

Section 7

**2030 Travel Forecast and Future System
Performance**

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

Functional Class	VMT		VHT		VHD	
	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.

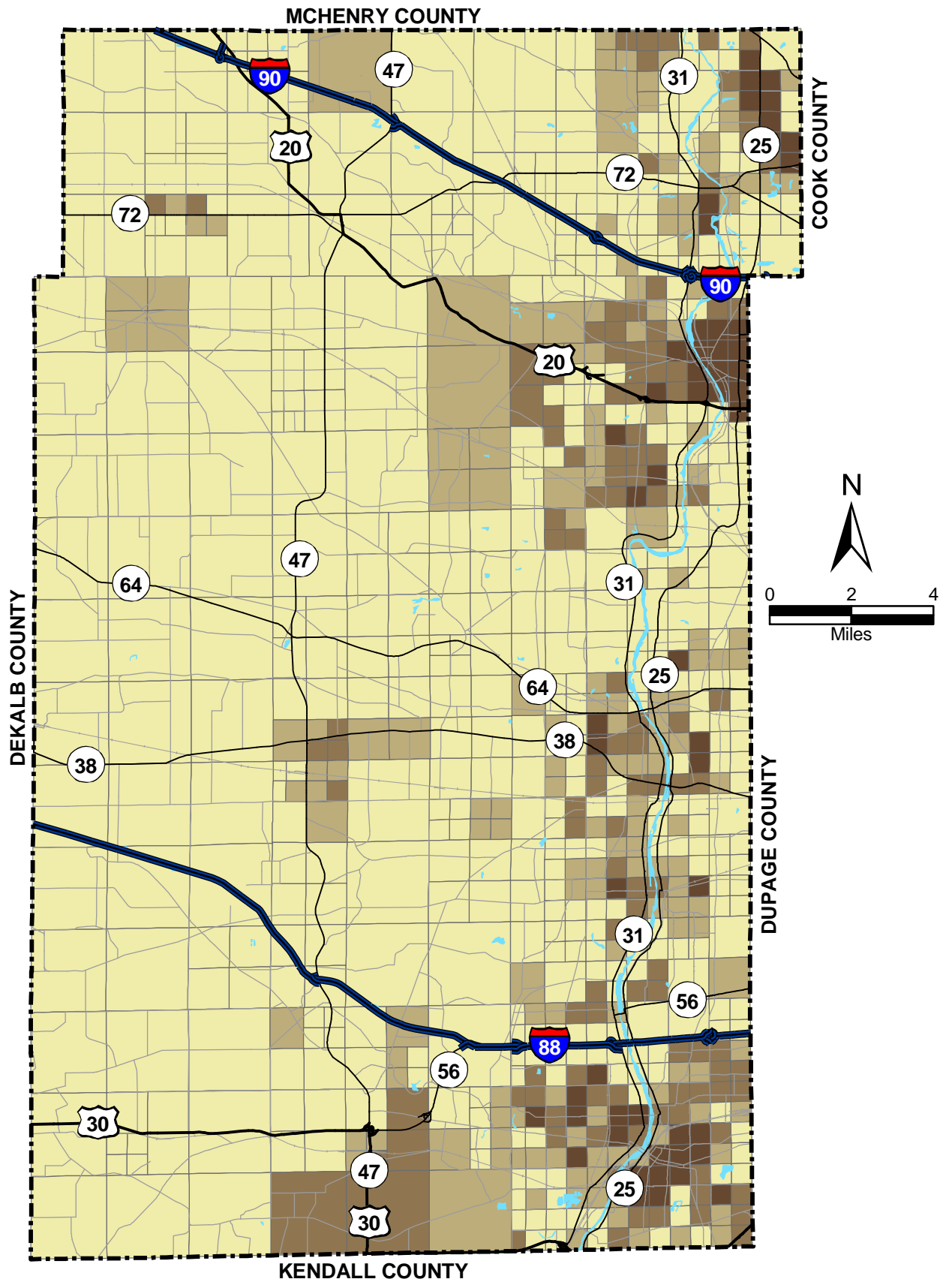
TABLE 7-4
Comparison of Traffic Performance

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)

