

Transit Priorities

Note: Most of the following text describing the System Evaluation and Preferred Transit Alternative comes from the public transportation study efforts for the Lake County Transportation Improvement Project Environmental Impact Statement (EIS). Where appropriate, Kimley-Horn and Associates, Inc. updated the LCTIP information with new data to reflect the most recent conditions for public transportation in Lake County.

In Lake County, the operating divisions of the Regional Transportation Authority (RTA), Metra and Pace provide public transportation service. Metra operates commuter rail service throughout the region; four of its lines-the Union Pacific (UP) North Line, the Union Pacific Northwest Line, the North Central Service, and the Milwaukee District North Line-serve Lake County. Pace, RTA's suburban bus division, operates a family of services including fixed-route bus

service, dial-a-ride service, vanpool/ rideshare services and paratransit service. These transportation services are part of one of the largest transit systems in the country. In addition to the public transit services operated under the auspices of Metra and Pace, Lake County residents have access to services provided by private operators, including taxi services and airport limousine services.

Table 9-1 provides information about alternate travel mode use in Lake County. Since 1970, the number of total daily commuter trips increased by approximately 90%. This value is higher than the population increase in Lake County since 1970, which has been approximately 68%. This demonstrates the dramatic increase of women in the workforce over the past thirty years.

This table's data also illustrates how the public transportation (rail and bus) modes have reversed a downward ridership trend since 1990. In fact, the combined ridership totals for bus and rail in 2000 almost meet the use of public transportation in 1970.

Public transportation's market share of commuter trips decreased steadily from 1970 through 1990. Since that time, its share has slightly risen to about 5% of all commuter trips in 2000. However, over the past four censuses, the automobile's share has increased to where it presently accounts for nine out of ten commuter trips.

Mode	1970	1980	1990	2000
Automobile (includes carpools) (% share)	120,658 (74.9%)	174,687 (83.2%)	231,352 (88.4%)	274,693 (90.3%)
Rail (% share)	13,625 (8.5%)	10,844 (5.2%)	9,748 (3.7%)	12,394 (4.1%)
Bus (% share)	1,689 (1.0%)	1,351 (0.6%)	1,421 (0.5%)	1,807 (0.6%)
Other (includes taxi patrons) (% share)	25,204 (15.6%)	22,976 (10.9%)	19,294 (7.4%)	15,254 (5.0%)
Total Commuter Trips	161,176	209,858	261,815	304,148

Source: US-Census Reports, 1970-2000
2000 data developed by Kimley-Horn and Associates, Inc. from the 2000 US Census and Northeastern Illinois Planning Commission (NIPC).

Commuter Rail

Four Metra commuter rail lines operate in Lake County. Figure 9-1 is a map of the system, showing service levels (number of daily trains) on each of the four lines in the study area. Table 9-2 shows the population, employment, and number of households within 0.5, 1, and 5 miles of a Metra station. The data indicates that commuter rail services are accessible to a substantial number of people and jobs in Lake County and the study area as a whole. In 1996, nearly one-third of the residents in the study area were within one mile of a Metra station.

Table 9-2 DISTANCE TO METRA SERVICE IN STUDY AREA FOR SELECTED DEMOGRAPHIC CHARACTERISTICS Lake County Transportation Improvement Project									
Distance from Transit	Population			Households			Jobs		
	1990	1996	2020 ^a	1990	1996	2020 ^a	1990	1996	2020 ^a
Within 0.5-Mile of Metra	71,574 <i>10%</i>	82,595 <i>10%</i>	84,748 <i>8%</i>	25,003 <i>10%</i>	26,296 <i>10%</i>	30,149 <i>8%</i>	49,282 <i>16%</i>	52,288 <i>15%</i>	66,615 <i>13%</i>
Within 1-Mile of Metra	218,459 <i>30%</i>	251,777 <i>31%</i>	267,120 <i>27%</i>	73,727 <i>30%</i>	78,447 <i>28%</i>	93,749 <i>25%</i>	109,466 <i>35%</i>	117,627 <i>34%</i>	156,143 <i>31%</i>
Within 5-Miles of Metra	696,126 <i>97%</i>	790,700 <i>97%</i>	967,133 <i>96%</i>	241,647 <i>97%</i>	265,952 <i>96%</i>	355,819 <i>96%</i>	308,951 <i>98%</i>	334,178 <i>97%</i>	481,738 <i>95%</i>
^a Existing Airport 2020 No Build development scenario Source: Northeastern Illinois Planning Commission (NIPC) Note: The LCTIP study area includes all of Lake County and adjacent portions of McHenry and Cook counties, as depicted in Figure 9-2.									

UP North Line

The UP North Line serves communities bordering the Lake Michigan shoreline. Twelve stations are located within Lake County, including one at Ravinia Park, the location of a summer music festival, where trains stop only during the summer concert season. Another four stations on this line are located beyond the county, but are part of this analysis, including one in Wisconsin and three in northern Cook County.

Some important institutions located in the UP North Line corridor include:

- Barat College and Lake Forest College in Lake Forest;
- Chicago Medical School in Waukegan;
- Great Lakes Naval Training Center and the Naval Hospital in North Chicago;
- Highland Park Hospital; the VA Hospital in North Chicago; and
- Victory Memorial Hospital in Waukegan.

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Table 9-3 provides data about the number of stations, 1997 weekday boardings, and the number of weekday trains on UP North Line considered in this analysis. Weekday boardings, in this context, refer to a one-way trip.

Table 9-3 UNION PACIFIC NORTH LINE STATIONS IN THE STUDY AREA Lake County Transportation Improvement Project				
Area	Number of Stations	1997 Weekday Boardings	Weekday Trains	
			Total	Express
Wisconsin*	1	306	18	10
Lake County	12	4,644	56	21
North Cook*	3	1,898	59	17

*Stations are outside study area boundary, but are included here because transit services connect to Lake County.

Milwaukee District North Line

The Milwaukee District North Line travels diagonally from Fox Lake to Rondout, northwest to southeast. At Rondout, it swings south and continues into Cook County. On this line, eight stations are located in Lake County, with additional stations in Cook County at the county line (Lake-Cook Road) and at Northbrook.

Institutions in this corridor include:

- Trinity College in Bannockburn,
- Lake Forest Academy, and
- Lambs Farm near Lake Bluff.

Table 9-4 provides data about Milwaukee District North Line stations.

Table 9-4 MILWAUKEE ROAD DISTRICT NORTH LINE STATIONS IN THE STUDY AREA Lake County Transportation Improvement Project				
Area	Number of Stations	1997 Weekday Boardings	Weekday Trains	
			Total	Express
Lake County	8	5,083	58	18
North Cook*	2	2,199	57	16

*Stations are outside study area boundary, but are included here because transit services connect to Lake County.

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North Central Service

The North Central Service travels approximately through the center of Lake County, from Antioch (near the Wisconsin border) to Chicago. This single-track line shares right-of-way with freight operations for most of its length, and uses the Milwaukee West Line right-of-way between Franklin Park (well south of the study area) and Chicago. The North Central Service started operating in August 1996. Eight stations are located in Lake County, and a ninth will open in Grayslake in the future.

The line provides access to O'Hare International Airport at the O'Hare Transfer station, south of the study area. Metra is planning to upgrade the service to a two-track railroad to increase the service. Since the 1997 passenger counts, reflected in Table 9-5, Metra reports that ridership has continued to increase, with gains approaching 20% for the line as a whole.

Table 9-5 NORTH CENTRAL SERVICE LINE STATIONS IN THE STUDY AREA Lake County Transportation Improvement Project				
Area	Number of Stations	1997 Weekday Boardings	Weekday Trains	
			Total	Express
Lake County	8	1,565	10	0
North Cook*	1	245	10	0

*Stations are outside study area boundary, but are included here because transit services connect to Lake County.

UP Northwest Line

The UP Northwest Line travels northwest from downtown Chicago, through Cook and McHenry Counties, to Harvard, close to the Boone County, Illinois/Wisconsin border. While much of McHenry County is beyond the study area, four McHenry communities served by the Northwest Line and its McHenry Branch Line are within the area considered in this analysis. There are no Lake County stations on this line, but two Cook County stations are within the study area, including one at Barrington, just south of the Lake County boundary. Table 9-6 provides information about this line.

Table 9-6 UNION PACIFIC NORTHWEST LINE STATIONS IN THE STUDY AREA Lake County Transportation Improvement Project				
Area	Number of Stations	1997 Weekday Boardings	Weekday Trains	
			Total	Express
McHenry County**	4	2,918	53	23
North Cook*	2	3,850	60	27

**One station, Crystal Lake, is located outside of study area, but is included in the analysis due to limited service on the McHenry branch.
*Stations are outside study area boundary, but are included here because transit services connect to Lake County.

Study Area Ridership Trends

On an average weekday in 1997, 28 commuter rail stations in Lake County served 11,292 boarding passengers, while in the larger set of stations considered in this analysis, including eastern McHenry County, northern Cook County and 1 station in Wisconsin, 41 stations served 22,708 boarding passengers. Despite figures that show transit is serving a smaller portion of total work trips than 20 years ago, between 1987 and 1997, actual commuter rail ridership has grown approximately 26% in the study area. Lake County's ridership growth over the same period was more than 30%, no doubt reflecting both increased service and population growth. Table 9-7, below, illustrates the change in ridership for the study area, from 1987 to 1997.

Table 9-7 RIDERSHIP CHANGE IN THE STUDY AREA, 1987 TO 1997 Lake County Transportation Improvement Project				
Area	Number of Stations	1987 Weekday Boardings	1997 Weekday Boardings	Percent Change
Lake County	1987: 20 1997: 28	8,545	11,292	+32%
Wisconsin	1	208	306	+47%
McHenry County	4	2,027	2,918	+44%
North Cook	1987: 7 1997: 8	7,271	8,192	+13%

Despite the average system-wide growth in commuter rail ridership through much of the study area, ridership on UP North Line stations in the southern tier of the study area declined slightly between 1987 and 1997. All stations on the UP North Line between Lake Forest and Winnetka experienced weekday decreases ranging from 0.4% to 29.9%. The decreases in the southern tier offset increases ranging from 7% to 96% between Lake Bluff and Kenosha, resulting in an overall decrease of only 0.1%. Factors that may have contributed to these changes include population shifts to the north and west, increased availability of Metra service in the north and central areas of the county, the closing of Fort Sheridan, and changes in the demographic characteristics of the older, more established lakeshore communities.

Daily Ridership

Most weekday trips are in the peak travel direction, during the morning and evening peak periods. However, on the lines with services scheduled during off peak times, a fair amount of travel does occur during the midday and evening periods, as well.

Ridership data suggests a relatively small proportion of riders travel between rail stations within Lake County. In Metra's 1997 rider counts, this proportion applies to between 4% and 5% of the Milwaukee District North Line riders, 5% of the North Central Service riders, about 2.5% of the UP North Line riders, and 2.5 to 3.5% of the UP Northwest Line riders. The lines that serve the central part of Lake

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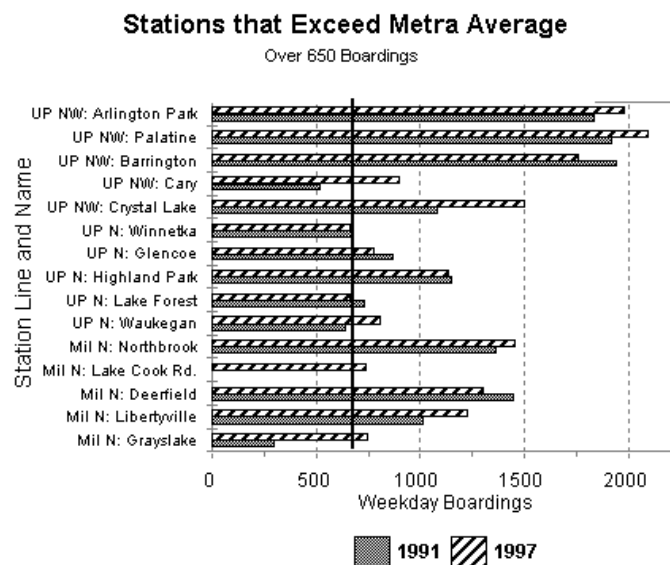
County and its growing employment centers have a slightly higher share, despite the small number of daily trains on the North Central Service. Table 9-8 displays the distribution of passengers by time for the lines that serve the study area.

