected Revenue	$20,345,200		$896,812,291		$190,489,314	$706,322,977
Projected Needs	**Annual Need**	**Expansion Factor***	**27 Year Cumulative Needs**		**Capacity Projects Needs**	**O&M Needs**
Bond Payment	$3,495,000	18	$62,910,000			$62,910,000
Building & Grounds	$569,200	3.80%	$26,023,506			$26,023,506
Equipment	$740,100	27	$19,982,700			$19,982,700
General Services	$3,593,700	4.00%	$169,206,541			$169,206,541
Maintenance - General	$2,949,700	4.65%	$152,979,006			$152,979,006
Maintenance - Highway (Resurfacing/Striping/Other)	$4,100,000	3.70%	$184,723,940			$184,723,940
Maintenance - Deicing Materials	$630,000	6.20%	$41,398,461			$41,398,461
Maintenance - Bridge	$940,000	4.65%	$48,750,810			$48,750,810
Capital Capacity Improvement Projects*	$0		$0.00		$0	- - -
Total Projected Needs	$17,017,700		$705,974,964			$705,974,964
Surplus (Deficit)			$190,837,327		$190,489,314	$348,013

* - Expansion factors determined based on KCDOT 10-year revenue and needs forecast. Percentage factors represent percent increase per year.

TABLE 9-6
Kane County Revenues and Needs Forecast through Year 2030 – Scenario 2

Projected Revenue	Annual Revenue	Expansion Factor*	27 Year Cumulative Revenue	% of Revenue for Capacity Projects	Capacity Projects Revenue	O&M Revenue
County Highway Levy	$5,050,700	5.00%	$276,117,357		$0	$276,117,357
County Bridge Levy	$262,800	5.00%	$14,367,046		$0	$14,367,046
County Highway Matching Levy	$54,600	5.00%	$2,984,934		$0	$2,984,934
Motor Fuel Tax - State	$6,246,200	1.96%	$219,542,903	53%	$116,357,738	$103,185,164
Motor Fuel Tax - Local Option	$4,167,500	1.96%	$146,480,267	18%	$26,366,448	$120,113,819
Motor Fuel Tax - Local Option (additional 2 cents)	$4,167,500	1.96%	$146,480,267	17%	$24,901,645	$121,578,622
Impact Fee	$2,700,000	27	$72,900,000	95%	$69,255,000	$3,645,000
Council of Mayors Planning Funds	$48,400	2.80%	$1,914,783		$0	$1,914,783
Fees	$440,000	27	$11,880,000		$0	$11,880,000
Development Donation Accruals	$50,000	27	$1,350,000		$0	$1,350,000
Other	$1,050,000	27	$28,350,000		$0	$28,350,000
Interest (non federal only)	$275,000	27	$7,425,000		$0	$7,425,000
STP-R	$500,000	27	$13,500,000		$0	$13,500,000
Federal			$100,000,000	100%	$100,000,000	$0
Total Projected Revenue	$24,512,700		$1,043,292,558		$336,880,832	$706,411,726
Projected Needs	**Annual Need**	**Expansion Factor***	**27 Year Cumulative Needs**		**Capacity Projects Needs**	**O&M Needs**
Bond Payment	$3,495,000	18	$62,910,000			$62,910,000
Building & Grounds	$569,200	3.80%	$26,023,506			$26,023,506
Equipment	$740,100	27	$19,982,700			$19,982,700
General Services	$3,593,700	4.00%	$169,206,541			$169,206,541
Maintenance - General	$2,949,700	4.65%	$152,979,006			$152,979,006
Maintenance - Highway (Resurfacing/Striping/Other)	$4,100,000	3.70%	$184,723,940			$184,723,940
Maintenance - Deicing Materials	$630,000	6.20%	$41,398,461			$41,398,461
Maintenance - Bridge	$940,000	4.65%	$48,750,810			$48,750,810
Capital Capacity Improvement Projects*	$0		$0.00		$0	- - -
Total Projected Needs	$17,017,700		$705,974,964			$705,974,964
Surplus (Deficit)			$337,317,594		$336,880,832	$436,762

* - Expansion factors determined based on KCDOT 10-year revenue and needs forecast. Percentage factors represent percent increase per year.

TABLE 9-7
Kane County Revenues and Needs Forecast through Year 2030 – Scenario 3

Projected Revenue	Annual Revenue	Expansion Factor*	27 Year Cumulative Revenue	% of Revenue for Capacity Projects	Capacity Projects Revenue	O&M Revenue
County Highway Levy	$5,050,700	5.00%	$276,117,357		$0	$276,117,357
County Bridge Levy	$262,800	5.00%	$14,367,046		$0	$14,367,046
County Highway Matching Levy	$54,600	5.00%	$2,984,934		$0	$2,984,934
Motor Fuel Tax - State	$6,246,200	1.96%	$219,542,903	53%	$116,357,738	$103,185,164
Motor Fuel Tax - Local Option	$4,167,500	1.96%	$146,480,267	10%	$14,648,027	$131,832,241
Sales Tax (0.25 Cent)	$11,000,000	1.96%	$386,630,580	71%	$274,507,712	$112,122,868
Impact Fee	$2,700,000	27	$72,900,000	95%	$69,255,000	$3,645,000
Council of Mayors Planning Funds	$48,400	2.80%	$1,914,783		$0	$1,914,783
Fees	$440,000	27	$11,880,000		$0	$11,880,000
Development Donation Accruals	$50,000	27	$1,350,000		$0	$1,350,000
Other	$1,050,000	27	$28,350,000		$0	$28,350,000
Interest (non federal only)	$275,000	27	$7,425,000		$0	$7,425,000
STP-R	$500,000	27	$13,500,000		$0	$13,500,000
Federal			$100,000,000	100%	$100,000,000	$0
Total Projected Revenue	$31,345,200		$1,283,442,871		$574,768,477	$708,674,394
Projected Needs	**Annual Need**	**Expansion Factor***	**27 Year Cumulative Needs**		**Capacity Projects Needs**	**O&M Needs**
Bond Payment	$3,495,000	18	$62,910,000			$62,910,000
Building & Grounds	$569,200	3.80%	$26,023,506			$26,023,506
Equipment	$740,100	27	$19,982,700			$19,982,700
General Services	$3,593,700	4.00%	$169,206,541			$169,206,541
Maintenance - General	$2,949,700	4.65%	$152,979,006			$152,979,006
Maintenance - Highway (Resurfacing/Striping/Other)	$4,100,000	3.70%	$184,723,940			$184,723,940
Maintenance - Deicing Materials	$630,000	6.20%	$41,398,461			$41,398,461
Maintenance - Bridge	$940,000	4.65%	$48,750,810			$48,750,810
Capital Capacity Improvement Projects*	$0		$0.00		$0	- - -
Total Projected Needs	$17,017,700		$705,974,964			$705,974,964
Surplus (Deficit)			$577,467,907		$574,768,477	$2,699,430

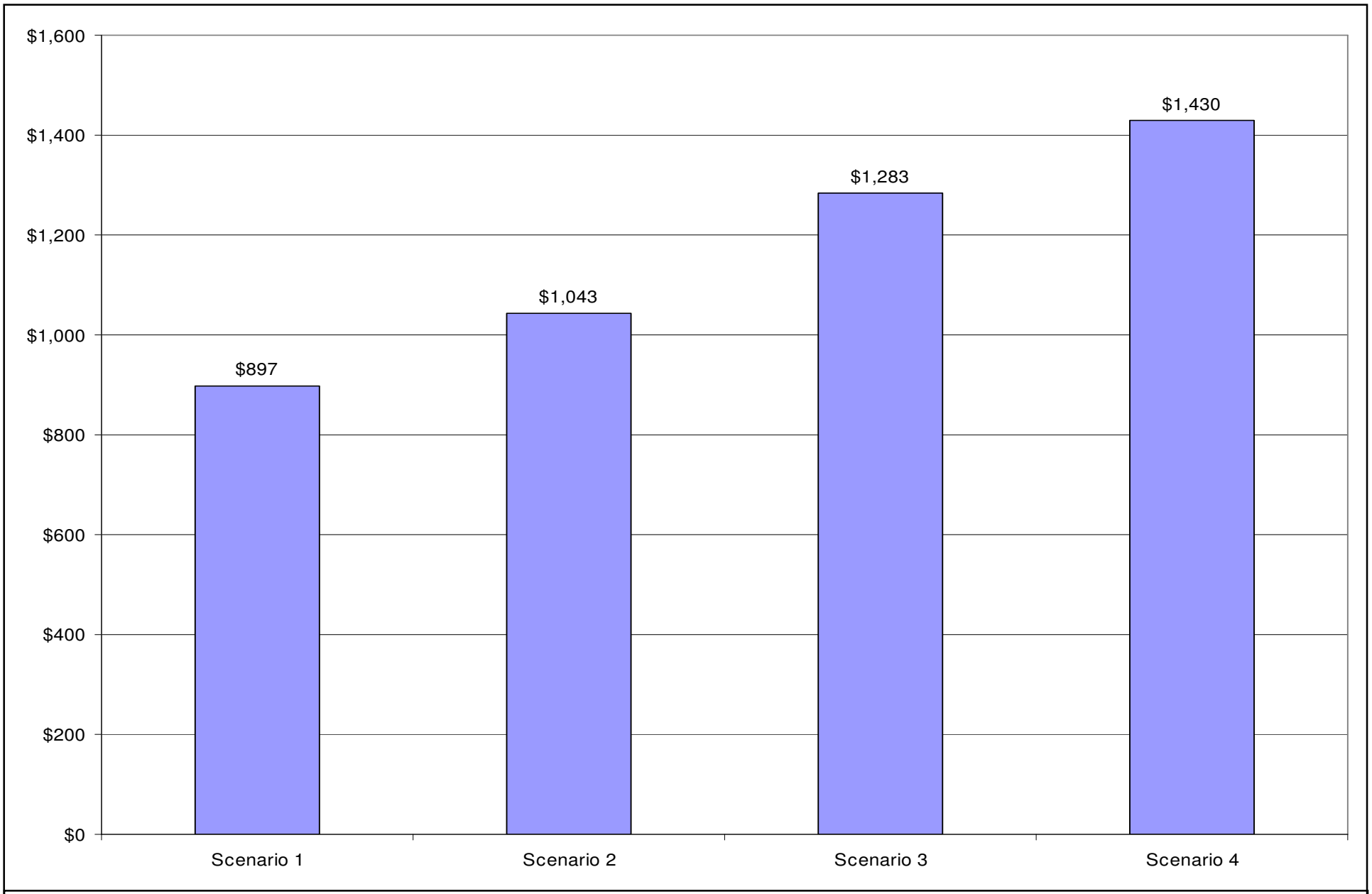
* - Expansion factors determined based on KCDOT 10-year revenue and needs forecast. Percentage factors represent percent increase per year.

TABLE 9-8
Kane County Revenues and Needs Forecast through Year 2030 – Scenario 4

Projected Revenue	Annual Revenue	Expansion Factor*	27 Year Cumulative Revenue	% of Revenue for Capacity Projects	Capacity Projects Revenue	O&M Revenue
County Highway Levy	$5,050,700	5.00%	$276,117,357		$0	$276,117,357
County Bridge Levy	$262,800	5.00%	$14,367,046		$0	$14,367,046
County Highway Matching Levy	$54,600	5.00%	$2,984,934		$0	$2,984,934
Motor Fuel Tax - State	$6,246,200	1.96%	$219,542,903	53%	$116,357,738	$103,185,164
Motor Fuel Tax - Local Option	$4,167,500	1.96%	$146,480,267	18%	$26,366,448	$120,113,819
Motor Fuel Tax - Local Option (additional 2 cents)	$4,167,500	1.96%	$146,480,267	17%	$24,901,645	$121,578,622
Sales Tax (0.25 Cent)	$11,000,000	1.96%	$386,630,580	100%	$386,630,580	$0
Impact Fee	$2,700,000	27	$72,900,000	95%	$69,255,000	$3,645,000
Council of Mayors Planning Funds	$48,400	2.80%	$1,914,783		$0	$1,914,783
Fees	$440,000	27	$11,880,000		$0	$11,880,000
Development Donation Accruals	$50,000	27	$1,350,000		$0	$1,350,000
Other	$1,050,000	27	$28,350,000		$0	$28,350,000
Interest (non federal only)	$275,000	27	$7,425,000		$0	$7,425,000
STP-R	$500,000	27	$13,500,000		$0	$13,500,000
Federal			$100,000,000	100%	$100,000,000	$0
Total Projected Revenue	$35,512,700		$1,429,923,138		$723,511,412	$706,411,726
Projected Needs	**Annual Need**	**Expansion Factor***	**27 Year Cumulative Needs**		**Capacity Projects Needs**	**O&M Needs**
Bond Payment	$3,495,000	18	$62,910,000			$62,910,000
Building & Grounds	$569,200	3.80%	$26,023,506			$26,023,506
Equipment	$740,100	27	$19,982,700			$19,982,700
General Services	$3,593,700	4.00%	$169,206,541			$169,206,541
Maintenance - General	$2,949,700	4.65%	$152,979,006			$152,979,006
Maintenance - Highway (Resurfacing/Striping/Other)	$4,100,000	3.70%	$184,723,940			$184,723,940
Maintenance - Deicing Materials	$630,000	6.20%	$41,398,461			$41,398,461
Maintenance - Bridge	$940,000	4.65%	$48,750,810			$48,750,810
Capital Capacity Improvement Projects*	$0		$0.00		$0	- - -
Total Projected Needs	$17,017,700		$705,974,964			$705,974,964
Surplus (Deficit)			$723,948,174		$723,511,412	$436,762