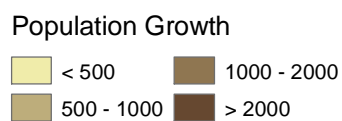
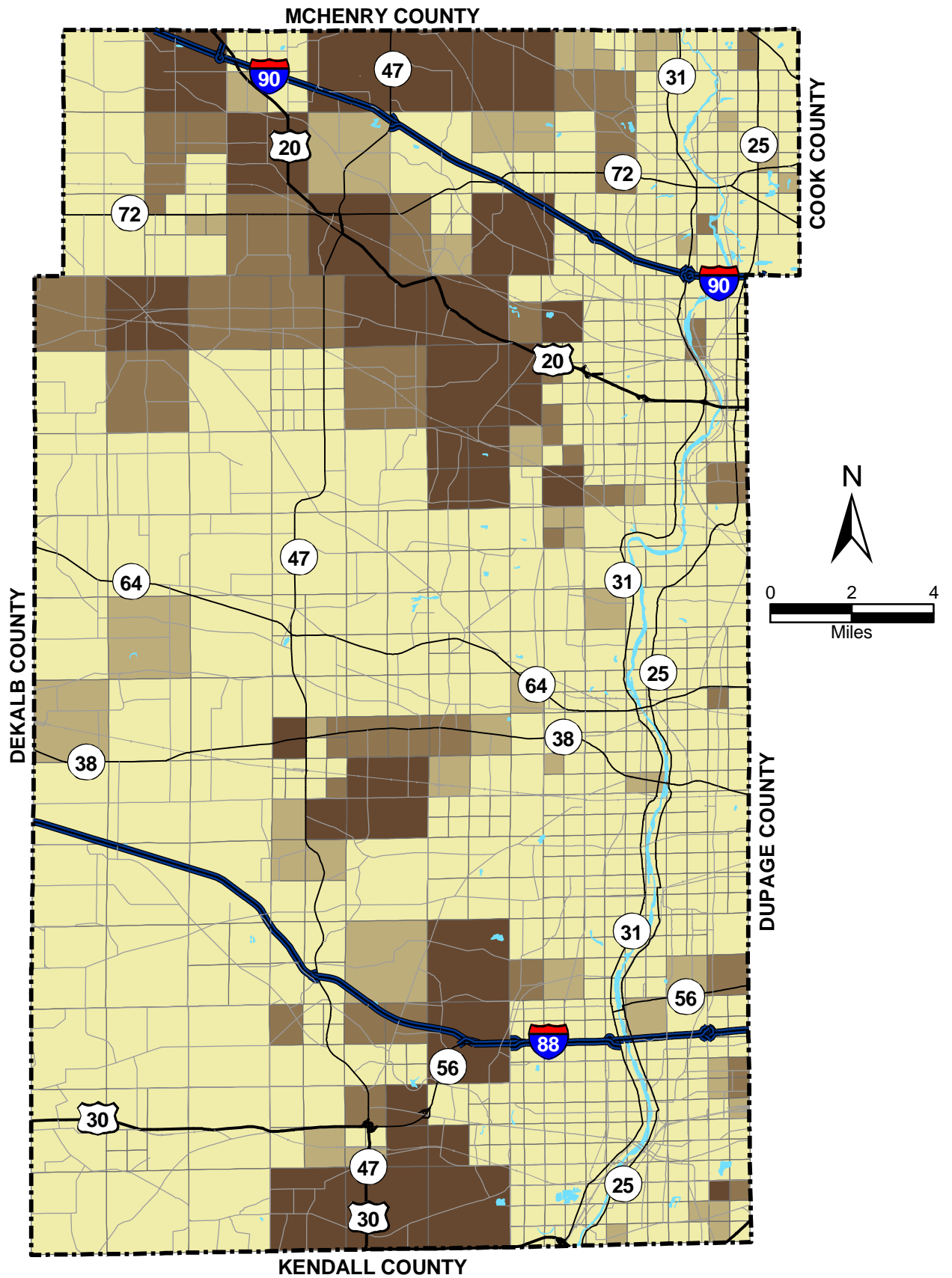
- 0 - 3
- 3 - 6
- 6 - 10
- 10 +

Sources:

- 2030 NIPC Socioeconomic Forecast, Nov 2003

2030 Population Density

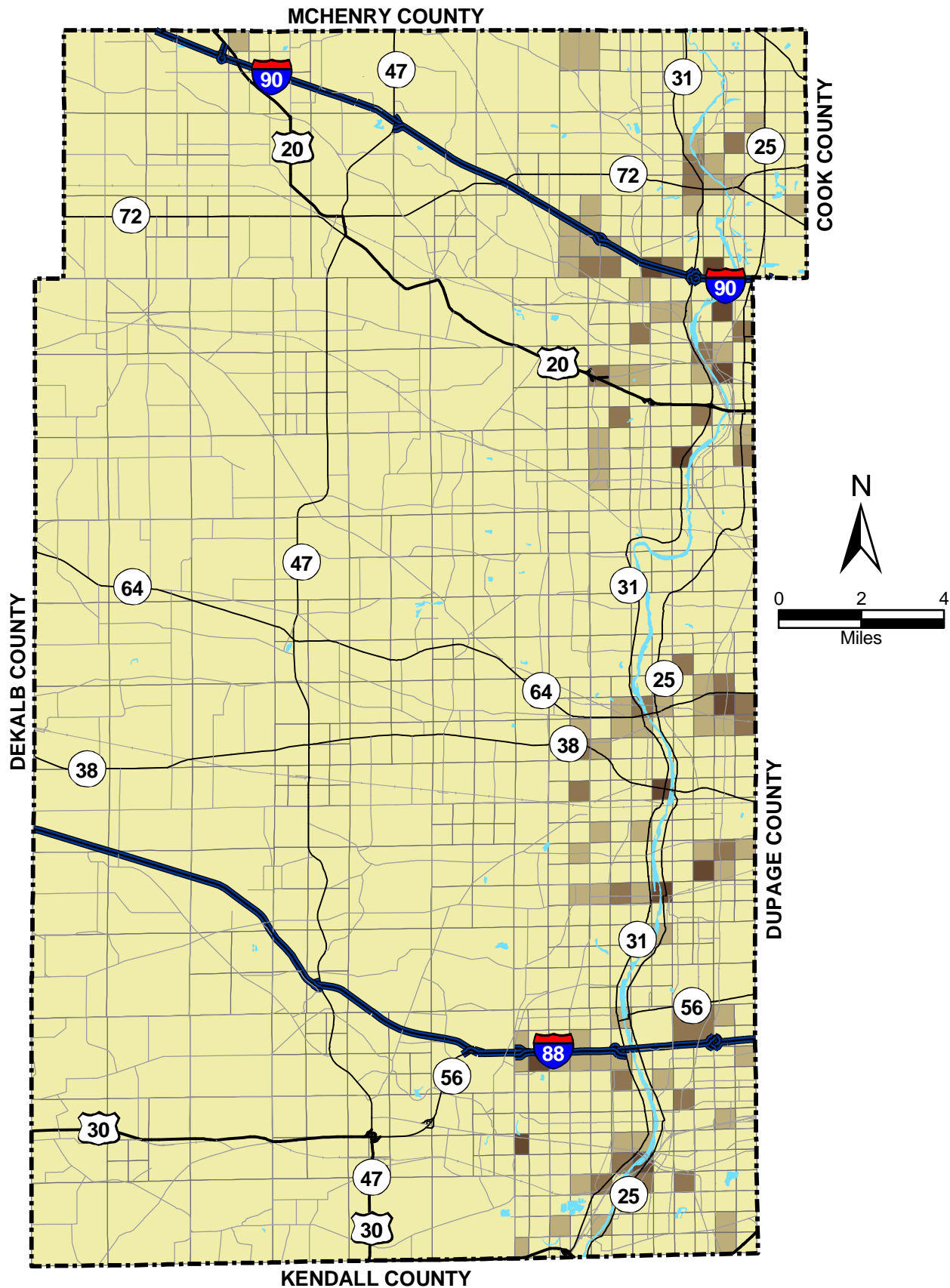
Figure 7-1
Kane County 2030 Transportation Plan