Table 9-8 PERCENT OF RIDERSHIP BY PERIOD OF DAY (TO THE NEAREST WHOLE PERCENT) Lake County Transportation Improvement Program				
Line*	Peak Period/ Peak Direction	Peak Period/ Reverse Direction	Midday	Evening
UP North (UPN)	73%	11%	9%	7%
UPN-Lake County	66%	15%	12%	6%
Milwaukee North	76%	8%	9%	7%
North Central	97%	n/a	2%	n/a
UP Northwest	81%	5%	9%	5%

*For all lines except the UPN, the percent of peak period/reverse direction ridership is essentially the same for the whole line and for the study area segments.

In 1996 and 1997, Metra added nine new stations to its system: eight along the North Central line, and a ninth along the Milwaukee District North Line at Lake-Cook Road. This substantially increases transit service to Lake County. Despite this increase in number of stations, several stations continue to be above average in passenger boardings, as illustrated in Figure 9-3. In 1997, the average number of weekday passengers boarding at Metra stations outside of downtown Chicago was 650.

FIGURE 9-3
STATIONS WITH BOARDINGS EXCEEDING METRA AVERAGE
Lake County Transportation Improvement Project



Reverse Commutes

Reverse commuting is not a large proportion of the total Metra market, varying from 5% to 15% in the study area on the three commuter lines where reverse trips are possible. However, with the growth of employment in the study area, reverse commutes have grown 32% since 1991; it now accounts for approximately 3,517 trips on an average weekday.

The greatest proportion of growth, more than 94%, occurred on the Milwaukee District North Line. Over 70% of these trips are in the vicinity of the Lake Cook corridor-at the Deerfield, Lake Cook Road and Northbrook stations-which has benefited from coordinated planning and operations. Another important factor in making the rail system work for reverse travel is scheduling. Metra rescheduled the Milwaukee District North Line to provide four northbound trains at Lake Cook Road before 8:30 a.m. on weekdays.

Table 9-9 displays the reverse travel data for the Milwaukee District North Line, UP North Line, and UP Northwest Line.

Table 9-9			
PEAK PERIOD, REVERSE DIRECTION BOARDING AND ALIGHTING			
Lake County Transportation Improvement Project			
Line	1991	1997	Change
Milwaukee North	596	1,158	94.3%
UP North	1,658	1,852	11.7%
UP Northwest	417	507	21.6%
Countywide Total:	2,671	3,517	31.7%

Train Capacity

With the exception of the North Central Service, at least one-half of the inbound trains on all of the other lines achieve 85% or higher occupancy during the morning peak period. This level begins to approach the threshold of passenger comfort (e.g., seat accessibility or perceived overcrowding). Table 4-9 shows the number of peak trains with 85% or higher occupancy for lines serving Lake County.

When riders occupy 95% of its seats, then Metra considers the train full. At this point, Metra actively begins to consider adding cars to its trains. In the morning peak period, four trains on the UP North Line and one train on the Milwaukee District North Line exceed the occupancy level. However, the inbound capacity problems do not really affect Lake County riders because there is plenty of available capacity at their boarding stations. As trains reach downtown Chicago, patrons fill most seats, and there are more standing passengers.

However, in the evening peak, the capacity issue affects Lake County riders because the trains have the most passengers when they leave the central area. The maximum load point is generally at Clybourn Station in Chicago. Peaking characteristics differ in the evening. Only the UP North Line has high

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occupancy on a large percentage of its trains; on that line, three trains are at 95% or higher occupancy. The UP Northwest Line has one train that exceeds the 95% occupancy threshold in the evening.

Table 9-10 NUMBER OF PEAK TRAINS WITH 85% OR HIGHER OCCUPANCY (LINES SERVING LAKE COUNTY) Lake County Transportation Improvement Project				
Line	AM Peak Inbound Trains	Percentage of AM Peak	PM Peak Outbound Trains	Percentage of PM Peak
UP North	9 of 13	69%	7 of 10	70%
Milwaukee North	7 of 12	58%	1 of 10	10%
North Central	0 of 5*	0%	0 of 5	0%
UP Northwest	9 of 17	53%	4 of 14	29%

*On one inbound train, 81% of seats are occupied
Source: Metra unpublished data, April 1998

Capacity constraints near downtown Chicago represent another issue pertinent to Lake County residents-train storage. Coach yards are located at the outlying terminals. As the need for additional trains or coaches grows, it may become necessary to increase storage capacity at these locations. Several factors including finding space; allowing the land use; and controlling the noise associated with coach yards, including that of idling trains, often contribute to neighborhood concerns.

Service Frequency

On all of the lines in the study area, the first daily train to downtown Chicago leaves its northern terminal at about 5:00 a.m., and except for the North Central Service, the last trains leave downtown Chicago at about 12:30 a.m. The last North Central Service train leaves downtown Chicago at 6:17 p.m. Metra's recent customer satisfaction surveys indicate that lack of later trains on this line is a source of consumer concern, and one which Metra would rectify by double tracking the line to increase capacity.

As a matter of policy, Metra strives to achieve a minimum of one-hour headway throughout the week-day off-peak service periods, with the exception of the North Central Service, which is limited to five trains per weekday in each direction. Other than one afternoon round-trip train, the North Central Service provides service in the peak period only. On the other lines, although there are a few two-hour gaps in schedule, the one-hour frequencies generally prevail. During the rush periods, of course, service is much more intensive, with scheduled departures varying from 4 to 35 minutes, depending on station location. Figure 9-1, presented earlier in this section, depicts train service levels (number of daily trains) at the stations in the study area.

There is no weekend service on the North Central Line. On the UP Northwest line, Saturday trains arrive at the Chicago terminal every 20 or 25 minutes until 9:20 a.m., then hourly until 1:20 p.m. After that, service is every one to two hours. Otherwise, Metra generally offers scheduled weekend service every two hours throughout the study area.

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Parking

Parking for autos is available at all Metra stations in the study area, and bicycle storage is available at many stations. In most instances, there is a charge for parking; it varies because the local communities determine pricing. Metra considers parking capacity exhausted when utilization exceeds 85%. Figures 9-4a through 9-4d illustrates parking utilization in the study area.

Commuter Rail Forecasts

Metra, in conjunction with the North Central Corridor Major Investment Study, prepared forecasts for commuter rail ridership for all communities in the study area, except for the communities along the UP North Line (see Table 9-11). The forecasts show substantial growth on the North Central Service line depending on the level of upgrade (partial to full), resulting in an overall increase in rail use. Upgrades on the North Central Service would cause some commuters from other lines to divert to the North Central Service. The diversion to the North Central Service reflects improved service, convenience and comfort.

Table 9-11 2020 COMMUTER RAIL RIDERSHIP PROJECTIONS* Lake County Transportation Improvement Project			
Line	North Central Service Full Up-Grade (52 Daily Trains)	North Central Service Partial Upgrade (22 Daily Trains)	MDN and UP/NW ^a Upgrade (No improvements to NCS)
NCS	+13,400	+8,400	0
Other Lines	-1,600	-400	+3,400
Total	+11,800	+8,000	+3,400

* Improve Existing Airport
^a MDN=Milwaukee District North Line; UP/NW=Union Pacific Northwest Line
 Source: North Central Corridor Major Investment Study, Metra 1998

Table 9-12 PROJECTED FUTURE PARKING SPACE NEEDS ON METRA RAIL LINE Lake County Transportation Improvement Project			
Rail Line	1991 Station Parking	Future Parking Needs	Percent Increase
UP North	5,125	+605	12%
Milwaukee North	4,622	+2,860	62%
North Central*	N/A	+4,500	N/A
UP Northwest	10,052	+4,400	44%
* No data available, rail line began operation in August 1996 Sources: Metra Extended Transportation Agenda (EXTRA), 1992, and North Corridor Major Investment Study, 1998			

In 1992, Metra identified the need for new parking spaces at commuter rail stations as part of its comprehensive planning efforts. Table 9-12 identifies future parking space needs using a household growth forecast. Parking forecasts can provide a good indication of future station demand due to the strong relationship between station parking and rail use, because over 90% of rail users accessing rail stations by automobile. The forecast provides a reasonable picture of future activity in the study area, even though the estimates are for rail stations along the entire line.

Established communities along the UP North Line will also experience modest growth during the planning period. The Milwaukee District North Line, North Central Service and Union Pacific Northwest Line all expect moderate to considerable ridership growth.

Taking a broader look at all transit trips, including rail and bus, CATS estimates that there will be a 29% increase in transit person trips made by Lake County residents each weekday between 1996 and 2020 under the No-Build scenario. Under a 2020 Build scenario, which includes the double tracking of the North Central Service, this value is expected to be about 39%. CATS data indicates that the demand for transit services by Lake County residents will continue to increase.

SUBURBAN BUS SERVICE

Pace, the RTA's suburban bus division, carried over 3.3 million passengers during April 1998, a 2.2% increase over April 1997. Its nine operating divisions in the six county area carried more than 83% of the total suburban bus ridership; three of these-North, North Shore and Northwest, provide service to the study area. It provides commuter and local services within Lake County and the entire study area. These include fixed-route and dial-a-ride as well as paratransit service. Table 9-13 shows the population, employment, and number of households within 0.5 mile of Pace bus routes. Correspondingly, Figure 9-5 graphically depicts the data.

The data presented in the table shows that bus services are accessible to a substantial number of people and jobs in Lake County and the study area as a whole. In 1996, more than half of the County's residents lived within 0.5 miles of a Pace route.

Table 9-13 DISTANCE TO PACE BUS SERVICE IN PROJECT STUDY AREA FOR SELECTED DEMOGRAPHIC CHARACTERISTICS Lake County Transportation Improvement Project									
Distance from Transit	Population			Households			Jobs		
	1990	1996	2020 ^a	1990	1996	2020 ^a	1990	1996	2020 ^a
Within 0.5 Mile of Pace	415,233 <i>58%</i>	468,631 <i>57%</i>	499,489 <i>50%</i>	144,250 <i>58%</i>	154,325 <i>56%</i>	183,377 <i>49%</i>	195,223 <i>62%</i>	216,160 <i>62%</i>	295,022 <i>58%</i>
^a Existing Airport 2020 No-Build development scenario Source: Northeastern Illinois Planning Commission (NIPC) Note: The study area includes all of Lake County and adjacent portions of McHenry and Cook counties.									

While the average weekday ridership for the Pace system is 135,700, it is about 13,036 in the study area. Thirty-six Pace routes operate in the study area. Connecting bus services exists at 29 of the 41 Metra rail stations in the Lake County area. Thirteen stations have only one route providing service, and sixteen stations have two or more routes.

Pace directly contracts with three municipalities in the suburban Chicago area for additional fixed route services. One of these, Highland Park, is within Lake County. In 1996, Pace provided service to more than 80 communities by directly contracting with 12 private transit companies. Two of those companies have contracts in the study area. Pace is also subsidizing 53 dial-a-ride services covering 210 communities throughout the six county area. Generally, these services are operated by townships or local municipalities under contract with Pace.

Only partial funding provides for these services; local governments are required to support a portion of the net service costs. Fourteen such services operate in the study area. To comply with Pace's ADA plan to serve persons with disabilities, an alternate paratransit service has also been implemented. In addition to these services, Pace also operates smaller buses to serve the large employment area that has developed along the Lake-Cook corridor, called the "Shuttle Bugs." It provides support for a vanpool service called the Vanpool Incentive Program (VIP).

Fixed Route

Ten county, nine Waukegan and three Highland Park routes primarily provide fixed route service in Lake County. Eight additional, peripheral routes bring service into the study area and the county. Finally, between October 1997 and March 1998, Pace began to operate bus service from the new Lake Cook Road station on the Milwaukee District North line. The "Shuttle Bugs," as the six routes are called, use smaller buses and provide service with an innovative approach. They directly serve the large employment area that has developed along this corridor. In total, 35 routes are in the study area. Table 9-14 summarizes the fixed route service in Lake County. Figure 9-6 shows the fixed routes.

Table 9-14 FIXED ROUTE SERVICE Lake County Transportation Improvement Project			
Market Area	Number of Routes	Average Weekday Riders April 1998	Notes
Countywide Service	10	2,864	Includes two NCS alternative routes, discontinued 8/22/98
City of Waukegan	9	5,022	
City of Highland Park	3	1,138	
Peripheral Routes	7	3,380	
Shuttle Bugs	6	632	Includes one vanpool
Total	35	13,036	

The North Division garage and maintenance facility in Waukegan operates 13 routes, including all Waukegan routes. The North Shore Division garage and maintenance facility in Evanston and the Northwest Division facility operate additional routes in the study area. McHenry Paratransit, DAR Systems Inc., a private carrier in Crystal Lake, provides service for two routes. A private carrier operates four other routes in the study area.