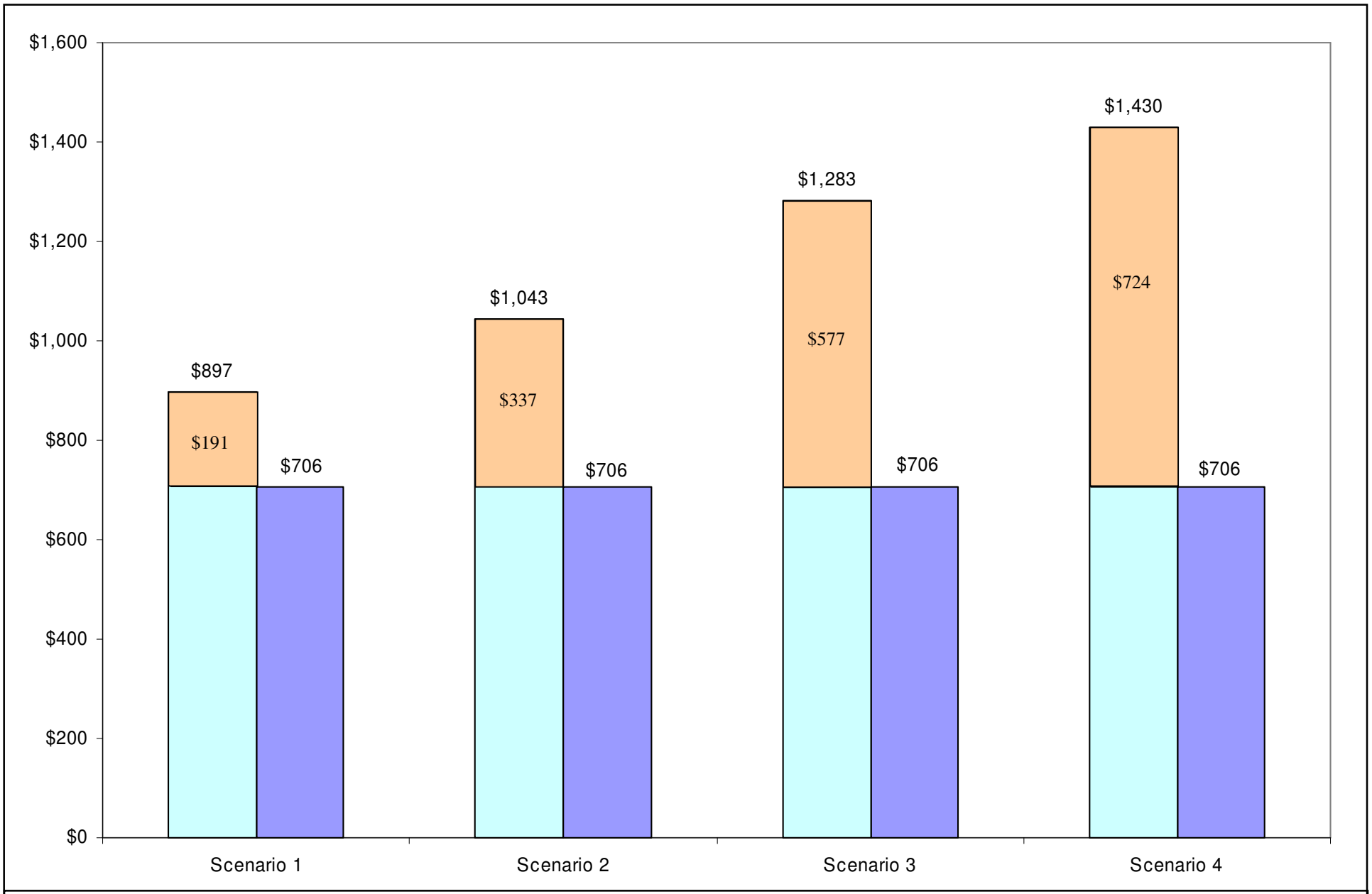
* - Expansion factors determined based on KCDOT 10-year revenue and needs forecast. Percentage factors represent percent increase per year.

Section 9
Figures



Projected Revenues

Figure 9-1
Kane County 2030 Transportation Plan



Comparison of Revenues to Needs

Figure 9-2
Kane County 2030 Transportation Plan

Section 10

2030 Recommended Transportation Plan

SECTION 10

2030 Recommended Transportation Plan

The 2030 transportation plan is comprised of roadway, transit, and non-motorized improvements to the Kane County Transportation System. County priorities have been identified as given the existing and/or potential revenue sources described in Section 9. The Kane County transportation system is primarily supported with roadways. Much of the transportation plan is focused on expanding the highway system and is supported with locally funded collector roads networks, transit and non-motorized improvements, and through the use of additional transportation strategies such as TDM and TSM.

10.1 Roadway Plan

The roadway element of the recommended transportation plan is shown in Figure 10-1. Projects include improvements to the tollways, SRAs, other arterials, new bridge and road corridors, realignments, and new collector roads. All of the projects identified in the CATS 2030 RTP and Impact Fee Program CRIP are included in this transportation plan.

10.1.1 Committed Projects

Committed projects are those projects with known construction funding sources and are anticipated to be built in the near term. Committed projects are Orchard Road from U.S. 30 to Jericho Road and from Prairie Street to Indian Trail Road, and McLean Road from Hopps Road to Bowes Road. Each project involves widening from two lanes to four lanes.

10.1.2 Interstate Projects

The interstate projects identified for Kane County are all on ISTHA system and include I-90 and I-88. The projects have been identified as part of the 2030 RTP. I-90 would be widened to an eight-lane cross section from the Elgin Toll Plaza to the east county line and widened to a six-lane cross section from Sandwald Road to the Elgin Toll Plaza. I-88 would be widened to an eight-lane cross section from Orchard Road to the east county line and to a six-lane cross section from IL 47 through the merge with IL 56 to Orchard Road.

Complete interchanges are proposed at IL 47 with I-90 and I-88. Currently, there is only a partial interchange at each site with access provided to and from the east at I-90 and to and from the west at I-88.

10.1.3 Additional Freeway/Expressway Projects

U.S. 20 through Elgin is currently a four-lane freeway. The 2030 roadway plan includes widening this segment to six-lanes. The interchange at U.S. 20 and Randall Road is planned for improvement. The interchange would be reconfigured to accommodate the increase in traffic volume at this location.

IL 56 from IL 47 to I-88 is an expressway segment that facilitates the movement from the south to I-88. This segment would also be widened to six-lanes and an additional partial interchange is planned for at Hankes Road.

10.1.4 Prairie Parkway

The Prairie Parkway is a proposed new transportation corridor connecting I-80 and I-88. The study area for this project includes the southwest area of Kane County from Orchard Road to the east and I-88 to the west. The study area also extends into DeKalb County. The alignment of this new freeway is currently under study and a final corridor has not been selected. The alignment as shown in Figure 10-1 illustrates one proposed alternative and is consistent with the CATS 2030 RTP. The facility type for this new alignment is also under review.

10.1.5 Strategic Regional Arterials

The SRAs are a system of major roadways developed to serve as a second tier to the freeway system with a focus on throughput capacity and regional connectivity. Improvements are planned for many of the SRAs in Kane County, in coordination with the previous IDOT SRA studies. Randall Road/Orchard Road, Fabyan Parkway, and Dunham/Kirk Road are SRAs under county jurisdiction where widening is planned. On Orchard Road there is a planned widening to a six-lane cross section from Indian Trail Road to Randall Road around the interchange with I-88. There are plans to widen Randall Road to six-lanes from Orchard Road to the northern county line. A grade separation is also planned at Randall Road and the IC Rail Road. Randall Road is a major north/south arterial in the developed and expanding portions of the county and includes many commercial/retail centers. The SRA portion of Fabyan Parkway, Randall Road to the east county line, is planned to be widened to a six-lane cross section. Another north/south SRA through Kane County is Farnsworth, Kirk, Dunham, and the IL 25 corridor in the eastern portion of the county. This corridor is planned to be widened to six lanes from I-88 to IL 64 and from Congdon Avenue to the North County Line. The portion between IL 64 and Congdon Avenue would be widened to four lanes. Development in portions of this corridor is dense, with limited room for expansion.

All other SRA projects are state or federal designated routes. The IL 47 corridor from the south county line almost to the north county line is a state SRA route planned for expansion. The expansion of IL 47 through Elburn would be limited by existing development. The entire length of IL 47 is planned to be four lanes wide with a six-lane section between Big Timber Road and Power Road. U.S. 20 is an SRA west of the existing freeway section through Elgin. U.S. 20 and IL 72 in Hampshire are to be realigned and grade separated from the railroad track similar to the intersection of Peck and Keslinger Roads. U.S. 20 would also be realigned in Pingree Grove to remove the almost 90 degree bend on this higher speed facility. The ultimate roadway plan calls for the section from Coombs Road to Randall Road to be widened to six lanes and four lanes from the north county line to Coombs Road. U.S. 30 along the southern border of Kane County is planned to be widened to four lanes from IL 47 to the current four-lane section over the Fox River. IL 64 is planned to be widened between Burlington Road and Randall Road. IL 62 in the northeast corner of the county through Barrington Hills is planned to be widened to four-lanes.

10.1.6 Regional Fox River Bridge Corridors

Three new regional Fox River bridge corridors are planned for Kane County. These projects would be funded with federal and local support. The planned regional bridge corridors are the Longmeadow Parkway/Bolz Road Corridor, Stearns Road Bridge Corridor, and Oak Street/IL 56 Corridor. All three bridge corridors would be a four-lane facility. The Longmeadow Parkway/Bolz Road Corridor would extend from Huntley Road to IL 62 in the northern portion of the county in the Carpentersville Area. The Stearns Road Corridor would extend from Randall Road and McDonald Road to the realigned intersection of Stearns Road, IL 25, and Dunham Roads in the Elgin/South Elgin area**.** The Oak Street/IL 56 Corridor would extend from IL 31 and Oak Street to the east county line along existing IL 56 in Aurora area. Local bridges are discussed in Section 10.1.11 - Collectors and Local Projects.

10.1.7 Existing Arterials

Arterials other than SRAs have also been identified for widening. Table 10-1 shows the additional arterial widening projects. All of the roadways listed would be widened to four lanes, with the exception of Montgomery Road and Oak Street, which are three-lane projects. It should be noted that Kreutzer Road is shown as an arterial in that there are plans to re-route traffic from Huntley Road to Kreutzer Road providing a bypass of the downtown Huntley area.

TABLE 10-1
Non-SRA Arterial Improvements

Roadway	Segment Limits	Jurisdiction
IL 72	State Street to IL 31	IDOT
IL 31	Huntley Road to Longmeadow Parkway	IDOT
Huntley Road	Kreutzer Road to IL 31	County
Kreutzer Road	IL 47 to Huntley Road	McHenry County
Galligan Road	South realignment to north realignment	County
Tyrell Road	Big Timber Road to IL 72	County
Big Timber Road	U.S. 20 to Randall Road	County
IL 68	IL 72 to East County Line	IDOT
Bowes Road	Water Road to McLean Road	County
McLean Road	IL 31 to Hopps Road	IDOT
IL 38	IL 47 Randall Road	IDOT
Keslinger Road	West of Peck Road to Randall Road	County
Keslinger Road	IL 47 to Anderson Road	County
Fabyan Parkway	Main Street to Randall Road	County
Main Street	Fabyan Parkway to Randall Road	County
Bliss Road	IL 47 to Realignment	County
Galena Road	IL 47 to Randall Road	IDOT

TABLE 10-1
Non-SRA Arterial Improvements

Roadway	Segment Limits	Jurisdiction
U.S. 30	Dauberman Road to IL 47	IDOT
Jericho Road	IL 47 to Randall Road	County
Brier Hill Road	Extension to North County Line	Local
Oak Street	Randall Road to IL 31	Local
Montgomery Road	IL 25 to Farnsworth Extension	County

10.1.8 New Alignments

There are multiple major new alignments planned for Kane County to support the arterial system. The new alignments would add connectivity to the transportation system and access to newly developed areas. One alignment is Gordon Road in the south central Kane County Area, which would be locally funded and maintained. The Gordon Road alignment would be a four-lane arterial with a boulevard cross section and a grade separation at the railroad crossing. The southern and northern sections of Gordon Road have already been built. The Corron Road extension from Bowes Road to U.S. 20 is planned to provide additional north/south access between IL 47 and Randall Road. The Corron Road extension connects to a local collector road at U.S. 20 providing further connectivity to Coombs Road. Anderson Road would be extended from IL 38 to Keslinger Road with a grade separation at the railroad. This roadway would serve the committed new Elburn Metra Station. In addition, Anderson Road is anticipated to be a county facility. Bowes Road would be extended to IL 31. The planned extension of North County Line Road from Boyer Road to the Galligan Extension would be locally funded and maintained. Kreutzer Road is planned to be extended west through IL 47 and then north into McHenry County to intersect with Algonquin Road providing for an additional bypass around downtown Huntley. In the southeast portion of the county, an extension of Farnsworth Avenue to Hill Drive is planned. A new alignment is planned in the Hampshire of Brier Hill Road to provide improved access to U.S. 20 and Big Timber Road from the north.

10.1.9 Realignments

Realignments are planned to provide additional connectivity between existing roadways. All proposed realignments would be county funded and maintained. Bliss Road would be realigned with Fabyan Parkway at Main Street. Bunker Road would be extended and then aligned with La Fox to provide a better north/south connection in the central portion of the county. The Bunker Road railroad crossing would be grade separated. The Plank Road realignment at Burlington Road improves safety and traffic operations.

Two realignments are associated with Galligan Road. The southern alignment would shift Galligan Road to the east around the downtown area of the Village of Gilberts and would align with Tyrrell Road. The northern alignment would realign Galligan Road to the west and extend the road north past Huntley Road to intersect with Lakewood Road in McHenry County.

Five realignments in the western third of the county are planned. Together these five alignments provide for a continuous north/south corridor and improve connectivity. The five alignments are:

- Granart Road and Dauberman Road
- Dauberman Road with Meredith Road
- Meredith Road with Peplow Road
- Peplow Road and French Road (Burlington Bypass)
- French Road and Harmony Road

The Granart/Dauberman Road alignment would assist in relieving the traffic congestion at Dugan Road and U.S. 30 and would help provide north/south connectivity in the western third of the county. The Burlington Bypass and the French/Harmony alignment would both have a grade separation with the Chicago Central & Pacific Railroad and the Soo Line Railroad respectfully.

10.1.10 CRIP Intersection Projects

Additional CRIP projects that are not incorporated in the projects described above are also included in the transportation plan. These projects are primarily intersection improvements incorporating additional turn lanes and improvements to intersection control. All the CRIP projects are on county facilities. The CRIP is a 10-year plan and may be used in the determination of priorities.

10.1.11 Collectors/Local Projects

The county and municipalities have completed many local plans that include the addition of collector roads. Collector roads are also components of four sub-regional studies have been performed in the WUF, Elgin, SAM, and NWKC areas. The collector roads identified in these plans and other municipal plans serve a dual function of providing mobility and access to abutting land uses.

An efficient and continuous collector road network would benefit the County. The collectors would be effective in removing local traffic from the arterial roads, thereby providing for enhanced mobility on the arterials. Collector roads would provide safe access to abutting residential areas and would help control access onto the arterials Also, the collector roads would provide an alternative route should an incident occur.

For detailed plans of the sub-regional areas, refer to the Kane County Transportation Planning Area Study Plans. See Appendix A.

Local Fox River bridges are proposed in Kane County. The planned bridges are proposed to be located near the following communities St. Charles (Red Gate Corridor), Carpentersville (Williams or Miller Roads), and Aurora (Sullivan Road).

Table 10-2 is a list the roadway projects contained in the 2030 Transportation Plan.