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

**Population Growth
 2000 - 2030**

Figure 7-2
 Kane County 2030 Transportation Plan



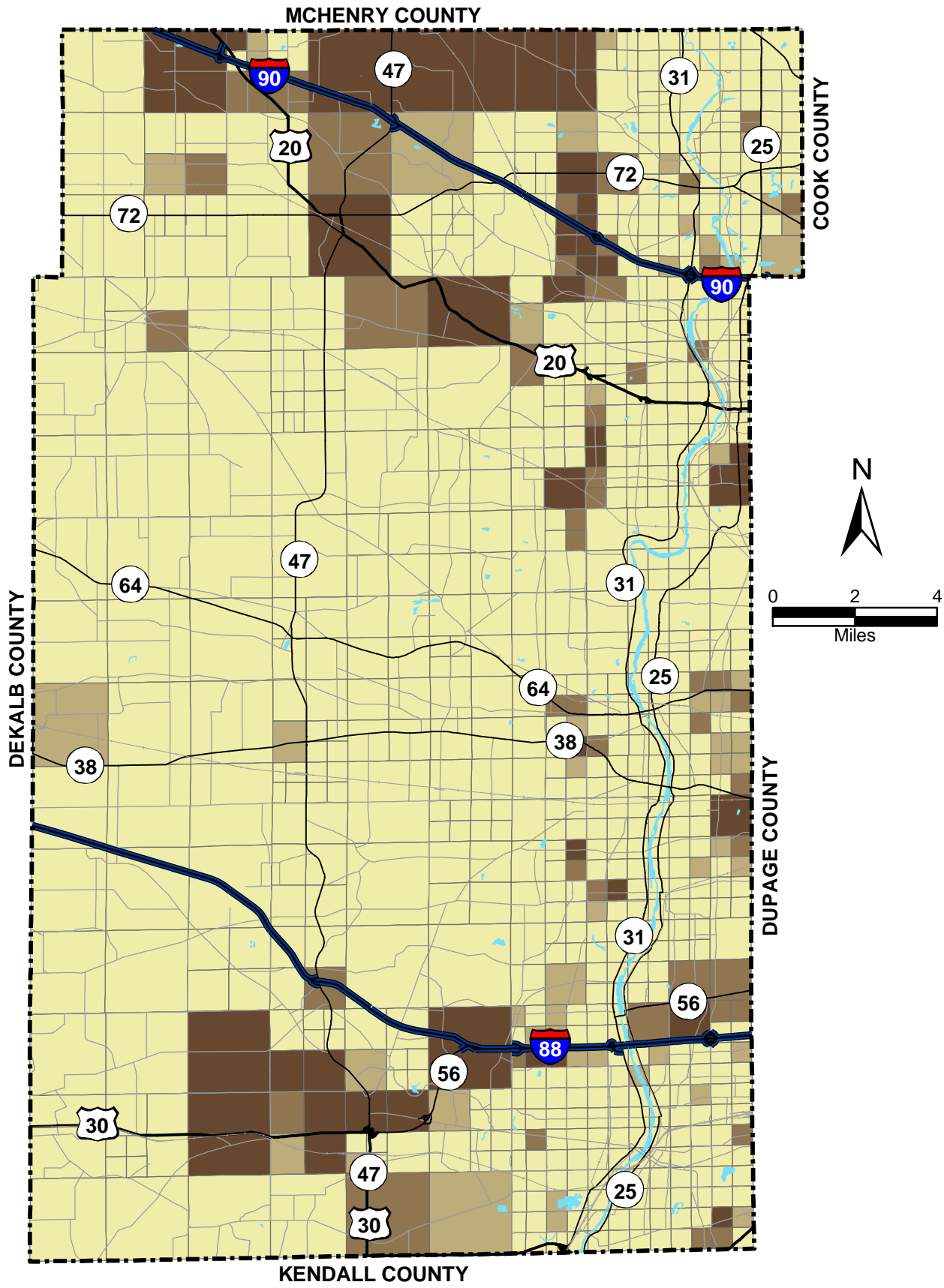
Employment Density (Employees Per Acre)

