Executive Summary
Northwest Kane County Planning Area
Transportation Improvement Plan

Introduction

In October 2000, the Kane County Division of Transportation and CH2M HILL began a planning study to develop a recommended set of transportation improvements for areas within the County. The project consists of two phases; first, a countywide assessment of existing and future conditions, and then a more detailed study of transportation issues within a designated planning area. This report describes the results of the areawide planning process and presents a recommended plan for the Northwest Kane County planning area.

Analysis of Existing and Future Conditions

Performance of the existing Kane County highway system was evaluated in three categories: (1) traffic service, (2) congestion, and (3) safety. In examining traffic performance, it was found that principal arterials account for approximately one-quarter of the lane miles, but carry the bulk of traffic (approximately 50 percent) and account for an even larger proportion of delay encountered by motorists (approximately 55 percent). Under existing conditions, 14 percent of the route miles in Kane County were judged congested. Fifteen intersections and 15 route miles of county roads were classified in the highest priority category for safety.

Population of Kane County is expected to grow from 317,000 in 1990 to 692,000 in 2030 and employment is expected to increase from 174,000 to 343,000 during the same period. Future travel demand was determined based on increased population and employment. Areas with the largest anticipated traffic growth would be Sugar Grove, West Geneva/West Batavia, Elgin, and West Upper Fox.

Between 1997 and 2020, vehicle miles traveled within the county is expected to grow by 93 percent. Delay encountered by motorists will increase more than sevenfold. By 2020, it is anticipated that 56 percent of the lane miles of highway within the county will be congested compared with just 14 percent in 1997.

The final step in the analysis of the existing and future transportation conditions was to delineate and prioritize planning areas in Kane County. Clusters of performance problems were delineated to define the planning areas and then compared to one another to prioritize the order of study. Figure 1 illustrates the four planning areas identified as having immediate need for further study. The Northwest Kane County Planning Area, which is the subject of the remainder of this document, fell into the near term needs category for two of the five performance measures.

Figure 1: Planning Areas Selected for Immediate Study
Northwest Kane County (NWKC) Planning Area

Development Trends

Previous 2020 travel forecasts for Kane County were based on population and employment projections by the Northeastern Illinois Planning Commission (NIPC) and did not fully account for some of the residential and commercial developments planned in the NWKC area. The NIPC estimates of dwelling units, population and employment were adjusted, therefore, in the areas indicated in Figure 2. In adjusting the Kane County travel forecasting model, 3,006 households were added in the NWKC area, creating an increase in population of approximately 8,300 over the prior 2030 estimate.

Growth of Travel Demand

The largest traffic increase by 2030 would occur on the Illinois Tollway (I-90), and Illinois Route 47. Other highways that would experience heavy traffic growth would be IL 72, U.S. 20, and Big Timber Road, and to a lesser degree, Highland Avenue, and Damisch Road. See Figure 3.

Future System Performance

Performance of transportation facilities in the NWKC area under future conditions (2030) was measured to identify roadways that would operate poorly. Considering all roadways, 51 percent of the lane-miles would be congested and the average speed on the roadway network would be 39 mph. Roadways that would experience extreme congestion (LOS F) are shown in Figure 4.
NWKC Area Transportation Improvement Plan

Objectives and Constraints

A planning framework was established to assist in development and evaluation of a transportation improvement plan for the NWKC area. Five objectives, as follows, were set up to guide development of a transportation improvement plan:

- Enhance connectivity
- Reduce delay
- Reduce congestion
- Be proactive towards development related to infrastructure improvements
- Distribute trips to appropriate facility types.

Previously Planned Transportation Improvements

Roadways

Planned roadway improvements in the NWKC area were obtained from multiple sources including the Chicago Area Transportation Study and the local municipalities. The planned improvements include widening existing arterials and the development of a new collector road system. Previously planned roads in NWKC study area are shown in Figure 5.