TABLE 10-2
Recommended Highway Projects

	Name	From	To	Functional Class	Improvement	Length (Miles)	Cost (Millions)
Committed Projects							
2	McLean Boulevard	Hopps Road	Bowes Road	Minor Arterial	Widen to 4 Lanes	0.7	$8.9
1	Orchard Road	Prairie Street	Indian Trail Road	SRA	Widen to 4 Lanes	1.9	$13.3
	Subtotal						**$22.2**
County							
1	Anderson Road	Keslinger Road	IL 38	Collector	New Alignment, 3 Lanes	1.7	$13.0
2	Big Timber Road	Tyrrell Road	Randall Road	Principal Arterial	Widen to 4 Lanes	1.1	$8.1
3	Big Timber Road	IL 47	Tyrrell Road	Principal Arterial	Widen to 4 Lanes	5.2	$47.7
4	Big Timber Road	U.S. 20	IL 47	Principal Arterial	Widen to 4 Lanes	2.8	$27.6
5	Bliss Road	IL 47	Main Street	Principal Arterial	Widen to 4 Lanes	5.3	$47.4
6	Bowes Road	McLean Boulevard	La Fox Road	Principal Arterial	New Alignment, 4 Lanes	1.3	$10.3
7	Bowes Road	Randall Road	McLean Boulevard	Principal Arterial	Widen to 4 Lanes	1.1	$7.8
8	Bowes Road	Water Road	Randall Road	Principal Arterial	Widen to 4 Lanes	1.3	$11.7
9	Bunker Road	Keslinger Road	U.S. 20	Minor Arterial	Realignment, 2 Lanes	1.0	$12.4
10	Burlington Bypass	Peplow Road	French Road	Minor Arterial	Realignment, 2 Lanes	1.7	$8.5
11	Corron Extension	Bowes Road	IL 72	Minor Arterial	New Alignment, 2 Lanes	6.7	$55.3
12	Dauberman Road / Meredith Road	Dauberman Road	Meredith Road	Minor Arterial	Realignment, 2 Lanes	0.9	$4.4
13	Dunham Road	Kirk Road	IL 25	SRA	Widen to 4 Lanes	2.7	$25.2
14	Fabyan Parkway	Main Street	Randall Road	Principal Arterial	Widen to 4 Lanes	3.7	$32.2
15	Fabyan Parkway	Randall Road	East County Line	SRA	Widen to 6 Lanes	4.1	$53.3
16	French Road / Harmony Road	French Road	Harmony Road	Minor Arterial	Realignment, 2 Lanes	1.5	$11.2
17	Galligan Road	At Huntley Road	N/A	Minor Arterial	Realignment, 4 Lanes	0.8	$7.3
18	Galligan Road	Galligan/Tyrrell Connection	Huntley Road	Minor Arterial	Widen to 4 Lanes	1.8	$15.8
19	Galligan/Tyrrell Connection	Galligan Road	Tyrrell Road	Minor Arterial	New Alignment, 4 Lanes	1.5	$12.8
20	Granart Road / Dauberman Road	Granart Road	U.S. 30	Minor Arterial	Realignment, 2 Lanes	0.7	$10.7
21	Huntley Road	Kruetzer Road	Randall Road	Principal Arterial	Widen to 4 Lanes	3.6	$28.2
22	Huntley Road	Randall Road	Sleepy Hallow Road	Principal Arterial	Widen to 4 Lanes	1.3	$3.3

TABLE 10-2
Recommended Highway Projects

	Name	From	To	Functional Class	Improvement	Length (Miles)	Cost (Millions)
23	Huntley Road	Sleepy Hallow Road	IL 31	Principal Arterial	Widen to 4 Lanes	1.3	$10.2
24	Jericho Road	IL 47	Orchard Road	Minor Arterial	Widen to 4 Lanes	3.8	$29.9
25	Keslinger Road	IL 47	Anderson Road	Principal Arterial	Widen to 4 Lanes	0.9	$6.5
26	Keslinger Road	East of Peck Road	Randall Road	Principal Arterial	Widen to 4 Lanes	1.3	$10.2
27	Kirk Road	IL 64	Dunham Road	SRA	Widen to 4 Lanes	1.6	$12.0
28	Kirk Road	IL 56	IL 64	SRA	Widen to 6 Lanes	7.5	$110.9
29	Longmeadow Parkway Bridge Corridor	IL 62	Randall Road	SRA Extension	New Bridge Corridor, 4 Lanes	4.7	$74.3
30	Main Street	Fabyan Parkway	Randall Road	Principal Arterial	Widen to 4 Lanes	3.2	$28.5
31	Meredith Road / Peplow Road	Meredith Road	Peplow Road	Minor Arterial	Realignment, 2 Lanes	0.8	$4.7
32	Montgomery Road	IL 25	Hill Road	Minor Arterial	Widen/Realign to 3 Lanes	3.0	$19.6
33	Orchard Road	U.S. 30	Jericho Road	SRA	Widen to 4 Lanes	1.5	$18.5
34	Orchard Road	Randall Road	Oak Street	SRA	Widen to 6 Lanes	1.6	$18.7
35	Orchard Road	Oak Street	Indian Trail Road	SRA	Widen to 6 Lanes	1.8	$22.5
36	Plank Road	In Burlington	N/A	Principal Arterial	Realignment, 2 Lanes	0.6	$1.7
37	Randall Road	IL 72	Huntley Road	SRA	Widen to 6 Lanes	1.5	$16.3
38	Randall Road	Big Timber Road	IL 72	SRA	Widen to 6 Lanes	2.7	$30.3
39	Randall Road	Big Timber Road	Highland Avenue	SRA	Widen to 6 Lanes	1.2	$18.4
40	Randall Road	Highland Avenue	South Street	SRA	Widen to 6 Lanes	1.2	$10.9
41	Randall Road	South Street	Silver Glenn Road	SRA	Widen to 6 Lanes	4.4	$69.6
42	Randall Road	Silver Glenn Road	Dean Street	SRA	Widen to 6 Lanes	3.5	$42.2
43	Randall Road	Dean Street	IL 38	SRA	Widen to 6 Lanes	1.2	$23.4
44	Randall Road	IL 38	Orchard Road	SRA	Widen to 6 Lanes	4.2	$68.2
45	Randall Road	Huntley Road	North County Line	SRA	Widen to 6 Lanes	2.0	$21.6
46	Stearns Road Bridge Corridor	Dunham Road	IL 47	SRA Extension	New Bridge Corridor, 4 Lanes	4.3	$107.4
47	Tyrrell Road	Galligan/Tyrrell Connection	Big Timber Road	Minor Arterial	Widen to 4 Lanes	2.2	$18.2
	Subtotal						**$1,248.9**

TABLE 10-2
Recommended Highway Projects

	Name	From	To	Functional Class	Improvement	Length (Miles)	Cost (Millions)
State/U.S. System							
1	Galena Road	IL 47	Orchard Road	Minor Arterial	Widen to 4 Lanes	3.5	$32.1
2	IL 25	Dunham Road	Congdon Avenue	Principal Arterial	Widen to 4 Lanes	5.4	$40.5
3	IL 25	Congdon Avenue	IL 62	SRA	Widen to 6 Lanes	2.2	$74.0
4	IL 31	Huntley Road	Longmeadow Parkway	Principal Arterial	Widen to 4 Lanes	2.4	$22.1
5	IL 31	Longmeadow Parkway	North County Line	Principal Arterial	Widen to 4 Lanes	0.9	$8.4
6	IL 38	Peck Road	Randall Road	Principal Arterial	Widen to 4 Lanes	1.0	$7.7
7	IL 38	IL 47	Peck Road	Principal Arterial	Widen to 4 Lanes	5.9	$49.2
8	IL 47	Merill Road	Main Street	SRA	Widen to 4 Lanes	2.8	$28.4
9	IL 47	Main Street	Keslinger Road	SRA	Widen to 4 Lanes	3.0	$24.4
10	IL 47	Keslinger Road	IL 38	SRA	Widen to 4 Lanes	1.5	$10.7
11	IL 47	IL 38	U.S. 20	SRA	Widen to 4 Lanes	13.0	$116.7
12	IL 47	Big Timber Road	Powers Road	SRA	Widen to 6 Lanes	6.6	$34.7
13	IL 47	U.S. 20	Big Timber Road	SRA	Widen to 6 Lanes	2.2	$25.0
14	IL 47/U.S. 30	Base Line Road	Existing 4 Lane Segment	SRA	Widen to 4 Lanes	3.0	$41.8
15	IL 56	IL 25	East County Line	SRA	New Bridge Corridor, 4 Lanes	3.1	$30.6
16	IL 62	North County Line	East County Line	SRA	Widen to 4 Lanes	1.8	$13.5
17	IL 64	Burlington Road	Randall Road	SRA	Widen to 4 Lanes	3.5	$37.4
18	IL 68	IL 72	East County Line	Principal Arterial	Widen to 4 Lanes	1.8	$15.0
19	IL 72	Tyrrell Road	Randall Road	Minor Arterial	Widen to 4 Lanes	1.3	$11.2
20	IL 72	Randall Road	IL 31	Minor Arterial	Widen to 4 Lanes	2.5	$23.4
21	IL 72	IL 47	Tyrrell Road	Principal Arterial	Widen to 4 Lanes	5.3	$44.0
22	IL 72	State Street	IL 47	Principal Arterial	Widen to 4 Lanes	4.0	$40.4
23	McLean Boulevard	Spring Road	IL 31	Minor Arterial	Widen to 4 Lanes	1.4	$11.7
24	Oak Street/IL 56 Bridge Corridor	IL 25	IL 31	Principal Arterial	New Bridge Corridor, 4 Lanes	0.3	$8.9
25	U.S. 20	Marshall Road	Switzer Road	SRA	Realignment, 4 Lanes	1.3	$11.2
26	U.S. 20	Harmony Road	IL 47	SRA	Widen to 4 Lanes	6.0	$58.6
27	U.S. 20	IL 47	Marshall Road	SRA	Widen to 4 Lanes	2.0	$14.6

TABLE 10-2
Recommended Highway Projects

	Name	From	To	Functional Class	Improvement	Length (Miles)	Cost (Millions)
28	U.S. 20	Switzer Road	Coombs Road	SRA	Widen to 4 Lanes	1.7	$14.3
29	U.S. 20	Coombs Road	Randall Road	SRA	Widen to 6 Lanes	2.5	$20.5
30	U.S. 30	IL 47	IL 31	SRA	Widen to 4 Lanes	5.1	$40.6
31	U.S. 30	Dauberman Road	IL 47	Principal Arterial	Widen to 4 Lanes	4.2	$50.1
	Subtotal						**$961.7**
Freeway							
1	I-88	IL 47	Orchard Road	Tollway	Widen to 6 Lanes	4.9	$17.0
2	I-88	East County Line	Orchard Road	Tollway	Widen to 8 Lanes	5.8	$67.0
3	I-90	Elgin Toll Plaza	Sandwald Road	Tollway	Widen to 6 Lanes	8.6	$38.0
4	I-90	East County Line	Elgin Toll Plaza	Tollway	Widen to 8 Lanes	3.9	$32.0
5	IL 56	IL 47	I-88	Freeway	Widen to 6 Lanes	3.8	$18.0
6	U.S. 20	Randall Road	East County Line	Freeway	Widen to 6 Lanes	4.3	$30.0
7	Prairie Parkway	I-80	I-88	Freeway	New Alignment, 4 Lanes	Under Review	
	Subtotal						**$202.0**
Local Fox River Bridges and Arterial Improvements							
1	Brier Hill Road	Big Timber Road	North County Line	Minor Arterial	Widen/Realign, 4-Lanes	2.3	$25.8
2	Carpentersville Bridge	IL 31	Williams Road	Major Collector	New Bridge Corridor, 2 Lanes	0.3 – 1.4	$25.0
3	Farnsworth Avenue	Montgomery Road	New York Street	SRA Extension	Realignment, 4 Lanes	0.3	$3.0
4	Farnsworth Avenue	I-88	IL 56	SRA	Widen to 6 Lanes	0.8	$9.8
5	Farnsworth Avenue	U.S. 30	Montgomery Road	SRA	Widen/Realign, 3 Lanes	0.7	$5.5
6	Gordon Road	U.S. 30	Galena Road	Minor Arterial	New Alignment, 4 Lanes	3.2	$42.1
7	Kreutzer Road	IL 62	IL 47	Principal Arterial	New Alignment, 4 Lanes	0.8	$7.7
8	Kreutzer Road	IL 47	Huntley Road	Principal Arterial	Widen to 4 Lanes	2.3	$19.4
9	Oak Street	Randall Road	IL 31	Minor Arterial	Widen to 3 Lanes	1.2	$7.4
10	Red Gate Bridge	IL 31	IL 25	Major Collector	New Bridge Corridor, 2-Lanes	1.0	$19.4
11	Sullivan Road Bridge	IL 31	IL 25	Major Collector	New Bridge Corridor, 2 Lanes	0.5	$13.8
	Subtotal						**$178.9**

TABLE 10-2
Recommended Highway Projects

	Name	From	To	Functional Class	Improvement	Length (Miles)	Cost (Millions)
Isolated Intersection Improvements							
1	Big Timber Road	At Damisch Road	N/A	N/A	Intersection Improvement	N/A	$0.5
2	Big Timber Road	At Coombs Road	N/A	N/A	Intersection Improvement	N/A	$0.3
3	Big Timber Road	At Manning Road	N/A	N/A	Intersection Improvement	N/A	$0.6
4	Bowes Road	At Nesler Road	N/A	N/A	Intersection Improvement	N/A	$15.1
5	Burlington Road	At Old LaFox Road	N/A	N/A	Intersection Improvement	N/A	$0.8
6	Burlington Road	At Corron Road	N/A	N/A	Intersection Improvement	N/A	$1.6
7	Corron Road	At McDonald Road	N/A	N/A	Intersection Improvement	N/A	$1.6
8	Hankes Road	At IL 56	N/A	N/A	Partial Interchange	N/A	$10.7
9	Highland Road	At Coombs Road	N/A	N/A	Intersection Improvement	N/A	$1.6
10	IL 31	At Mooseheart Road	N/A	N/A	Intersection Improvement	N/A	$0.8
11	IL 31	At Silver Glenn Road	N/A	N/A	Intersection Improvement	N/A	$0.7
12	IL 47	At Harter Road	N/A	N/A	Intersection Improvement	N/A	$0.1
13	IL 47	At I-90	N/A	N/A	Full Interchange	N/A	$8.7
14	IL 47	At I-88	N/A	N/A	Full Interchange	N/A	$8.7
15	La Fox Road	At Campton Hills Road	N/A	N/A	Intersection Improvement	N/A	$4.4
16	Lake Cook Road	At Algonquin Road	N/A	N/A	Intersection Improvement	N/A	$0.2
17	Main Street	At Bunker Road	N/A	N/A	Intersection Improvement	N/A	$0.7
18	Randall Road	At U.S. 20	N/A	N/A	Update Interchange	N/A	$39.7
	Subtotal						**$96.8**
Collectors							
	Various Locations					160	**$608**

The total cost of the plan as shown on Figure 10-1 excluding Prairie Parkway is $3.3 Billion. The County share of the total cost is in the range of $1.1 to $1.3 Billion. The lower cost takes into consideration that the Stearns Road and Longmeadow Parkway bridge corridors would be partially covered through federal dollars. The higher cost assumes the two bridge corridors are fully financed by the County.

10.1.12 Fiscally Constrained Plan

Compared to the needs, Kane County has limited revenues. As a result the County would not be able to fund all the capacity expansion projects within the planning horizon of the transportation plan. Those projects that are not contained within the financially constrained priorities will be pursued through right-of-way protection and through agreements with other local, state, and federal agencies. The fiscally constrained priorities only pertain to facilities within the county's jurisdiction and serves as a priority list of projects for the County to develop over the long term.