- 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



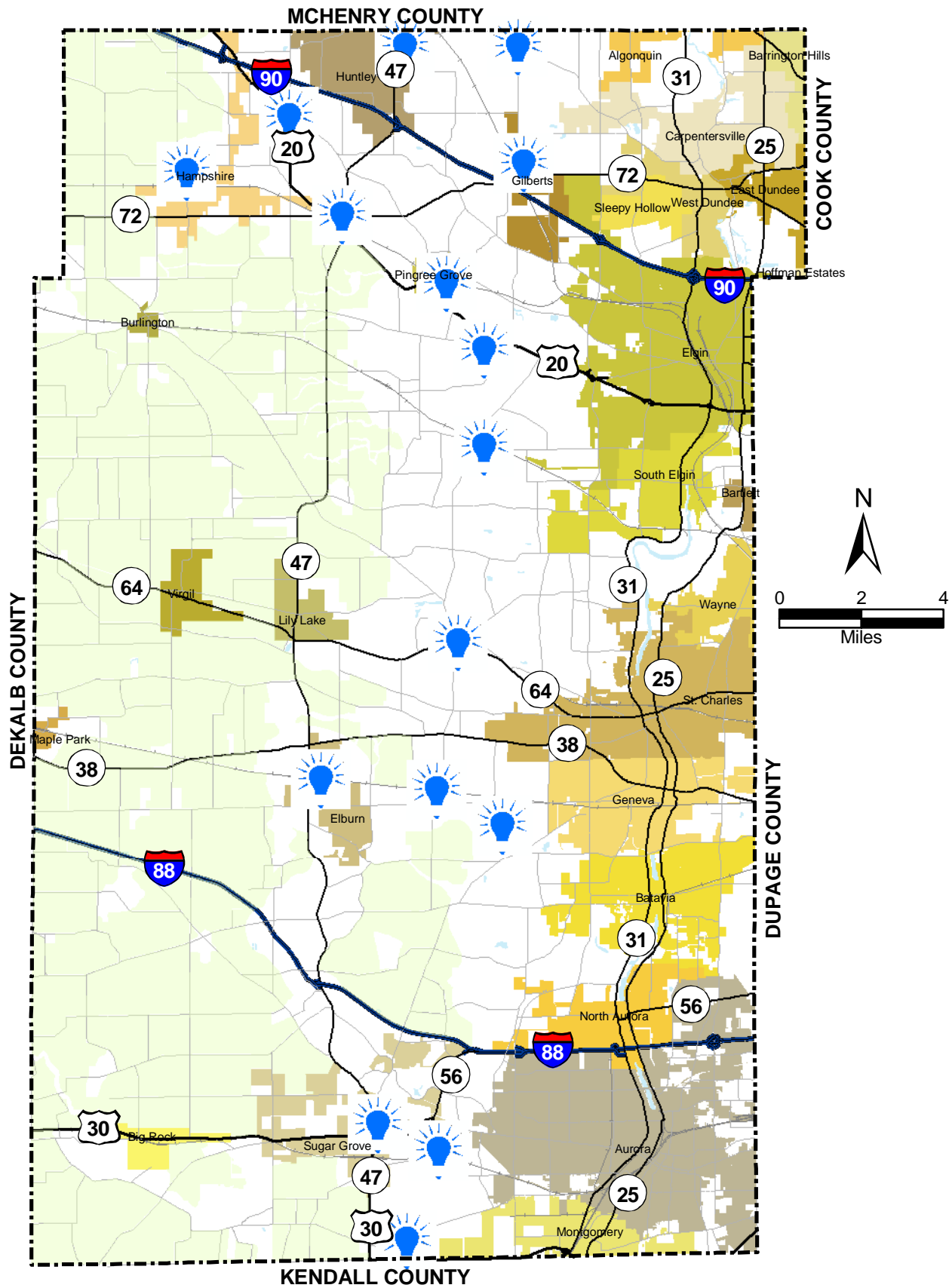
Employment Growth

 < 250	 250 - 500	 500 - 1000	 > 1000
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Sources:
 - 2000 U.S. Census
 - 2030 NIPC Socioeconomic Forecast, Nov 2003