Dial-a-Ride

Generally, these services are operated by townships or local municipalities under contract with Pace. Only partial funding provides for these services; local governments are required to support a portion of the net service costs. Fourteen such services operate in the study area.

Dial-a-Ride services use vans and small buses to provide prearranged trips to and from specific locations within specific service area. The service provides individuals with transit service, who are determined eligible based on local requirements; local sponsors set the fares. Since establishing the service to extend public transportation to areas without traditional service, it is not necessarily exclusive to disabled persons. Pace contracts directly with private providers for the operation of 18 dial-a-ride projects and has grant agreements with villages and townships for the operation of 33 other dial-a-ride projects. The local sponsors share funding of the operating deficits. Fourteen of these projects are lo-

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cated in the study area. It is interesting to note that in 1997, more riders used dial-a-ride services in eastern McHenry County than in Lake County. Table 9-15 summarizes present dial-a-ride services in Lake County.

Table 9-15 DIAL-A-RIDE IN THE STUDY AREA Lake County Transportation Improvement Project			
Service Area	Number of Sponsors	1997 Annual Ridership	Number of Communities Served
Northern Cook	1	n/a	3 (Crosses into Lake Co)
Lake County	10	109,533	21
Eastern McHenry	3	130,810	14

ADA Paratransit Service

ADA paratransit service is a prearranged curb-to-curb operation for persons with disabilities whose eligibility a regional certification process has determined. Pace's ADA Paratransit Service operates in all suburban areas that are within 0.75 mile of Pace's regular fixed routes, during the same days and hours as the regular fixed route service. Pace contracts with six operators strategically located throughout the service area. Fares are one-half of the regular, basic fare. All deficit spending is funded completely by Pace. Table 9-16 summarizes Lake County's A.D.A. paratransit service.

Table 9-16 A.D.A. SERVICE IN THE STUDY AREA Lake County Transportation Improvement Project			
Service Area	Number of Areas Served	Operator	1997 Ridership
Northern Cook	1	Laidlaw	n/a
Lake County	22	Laidlaw	38,146
Eastern McHenry	3	DAT/Laidlaw	800 (all of county)

Vanpool Services

Pace also supports a Lake County vanpool service, called the Vanpool Incentive Program (VIP). As of July 1998, Pace had over 296 vanpools in operation. Total monthly ridership in April 1998 was 96,922 for all vanpools, up 2.3% over the April 1997 ridership. The average weekday ridership is 4,406. Eleven percent or 33 of the vanpools operate in Lake County. Assuming proportional ridership, average weekday vanpool ridership in Lake County is 485 persons.

This service accommodates those who cannot use traditional public transportation yet want to ride-share. It also increases reverse commute opportunities. The services help Pace to improve ridership and fare recovery rates, and to minimize market share loss. They also help the Chicago region by reducing traffic congestion and auto emissions. VIP fares cover over 90% of program operating costs.

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VIP users are frequently long-term transit riders who have moved out of the city or whose jobs have relocated. They may no longer have access to regular route service but wish to continue transit usage.

The VIP service area is the 6-county Pace service area, as well as non-attainment areas outside the service area, as well as southwestern Wisconsin and northwestern Indiana. The service area encompasses 6,000 square miles. While its primary market is suburb-to-suburb, VIP also serves the Chicago-to-suburbs and suburbs-to-Chicago markets.

Pace provides three types of services:

- **Traditional vanpool service** allows a group of co-workers who live near each other to ride together to work. Pace sets up the route, collects the fares, determines the van size and pays the insurance, fuel and maintenance costs. The minimum vanpool fare is \$45.00 each month. The driver does not pay a fare and is responsible for arranging van service and maintenance.
- **Subscription shuttle/feeder service** is available to companies that transport employees between park-n-ride locations, employee work sites, rail stations and/or transit centers. The van driver is a company employee or a third party contractor employee.
- **AdvAntage Service** provides transportation for work related activities to persons with disabilities. With AdvAntage Services, the driver can be a human service agency/workshop employee or a relative of a van rider. This service transports persons with disabilities to work related activities. If the majority of the riders in the van meet the ADA eligibility requirements, there is a reduction in fare.

The vanpool fleet is a mix of mini- and maxi-vans; it also includes 21 accessible vans. Fifty-three vanpools operate at Sears' Prairie Stone corporate center in Hoffman Estates. Another 27 operate as subscription shuttle/feeder services.

In Lake County, the VIP service includes the following:

- Operating 33 vanpools within Lake County;
- Providing 12 vanpools originating within the county and 21 beginning outside of Lake County;
- Offering the Lake Cook TMA/Metra and the Lake County Community Action Project, a welfare-to-work project, provide subscription shuttle/feeder service;
- Operating the AdvAntage program serves Alexian Brothers Medical Center;
- Servicing six of the County's largest employers, including: Abbott Labs; Baxter Labs (Round Lake and Deerfield); Dean Witter; Kemper; Komatsu; and Trustmark

Taxi Cabs and Limousines

As an additional alternative to traditional public transit, taxicabs and limousine services provide accessibility for Lake County residents. Taxi and limousine operators provide considerable service through-

out the county, with taxi service available in most major communities. All interviewed taxi and limousine companies operate 24 hours per day; some are quite large and serve several communities. Taxi fleets vary in size from 55 to 600 cabs. The airport market appears to be more important to the limousine services than to the taxi services. Of airport trips, the largest proportion is destined to O'Hare, followed by Midway. Service providers also operate trips to and from Mitchell Field, the Milwaukee area international airport.

OBSERVATIONS AND CONCLUSIONS

The following summary relates to observations and conclusions about the Lake County public transportation system from the Lake County Transportation Improvement Project study team. The summary characterizes its findings into topical groups that best present their observations.

Access to Rail Stations

Auto is the preferred mode of accessing the rail system. Currently, 19 of the 41 stations considered as a part of this analysis have parking usage that is in the range of 80 to 100% of capacity. Metra uses 85% occupancy of parking spaces as a threshold for needing additional parking capacity.

Because parking is reaching capacity at nearly 50% of the stations considered in this analysis, the need for additional parking is evident. Demand for parking will continue to grow, and for the most part, it is possible to add capacity at most stations to accommodate this growth. Land for additional parking is available near stations along most lines, with the exception of the UP North Line.

Experience shows that the parking supply fills almost as fast as the local communities construct the facilities. Presently, parking limitations at rail stations represent one of largest constraints affecting rail usage in the study area.

Metra conducts mode-of-access surveys periodically. Since 1989, there have been four mode-of-access surveys. The surveys reveal that the preferred mode of access is the automobile, while other modes are little used. Bus access to rail stations in the study area ranges from 2.5% to approximately 5.8%. Only two stations in the study area achieved the 5.8% level:

- Deerfield, on the Milwaukee North Line, served by two bus routes, and
- Buffalo Grove, on the North Central Service Line, served by three bus routes.

Highland Park (UPN), followed these stations with four routes providing a bus access rate of 3.5%; Zion, with 1 route providing a bus access rate of 3.4% in 1995; and Kenosha, Wisconsin, served by the Kenosha Transit System, providing a bus access rate of 3.4% in 1996. All other stations in the study area have a bus access rate of 2.7% or less. Walking and bicycling to the rail stations are occurring at a modest rate. Generally, low land use densities and the absence of pedestrian and bicycle paths in the area are not conducive for rail access by these means.

Train Capacity

At least half of the inbound trains in the study area during the morning peak are 85% occupied or greater. This level begins approaching the threshold of passenger comfort (i.e., availability of seats or perceived crowding). When ridership fills 95% of the seats on a train, then Metra considers it full. At this threshold, Metra takes action to add cars to its trains.

During the morning peak, four trains on the UP North Line and one train on the Milwaukee North Line exceed the 95% occupancy level. For Lake County rail commuters, the trains reach these occupancy levels when they approach downtown Chicago.

During the evening peak, however, the capacity issue does affect commuters in the study area. The UP North Line has high occupancy on a large percentage of its trains, and three trains are at 95% or higher occupancy. The UP Northwest Line has one train that exceeds the 95% occupancy threshold in the evening. Overall, the evening peak is longer than the morning peak, which helps to spread rail ridership over a longer period. Therefore, the UP North Line is generally the only rail line with high occupancy rates during the evening peak. Increasing population and additional parking spaces at train stations creates greater need for additional train service in Lake County.

Bus Use

Bus service supports about 0.5% of the work trips in the study area. Bus service in the study area offers a variety of fixed-route, as well as other transit options including Dial-A-Ride, ADA paratransit, and vanpool service. Fixed route bus service is proximate to a large percentage of the study area's population and currently has an average weekday ridership of 13,036 persons.

The other transit options (e.g., Dial-A-Ride and vanpools) have a much smaller patronage. For example, 33 vanpools operate in Lake County with an average weekday ridership of 485 persons. Typically, suburban settlement patterns tend to affect the use of bus service. Scattered origins and destinations make it difficult to structure bus service to meet the variety of needs.

Characteristically, many residents link or “chain” suburban trips (excluding work trips) by combining trip purposes and errands together. This trip characteristic tends to favor the automobile.

However, specialty bus service is finding a niche in the study area market. A model bus service operates in the Lake-Cook corridor providing service from rail stations to employment centers. Installing services that link bus and rail service, park-n-ride and bus, and link residential areas and job centers, as well as enhance the reverse commute from Cook County to the study area, will foster increases in bus ridership.

PUBLIC TRANSPORTATION RECOMMENDATIONS FROM THE LCTIP

Existing plans, pending proposals, and suggestions from the existing Lake County service providers were the basis for the LCTIP study team's public transportation recommendations. The improvements fall into two categories: Candidate Improvements Identified in the 2020 RTP, and Other Potential Improvements. These improvements are in addition to those identified as LCTIP baseline improvements.

The next step in the process of refining the initial transit improvements includes refining the preliminary concepts, and assessing their feasibility in terms of ridership potential and cost. Following is a discussion of the refined rail improvements.

Commuter Rail Improvements

2020 REGIONAL TRANSPORTATION PLAN IMPROVEMENT CANDIDATES

Expanding commuter rail by providing service along the Elgin, Joliet and Eastern Railroad. The 2020 RTP shows this project as a 50-mile placeholder for further study. The EJ&E Railroad is a 105-mile circumferential route around the metropolitan area. A feasibility study published by Metra in spring 1999 examined physical considerations and cost parameters related to establishing commuter rail service on the entire corridor. The Metra feasibility study identifies three operable segments. One segment runs from Waukegan, the north terminal of the line, to the Milwaukee District West Line at Spaulding (near Elgin), where there are adjacent rail yard facilities. This operable segment was examined to determine how well it might address Lake County transportation demand for 2020.

Regional planners from the Northeastern Illinois Planning Commission and the Chicago Transportation Study, expect employment to grow along the EJ&E line near Prairie Stone (Sears/Hoffman Estates) and Rondout/Green Oaks (Abbott Labs). While these centers are located in the EJ&E corridor, most destinations will require another mode trip from a rail station to the ultimate destination. This may constrain potential ridership of the EJ&E rail service.

This constraint may apply as well to those transferring to the EJ&E from other Metra rail lines. In the assumed station configuration for costing, the LCTIP study team includes eight stations as having potential for direct service to residential and employment centers, as well as transferring capabilities to Metra's radial commuter rail lines. From its studies, the LCTIP team recommends eight of the thirteen stations be a part of the first tier investment during the 2020 planning horizon. These include:

- Waukegan, with cross-platform transfer to the UP North Line;
- North Chicago, with transfer to the UP North Line;
- Rondout, with transfer to the Milwaukee District North Lines (LCTIP recommends this station having substantial parking and good bus transferring capabilities);
- Leighton, with transfer to the North Central Service;
- Lake Zurich, (with substantial parking to intercept auto traffic using US-12):

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- Barrington (providing a wide, safe, well-lit 0.5-mile pathway to the UP Northwest station for transferring);
- Prairie Stone (with bus/shuttle service to the corporate campuses in the area); and
- Spaulding (with transfer to the Milwaukee District West Line and a yard connection for rail car storage and repair).

The line itself will require upgrading, passing track improvements, and CTC signaling. Operating equipment will be conventional diesel locomotives and coaches with cab controls, rather than more expensive diesel multiple-unit equipment.