10.1.12.1 Estimated Cost of Kane County's Roadway Improvements

Evaluating the financial analysis in Section 9, Kane County could expect that between $190 and $724 million would be available to spend on capacity improvements during the planning horizon. The total cost of the roadway improvements under the County's jurisdiction, as shown in Figure 10.1 would be $1.1 billion. Since the planning process considers financial constraints, the expenditures should be comparable to the available revenues for capacity improvements. Given limited revenues projected for capital improvements priorities have been established. The priorities are as follows:

- Capacity enhancements on Randall Road and Orchard Road
- Regional Fox River Bridges
- Various Intersection Improvements

Capacity enhancements along Randall Road and Orchard Road included improving critical segments along the corridor to six-lanes or by improving intersection capacity by adding through lanes and/or channelization. The Randall/Orchard Road enhancements will improve north/south travel through the eastern portion of the county. The county will continue to pursue the regional Fox River bridge crossings, which will add capacity to the east/west traffic patterns. The third priority would be intersection improvements throughout the county. The intersection improvements can include such items as turn lanes and the addition of traffic signals. Priority intersections have been identified as part of the CRIP.

10.2 Transit

The transit recommendations provide a focus and objectives for five transit service areas. Information is also provided on transportation hubs, transportation centers, park-n-ride lots, and carpool/vanpools.

10.2.1 Proposed Metra Commuter Rail Service

The proposed Metra improvements are shown in Figure 10-2. Three of the potential extensions have been designated *high priority* projects by Kane County.

- UP-W Line Extension to Elburn – This project is a committed project within the 2030 CATS RTP. It consists of an 8-mile extension beyond the current terminal in Geneva. An intermediate station will be located in unincorporated La Fox. The new railroad yard in Elburn will also eliminate extensive congestion, freight conflicts, and dead-heading between West Chicago and Geneva. Funding has been secured and construction is estimated to be complete in 2006. Metra has received Federal New Start funding to

extend the UP-W line 8 miles beyond its current terminal in Geneva. An intermediate station will be provided in unincorporated LaFox. The extended service is anticipated to begin in 2005 or 2006.

- MD-W Extension to Huntley or Marengo (UP Belvidere Subdivision) The initial proposal includes an 11-mile extension of the MD-W Line from the current terminal point at Big Timber Road in Elgin to Huntley, with a corridor continuing to Marengo and Rockford. In addition to the two alternative terminal communities, a station would be anticipated in Gilberts. An alternative extension to Hampshire has also been considered, as a possible spur line with an additional station in Pingree Grove. Metra is in the process of performing a Phase I Feasibility Study for this project. This project is included in the 2030 CATS RTP.

- BNSF Extension to Kendall County – The initial proposal for this project is the extension of the Metra-BNSF Chicago-Aurora Commuter Rail service from its current terminus in Aurora to additional stops at U.S. 30 and Orchard Road, a total of 6.0 miles. A longer extension terminating in Plano is also proposed. Phase One and Phase Two feasibility studies have been completed for this proposal, but since the route extends outside the regional planning area, more coordination between the representative agencies is needed to evaluate the viability of this proposal. The Phase Two studies concluded that the proposed extension would be a feasible project. This project is contained in the 2030 CATS RTP.

Kane County has identified the BNSF Extension to Sugar Grove as a conceptual extension. This potential route would extend west from the current terminal in Aurora to provide services to Sugar Grove. Metra has not identified this proposed service a priority, but it has been designated a desirable extension by both the Kane County and local municipalities.

The CATS 2030 RTP proposes implementation of a circumferential rail transit line known as the STAR. In contrast to Metra's suburb-to-downtown Chicago market, this rail line would most likely serve suburb-to-suburb market, as well as, some of the traditional downtown Chicago market via transfer to existing Metra lines. Although the rail line, itself, is not located in Kane County, its corridor is close to Kane County's eastern border. While the proposed STAR line corridor is not within Kane County, its potential influence on travel behavior and land development in the surrounding area would be appreciable. The north-south segment of the STAR line parallel to IL 59 in Dupage County would intersect several of the commuting rail line radiating out from the downtown Chicago. These connection points would provide many opportunities for suburb-to-suburb trips to be served by commuter rail. A map of the STAR Line is shown in Figure 10-3.

10.2.2 Transit Areas

Kane County is divided into five transit areas, Greater Elgin, Greater Aurora, Tri-Cities, Upper Fox, and Rural Villages, each with unique transit requirements and needs. Each transit area has the following general objectives:

- Apply TOD and TCP where applicable
- Support Pace's Vision 2020 planning concepts

- Promote transit system expansion, including Metra commuter rail service at new stations
- Establish express bus service to high demand travel destinations in the Chicago region
- Provide flexible paratransit service for the elderly and other special needs to users
- Provide and promote the development of park-n-ride lots, and include shuttle service to Metra stations

For more detailed information about the transit areas within Kane County refer to the Transit Opportunity Assessment Study.

10.2.2.1 Greater Elgin Transit Area

The Greater Elgin Transit Area encompasses the City of Elgin, the Village of South Elgin and the surrounding areas. This area has some existing transit services including Metra and Pace. The focus for this area would be to enhance transit services to Schaumburg, Hoffman Estates, Bartlett, St. Charles, and O'Hare Airport. The objectives and recommendations for this area include the following:

- Grand Victoria Foundation to provide low-income residents transportation to employment centers in Elgin and elsewhere.
- Enhance the existing transportation hub in Elgin to provide improved and increased services.

10.2.2.2 Greater Aurora Transit Area

The Greater Aurora Transit Area includes the City of Aurora, Village of North Aurora, Village of Montgomery, Village of Sugar Grove, and the surrounding areas. Similar to Elgin, this area has some existing transit services provided by Metra and Pace. The focus for transit improvements would be to enhance services to the I-88 corridor, Tri-Cities, Joliet, and O'Hare Airport, and to work directly with the East-West Corporate Corridor Association (EWCCA). The objectives and recommendations for the Elgin Area include the following:

- Develop park-n-ride facilities in Sugar Grove and Montgomery with shuttle services to existing Metra stations
- Extend the BNSF Metra line south into Kendall County with a station at U.S. 30 in Montgomery, named the Avaya Station and into Sugar grove with a Station at Gordon Road.
- Promote TOD around the park-n-ride facilities and future Metra Stations.
- Develop a local community shuttle to serve the employment and retail centers of the area and provides connections to neighboring areas.
- Provide a transit connection between Orchard Road and the Aurora Transportation Hub
- Restructure the transit service in the Greater Aurora area
- Enhance the existing transportation hub in Aurora to provided improved and increased services.

10.2.2.3 Tri-Cities Transit Area

The Tri-Cities Transit Area includes the Cities of Batavia, Geneva, and St. Charles and the surrounding areas. This area has some Pace and Metra service. The focus for this area would be to enhance connections to the West Chicago, Aurora, and O'Hare Airport. The objectives and recommendations for the Tri-Cities Area includes the following:

- Develop and promote the Geneva Metra station as a transportation hub
- Promote the expansion of the UP-W line to Elburn
- Promote TOD near the Kirk Road employment center and near the Geneva Metra Station.
- Develop a local community shuttle should between Randall Road and the downtown areas of the local communities and the neighboring areas

10.2.2.4 Upper Fox Transit Area

The Upper Fox Transit Area includes the Villages of Carpentersville, East Dundee, West Dundee, Sleepy Hallow, Gilberts, Pingree Grove, and surrounding areas. This area has some Pace service on the east side of the area. The focus for this area would be to provide connections to Elgin, the I-90 corridor, IL 72 corridor, and O'Hare Airport. The objectives and recommendations for the Upper Fox Transit Area include the following:

- Develop a local community shuttle to serve the retail and employment centers, connect Randall Road with the downtowns of the various communities, and surrounding communities.

10.2.2.5 Rural Villages Transit Communities

The Rural Villages Transit Communities includes the Villages of Elburn, Hampshire, Huntley, Lily Lake, Virgil, Burlington, Maple Park, Pingree Grove, Plato Center, and the surrounding areas. Currently this area has no service provided by Metra or Pace fixed route bus. The focus of this area would be to provide transit services to the eastern portions of Kane County and major travel destinations in the Chicago region. The objectives and recommendations for this area include the following:

- Promote Metra service expansion to Elburn, Hampshire, and Huntley
- Establish park-n-ride locations within local communities for access to existing or proposed Metra stations.
- Promote TOD near all park-n-ride and Metra stations
- Develop a corridor plan for IL 47 maintaining the rural character of the area.

10.2.2.6 Bus Rapid Transit

BRT as describe in Section 8 is promoted throughout the eastern half of Kane County. BRT would provide expedited services along the following corridors.

- Randall Road
- Kirk Road

- IL 25
- I-90
- I-88

10.2.3 Transportation Hubs and Centers

Transportation hubs are comprehensive and full-service centers that provide a full range of transportation opportunities. They serve as a convergence point for the entire transportation system in Kane County and provide direct transit links to the larger transportation systems in the Chicago region. The transportation hub is accessible from different modes of transportation including commuter rail, bus, car, carpool, bike, and by foot. Kane County currently has two transportation hubs, one in downtown Elgin and the other in downtown Aurora. The two existing hubs are recommended to be improved by enhancing and adding services. A third transportation hub is proposed in Geneva at the existing Geneva Metra station.

A transportation center is a smaller facility with more limited transportation services than a transportation hub and is generally considered to be a connection between park-n-ride lots in smaller outlying local communities and transportation hubs. The following locations have a planned transportation center:

- LaFox
- Sugar Grove
- Montgomery
- Hampshire
- South Elgin
- St. Charles
- One or two strategic locations in the Upper Fox Transit Area

It should be noted that a major deterrent to riding transit is high wait times at transfer locations. When at all possible, coordinated transfers should be provided minimizing wait times. Retail and service centers should also be planned for and provided at transfer locations.

10.2.4 Park-n-ride

Park-n-ride lots are planned throughout Kane County. These lots should be developed in areas of medium density residential development located next to a heavily traveled arterial. The park-n-ride lots should be accessible by pedestrians, bicyclists, and motorists, and can be located at shopping centers, churches, and other locations where daytime parking is available. Park-n-ride lots may also provide remote parking for Metra stations. For more information on park-n-ride, refer to the Kane County Transit Opportunity Assessment Study.

10.2.5 Paratransit

Paratransit services provide transportation options for the elderly and people with disabilities. The following recommended approaches are provided to coordinate the existing services.

Continuation of a KCPCC. The KCPCC was established in October 2003. Membership is open to representatives of organizations that provide or interested in providing paratransit service for the elderly, disabled and poor in Kane County, all municipalities and townships, and a limited number of citizens. The Council meets every other month to share information, expand awareness of transportation issues, and identify opportunities for better coordination and operation of paratransit service. The KCPCC also provides a forum for identifying best practices among paratransit providers.

Development of a Coordinated Marketing Program. In summer of 2004, the KCPCC developed and approved the *Kane County Transportation Guide for Seniors and People With Disabilities*. This guide identified existing transportation options, both public and private services, for seniors and people with disabilities. Information about each of the services was listed, including service areas, eligibility requirements, service hours, and costs, are listed for each municipality and township.

Implementation of a User-Side Taxi Subsidy Program. The creation of a user-side taxi subsidy program - where the customer receives a subsidy for transportation. The provider would be paid the market rate for the trip – would be an easy and inexpensive way to address gaps in service as taxis are available 24 hours a day, 7 days a week.

Eastern Kane County Regional Dial-A-Ride Service. The analysis of existing paratransit services resulted in findings that indicate the potential for increased service efficiencies and improved mobility through integration of existing local Dial-A-Ride services into a larger, regional operation. Since the implementation of a regional Dial-A-Ride system would be challenging, as well as costly, it was recommended to phase in several strategies over a longer period of time:

- Adoption of uniform dial-a-ride operating and service policies, including consistent advance notice and eligibility requirements
- Provision of dial-a-ride services for Pace ADA customers
- Integration of dial-a-ride and Pace ADA services

Additionally, there are potential actions that would increase the usefulness of transit and paratransit services in the county regardless of whether other coordination strategies were implemented. These include a countywide transportation information and marketing campaign, and the provision of centralized driver training and possibly vehicle maintenance services, offered by Pace.

10.3 Non-Motorized

The non-motorized recommended plan identifies all existing and proposed bikeways, develops best practice policies, provides design guidance, and proposes policy and physical recommendations to expand the bikeway network. Non-motorized improvements are illustrated in Figure 10-4.

10.3.1 Regional Bikeways

The Kane County Bicycle and Pedestrian Plan identifies policies to incorporate bikeways into county and local planning initiatives. The policy suggests that bikeways be included in development and roadway projects. The improvements should consider wider paved shoulders and bicycle-friendly features. New developments should incorporate a trail plan to link to nearby local and regional trails. A minimum BLOS should be considered when designing roadway improvements. Coordination should be sought between local, regional, and state agencies to maximize the use of the trail system.

The second part of the regional bikeway plan is the physical plan, which includes the following objectives:

- Link bicycle and pedestrian destinations
- Improve the on-street bikeway network
- Increase pedestrian and bicyclist safety
- Improve trail network connectivity
- Support multi-modal transportation
- Develop future bikeway corridors
- Break barriers which prevent bicycle trips
- Encourage bikeway use

The regional bikeway considerations were made for three sub-sections of Kane County; North Kane County, South Kane County, and West Kane County. The regional bikeway considerations were also broken down into three categories:

BLOS Improvements – Improve the existing BLOS to provide a safer environment for bicycles that elect to ride on the street. Roadway improvements should improve a BLOS grade, include wide outside lanes, bike lanes, and paved shoulders.

Completion of Bikeway Gaps – Provide bikeways between two existing facilities to promote the creation of a regional network.

Conceptual Bikeway Corridors – Utilize greenways, open spaces, roadways, utility rights-of-way, and forest preserves to identify desirable corridors to develop the regional bikeway network.

North Kane County

The North Kane County area is defined as the north urban area of Kane County. The proposed bikeway projects for the North Kane County Area are described in Table 10-3.

TABLE 10-3
North Kane County Regional Bikeway Considerations
BLOS Improvements

Project	Location	Description
Randall Road	Silver Glen Road to Longmeadow Parkway	Improved with a paved shoulder and linking several communities and other bike trails.
Longmeadow Parkway Bikeway Corridor	Huntley Road to Algonquin Road	Ideally, an off-system segment connecting an existing path on Longmeadow Parkway to the Fox River Trail.