![Figure 5: Previously Planned Road Improvements](image)

Public Transit, Bike and Pedestrian Facilities

The county and other agencies have already planned improvements to the area’s transit, bike, and pedestrian facilities.

Plan Development Process

The development of a transportation improvement plan for the NWKC area was accomplished using a toolbox approach. The basic implements in such a toolbox would be arterial improvements, new collector roads, regional connections, transit enhancements, bike and pedestrian paths, and access management strategies.

Roadway improvements are identified in the area both through existing plans and determination of system deficiencies. New roads are classified either as a collector road or an arterial, and may include the realignment of existing facilities. The process followed in developing a transportation plan in the NWKC area was to first address a system of collector roads, and then augment the roadway network with improved arterials.

Collector Road Improvements

Collector roads serve a dual function of providing for mobility as well as access to abutting land uses. An efficient and continuous collector road network 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 to control access onto the arterials.

Each collector road would provide two through lanes (one in each direction), with turn lanes as required and appropriate access control. It was also assumed that the collector road system would be continuous. A partial collector road network would not have the same impact as one fully developed.

Arterial Improvements

Once the collector road network had been established, arterial improvements were added to create a network having sufficient capacity to meet anticipated traffic demand. The steps involved in defining arterial improvements are as follows:

- Identify potential arterial improvements
- Determine effectiveness of each individual improvement project
• Estimate the cost of each improvement project
• Summarize performance of the improvement projects

The candidate roadway improvements were stratified into categories of major and secondary projects and cost estimates were determined for each of the individual improvements.

**Recommended Plan**

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. The plan would recognize the importance of regional connectivity by incorporating improvements that connect the NWKC area to surrounding communities and adjacent counties.

**Roadways**

The foundation for the recommended plan is the establishment of an in-fill collector road network, which affords several distinct advantages in the area of Kane County. Since the collector network would distribute traffic demand more evenly among the area’s roadways, the existing arterial highways would be capable of functioning adequately over a longer time span. The implementation of a collector system would also provide an opportunity to shift some of the financial burden to developers and/or local governing bodies. Collector and arterial roadway improvements incorporated in the recommended plan are shown in Figure 6, on the next page.

In developing the recommended plan, the arterial improvement performance was summarized using the stepwise method described above. The projects to be included are listed in Table 1.

It is envisioned that along with the major improvements, as listed in Table 1, other enhancements such as intersection capacity improvements would occur in preparation of or in conjunction with the proposed widening of the arterials and collectors.

Two additional grade separations with the Soo Line railroad are also proposed: on the realignment of U.S. 20 and IL 72, and as part of the French/Harmony roadway connection.

As the recommended improvement projects are added to the base network, there would be significant improvements in each of the measures of effectiveness, as shown in Table 2.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Location</th>
<th>Length (route-miles)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. 20</td>
<td>N. County Line to Randall Road</td>
<td>12.9</td>
<td>4 – Lanes</td>
</tr>
<tr>
<td>IL 47</td>
<td>Plato Road to Big Timber Road</td>
<td>7.3</td>
<td>4 – Lanes</td>
</tr>
<tr>
<td>IL 47</td>
<td>Big Timber Road to Powers Road</td>
<td>2.3</td>
<td>6 – Lanes</td>
</tr>
<tr>
<td>Brier Hill Road</td>
<td>U.S. 20 to N. County Line</td>
<td>2.3</td>
<td>4 – Lanes</td>
</tr>
<tr>
<td>Big Timber Road</td>
<td>U.S. 20 to Randall Road</td>
<td>6.7</td>
<td>4 – Lanes</td>
</tr>
<tr>
<td>IL 72</td>
<td>State Street to Tyrrell Road</td>
<td>9.1</td>
<td>4 – Lanes</td>
</tr>
<tr>
<td>Corron Road</td>
<td>Bowes Road to U.S. 20</td>
<td>2.9</td>
<td>2 – Lanes</td>
</tr>
<tr>
<td>I-90/IL 47</td>
<td></td>
<td></td>
<td>Complete Interchange</td>
</tr>
<tr>
<td>U.S. 20/IL 72</td>
<td></td>
<td></td>
<td>Realignment/Grade Separation</td>
</tr>
<tr>
<td>Collectors*</td>
<td></td>
<td>57.1</td>
<td>2 – Lanes</td>
</tr>
<tr>
<td>Realignments*</td>
<td></td>
<td>5.4</td>
<td>2 – Lanes</td>
</tr>
</tbody>
</table>