A 1999 feasibility study assumes that Metra is the exclusive operator on a single-track line with 13 stations, conventional operating equipment, and a new full-maintenance shop facility. The LCTIP study team refined this concept to reduce the number of stations to eight and reflect a staged implementation of this project. The team also identified joint running with EJ&E freight on a single track, as well as the possibility for additional stations along the line as demand builds.

The LCTIP team recommends realizing some savings if equipment storage and maintenance can be accomplished at existing facilities. Projected ridership volumes do not warrant the higher cost alternative of separating passenger and freight services. Feasibility thus turns on establishing an agreement for joint running and collaboratively investing in the infrastructure to make it work for both freight and passenger service.

The 1999 Metra study recommends considering EJ&E track segments for transferring passengers among the radial commuter rail routes. Interlining operations may be an appropriate strategy for incremental integration of EJ&E facilities into the Metra operational network prior to dedicated circumferential service.

Add Parking at Commuter Rail Stations. The CATS 2020 Regional Transportation Plan identifies insufficient parking at commuter rail stations a significant constraint to growing commuter rail ridership and transit use in general. While the RTP recommends improving this situation, the plan does not specify funding in its recommendations for the Strategic Regional Transit System (SRT).

The LCTIP study team's analyses confirm a substantial parking shortage at commuter rail stations throughout the project area and support a parking enhancement program. Metra data regarding current parking use in combination with the ridership forecasts serve as a guide for future parking demand. Results from LCTIP's rail station parking study estimate that future rail patronage requires more than 5,500 additional spaces throughout Lake County. The study continues and identifies stations for parking capacity improvements (see figure 9-7). LCTIP establishes a cost estimate for parking expansion to be approximately \$21.9 million (in 1999 dollars). The parking improvements scope includes provision of a communication/management information system to allow "smartcard" use, load balancing, and overall rail station parking management as a part of the broader transportation management program.

OTHER POTENTIAL IMPROVEMENT CANDIDATES

Provide Turnback in Rondout / Green Oaks Area on Fox Lake Branch of Milwaukee District North Line. Metra expects the planned double tracking of the North Central Service to reduce demand on the line west of Rondout, and address the need for improving operations over existing signal control operations. Metra sees greater benefit and cost-effectiveness, and we concur, in being able to short-turn trains at Rondout and so the scope of this project deals with adding that facility.

The Milwaukee District North Line branch from Rondout to Fox Lake is a single-track line with passing tracks, and uses absolute block signaling. It carries freight and commuter rail service. The main line south (and north) of Rondout is double track with bi-directional CTC signaling. The main line carries AMTRAK, freight service, and commuter rail service that operate only south of Rondout. Adding main line commuter rail service from Rondout to Wadsworth is under study by Metra (the Wadsworth Extension Feasibility Study).

The Milwaukee District North main line is under consideration for high-speed passenger service between Chicago and Milwaukee. As part of that consideration, relocating through freight traffic to the UP New Line (freight line) may be necessary. The LCTIP study team has identified this freight relocation as a candidate project, regardless of the recommendations of the high-speed rail project, to enable better capacity and control over the Milwaukee District North Line for service to Wadsworth and Fox Lake and for trains turned at Rondout. Although not a prerequisite for implementing service to Wadsworth (if recommended by Metra), or for turnback service at Rondout, relocation of freight operations enhances the reliability of commuter service and the ability to improve the level of service to meet expected demand growth within the study period.

The scope of this improvement varies significantly with decisions on these other projects and the timing of implementation.

With EJ&E. Should the EJ&E project proceed, Metra will create a Rondout station. Then, operationally, the most desirable arrangement would be to create the turnback within the main north-south line and within the Rondout station in a station pocket track. This could also be part of a plan to make the Rondout station a comprehensive transfer station, and likely a transportation intermodal center also. The EJ&E project incorporates costs for constructing the Rondout station that could accomplish these objectives with an expanded scope.

Without the EJ&E or Wadsworth Extension. If the turnback is to be implemented substantially ahead of both the EJ&E and the Wadsworth extension projects, the LCTIP recommends (in collaboration with Metra) that a station be built on the Fox Lake branch just east of the Tollway and north of Rockland Road, with access provided by an extension of Bradley Road. Station development will provide turnback facilities. LCTIP recommends a new "Green Oaks" station along the Fox Lake branch. Bus and van feeders could provide the first significant rail connection for the Abbott Labs complex and neighboring employment centers. After constructing the Rondout station as part of another project, it may be appropriate to consider co-locating the operational turnback with that station and using the turnback space at Green Oaks for overnight storage.

With the Wadsworth Extension, but no EJ&E. Implementing the Wadsworth extension project creates an operating framework for the Milwaukee District North service consisting of a main line and two branches. Consequently, this operating framework adds impetus for a Rondout station to enable passenger transfers between the branch services. This framework also would encourage installation of a turnback arrangement with a pocket track or similar arrangement at the Rondout station.

Though not scoped or budgeted within this project, benefits are derived from the addition of CTC signaling out to Fox Lake station and both lengthening and adding passing tracks to enable better overall traffic management and integration with the freight trains on the line. Adding CTC signaling to the Green Oaks station on the Fox Lake branch will be necessary with the placement of the turnback there; the LCTIP team assumes funding is included in this potential project.

Upgrade Commuter Rail Service on Fox Lake Branch of Milwaukee District North Line. Enhanced signaling and related track adjustments on the Milwaukee District North Line-Fox Lake branch would improve its capacity. This single-track line with passing tracks carries both freight and passenger service using absolute block signaling. Metra owns, operates, and maintains this option. This project complements the creating a turnback facility at Green Oaks (see Provide Turnback in Rondout/Green Oaks Area on Fox Lake Branch of Milwaukee District North Line above) by implementing CTC signaling out to Fox Lake station as well as adding and lengthening passing tracks. CTC and improved passing track configurations will accommodate additional commuter rail trains and provide better overall traffic management and integration with freight operations on the line. The estimated cost for the branch line CTC signaling and passing track work is \$44.5 million (1999\$).

Relocate Freight from Milwaukee District North Line to UP Freight Line. This project would move freight operations from the Milwaukee District North Line to the UP New Line, improving commuter rail operations along the entire Milwaukee District North Line (and its branches). The existing and growing freight movement using this double track corridor is a constraint on improving ridership levels and reliability. Freight operations affect the existing Milwaukee District branch line to Fox Lake, as well as the potential new service to Wadsworth (Ongoing Feasibility Study).

Consolidating freight movements from Chicago to the north on one set of tracks has been under discussion for a number of years. Freight service consolidation would allow the Milwaukee District North Line tracks to be dedicated to passenger services and local freight only. The UP Railroad has taken this step already with the assignment of through freight to their rail corridor paralleling Interstate 94 (Tri-State Tollway), just west of the UP North Line corridor. Relieving the UP North Line of significant freight movement has reduced conflicts between freight and commuter service and benefited passenger commute service.

The Milwaukee District North Line tracks also carry AMTRAK service, in addition to freight and commuter passenger service (from Rondout south). Further, there are proposals for high-speed passenger rail service between Chicago and Milwaukee along this line. In the early 1990s CTE completed a study for IDOT examining the adaptations required in the Milwaukee District North corridor to accommodate to high-speed rail operation. The study found that freight movements would need to move off the most congested track segments in the corridor. The proposal recommends using track connecting to the UP New Line at Tower A-20 adjacent to Glenview Naval Air Station, and on the north end via connecting track at Truesdell in Wisconsin.

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The LCTIP improvement proposes rerouting freight movements onto the UP New corridor to the extent possible. This would give Metra additional capacity and flexibility to add rail passenger services and keep pace with growth in demand.

The feasibility of this improvement will depend upon resolution of institutional issues, control issues, cost sharing, and a host of other agreements necessary to effect this change. The project cost estimate of \$8.5 million (1999\$) allows for infrastructure changes that may be needed and for management and legal support to the negotiation process.

SUMMARY

Table 9-17 summarizes the cost opinions and potential ridership estimates for the rail improvements.

Table 9-17 CANDIDATE RAIL IMPROVEMENTS Lake County Transportation Improvement Project		
Improvement	Cost (in 1999 dollars)	Estimated Daily Ridership
Commuter Rail Service on the Elgin, Joliet and Eastern Rail Road	\$283.7 million	1,000 – 3,000
Add Parking at Commuter Rail Stations	\$21.9 million	NA
Upgrading the Milwaukee District North Line from Rondout to Fox Lake (CTC and passing tracks)	\$44.5 million	NA
Turnback in Rondout/Green Oaks Area on the Fox Lake Branch of the Milwaukee District North Line	\$16 million (This cost assumes the EJ&E and Wadsworth extension are not implemented)	NA
Relocating freight traffic from the Milwaukee District North Line and consolidating it on the UP New Line	\$8.5 million	NA
New stations at the junctions of all rail lines	This cost is included as part of the EJ&E and NCS improvements.	NA
Total Costs:	\$374.6 million	

Bus

Candidate Improvements Identified in the 2020 RTP (Planned Bus Services)

LCTIP identifies various express and local bus improvements from the region's long-range transportation plan. Figure 9-8 shows these improvements. Ridership on PACE express bus services ranges from 800 to 1,800 per day. The LCTIP anticipates that the 2020 RTP express bus service would have similar response. The estimated cost for the express services including operating cost and street furniture (shelters, signs) is \$8 million. The LCTIP estimates shuttle service ridership, based on the experience of the TMA Shuttle Bug, at about 300 passengers per day.

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Other Potential Improvements

Bus Corridors. The LCTIP identified other corridors that had the potential for improved bus service. Using the estimated year 2020 home-to-work travel patterns, the study team identifies five higher-volumes corridors for improving trunk line bus services in Lake County. The study team identifies bus travel for these home-to-work trips. Table 9-18 and Figure 9-9 shows the recommendation. Additional work by others will define the service for these areas.

Refining the Bus Corridor Concepts-Corridors 1-4. The LCTIP study team also recommends peak period operating headways for each proposed trunk line bus route, ranging from 15 minutes for the Lake Cook corridor and 20 minutes for the Waukegan-Round Lake IL-20 corridor to 30 minutes for other corridors. Corresponding off-peak headways were set for 30-minute service on the Lake Cook and Waukegan-Round Lake corridors, and hourly service on the other three routes. Bus blocks were created to determine equipment requirements based on these headway levels.

Unit costs of \$275,000 were estimated for capital equipment. A marginal operating cost of \$45.00 per hour was used following consultation with Pace. The marginal cost covers revenue service operation and maintenance only, with no incremental expansion of administrative, marketing or maintenance facility expense.

Table 9-18 CANDIDATE BUS IMPROVEMENTS Lake County Transportation Improvement Project		
No.	Corridor Title	Description
1	Winthrop Harbor-Waukegan Corridor	Originates near the Wisconsin state line and operates with alternating service on Green Bay Rd. and Lewis Ave. to the Waukegan Transportation Center. The route extends southward from the Transportation Center into central Waukegan and North Chicago, a branch service continues west from the Gurnee Transportation Center on Washington Street to the Gurnee Mills Shopping Center and major employers.
2	Waukegan-Round Lake Corridor	From the Waukegan Transportation Center, the route runs west on to the Lake Villa rail station, then on Fairfield Road, and south to Rollins Road. From this point, east on Rollins to Cedar Lake Road, then south on Cedar Lake Road to the Round Lake rail station, continuing southeasterly on Nippersink Road and IL-134 to IL-120, the Grayslake rail station, and then east on IL-120 to the Waukegan Transportation Center. Service would operate in both directions on this loop route pattern.
3	Gurnee-Libertyville-Buffalo Grove Corridor	From the route end at the Gurnee/Wadsworth Transportation Center, the service proceeds on Washington Street to O'Plaine Road, south to Buckley Road (IL-137), then west to Milwaukee Avenue and the Libertyville rail station. From the rail station, the bus trunkline continues south on IL-21 to IL-60, proceeds west on IL-60 to Butterfield Road, then south on Butterfield Road to US-45, the Vernon Hills rail station, continuing to Milwaukee Avenue (IL-21) and south to Deerfield Road, the Buffalo Grove Transportation Center/rail station and terminating at Lake Cook Road and Weiland Road.
4	Highland Park-Fox River Grove Corridor	Service begins at the UP North Line Highland Park rail station, proceeds northerly on Green Bay Road then west on Half Day Road (IL-22) to US-45 and the Prairie View Station on the Milwaukee District North Line. From this point, west on Port Clinton Road and south on IL-83 to return to Half Day Road/Lake Zurich Road and on to the Fox River Grove Station on the UP Northwest Line.