TABLE 10-3
North Kane County Regional Bikeway Considerations
BLOS Improvements

Project	Location	Description
Helm Road	Elgin Road eastward	Improve on street facilities
Forest Drive	Elgin neighborhoods to Fox River Trail	Improve on-street segments
Shoe Factory Road	Shoe Factory Road to Fox River Trail	Provide improved connectivity between Poplar Creek system and Fox River Trail
Higgins Road	West Dundee to Hampshire	Improve on street facilities
South Elgin Connector	South Elgin and Elgin Branch of the Illinois Prairie Path	On-street and off-street connection
Completion of Bikeway Gaps		
IL 64	St. Charles to Charlestown Mall	Additional connectivity along existing roadways
Elgin Connector	Elgin Community College to Fox River Trail	Provide additional connectivity along greenways and public spaces to connect trials, major trip attractions, and neighborhoods
Conceptual Bikeway Corridors		
Stearns Road Bridge Corridor	New Fox River Crossing	Utilizing a proposed new corridor and Forest Preserve District trails
Union Pacific (UP) Rail Trail	Elgin to Gilberts	Developed along active and abandoned rail corridors.
Mid-County Trail	IL 20 and Nesler Road to IL 56 and Virgil Gilman Trail	Link existing trails, forest preserves, parks, and greenways.
IL 68	Cook County to Fox River Trail	Improvements along existing facilities

South Kane County

The South Kane County area is defined as the South/Central urban area of Kane County. The proposed projects for the South Kane County Area are described in Table 10-4.

TABLE 10-4
South Kane County Regional Bikeway Considerations
BLOS Improvements

Project	Location	Description
Randall Road	IL 64 to Fabyan Parkway	Improved with a paved shoulder and linking several communities and other bike trails.
Main Street, Batavia	Rural Kane County to Mid-County Trail and Fox River Trail	On-street improvements such as adequate paved shoulders.
Kirk Road	Fabyan Parkway to IL 38	Improved sidepaths, enhanced connectivity to activity centers

TABLE 10-4
South Kane County Regional Bikeway Considerations
BLOS Improvements

Project	Location	Description
Completions of Bikeway Gaps		
Fox River Trail	Downtown Aurora	Improve connectivity in Fox River Trail and connections to the Virgil Gilman Trail
Gilman Trail	To Waubonsee Creek Trail	Provide a connection between the Gilman Trail and the Waubonsee Creek Trail
Fabyan Connector	Kaneville Road to Kirk Road	Complete gaps including Fox River Bridge Crossing and between Viking Drive and Bent Tree Drive connecting the proposed Mid-County Trail, Fox River Trail, and Kirk Road Sidepath.
Indian Trail	To Fox River Trail	Complete connection to Fox River Trail and possibly to the Illinois Prairie Path's Aurora Branch
Johnson's Mound		Complete connection between Kaneville Road/ Fabyan Parkway intersection to Johnson Mound Forest Preserve.
Conceptual Bikeway Corridors		
UP or Keslinger Road	Elburn to Geneva	Provide a connection between Elburn and Geneva along existing corridors or along the UP Railroad. Possible connections to Johnson's Mound Forest Preserve or Mill Creek System
North Aurora/Aurora Utility Trail	Mid-County Trail to Fox River Trail	Develop new corridor along utility easements with a possible connection to the Prairie Path.
Mid-County Trail	IL 20 and Nesler Road to IL 56 and Virgil Gilman Trail	Link existing trails, forest preserves, parks, and greenways.
Indian Trail	Extension to Mid-County Trail	Provide an connection between the Indian Trail Sidepath and the Mid-County Trail
Indian Trail	Gilman Connector	Provide a connection between the Indian Trail Side-path and the Virgil Gilman Trail through public lands
Stuart Sports Complex Path		Connect neighborhoods and the proposed Mid-County Trail to the sports complex.
Virgil Gilman Trail Extension		Eastward into DuPage County and westward to planned open spaces and Blackberry Creek
Orchard Road		Connect the Mid-County Trail, Virgil Gilman Trial, Fox River Trail, and Indian Trail Sidepath.

West Kane County

The West Kane County area is defined as the western rural sections of Kane County. The proposed projects for the West Kane County Area are described in Table 10-5.

TABLE 10-5
West Kane County Regional Bikeway Considerations
Completion of Bikeway Gaps

Project	Location	Description
IL 47	Silver Glenn Road to Lees Road	Connect the Lees Road facilities with the Silver Glen Road facilities.
Conceptual Bikeway Corridors		
West Kane County Bikeway Corridor	Full length of the county	Develop a regional trail along the full length of County in the west.

10.3.2 Planning a Safe and Desirable Non-Motorized System

To develop a safe and desirable non-motorized system, best practices, adequate design, and effective way-finding are all important. The best practices for policies and programs to promote safe bicycle and pedestrian travel are listed below. For detailed information on each of the best practices, and design guidelines refer to the Kane County Bicycle and Pedestrian Plan.

- Commit to designing bicycle and pedestrian friendly cities
- Identify a governmental bicycle and pedestrian coordinator
- Plan for bicycle and pedestrian facilities
- Promote citizen participation in the planning process
- Provide sufficient public information on bicycle and pedestrian issues
- Construct facilities according to recognized standards
- Incorporate bicycle and pedestrian facilities into new developments
- Plan for multi-model transportation access
- Design walkable communities
- Create safe routes to school
- Educate the public on safe bicycling and walking practices
- Establish enforcement policies promoting public safety
- Ensure accessible design of all facilities

Way-finding signage is an important amenity for trail users. Signage aids in guiding, warning, and navigating the users through the trail system. Way-finding can also direct users to off-system attractions. The objectives of the way-finding system are to:

- Get people to the paths and trails
- Warn motorist that there may be pedestrians or bicycles on the roadway
- Inform people how to navigate the network

For more information on way-finding refer to the Kane County Bicycle and Pedestrian Plan.

10.4 Operational Performance of Plan

Implementation of roadway projects included in the Kane County 2030 Recommended Transportation Plan would result in improved operational performance. All operational

improvements are based on the completion of the arterial and freeway projects as shown on Figure 10-1. The projects do not include the Prairie Parkway as the alignment and facility type is currently being studied. The arterial and freeway projects would add 520 new lane miles to the Kane County transportation system. As shown in Figure 10-5 the VMT increases 55 percent from 2003 to 2030 on roadways in Kane County. With the arterial and freeway projects in place the VMT increased 1 percent. This slight increase is a result of congestion on the roadway decreasing and travel in the area is more desirable. While VMT increases, VHD decreases with the addition of the freeway and arterial projects by 51 percent; see Figure 10-6. The percentage of congested lane miles also decreases by 16 percent with the addition of the arterial and freeway projects as shown in Figure 10-7. Kane County roadways that would still remain congested even after development of the arterial road projects (except the Prairie Parkway) are shown in Figure 10-8.

Provision of collector road networks will further relieve congestion on the Kane County roadway system. The effect of a collector road is localized to the area in its immediate vicinity. This localized effect results because collector roads are not intended to carry regional trips, but provide alternative routes to the arterial system for local trips. The planning area studies within Kane County illustrated that collector roads may reduce congestion by as much as 10 percent. This level of reduction would be realized in areas where a complete and efficient collector road system is in place.

10.5 Alternative Transportation Strategies

The alternative transportation strategies of TSM and TDM would be complementary to the development of the overall transportation systems in Kane County.

TSM is the concept of more efficiently using existing transportation systems by means other than large-scale construction. It is recommended that roadway improvements in Kane County would be accompanied by TSM actions. For example, traffic operations might be improved by interconnection of signals. Kane County has several locations where traffic signal interconnects are already operating, as shown below.

- Randall Road
- Orchard Road
- Fabyan Parkway
- IL 64
- IL 83

An additional TSM strategy already in use in Kane County is the Tollway's I-Pass electronic toll system. Both I-90 and I-88 have I-Pass express lanes along the mainline at the Elgin and Aurora Toll Plazas, respectively.

As traffic volumes increase, TSM strategies will be increasingly important in improving traffic operations by better managing the flow of traffic. The County should continue to identify locations where signal interconnects are appropriate. Ultimately, as further monitoring of Kane County roads occurs, consideration should be given to implementation of a county-wide coordinated Intelligent Transportation Systems (ITS) that would relay information to the County for evaluation and management of traffic operations.

Just as TSM strategies are aimed at managing the transportation *system,* TDM strategies are directed at managing transportation *demand*. The following TDM strategies are from the *Kane County Transit Opportunity Assessment Study*. Examples of TDM strategies that would reduce the demand for peak-period single-occupant vehicle travel are:

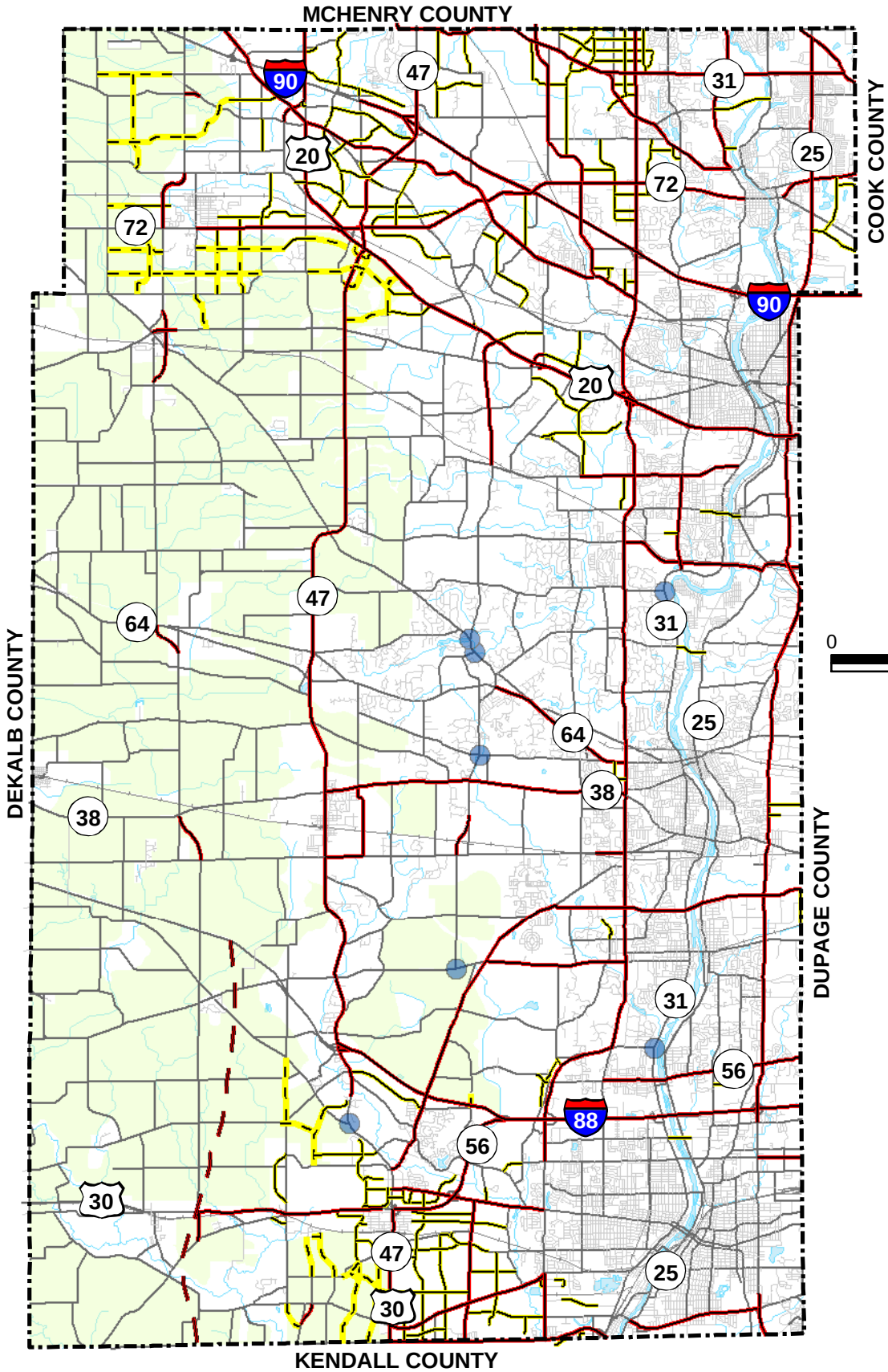
- Staggering work hours
- Providing preferential parking for carpools/vanpools
- Offering flextime
- Lowering or eliminating parking rates for carpools/vanpools
- Providing bicycle racks, lockers, and associated facilities
- Allowing telecommuting and hoteling at the place of work

The success of these TDM strategies in reducing peak period traffic congestion will depend on the level of employer participation or encouragement. Experience elsewhere has indicated that rideshare programs may reasonably be expected to reduce vehicle trips by approximately 2 percent to 5 percent for a particular traffic generator, and given a moderate degree of outside support.

One form of TDM, which has been considered in the past in Kane County, is the TMA. This is an organization that provides a structure for developers, employers and public officials to cooperate in promoting alternatives to the single occupant vehicle.

The goal of most TMAs is to reduce congestion and increase mobility. In Kane County, areas to investigate the potential implementation of TMAs would be transportation corridors that would have high travel demand and sustained congestion over time. In comparing the patterns of travel demand between the 2003 and 2030, Figure 7-8 shows a prominent North-South growth trend in travel desires in the eastern portion of the county. To further examine the effect of future travel growth, Figure 10-8 shows that even with the implementation of the roadway component of the Transportation Plan, there would be congestion on north-south roadways paralleling the Fox River along Randall Road, IL 31, IL 25 and Kirk/Dunham Road. The transportation performance analysis supports the recommendation of the *Transit Opportunity Assessment Study* that suggests creation of TMAs in the Randall/Orchard Road and Kirk Road corridors. Furthermore, the opportunity to implement TMAs in this area, can bring together land use planning and transportation improvements that would benefit mobility within the Urban Corridor.