**Employment Growth
 2000 - 2030**

Figure 7-4
 Kane County 2030 Transportation Plan



Priority Places

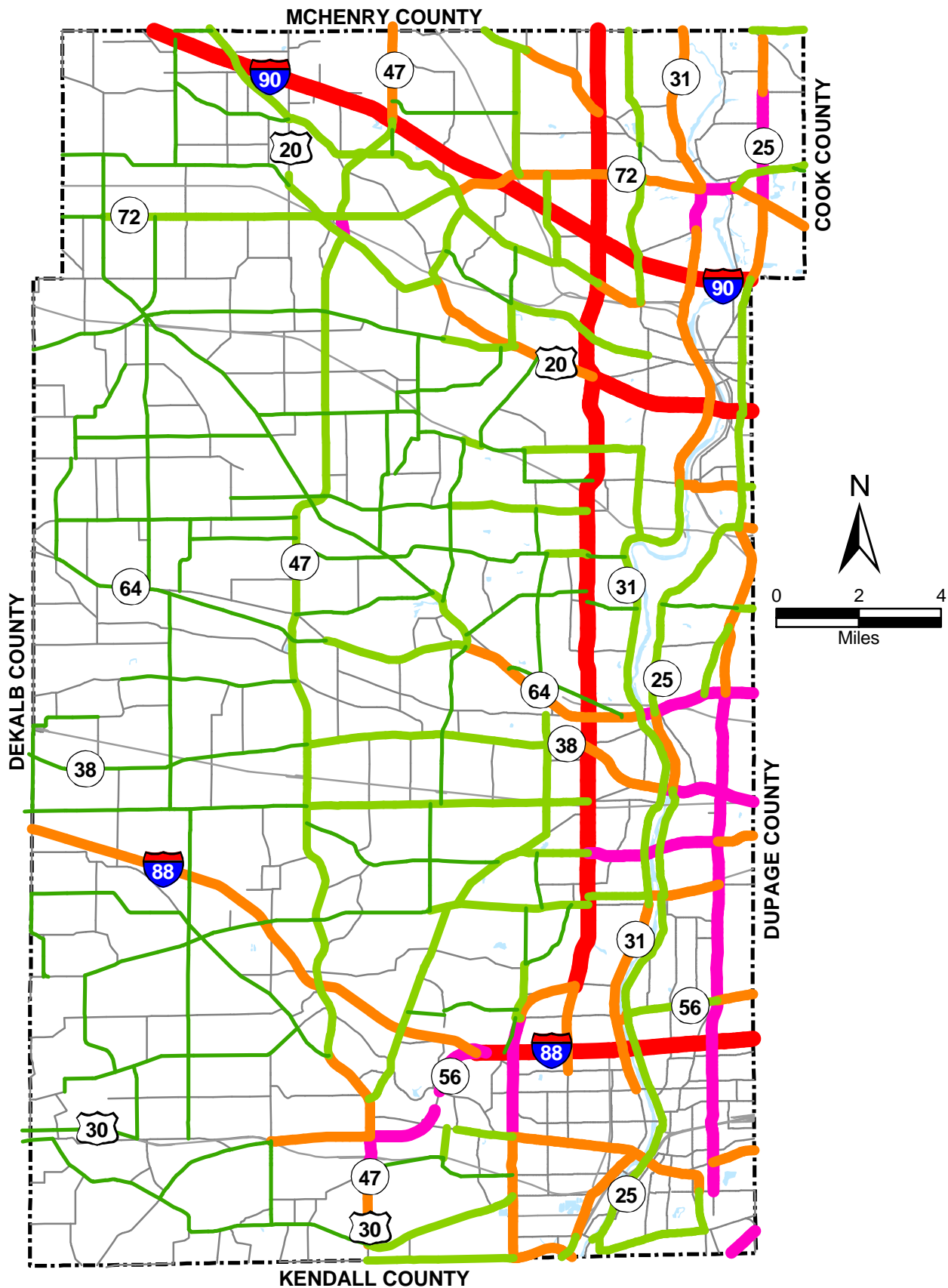


Proposed Agriculture Preservation
(2030 Land Use Plan)

Priority Places



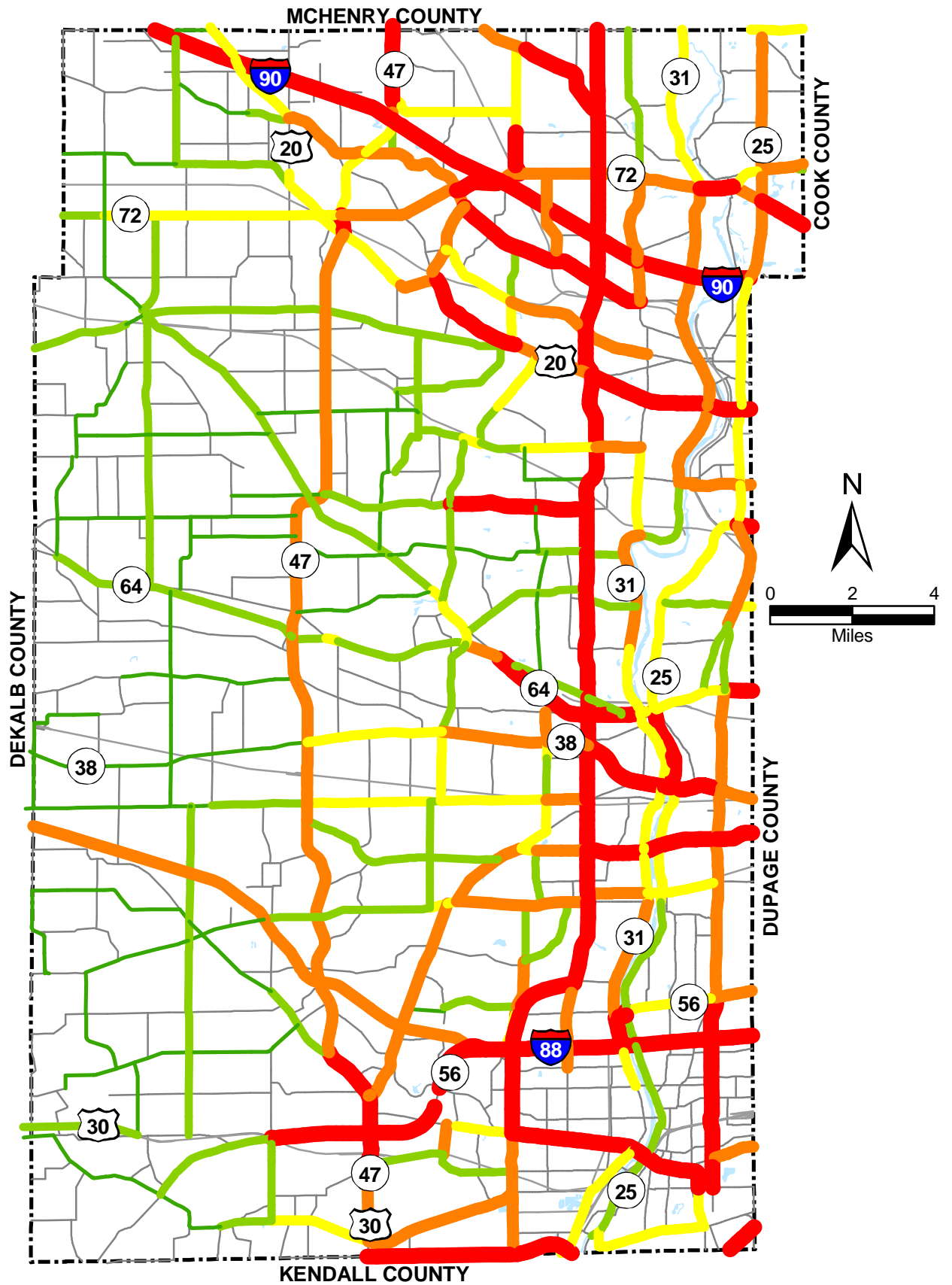
Figure 7-5
Kane County 2030 Transportation Plan