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Table 9-18 CANDIDATE BUS IMPROVEMENTS Lake County Transportation Improvement Project		
No.	Corridor Title	Description
5	Bus Rapid Transit in Lake Cook Corridor from the Lakefront to Palatine Station	Begins at the Highland Park Metra rail station on the Union Pacific North Line, uses US-41 to reach Lake Cook Rd. and then continues west with a detour to the Buffalo Grove Metra station on the MDNL. Using Hicks Road, it then cuts south to terminate at Palatine Station on the UP NWL.

Table 9-18 summarizes the estimated fleet requirements and corresponding marginal operating costs for the trunkline bus services. Capital cost for bus equipment and streetscape furniture and signing is estimated at \$10 million while annual marginal operating expense is estimated at \$4.45 million (1999\$).

Corridor 5-Bus Rapid Transit in Lake Cook Corridor from Lake Front to Palatine Station. The Lake Cook TMA pioneered "Shuttle Bug" bus and van services with a mix of scheduled and demand-responsive modes for employers along the rapidly developing Lake Cook Road employment corridor. More recently, the Shuttle Bug service has been transitioned from an ad hoc pilot demonstration program to regular fixed-route bus service operated by PACE. Nonetheless, Lake Cook Road serves heavy traffic volumes and continues to experience major congestion.

Table 9-19 ESTIMATED LCTIP BUS CORRIDOR CAPITAL FLEET COST AND RIDERSHIP Lake County Transportation Improvement Project				
Corridor Bus Service	Headway Peak/ Off Peak	Number of Busses	Capital Cost \$millions (in 1999 dollars)	Estimated Ridership
1	30/60	4	\$1.34	1,000–1,200
2	20/30	8	\$2.54	2,000–2,200
3	30/60	4	\$1.34	900–1,100
4	30/60	6	\$1.94	600–800
5	15/30	9	\$2.84	2,000–5,000 ^a
Total		31	\$10.00	
		Spare Busses	3	
Total Buses		34	\$9.35	
Shelters, Signs, etc.			\$0.65	
Total Bus Cost			\$10.00^b	

^a Ridership estimate varies with type of service; higher for bus rapid transit
^b If Bus Rapid Transit was implemented the cost would increase by 66.4 million dollars.
 Total Rail and Bus Costs (in 1999 dollars) = \$384.6 million. (North Central Service upgrade included in the project baseline-\$310 million.)

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Lake Cook Road is now and will continue to be a primary arterial corridor serving Lake and northern Cook counties. Continuing growth and higher density development along the corridor will exacerbate current congestion and deteriorating level of service.

The corridor is intercepted by major regional highways (US-12, IL-53, IL-83, IL-21, Interstate 94 (Tri-State Tollway), IL-43, US-41), by Metra commuter rail lines (UP North Line, Milwaukee District North Line, North Central Service Line, UP Northwest Line), many PACE suburban bus lines, and has another potential intercept with the CTA Yellow Line extension (Ongoing Feasibility Study), adjacent to US-41. It is a significant destination for work, business, medical and retail trips.

The LCTIP transit service designation for this corridor is a bus rapid transit model to provide enhanced levels of transit service, with the objective of rapidly moving riders to and from destinations along the corridor. The bus rapid transit mode supplements the subscription service rather than replace it. Bus rapid transit should dramatically improve connectivity, provided it can operate more effectively than the congested auto traffic.

Bus rapid transit requires certain travel conditions to maintain service and schedules. High speed boarding and alighting is essential to maintain short dwell times. A demonstration project currently under way in the Lake Cook Corridor is should recommend ITS and other strategies needed to implement bus rapid transit. Strategies that facilitate bus rapid transit include boarding and alighting predominantly at special platform areas with illumination, dynamic passenger service information displays, and weather protection. Low floor, articulated buses that would provide maximum capacity and minimum platform height with wheelchair access. It would also lend flexibility to operate at service stops without full facility station provisions. The LCTIP team recommends, when complete, reviewing and incorporating the results of this study into this improvement.

The bus rapid transit line alignment commences at the Highland Park rail station on the UP North Line, uses US-41 to reach Lake Cook Road, and then continues west with a detour to the Buffalo Grove Metra Station on the Milwaukee District North Line. Using Hicks Road, it cuts south to terminate at Palatine Metra Station on the UP Northwest Line.

Station facilities at 16 locations, initially:

- Highland Park Rail Station on UP North Line
- Deerfield Road on west side of US-41 (sited with generous parking provisions)
- Lake Cook Road on west side of US-41 (sited with bus/shuttle transfer facilities)
- Lake Cook Road at Northbrook Court Shopping Mall
- Lake Cook Station on Milwaukee District North Line (with bus/shuttle transfers)
- Lake Cook Road at corporate campuses east of Interstate 94 (Tri-State Tollway)
- Lake Cook Road at Sanders Road (with generous parking provisions)
- Deerfield Road at Sanders Road
- Deerfield Road at Milwaukee Avenue (IL-21)
- Buffalo Grove Station on the North Central Line (with bus/shuttle transfers)

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- Lake Cook Road at IL-83
- Lake Cook Road at Arlington Heights Road
- Lake Cook Road at IL-53 (with generous parking provisions)
- Hicks Road at US-12
- Hicks Road at Dundee Road
- Palatine Station on the UP Northwest Line (with bus/shuttle transfers)

The cost estimate for this bus rapid transit project is \$66.4 million (1999 dollars), including equipment and soft costs. An allowance for right-of-way acquisition; it is expected that most of the necessary adjustments can be made within the highway right-of-way, or can be made on donated property by adjacent property owners receiving direct benefits from the improvements.

Several parties for the Lake Cook Road corridor have also reviewed light rail service configurations. Initially, the 2020 Regional Transportation Plan recommends light-rail transit along Lake Cook Road. However, the plan recommends removing it from further consideration due to cost and right-of-way obstacles. CATS then designated the corridor a Corridor of the Future.

NIPC, in conjunction with analysis of regional growth and development scenarios, and the LCTIP considered a rail alignment and higher density in-fill development along the Lake Cook Road corridor and the IL-53 corridor. Limited ridership, high cost, and right-of-way challenges suggest light rail does not meet the travel demand in either corridor.

Transportation Centers at Selected Rail Stations. Auto access, passenger drop-off, and bus interconnecting facilities at rail stations are important features to provide seamless, integrated transportation service. This candidate project would add opportunities for bus to bus and bus to rail transfers at five strategic locations around the project area:

- Round Lake
- Libertyville
- Palatine
- Highland Park
- Fox River Grove

The cost estimate for these five facilities is \$9.95 million (1999 dollars), including right-of-way for five bus stands (each location), provisions for concessions (convenience stores), improvements in pedestrian and bicycle access and bike storage, real-time data displays of transportation services information, and other related costs.

The LCTIP recommends that as part of this project, the timed coordination of bus schedules to enable easy transfer to rail services as well as between bus routes that converge at the centers. The Buffalo Grove Transportation Center is a good example where coordinated scheduling can provide convenient service to commuter rail patrons and local travelers.

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Finalist Transit Improvement Summary

Table 9-20 describes the LCTIP's public transportation program for Lake County.

TABLE 9-20 LCTIP PUBLIC TRANSPORTATION PROGRAM Lake County Transportation Improvement Project	
Rail Improvements	
1.	Commuter Rail Service on the Elgin, Joliet and Eastern Rail Road
2.	Add Parking at Commuter Rail Stations
3.	Upgrading the Milwaukee District North Line from Rondout to Fox Lake
4.	Relocating freight traffic from the Milwaukee District North Line and consolidating it on the UP New Line
5.	New stations at the junctions of all rail lines
6.	Turnback at Green Oaks on the Milwaukee District North Line
Bus Service Improvements	
1.	Corridor 1: Winthrop Harbor-Waukegan Corridor
2.	Corridor 2: Waukegan-Round Lake Corridor
3.	Corridor 3: Gurnee-Libertyville-Buffalo Grove Corridor
4.	Corridor 4: Highland Park to Fox River Grove Corridor
5.	Corridor 5: Bus Rapid Transit in Lake Cook Corridor
6.	Shuttle Services- Vernon Hills Station-North Central Service (NCS) to Corporate Woods
7.	Express Bus Service- Gurnee to Lake Cook Road, via Interstate 94 (Tri-State Tollway)
8.	Express Bus Service- Grayslake to Rolling Meadows via IL-53 EXT
9.	Express Bus Service- Lake Cook Rd to I-190 via I-294
10.	Express Bus Service- Waukegan to Grayslake via IL-120
11.	Express Bus Service-(Action Year 2015) Express bus service on two routes. Placeholders: (Elgin/ Hoffman Estates/Buffalo Grove) (Hawthorn/Long Grove/Libertyville)
12.	Express Bus Service-(Action Year 2020) Express bus service on 4 routes (East Dundee/ Algonquin/Crystal Lake) (Evanston/Glenview) (Libertyville/Ft Sheridan-Vernon Hills) (Northbrook/Glenview)
13.	Local Service-(Action Year 2007) Increased service frequency on routes 234, 563, 565, 690, 723, 806
14.	Local Service-(Action Year 2015) Increased service frequency on route 571

POSSIBILITIES

The Regional Transportation Authority, Metra, Pace Suburban Bus, and the Lake County Division of Transportation have established baseline priorities for the transit element of this plan within Lake

County. These include the recommendations of the Lake County Transportation Improvement Project as summarized in Table 9-20.

Review of these priorities by this study team has suggested that additional improvements will provide more mass-transit opportunities in Lake County. An essential ingredient is to redirect efforts from fixed route service to providing interconnection throughout the county between Metra rail stations. In addition, the criss-crossing of commuter lines affords the opportunities to focus transit service at Rondout, Prairie Crossing, Waukegan, and South Mundelein-Vernon Hills as multi-modal hubs. Recommendations from the other priority plans, in particular the bicycle plan, have been coordinated reflect these hubs as key elements in this Priority Plan. The following discusses this plan's recommendations.

Multi-Modal Hubs

Increasing rail service recommendations by Metra along crossing commuter lines provide a tremendous opportunity for establishing four multi-modal hubs in Lake County. It is the vision of the study team that these hubs would serve as staging areas for varying modes of travel, while at the same time facilitate interconnection between the County's commuter rail lines. This interconnection will provide rail users with the flexibility to use multiple commuter rail lines to reach their destination from within Lake County, versus traveling south and possibly backtracking north. The multi-modal hubs are recommended in the following locations:

- **Prairie Crossing** – At the junction of the North Central and Milwaukee North lines, there is an existing Metra station servicing the North Central Service line. Within their supporting recommendations, the LCTIP recommended further study about possibly providing a single station servicing the Milwaukee North line as well. Given Prairie Crossing's central location, the study team recognizes this hub provides an opportunity to not only hub commuters on two rail lines, but also as a central point for Pace Suburban Bus to provide greater bus service to areas of the County that do not receive this type of transit service. Prairie Crossing is also near the proposed junction of the key north-south and east-west elements of the LCTIP alternatives.
- **Rondout** – Metra is continuing to plan for commuter rail expansion of the Milwaukee North line with service due north from Rondout into Gurnee, Wadsworth, and possibly Kenosha County, Wisconsin. At the same time, Rondout is also the point where the EJ&E railroad, and its proposed service, crosses the Milwaukee North line. With the possibility of serving as a focal point for three commuter lines, there is considerable opportunity for Rondout to be a multi-modal hub in eastern Lake County. This location, like Prairie Crossing, provides considerable flexibility for commuters in reaching their destinations. In addition, Rondout's location along IL-176, affords Pace with the ability to enhance commuter connections with bus service to supplement travel needs. Rondout is also central to three bicycle facilities: the Skokie Valley Bike Path, the North Shore Bike Path, and the Des Plaines River Trail.
- **Waukegan** – As Lake County's largest city, Waukegan is both an origination and destination for commuters. The community is also the County's largest client for bus transit from Pace, and site of a proposed transportation center. In addition, Waukegan may also be a potential termination

point for the EJ&E commuter line from Joliet. With these possibilities, the study team recognizes this community as a site for a multi-modal hub. This multi-modal hub could be located in conjunction with the proposed transportation center to not only hub bus operations, but also connections to two commuter rail lines, and the bicycle and pedestrian activities within the City's downtown area.

- **South Mundelein/Vernon Hills** – The junction of the EJ&E and North Central commuter lines, near the intersections of US-45, IL-83, and IL-60, is the recommended location for a fourth multi-modal hub in Lake County. Like the Rondout multi-modal hub, this site serves as a key decision point, where commuters may choose to proceed south and east to destinations in Northern Cook County, or to the south and west and communities near the Fox River Valley. This site is also located near many Lake County commercial destinations in Vernon Hills.