Section 10
Figures



* Prairie Parkway alignment under study - alignment as shown in CATS 2030 Regional Transportation Plan
The study area includes southwest Kane County, west of Orchard Road and south of I-88

Freeway/Arterial Improvement
Collector Improvement
Collector Improvement (Locally Planned)
Prairie Parkway Study*
Isolated Intersection Improvement
Proposed Agriculture Preservation (2030 Land Use Plan)

2030 Recommended Transportation Plan
Roadway

Figure 10-1
Kane County 2030 Transportation Plan

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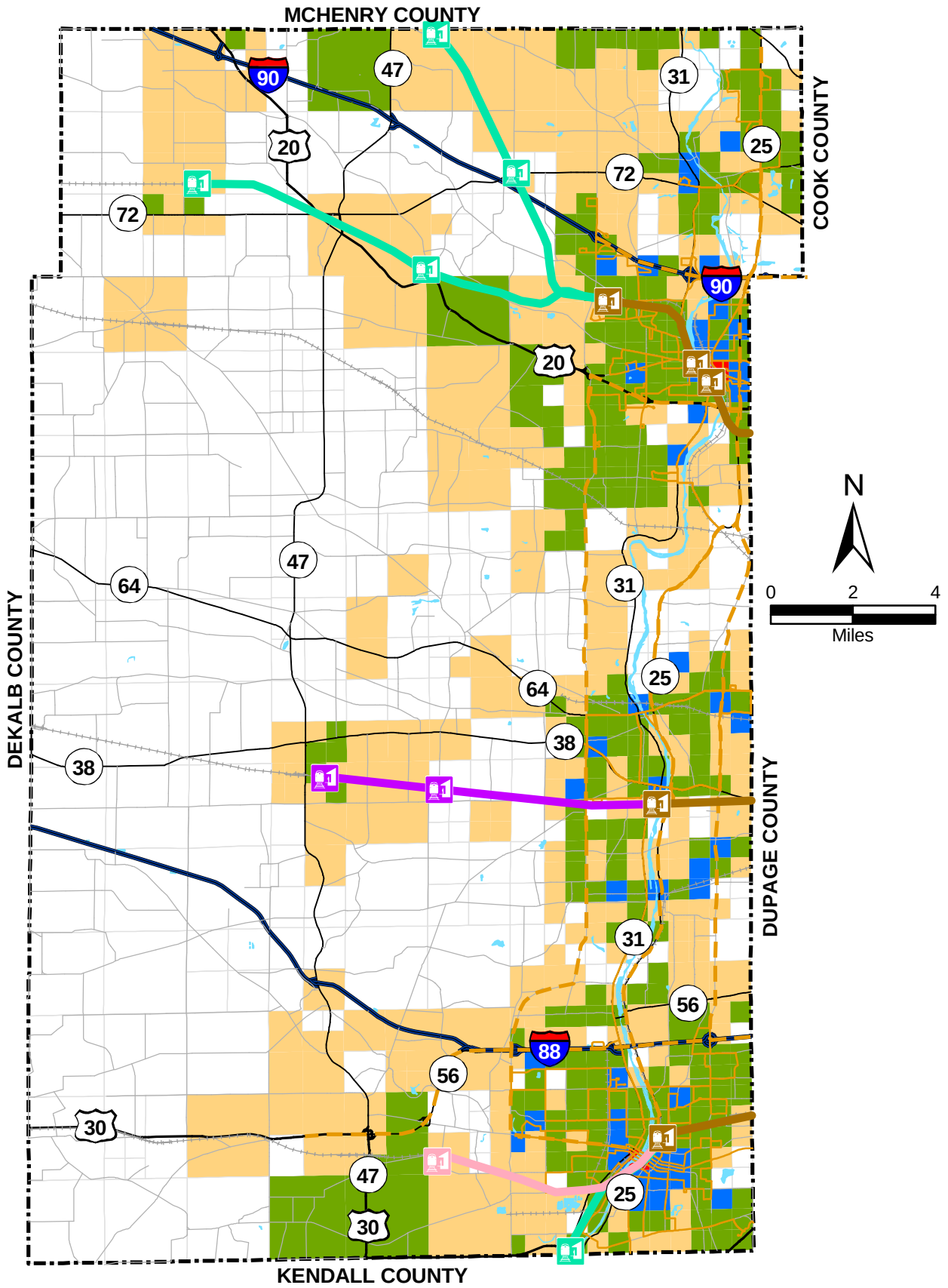

Existing Rail Service Lines
Existing Station
Committed Extension
Planned Extension
Conceptual Extension
Committed Station
Planned Station
Conceptual Station
Existing Pace Bus Service
Express Pace Bus Service

Population & Employment per square mile
< 1,000
1,001 - 4,000
4,001 - 10,000
10,001 - 30,000
> 30,000

CH2MHILL

2030 Recommended Transportation Plan
Transit
Figure 10-2
Kane County 2030 Transportation Plan

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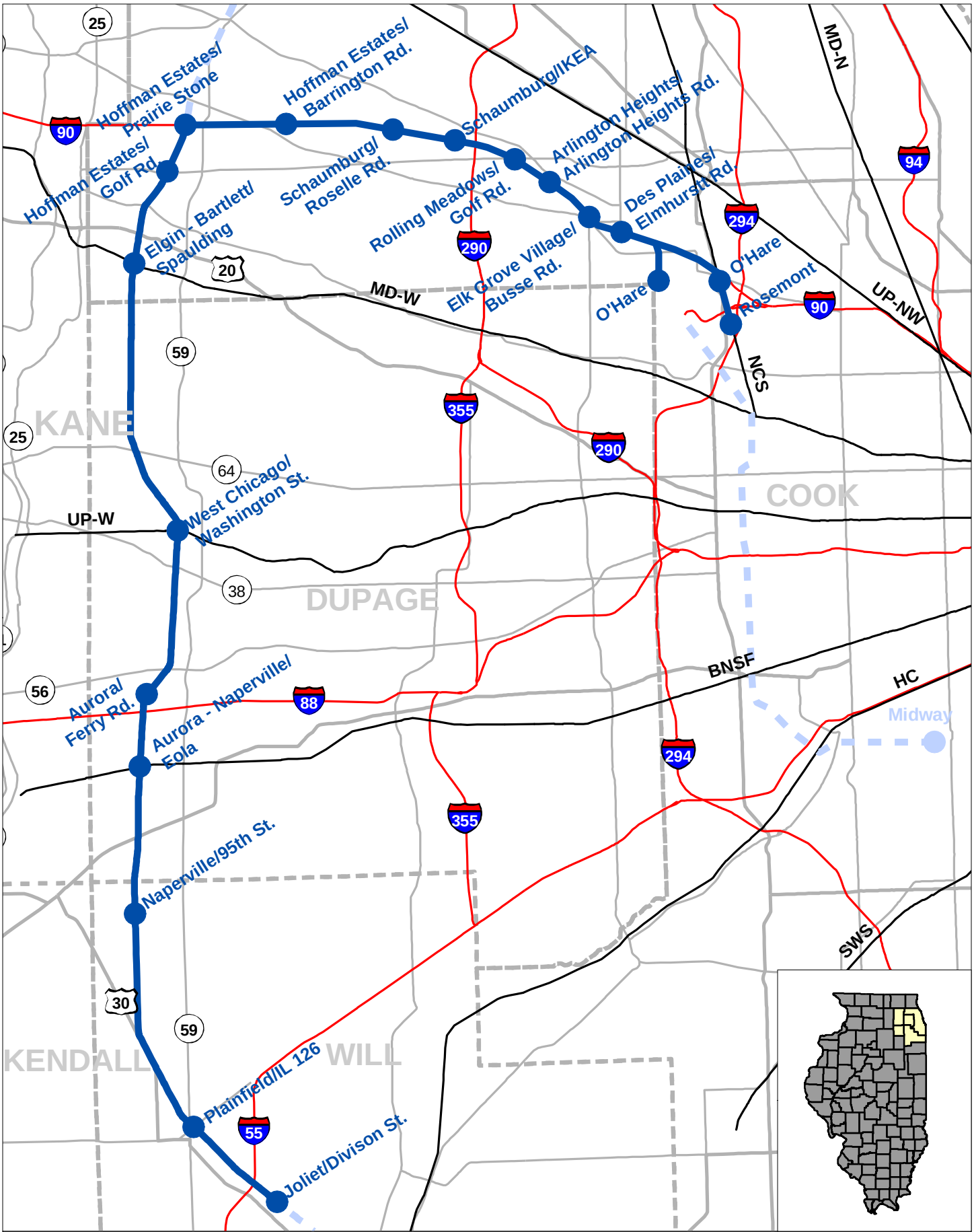

N

0 2 4
Miles

Existing STAR Line
STAR Line Under Study
Existing STAR Station
STAR Station Under Study

Existing Metra
Interstate
U.S. Highway
State Highway

STAR Line

Figure 10-3
Kane County 2030 Transportation Plan

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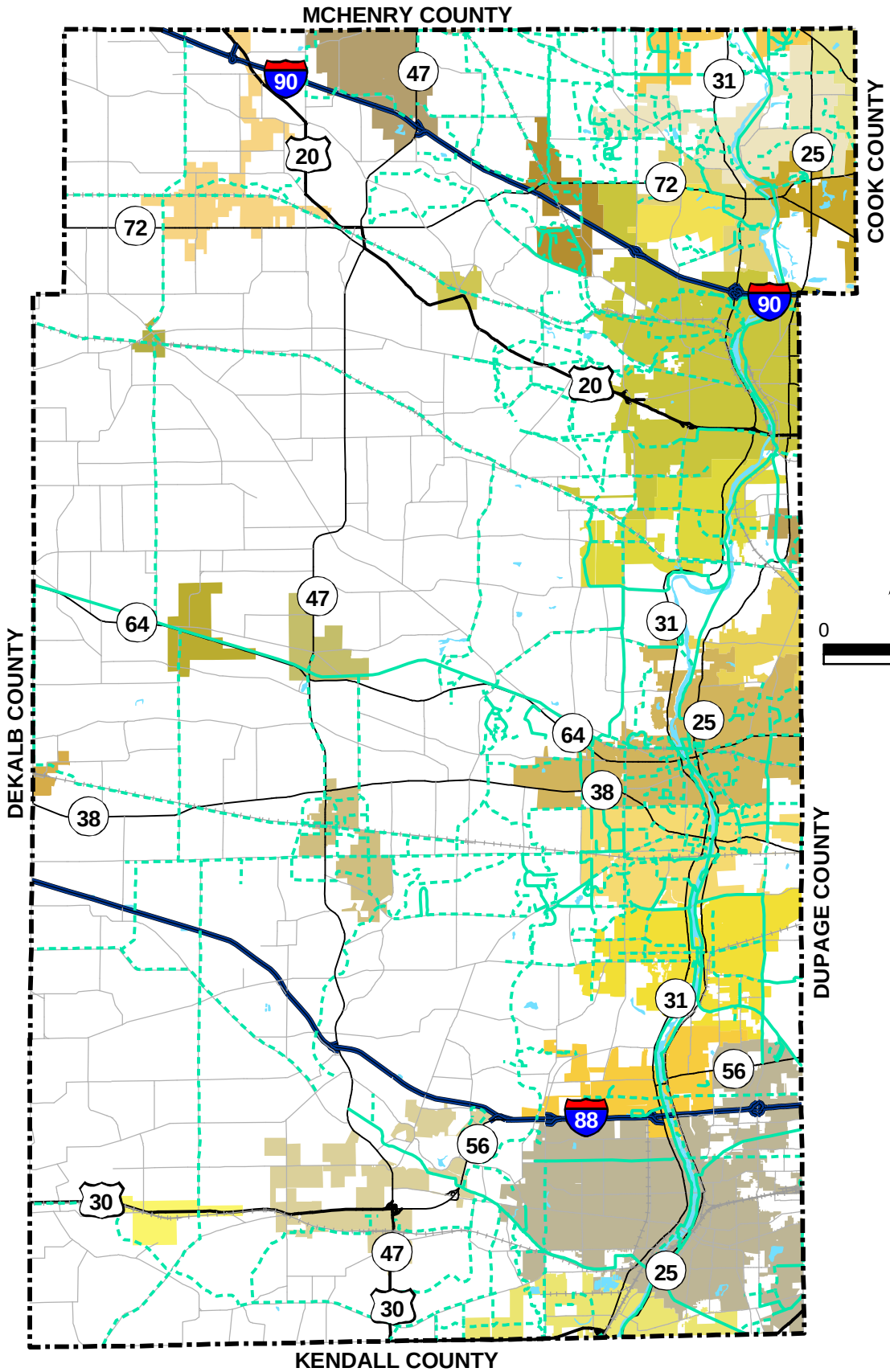