Sources:
 - Kane County Division of Transportation, July 2004

Average Daily Traffic
 Forecast Year 2030

Figure 7-6
 Kane County 2030 Transportation Plan

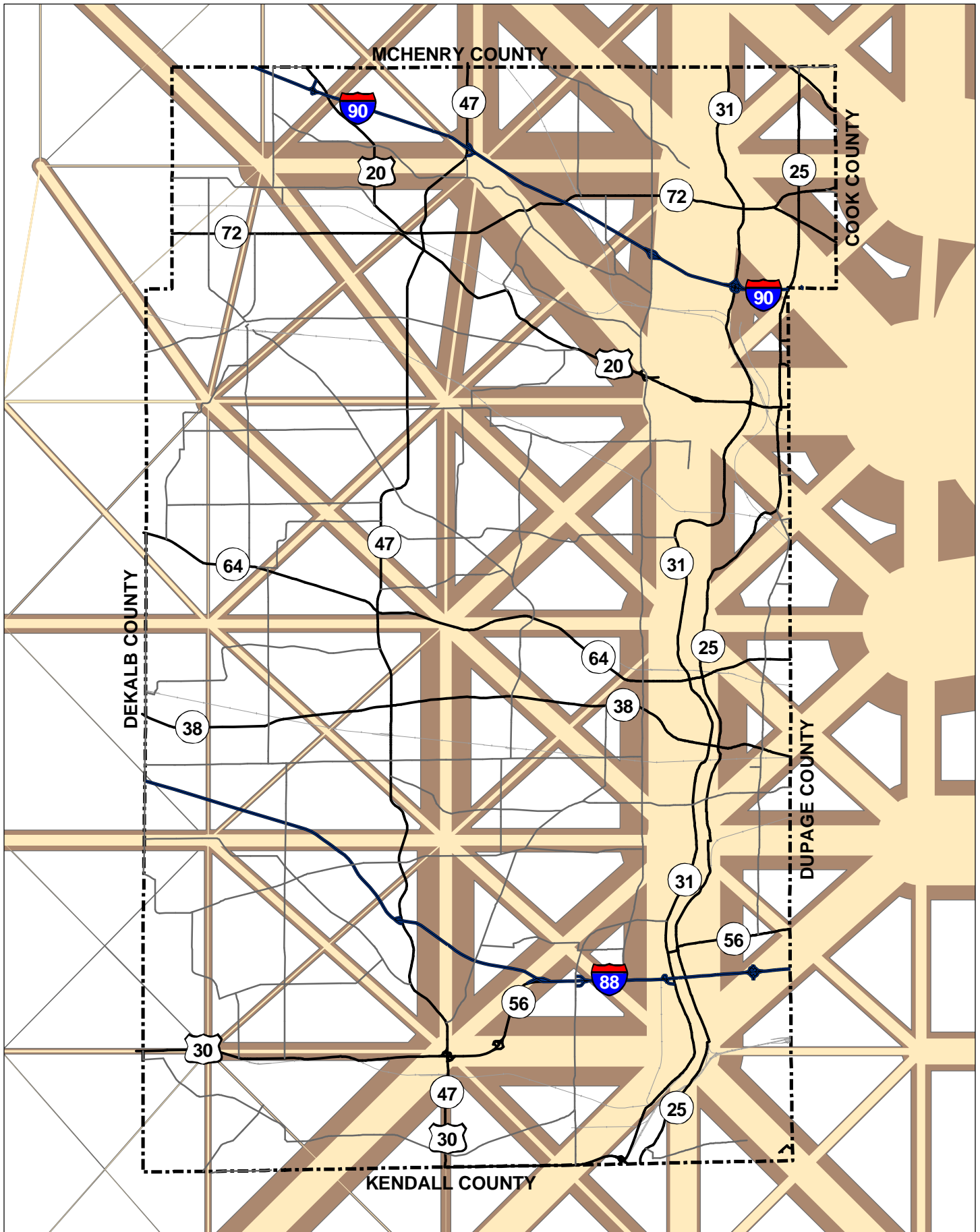


- No Data Available
- < 5,000
- 5,001 - 10,000
- 10,001 - 15,000
- 15,001 - 20,000
- > 20,000