With the selection of these four multi-modal hubs, the study team believes the recommendation meets the concerns address by local municipalities about improving transit's flexibility. These locations will provide commuters with a choice of mass transit services to reach their destinations. As noted in the hub descriptions, the study team recognizes their locations as staging opportunities for Pace to provide a variety of services, such as pulse-point transit service, in addition to traditional fixed route services.

Lastly, multi-modal hubs are natural locations for initiating varying forms of transit-oriented development (TOD) in suburban communities. The premise behind TOD is to allow development around the multi-modal hubs to be constructed in a manner allowing residents and visitors to either walk or bike to rail and bus services, versus personal automobiles. TOD communities are becoming very popular destinations for commercial development patrons, as developers construct shopping and entertainment venues in close proximity to mass transit.

Shuttle Services

In expanding mass transit opportunities in Lake County, the study team reviewed the possibility of introducing alternatives to fixed bus route service. Shuttle services are one of those alternatives this project team recommends.

Shuttle services are becoming popular means of transport to circulate commuters between destinations with smaller vehicles than 50-60 passenger busses. In the Denver metropolitan area, the Regional Transportation District is providing shuttle service for various functions. In one location that is predominantly commercial office development, the Denver Technological Center, RTD operates a shuttle service that serves two purposes. One purpose is provision of a continual service between the office complexes to reduce vehicular travel and the need to change parking venues. The shuttle's other purpose is for providing direct service between the office complexes and Light Rail Transit service.

In Lake County, the study team envisions shuttles providing for three markets. First, shuttles could link the multi-modal hubs with nearby commercial, office, and entertainment attractions. This operation is similar to the service described above in Denver.

Another application the shuttles could provide is to provide travel between the commuter rail lines in the southern portion of the County. The four multi-modal hubs are recommended in central and

2020 Transportation Priority Plan

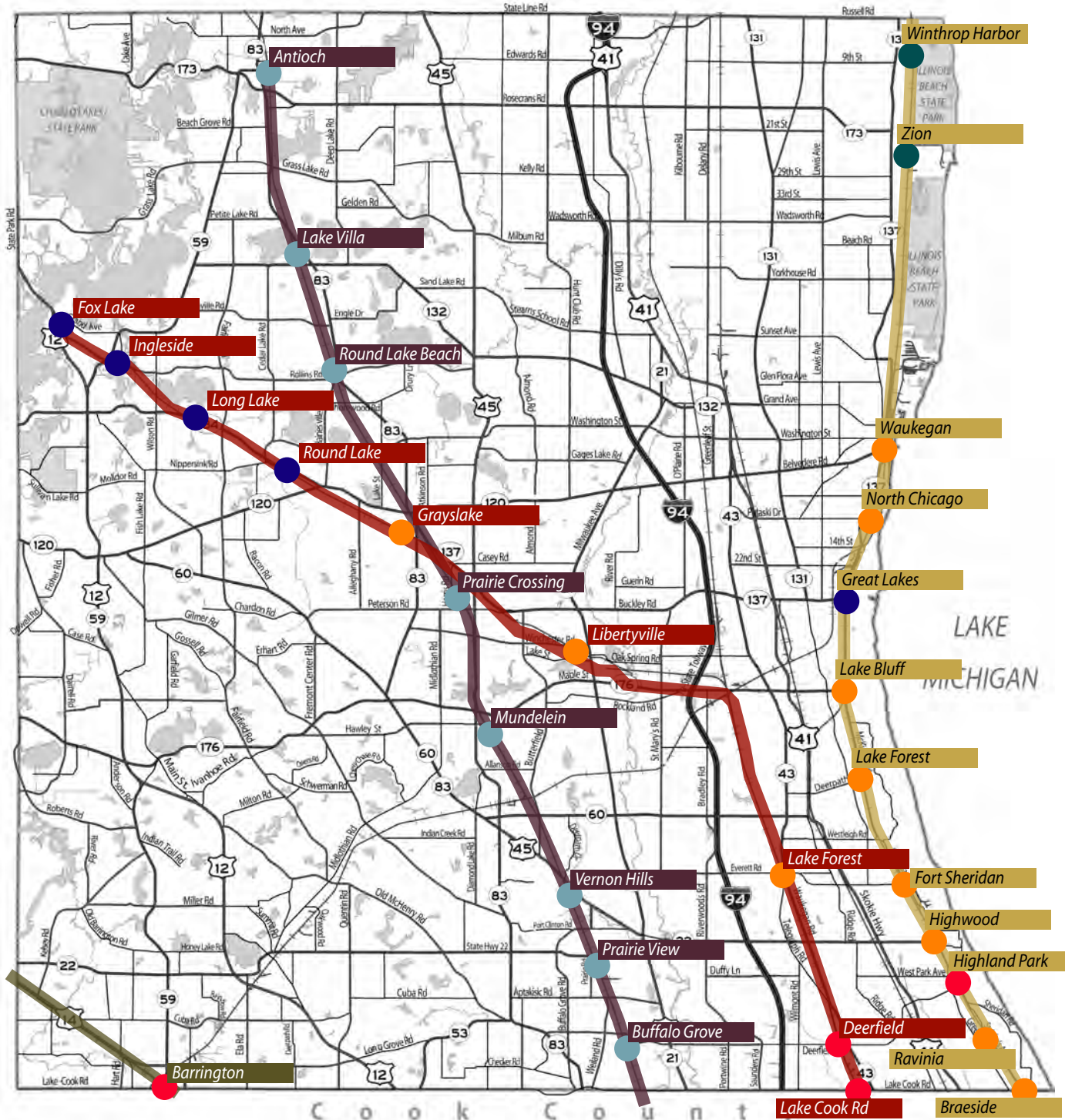
LAKE COUNTY DIVISION OF TRANSPORTATION

northern Lake County where the commuter rail lines criss-cross each other. To the south, there is little opportunity for commuters to have flexibility in choosing a commuter rail line. The study team recommends using shuttles as a means for providing connectivity between the rail stations. The most advantageous location for service would be in the IL-60 corridor.

And in a third market, the study team sees shuttle service as having the capability of linking sparsely populated areas of the County with the rail stations. Figure 9-2 illustrates the influence area of the Metra stations with plots of half-mile, one-mile, and five-mile concentric circles. The results of this graphic should considerable portions of the county that have to drive more than five-miles to reach a train station. Thus, the 2020 Transportation Priority Plan recommends introducing shuttle service in these portions of the county to provide a commuter rail access alternative. The initial locations are recommended in the Wauconda and Lake Zurich areas, and along Grand Avenue in the northern portions of the County.

Implementation

The transit recommendations of this Priority Plan represent a new direction for mass transit services. Additional study will be needed by the RTA, Metra, Pace, and the Lake County Division of Transportation regarding their implementation.



Legend

- Union Pacific Northwest Line
- North Central Service
- Milwaukee District North Line
- Union Pacific North Line

Stations - Daily Train Legend

- Less than 10 Trains per day
- 41 to 50 Trains per day
- 11 to 20 Trains per day
- More than 50 Trains per day
- 21 to 40 Trains per day



FIGURE 9-1

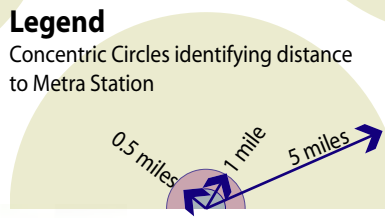
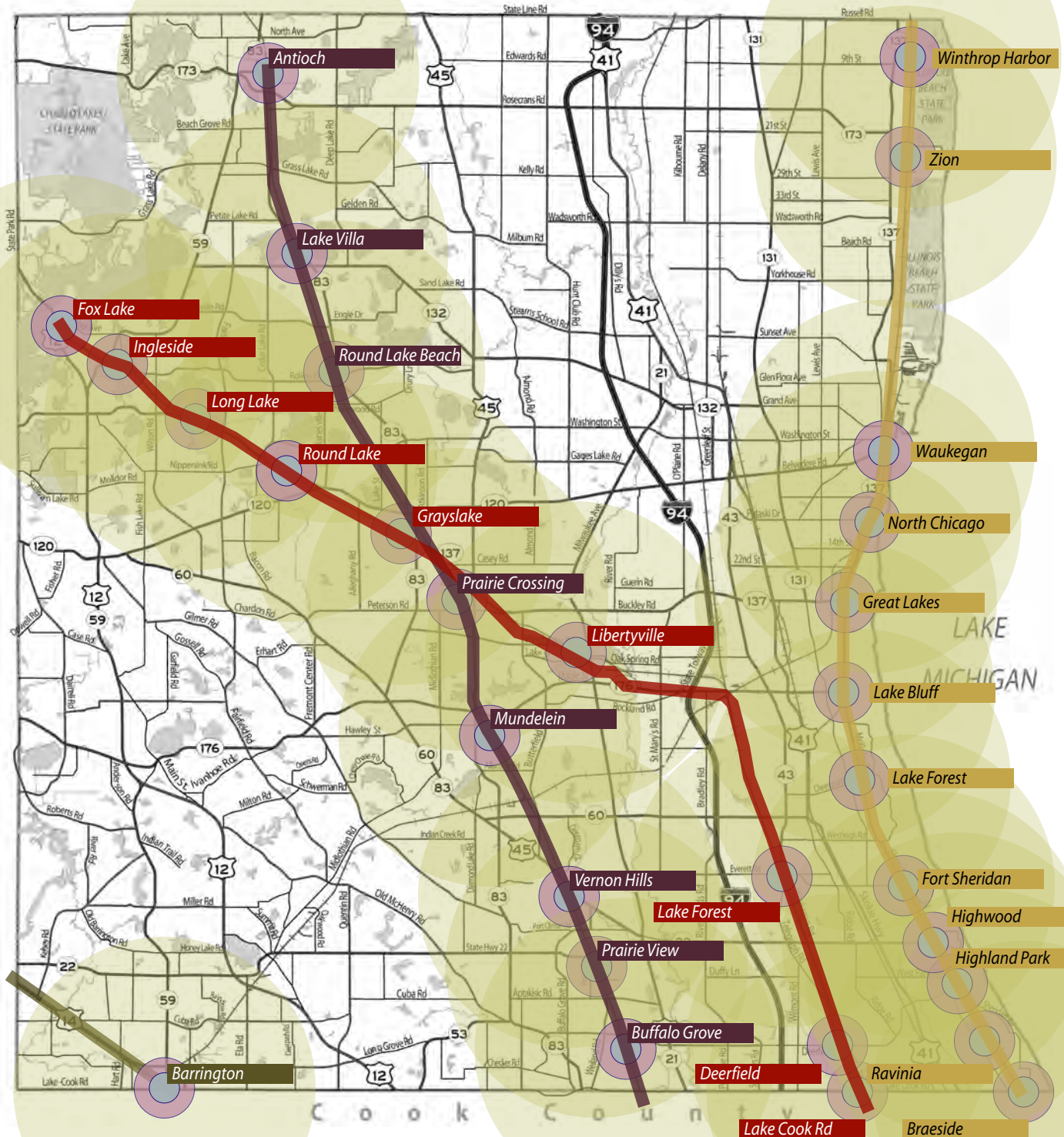