Existing Bike/Pedestrian Trail

Proposed/Conceptual Bike/Pedestrian Trail

2030 Recommended Transportation
Bike/Pedestrian Trails

Figure 10-4
Kane County 2030 Transportation Plan

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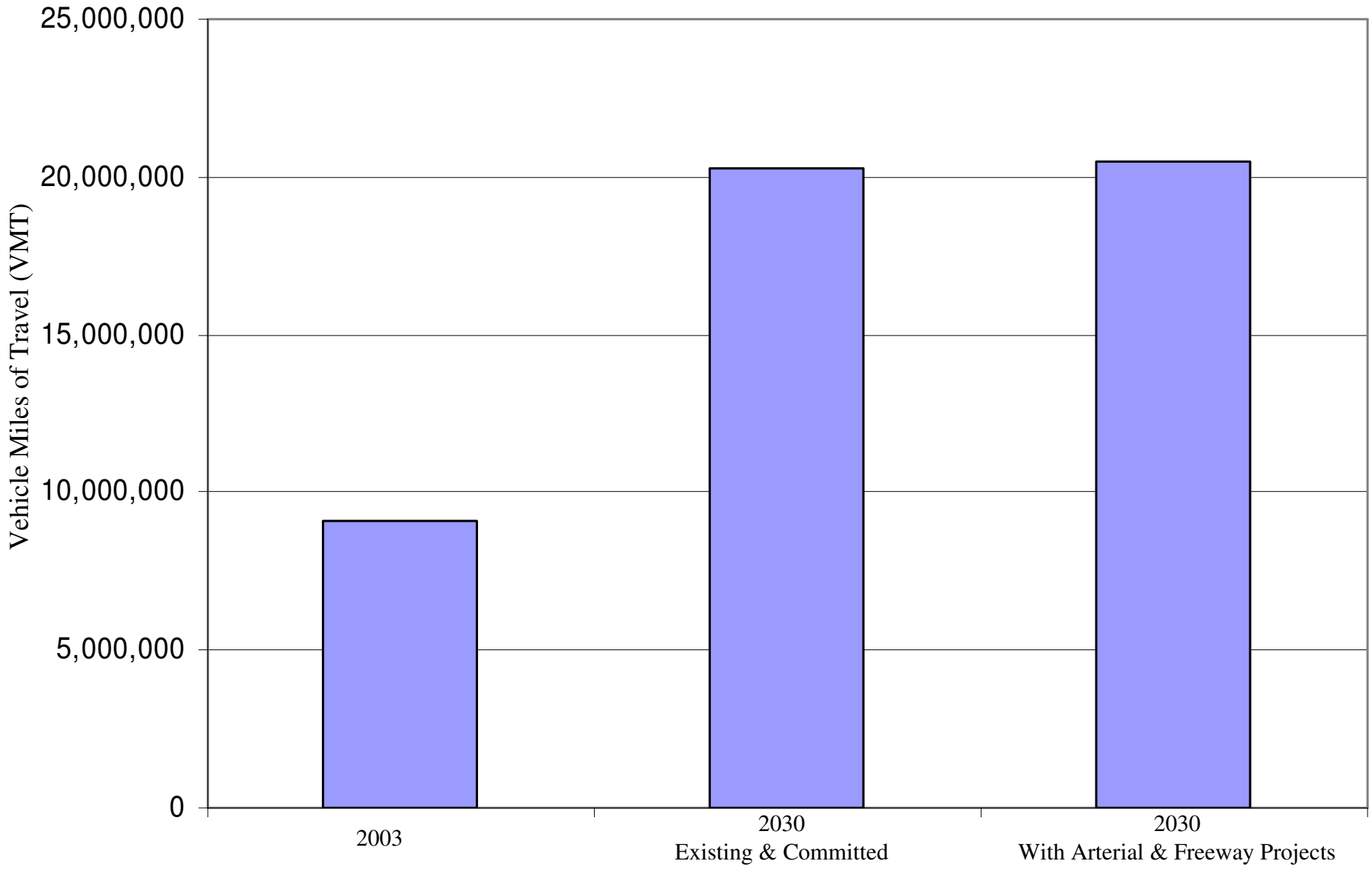
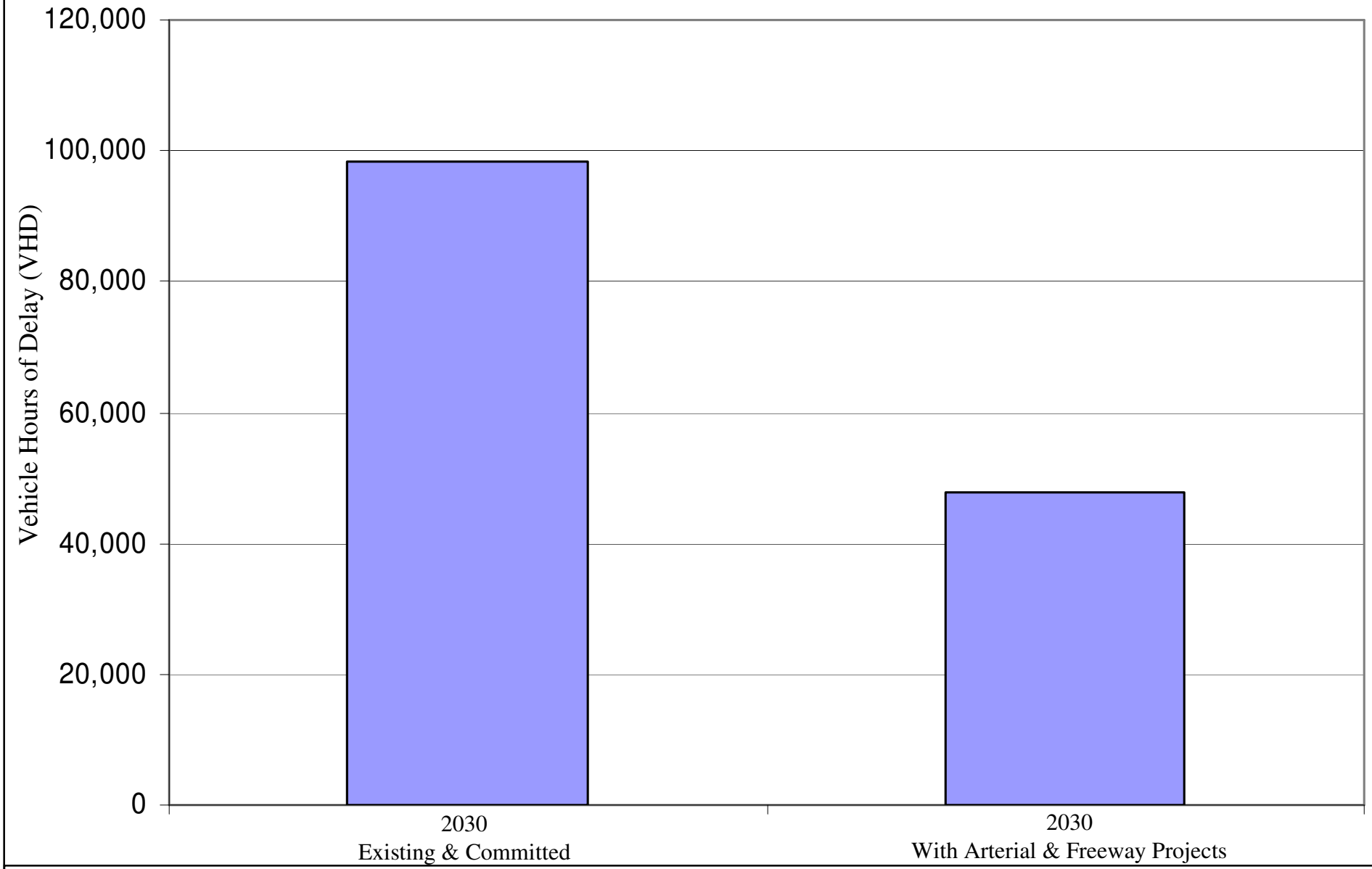


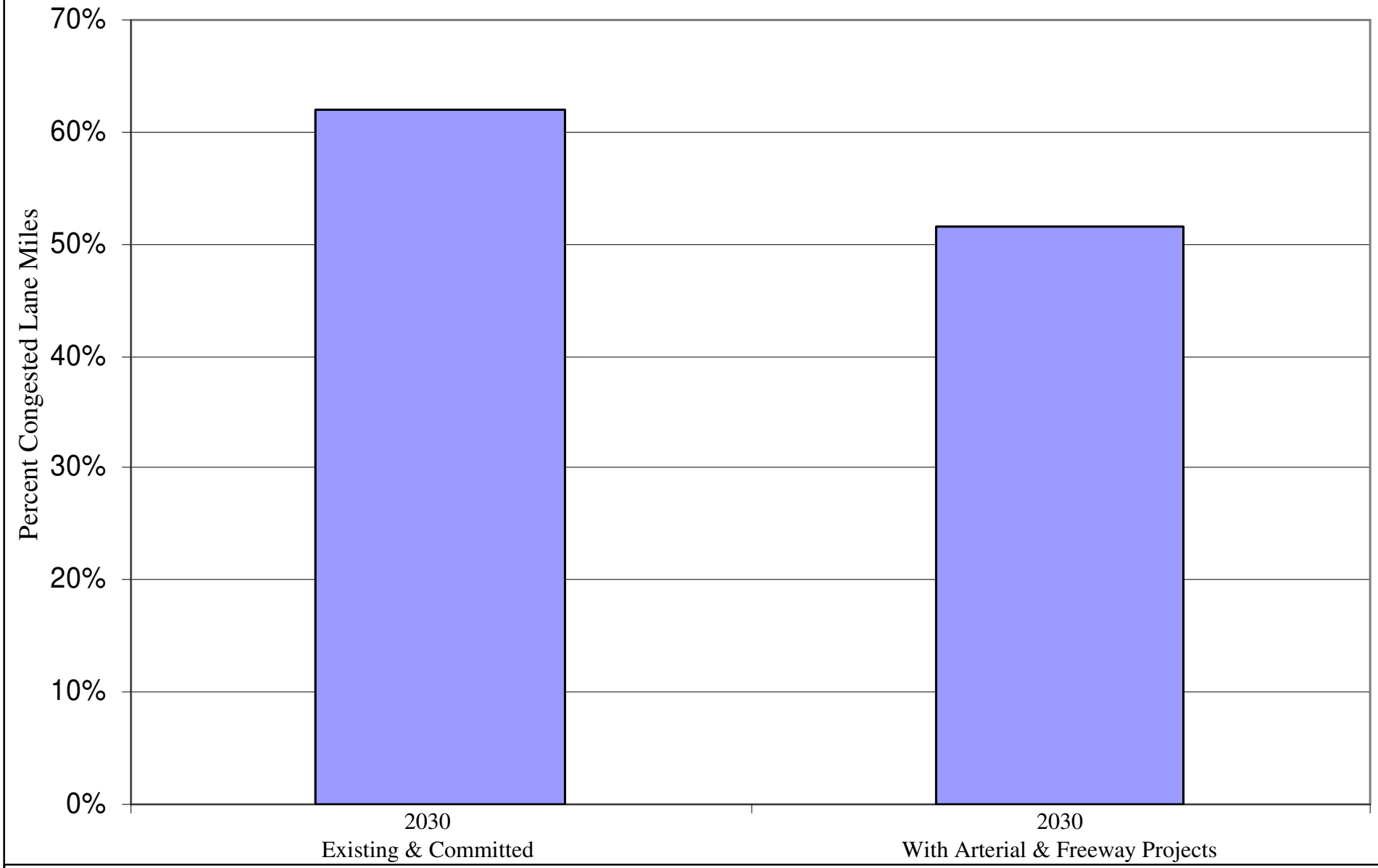
Comparison of Transportation Performance
Vehicle Miles of Travel

Figure 10-5
Kane County 2030 Transportation Plan



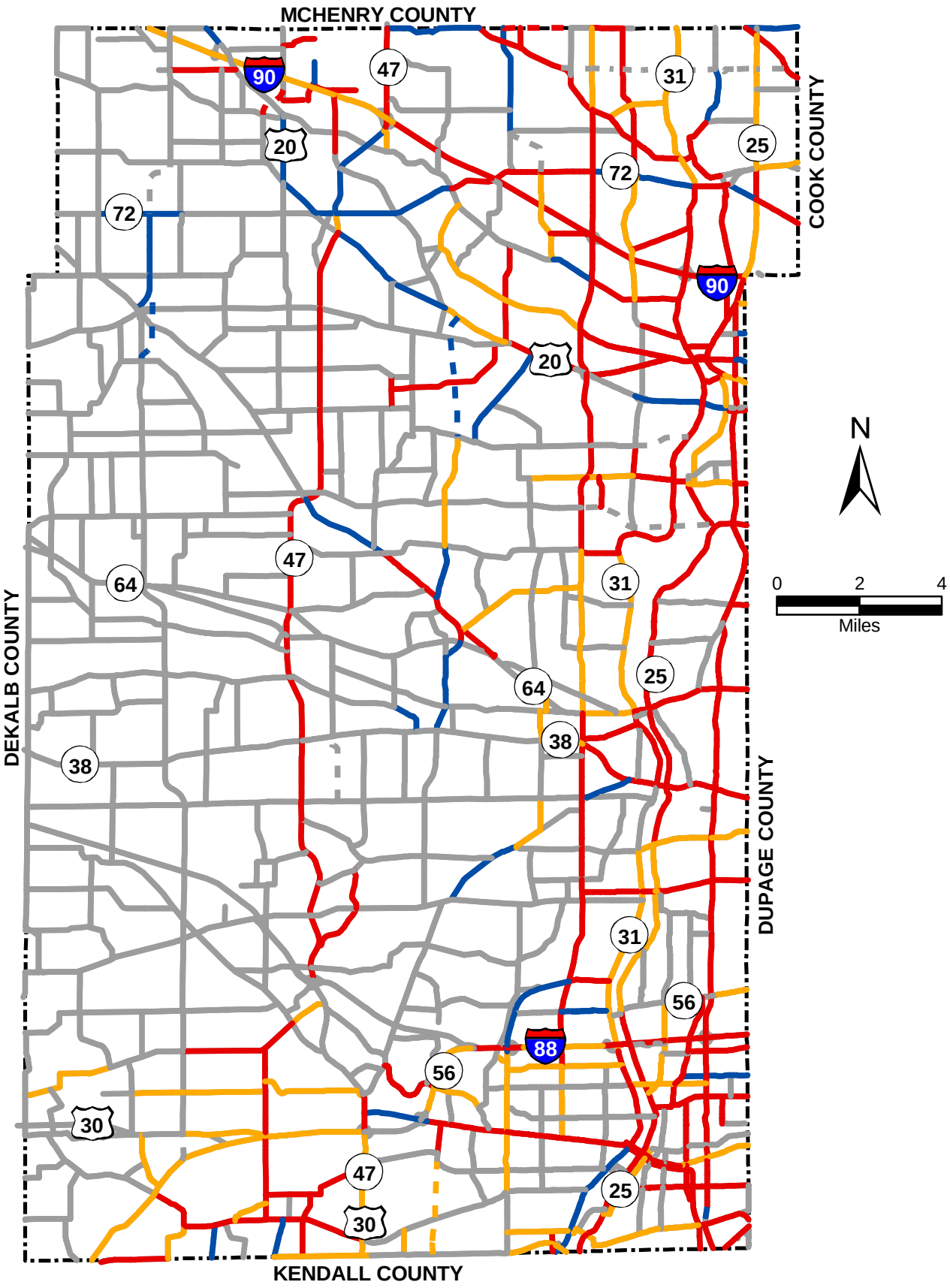
Comparison of Transportation Performance
Vehicle Hours of Delay

Figure 10-6
Kane County 2030 Transportation Plan



Comparison of Transportation Performance
Percent Congested Lane Miles

Figure 10-7
Kane County 2030 Transportation Plan



No Congestion
Moderate Congestion
Severe Congestion
Extreme Congestion
Dashed = Potential New Road

2030 Congested Roadway Segments with Freeway/Arterial Road Projects

Based on Average Daily Traffic

Figure 10-8
Kane County 2030 Transportation Plan

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Section 11

Plan Implementation and On-Going Management

SECTION 11

Plan Implementation and On-Going Management

11.1 Transportation and Land Use Integrated Planning

The 2030 Transportation Plan is a synthesis of several planning projects the County has completed in recent years. The 2030 Transportation Plan brings together these studies along with a long term vision for roadway improvements and establishes a common platform from which decisions would be made by Kane County and representative stakeholders regarding the development of the future transportation system. The Plan establishes a prioritization for the County's capacity enhancements that is projected to be financially attainable. These priority projects along with the other transportation strategies can be implemented over time in relationship to development patterns. Kane County's challenge is to be responsive to growth by enhancing mobility and yet maintaining the goals and objectives of the County's Land Resource Management Plan. The Transportation Plan identifies the needed infrastructure and transportation strategies to support the projected growth of approximately 290,000 people and 135,000 jobs in Kane County by 2030. The roadway improvements will address capacity, safety, and access issues, as well as, the maintenance of existing roadways. In addition, the projected growth will require a sustained commitment to maintain and expand transit service, pedestrian and bike facilities, and TSM and TDM strategies that would provide a comprehensive and coordinated multi-modal transportation system that serves the differing needs of Kane County residents.

11.2 Plan Evaluation to Goals and Strategies

11.2.1 Cooperative Planning

The planning process has capitalized on the planning efforts at both the local and regional level as critical inputs and represents the foundation of the Recommended Transportation Plan. At the regional level, the CATS 2030 RTP for Northeastern Illinois was referenced to identify major capital projects that will serve the future transportation needs of the metropolitan area. In addition, the NIPC socioeconomic forecasts were used as a basis for defining future development in Kane County and the corresponding travel within the County and the surrounding area.

To gain insight from a local level, the Kane County sub-area planning efforts brought together the growth trends and the need to provide commensurate investment in the transportation infrastructure. These coordinated sub-area planning studies brought together a variety of stakeholders to develop a long-range plan for roadway, transit, and bike and pedestrian facilities that bridged from other studies conducted by the municipalities and the County. A benefit of the sub-area studies was to bring together potentially different improvements between bordering municipalities and develop recommendations that met

the needs of the communities. In addition, the sub-area studies served as a common platform from which each of the communities would work from in planning transportation improvements.