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

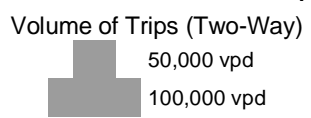
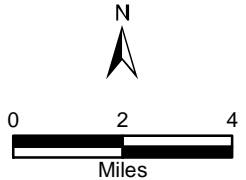
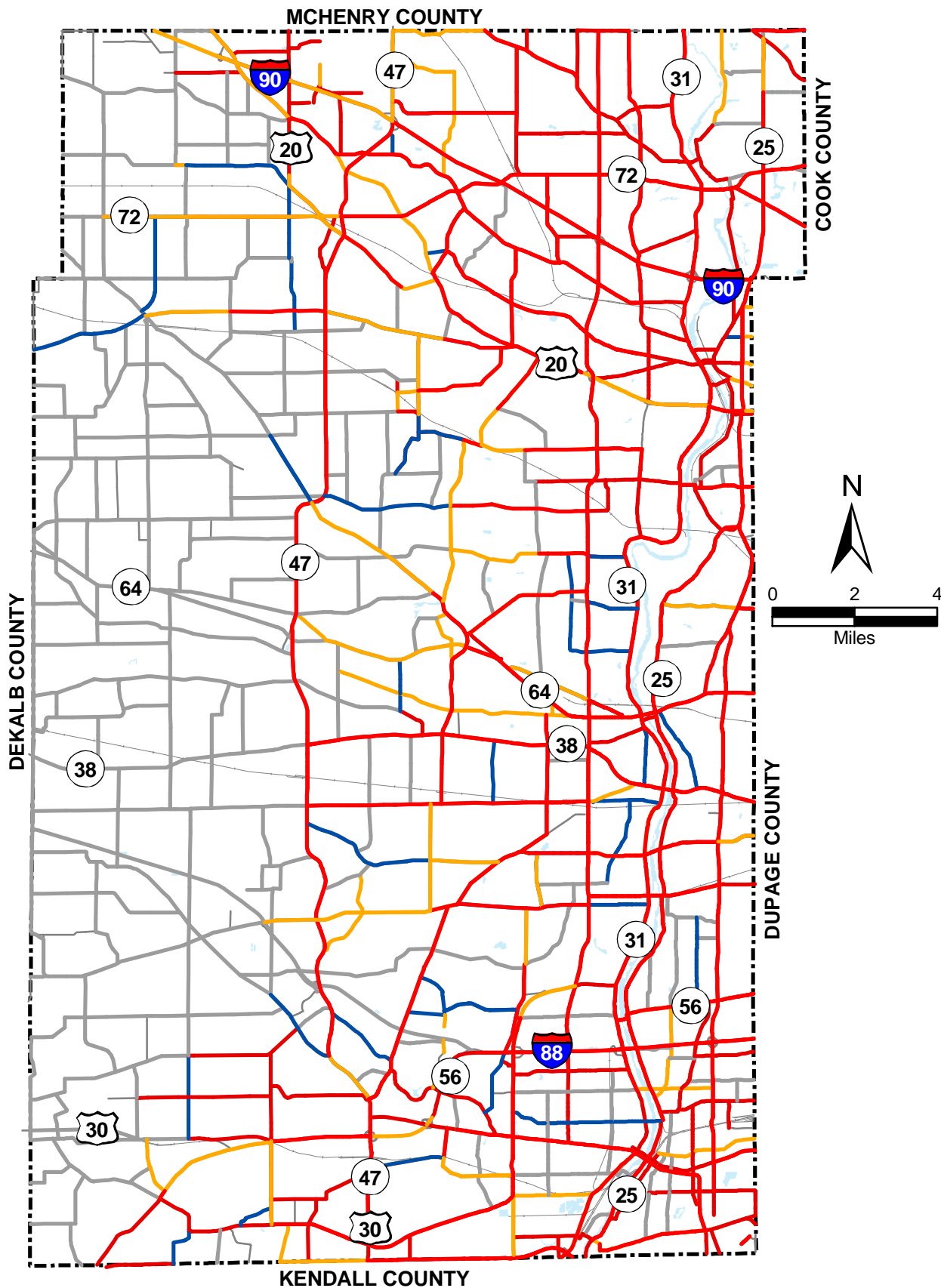


Figure 7-8
Kane County 2030 Transportation Plan



- 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