FIGURE 9-4a

Milwaukee District North Line

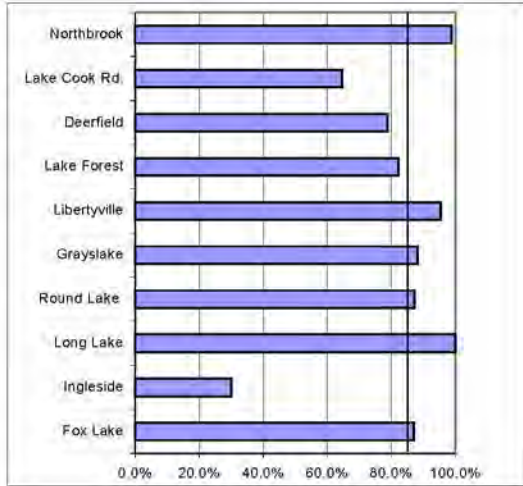


FIGURE 9-4b

North Central Service

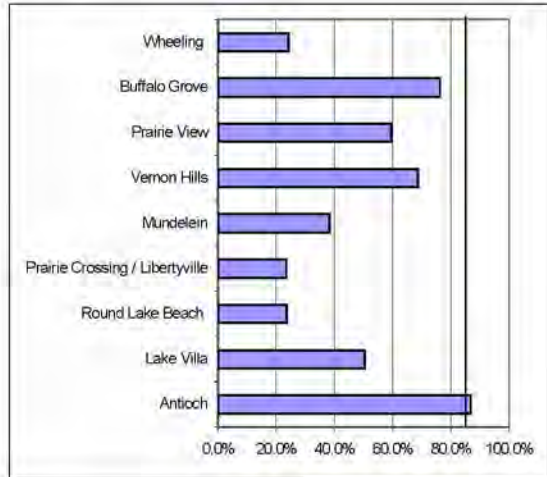


FIGURE 9-4c

Union Pacific North Line

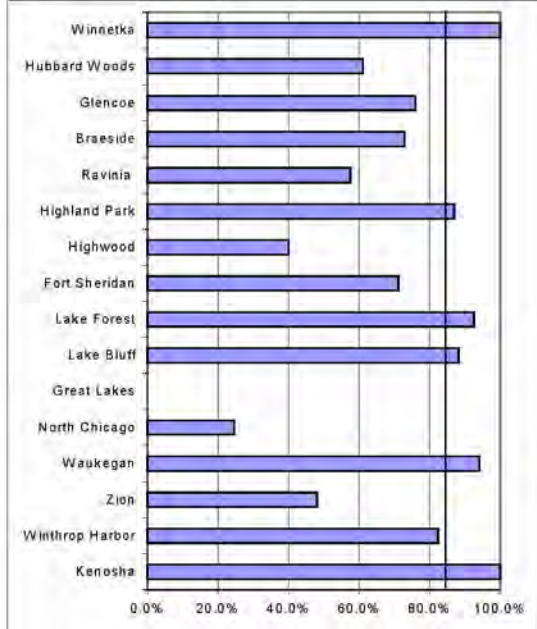
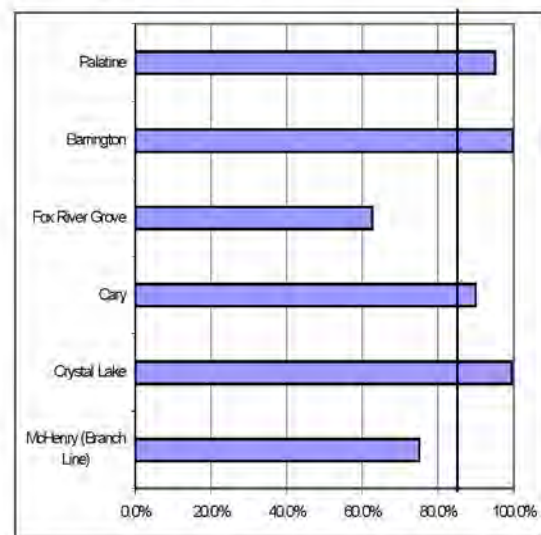
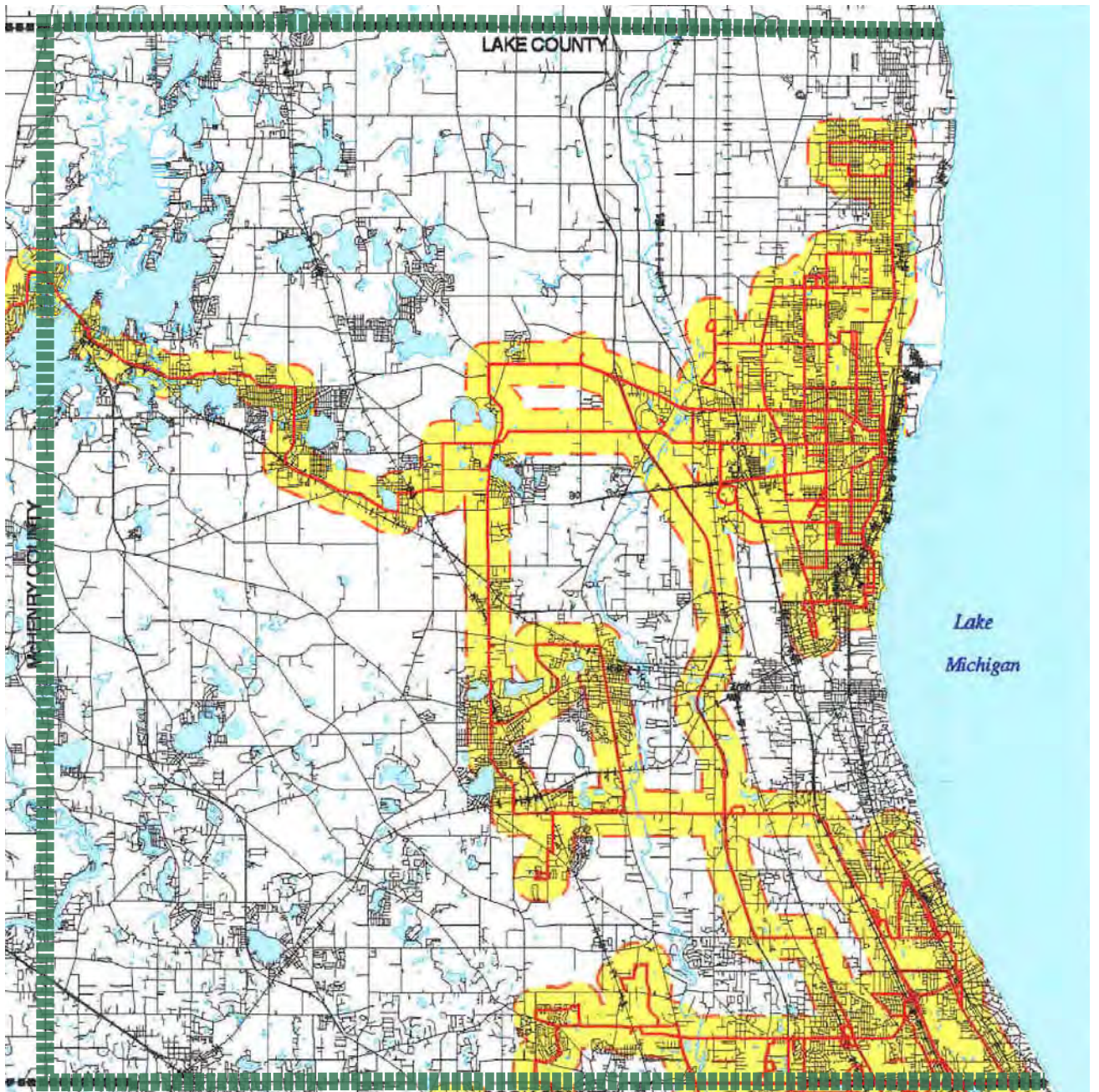