The smart growth principles promulgated by Kane County's Development Department provide a connection between County's Transportation Plan and the 2030 Land Resource Management Plan. These principles are:

1. Mix land uses
2. Take advantage of compact building design
3. Create a range of housing opportunities and choices
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty and critical environmental areas
7. Strengthen and direct development towards existing communities
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair and cost effective
10. Encourage community and stakeholder collaboration in development decisions

As shown on Figure 11-1, the Land Resource Management Plan provides a vision for safe, healthy and livable communities that maintain a balance between growth and land preservation. The 2030 Transportation Plan provides a road map from which the County would coordinate with municipalities designated in the influence area of the "Priority Places" to establish transportation improvements that would meet the needs of the County. The Division of Transportation should also coordinate with the municipalities when any new developments are proposed to ensure that the necessary transportation improvements are implemented. Land use and transportation planning should be conducted in concert to ensure that development is efficiently served by the transportation system. Implementation of the Land Resource Management Plan, combined with effective coordination of land use and transportation planning, could ultimately result in a reduction of reliance on the roadway system.

11.2.2 System Efficiency

The Transportation Plan is comprised of arterial roadway improvements, collector roads, regional connections, transit enhancements, bike and pedestrian trails, and access management strategies. The roadway improvements are critical elements of the recommended Transportation Plan and are essential in reducing congestion. The sub-area planning studies focused on providing an adequate collector road system in areas where development was projected. The new collector road systems in combination of the arterial improvements would serve to enhance system transportation efficiency in the following areas.

- Shift traffic from the arterial to the collector roads
- Provide an alternative route in the case of incidents or special events

- Provide easy and safe access to abutting residential areas

In combination with the roadway improvements, the implementation of access control guidelines will enhance system efficiency. The access management plan recognizes the relationship between the functional classification of the roadway and the need to balance mobility and land access. The Kane County access control guidelines consider the following elements of access planning.

- The roadway
- The access point
- Abutting property and the associated land development

A recommendation of the Transportation Plan would be to include more County roads where access control management would be applied along with the coordination of access issues with various transportation agencies.

11.2.3 Personal Mobility

The Transportation Plan is a multi-modal approach by providing Kane County residents a number of options for transportation service between origin and destination. While mobility will be served by the primarily by the automobile, improvements to transit, paratransit, bus, bike and pedestrian facilities have been studied by the County and regional transportation agencies to support the County's various transportation needs. In addition to the transit improvements, supporting facilities like transportation hubs or centers, and park-n-ride lots will encourage transit use.

In Kane County's 2030 Land Resource Management Plan, an emphasis is placed on the establishment of "Priority Places." These Priority Places would have TOD that link land use and transportation. TOD is the design and development of land around transit stations and bus stops that encourage people to use public transportation. Personal mobility would be enhanced by building communities that would link people to their jobs, as well as, to commercial and retail centers.

11.2.4 Quality of the Environment

At this stage in the planning process, the roadway improvements were generally considered in relationship to existing environmental constraints. At locations where there were obvious conflicts, an attempt was made to avoid sensitive environmental features. Potential conflicts would be evaluated in more detail during the design phases of the individual projects. The County should focus on preserving and protecting natural resources throughout each phase of project development.

Overall, the Transportation Plan was developed with the County's 2030 Land Resource Management Plan in mind. A key element of the planning process is the recognition of maintaining 50 percent of land in Kane County as either farmland or designated open space. The goals of conservation and preservation related to land development are linked to the infrastructure needs. To that end, the process of implementing improvements in conjunction with land development provides a necessary link between the planning and implementation of transportation improvements.

11.3 On-Going Management of Transportation Plan

The Kane County 2030 Transportation Plan is comprehensive by incorporating roadway, transit and non-motorized improvements. A complete list of roadway improvements has been developed as part of the recommended Transportation Plan. A prioritization of the County's road improvements (i.e. capacity enhancements, bridge corridors, and intersection improvements) has been made through the identification of roadway projects as part of the county priorities. The county's priority projects would be primarily funded by Kane County. As a result, the County would focus on implementing these improvements to address the projected transportation needs. For the remaining roadway improvements contained in the Plan, the County would coordinate with State and Local agencies to implement these projects as funding becomes available. The County would continue its on-going process of evaluating projects annually and determine which projects should be incorporated in the County's 5-year transportation improvement plan. It is this process that will allow the County to identify priority projects in the short-term by considering local development trends, implementation of regional improvements, and funding issues.

11.4 Future Planning Opportunities

11.4.1 Coordinated Planning

The implementation of the recommended Transportation Plan will require significant coordination from Kane County and various agencies from planning through construction. Kane County has developed a Transportation Plan that balances the County's objectives from the 2030 Land Resource Management Plan and the projected needs given the significant growth in development over the planning horizon. The County's efforts in coordinating with local municipalities to manage transportation and land use issues will be a key success factor in developing a comprehensive transportation system. The County should continue to focus on the preservation and acquisition of right-of-way needed to implement transportation projects in the recommended Transportation Plan. As part of new developments, Kane County should continue to coordinate with local municipalities and developers to incorporate collector roadways that would have sufficient connectivity to the existing roadway network.

It will imperative for Kane County to continue to coordinate with state and federal transportation agencies to coordinate roadway, transit, and non-motorized improvements. Capacity enhancements to major arterials and interstate facilities within the County will be needed to handle the projected growth in travel. The availability of both transit and non-motorized improvements will be important in providing alternative modes of transportation.

11.4.2 Transportation and Land Use

The Conceptual Land Use Strategy adopted by the Kane County Board is the framework for the 2030 Land Resource Management Plan. Land use strategies are established for three areas within the county – the Urban Corridor Area located in the easternmost portion of the county along the Fox River; the Critical Growth Area located west of the Urban Corridor

generally in the center of the county; and the Agricultural/Rural Area in the westernmost portion of the county.

Two of the *Smart Growth Principles* on which the plan for Priority Places is based are to create walkable neighborhoods and provide a variety of transportation choices. It is acknowledged that communities are beginning to implement new approaches to transportation planning, such as better coordinating land use and transportation; increasing the availability of high quality transit service; creating redundancy, resiliency and connectivity within the transportation networks; and ensuring connectivity between pedestrian, bike, transit, and road facilities.

The CATS 2030 RTP recommends that special emphasis be placed on the land principles of TOD. The purpose of TOD is to build active and convenient communities that link people to jobs as well as to commercial, retail and entertainment centers. The RTP encourages communities to embrace TOD principles to support existing transit service and to encourage transit investment.

11.4.3 Aggressively Seek Funding for Transportation Projects

The County's needs are funded from several major sources: property tax, LOMFT, the SMFT, and federal subsidies. Kane County's recommended Transportation Plan has identified more needs than revenues. Even the fiscally constrained plan would require additional revenue sources to meet the near term needs.

The County has enacted, in 2004, an Impact Fee Program that will offset a small percentage of the roadway improvement costs, but more capital will be needed. The County was proactive in the financing roadway improvements with a bond issue in 2001. Kane County should continue to work with governmental and transportation agencies to develop cost sharing strategies to finance future roadway improvements. In addition, the County should seek other ways in which to fund transportation improvements.

11.4.4 Context Sensitive Solutions

Implementation of the recommended Transportation Plan should be guided to a large extent by principles that are sensitive to the context of each project.

Context Sensitive Design (CSD) is among the most significant concepts to emerge in highway project planning, design and construction in recent years. Also referred to as "Thinking Beyond the Pavement," CSD reflects the increasingly urgent need to consider highway projects as more than transportation. CSD recognizes that a highway or road itself, by the way it is integrated within the community, can have far-reaching impacts (positive and negative) beyond its traffic or transportation function. The term CSD refers to as much an approach or process as it does to an actual outcome. [1]

"*Context Sensitive Design asks questions first about the need and purpose of the transportation project, and then equally addresses safety, mobility, and the preservation of scenic, aesthetic, historic,*

[1] NCHRP Report 480, *A Guide to Best Practices for Achieving Context Sensitive Solutions*, Transportation Research Board , 2002.

environmental, and other community values. Context sensitive design involves a collaborative, interdisciplinary approach in which citizens are part of the design team." [2]

Inclusion of CSD principles in the Kane County project development process will ensure stakeholder participation in development of the transportation system. It will also assist in maintaining aesthetic and environmental values as land use changes occur in rapidly developing areas of the County.

11.4.5 Access Management

Access management in Kane County is controlled by the Kane County DOT *Permit Regulations and Access Control Regulations* approved by the County Board on January 14, 2003 and implemented by February 2003. These regulations provide updated policies and detailed procedures for permitting access to County highways.

The guiding philosophy of the Access Control Regulations is to "provide safe, efficient transportation systems compatible with land use" by controlling access on roadways to minimize curb cuts and local street intersections and maintaining existing roadway capacity.

It is important that the County continue to enforce access management on the County highway system, particularly along roadways with higher functional classifications that are primarily intended to serve traffic rather than provide access to abutting land uses. The benefits of access management are improved safety, greater roadway capacity, decreased travel time and congestion, better access to properties, improved air quality, and the maintenance of travel efficiency with related economic prosperity.

11.4.6 Rustic Roads

The Kane County Board adopted the Kane County Rustic Roads Program in July 2000. The objective of this program is to preserve and enhance Kane County's rural character while incorporating new development and transportation needs as subtly as possible. In this respect, it compliments and furthers the Context Sensitive Design principles, described above, and should be an important element in long-range transportation planning and implementation.

The Rustic Roads program applies to both roads and surrounding features in the roadway corridor. It is intended to protect some of the rural roads and scenic vistas for future generations. Features of the roadway corridor that should be protected and enhanced are defined in a Corridor Management Plan developed when the route is designated a Rustic Road.

11.4.7 Travel Control Measures

Travel control measures consist of actions to improve either the demand (TDM) or supply (TSM) of transportation.

TDM is not one action, but rather a set of actions or strategies, the goal of which is to encourage travelers to use alternatives to driving alone, especially at the most congested

[2] FHWA, *Flexibility in Highway Design*, 1998

times of the day. The term TDM encompasses both alternative modes to driving alone and the techniques, or strategies, that encourages use of these modes.

The primary goal of most TDM programs is to reduce commute trips in a particular area and/or at a particular time of day. Program effectiveness varies widely by program type, by site, and by the TDM strategies chosen. TSM is the concept of more efficiently using existing transportation systems by means other than large-scale construction

11.4.8 Historic Preservation

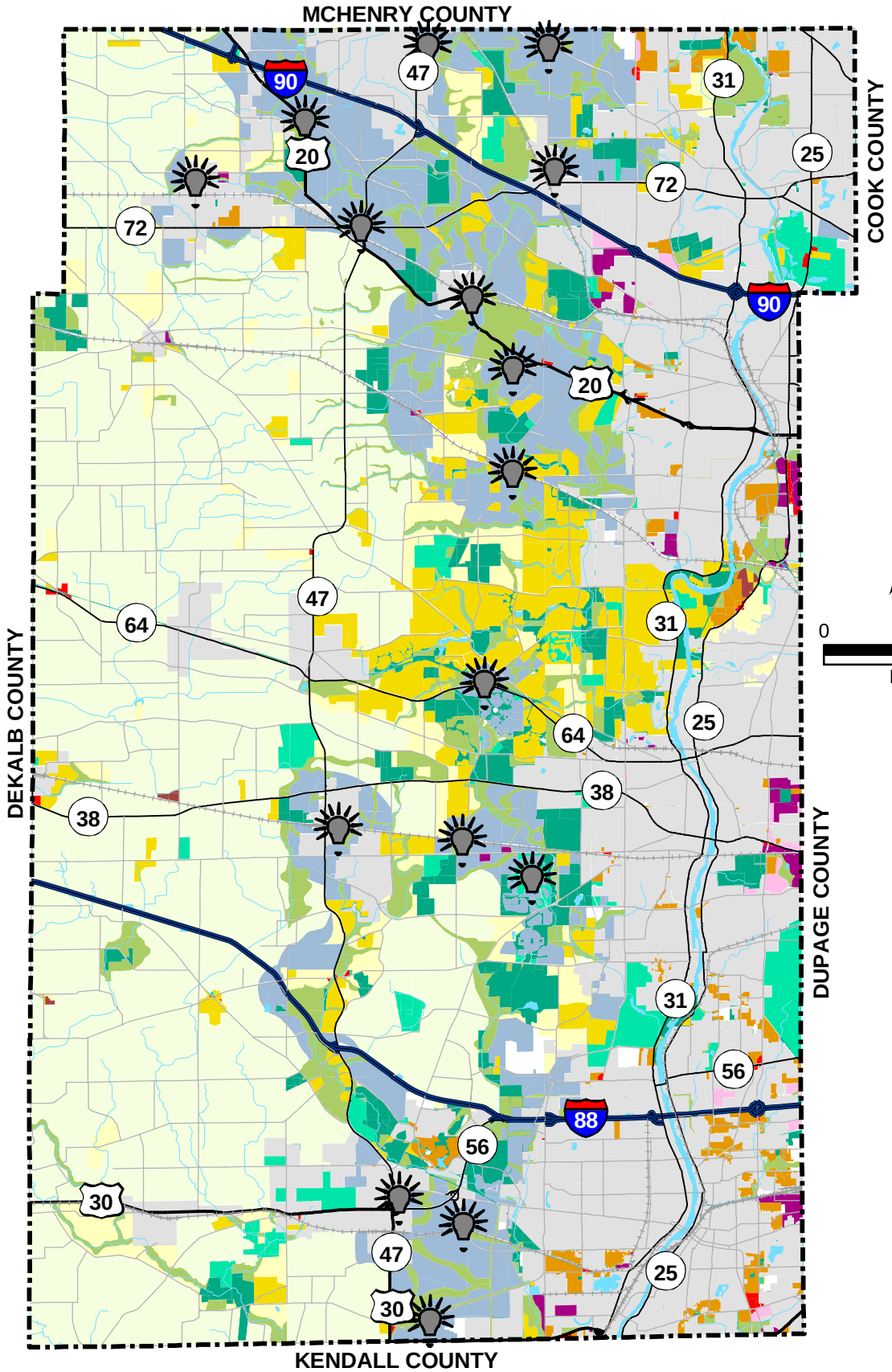
Amendments to the Kane County Historic Preservation Ordinance, enacted in June 2000, expanded the scope of historic preservation to include "road corridors." Road corridors were defined to include not only the roadway itself, but also adjacent properties and scenic vistas and viewsheds. This program, which empowers the County to protect and enhance facilities that have historic significance, is another important tool that should be retained and applied in development of the recommended Transportation Plan.

11.5 Summary

The implementation of the recommended Transportation Plan requires an on-going process of evaluating how future projects conform to the goals, objectives, and strategies set forth in this Plan. Several future planning opportunity strategies have been discussed that should be considered in the implementation of the Plan. With the needs far exceeding the projected revenues, the County should examine methods to increase funding for transportation projects. An emphasis in the planning process has been the interaction of transportation planning and land use. Considering smart growth principles in the development and implementation of projects would yield a transportation system that is multi-modal and serves the differing needs of those who live and work in Kane County.

Section 11

Figures



Existing Open Space
Institutional/Private Open Space
Proposed Open Space
Agriculture
Agricultural Business
Countryside/Estate Residential
Rural Residential
Resource Management Area
Priority Places
Urban Residential
Commercial
Office/Research
Industrial, Light Industrial, Warehousing

CH2MHILL

Draft 2030 Land Use Plan

Figure 11-1
Kane County 2030 Transportation Plan

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