* Only includes alignments within planning area – others are shown to indicate connectivity
After implementation of the recommended plan, much of the remaining system delay would be experienced on the tollway, which would operate at a poor Level of Service. Widening of I-90 has nor been evaluated as part of the recommended plan. However, improvements to the tollway may reduce the need for local roadway infrastructure improvements. Therefore, for planning purposes the NWKC plan would concentrate efforts on resolving local transportation issues.

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 $225 million for development of the collector road network. Widening the arterials, as opposed to full reconstruction would save $115 million, for a total cost of $425 million. The cost estimate excludes the cost of regional connections, transit, and bike/pedestrian facilities.

Public Transit and Bike/Pedestrian Facilities

The recommended public transit plan incorporates improvements already planned by Metra and Pace. An extension of the Milwaukee District West line to Huntley, with a spur to Hampshire is incorporated into the recommended plan with stations in Gilberts, Huntley, Pingree Grove and Hampshire. Ample parking should be provided at each station.

No expansion of Pace services to the NWKC planning area is anticipated. Park’n’ride locations within local communities should be provided for access to existing or proposed Metra stations.
Bicycle/pedestrian trail improvements incorporate all previously planned improvements as well as paths along newly developed collector roadways. The proposed bike trails would be consistent with the recommendations of the countywide bicycle and pedestrian plan. See Figure 7.

**Access management**

In order to achieve maximum benefit, transportation improvements in Kane County should be accompanied by an access management plan. The access management plan would consist of an access control policy and the provision of intersection capacity enhancements at critical locations throughout the study area. The county’s access control regulations specify the techniques and policies of access control to be applied in the following areas:

- Location of Access Points
- Number of Access Points

* Does not include cost improvement outside the planning area boundary.

Bicycle/pedestrian trail improvements incorporate all previously planned improvements as well as paths along newly developed collector roadways. The proposed bike trails would be consistent with the recommendations of the countywide bicycle and pedestrian plan. See Figure 7.

**Constraints**

A general environmental appraisal was conducted by comparing the proposed improvements to the environmental features in the study area. As shown in Figure 6, one area is highlighted as a potential impact to a sensitive area. The location is the Thurnau Road corridor, which is classified as a Rustic Road. The plan to preserve this corridor was adopted in September 2003.

**Implementation**

The recommended plan has been formulated to evolve in conjunction with land development in the NWKC area. The intent of the planning process was to anticipate the amount and location of future developments in order to provide for construction of infrastructure improvements concurrently with development. The need for roadway improvements will have to be reevaluated if changes occur in development patterns. As the recommended improvement projects are added to the base network, there would be significant improvements in each of the measures of effectiveness, as shown in Table 2.

**TABLE 2**

Comparison of Transportation Performance – Base Network to Recommended Plan

<table>
<thead>
<tr>
<th>Measure of Effectiveness (MOE)</th>
<th>Base Network</th>
<th>Recommended Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle-Hours of Delay (VHD)/Lane Mile</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Percentage of Lane Miles at LOS F</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td>Weighted Percentage of Lane Miles Congested</td>
<td>56</td>
<td>34</td>
</tr>
<tr>
<td>Percentage of VMT on Freeways/Arterials/Collectors</td>
<td>23 / 58 / 19</td>
<td>21 / 57 / 22</td>
</tr>
<tr>
<td>Estimated Cost</td>
<td>N/A</td>
<td>$425 – 540 Million*</td>
</tr>
</tbody>
</table>

* Does not include cost improvement outside the planning area boundary.