FIGURE 9-4d

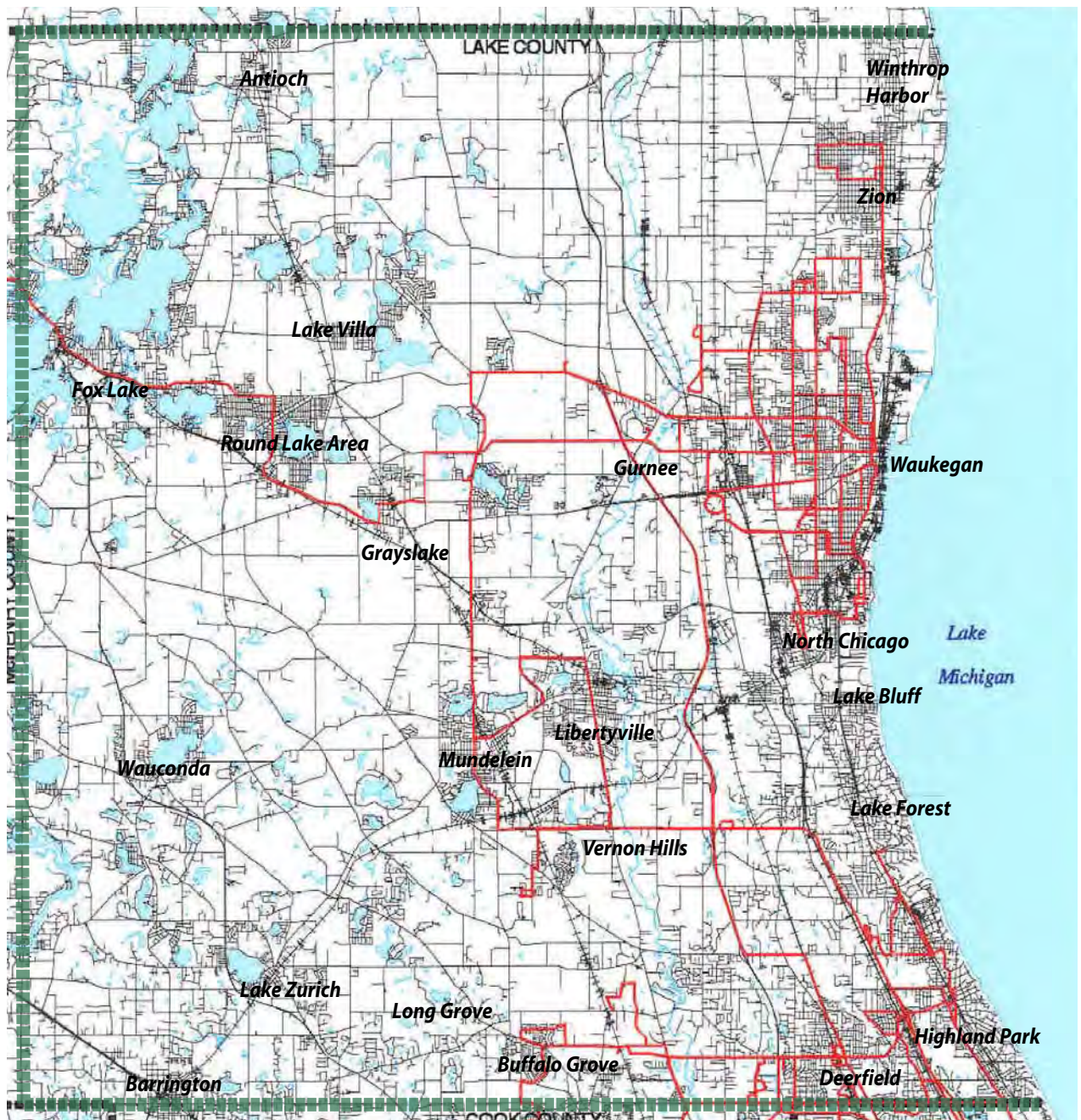
Union Pacific Northwest Line



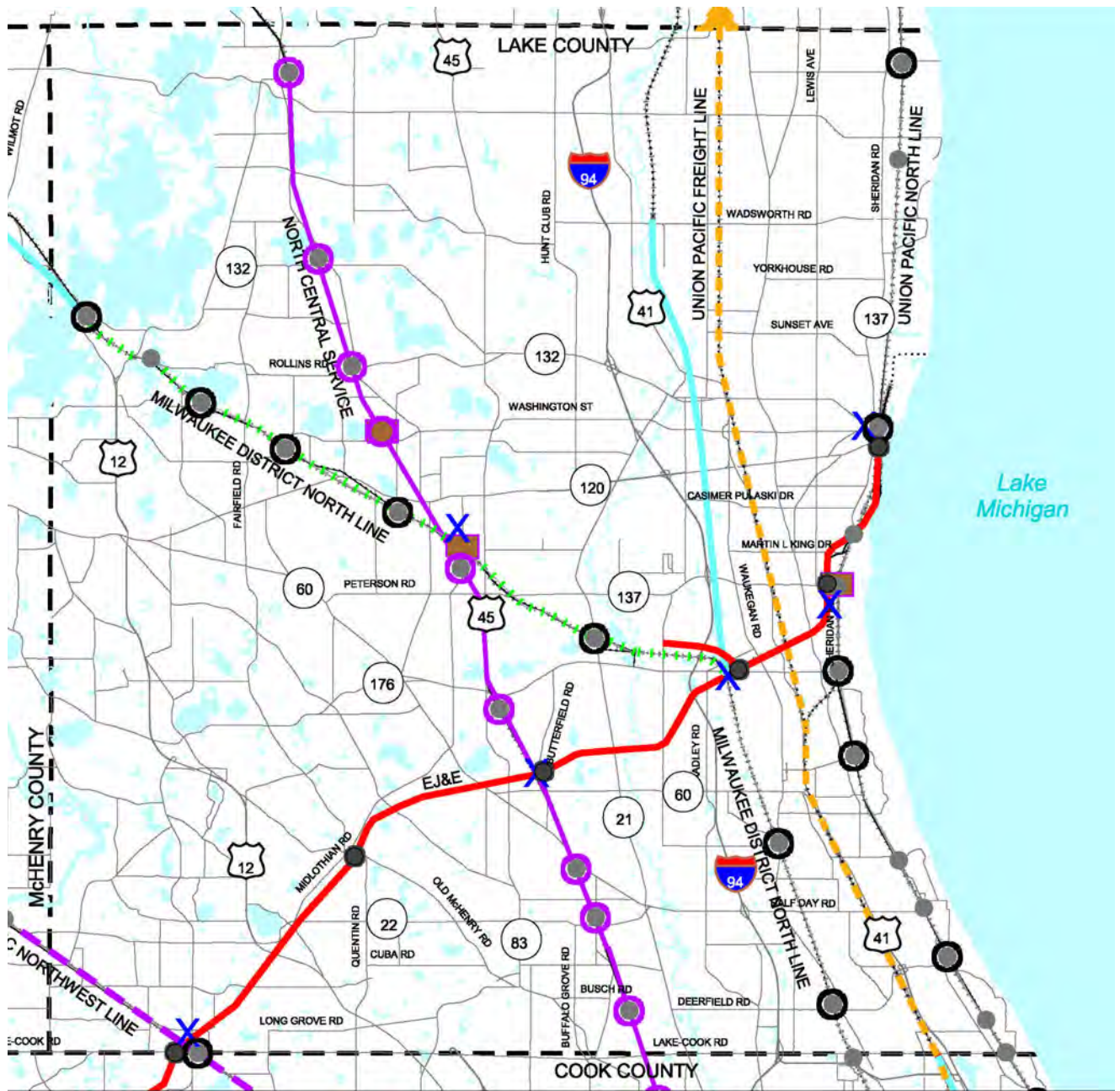
Source: *Transportation System Performance Report, Lake County Transportation Improvement Program, Illinois Department of Transportation, Illinois State Toll Highway Authority, CH2M Hill, Inc., January 1999, Figures 4-6a through 4-6d.*



Source: **Transportation System Performance Report**, Lake County Transportation Improvement Program, Illinois Department of Transportation, Illinois State Toll Highway Authority, CH2M Hill, Inc., September 2001, **Figure 4-7**.



Source: *Transportation System Performance Report, Lake County Transportation Improvement Program, Illinois Department of Transportation, Illinois State Toll Highway Authority, CH2M Hill, Inc., September 2001, Figure 4-8.*



Source: Roads, Railroads and Water Features: USGS
 County Boundaries: IL DNR IGIS

Legend

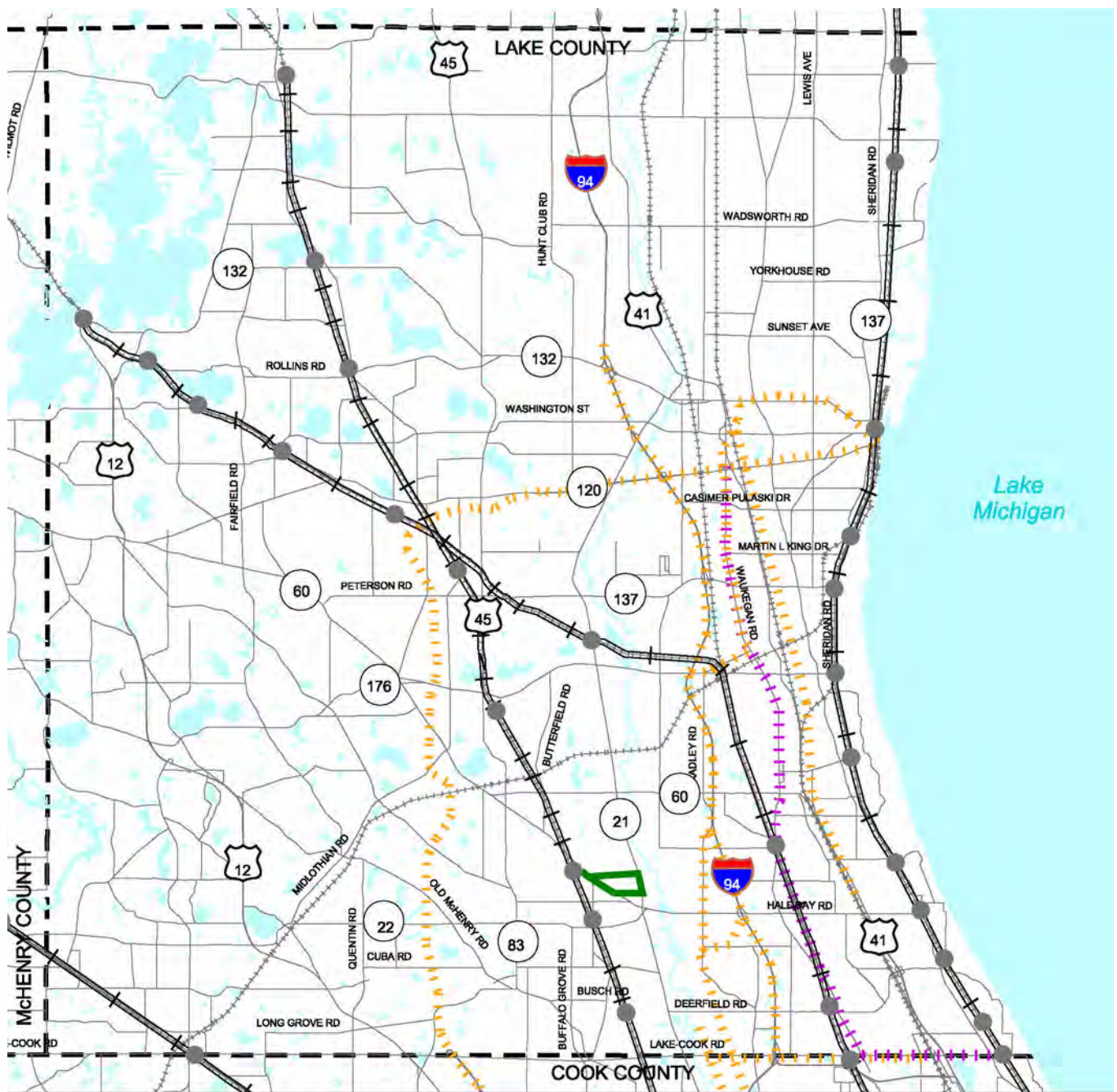
- County Boundary
- +++++ Railroad
- Road
- Metra Station
- Candidate Commuter Rail Services (EJ&E Service from Waukegan to Spaulding) (Turnback at Green Oaks-MDNL)
- - - Consolidation of Freight Service-UP Freight Line
- Signal Improvements (CTC and related track improvements)
- Feasibility Study
- X Rail Line Transfer
- Parking Capacity Improvements
- No-Action Improvements



Source: *Draft Environmental Impact Statement, Lake County Transportation Improvement Program, Illinois Department of Transportation, Illinois State Toll Highway Authority, CH2M Hill, Inc., September 2001, Figure S-8.*

FIGURE 9-7





Source: Roads, Railroads and Water Features: USGS
 County Boundaries: IL DNR IGIS



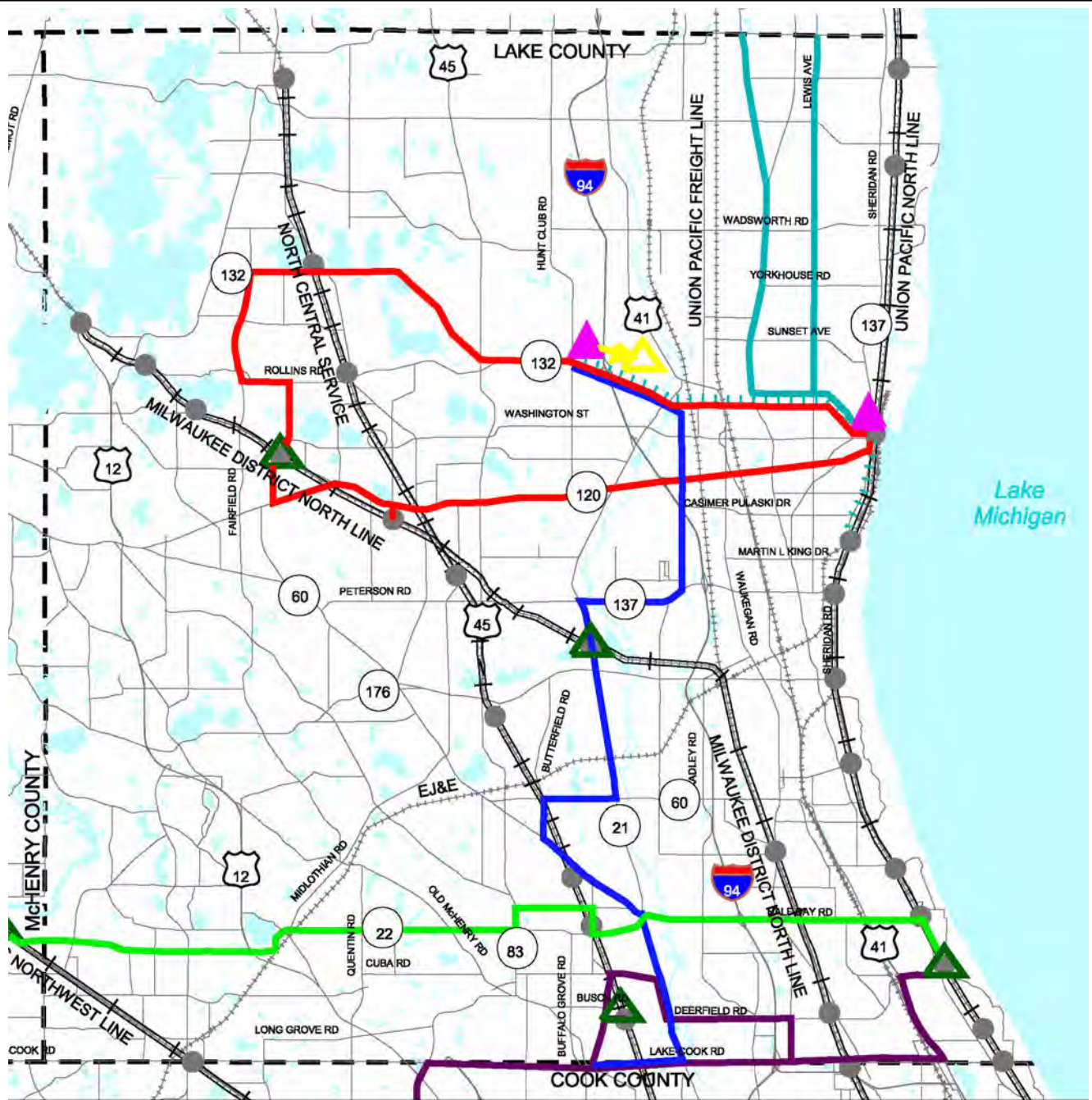
2020 Transportation Priority Plan

- Legend**
- County Boundary
 - +++++ Railroad
 - Road
 - +— Metra Line
 - Metra Station
 - - - - - No-Action Improvement
 - - - - - Express Bus Service
 - Shuttle Service

Source: *Draft Environmental Impact Statement, Lake County Transportation Improvement Program, Illinois Department of Transportation, Illinois State Toll Highway Authority, CH2M Hill, Inc., September 2001, Figure S-9.*

FIGURE 9-8

LCTIP SUPPORTING EXPRESS BUS IMPROVEMENTS



Legend

- Corridor 1: Winthrop Harbor-Waukegan Branch service to Gurnee Mills Shopping Center
- Corridor 2: Waukegan-Round Lake
- Corridor 3: Gurnee-Libertyville-Buffalo Grove
- Corridor 4: Highland Park-Fox River Grove
- Corridor 5: Bus Rapid Transit-Highland Park-Palatine (NOTE: Operate as a local service pending implementation of bus rapid transit)
- No-Action Improvement
- Transportation Centers (Rail to Bus or Bus to Bus)
- Potential Transportation Center Relocation (Pending outcome of Wadsworth Extension Feasibility Study)
- County Boundaries
- Railroad
- Road
- Metra Line
- Metra Station

Source: Draft Environmental Impact Statement, Lake County Transportation Improvement Program, Illinois Department of Transportation, Illinois State Toll Highway Authority, CH2M Hill, Inc., September 2001, Figure S-10.

FIGURE 9-9

