SECTION 1

Purpose and Need

1.1 Project Purpose

The purpose of the Lake County Transportation Improvement Project (LCTIP) is to identify the major transportation improvements that would help to address the key congestion and mobility problems in the study area through a system of strategic roadway, rail, and bus improvements.

Since 1998, the LCTIP has conducted a process to identify the major transportation improvement needs in Lake County. The process has included a detailed evaluation of the transportation needs of the study area, an examination of a large number of alternative sets of transportation improvements that would effectively address the major transportation needs, and an evaluation of the potential environmental and societal impacts of the finalist alternative transportation improvements discussed in this document. Overall, the purpose of the process and this document is to provide an analysis of the finalist alternatives at a sufficient level of detail to assist decision-makers in the selection of a preferred alternative for future implementation in Lake County.

1.2 Background

1.2.1 Regional Planning Context

The 2020 Regional Transportation Plan (RTP) was developed through a detailed series of land use and transportation considerations as a long-range framework for transportation strategies and decisions in northeastern Illinois. The RTP developed and evaluated two regional surface transportation scenarios: a Build scenario and a No-Build scenario. Companions to the Build and No-Build scenarios were two future regional airport scenarios: expansion of the existing airports (O'Hare and Midway) or construction of a new airport in the south suburbs (CATS 1997b). For the LCTIP, the expansion of the existing airports scenario will be used.

The RTP No-Build scenario and its corresponding population and employment forecasts assumed that only the committed projects in the 1998-2002 Transportation Improvement Program (TIP) would be in place by 2020.[1] The RTP Build scenario assumed that all major highway and transit projects recommended in the 2020 RTP would be in place by 2020, including the extension of IL 53 into Lake County.

The 2020 RTP set out a comprehensive strategy for transportation improvements in the region. This regional transportation vision established the platform to conduct a focused analysis of transportation improvements in Lake County that would achieve the RTP's regional goals and objectives.

1.2.2 Project History

The need for an improved transportation system in Lake County has been the focus of years of planning and study. As early as 1962, regional plans singled out the need for an improved north-south transportation link for the northeastern Illinois region, referred to as the Lake-Will Expressway, a north-south circumferential interstate route (IDH 1963). In 1964, the Department of Public Works and Buildings (currently known as the Illinois Department of Transportation [IDOT]) rendered a route location decision to construct IL 53 (a portion of the Lake-Will Expressway concept) from Dundee Road in Cook County to Peterson Road in Lake County (20.9 km or 13 mi) as a fully access-controlled facility.

In 1969, Congress enacted the National Environmental Policy Act (NEPA), resulting in the restructuring of the Federal Highway Administration's (FHWA's) planning

[1] The 1998-2002 TIP was the current TIP available when the No-Action (Baseline) scenario was developed.

requirements. These requirements included compliance with the RTP for all proposed transportation projects. The IL 53 proposal has been included in regional plans and their updates, including the 2020 RTP.

The NEPA mandated that major federal public works actions consider the environmental consequences of those actions prior to funding, permitting, or construction. The IL 53 proposal was the subject of environmental analysis and documentation on two prior projects that were never completed. In the early 1990s, IDOT initiated the most recent engineering and environmental studies for the IL 53 extension using 2010 population, employment, and travel demand forecasts. IDOT's efforts were supplemented in 1993 to include the Illinois State Toll Highway Authority (ISTHA). In July 1993, the state legislature authorized ISTHA to expand the tollway system to include the IL 53 extension as a tollway. From 1993 to 1997, IDOT and ISTHA collaborated on the study of the IL 53 extension, with IDOT as the lead agency and ISTHA serving as a cooperating agency in the Phase I engineering and environmental process.

In 1997, the ongoing study of IL 53 was put on hold pending the adoption of the 2020 RTP and its accompanying population, employment, and travel demand forecasts. Subsequent thereto, IDOT and ISTHA restructured the study and formed the LCTIP. The revised process would consider major improvements to all aspects of the transportation system, including roadways, rail, and bus, as well as overall transportation management strategies. For the roadway improvements, alternatives would include improvements with and without the IL 53 extension. This DEIS describes the evaluation of the alternative transportation improvements considered as part of a broader examination of transportation problems in the Lake County area.

1.3 Project Need

1.3.1 Population and Employment Growth

Lake County is growing at a quick pace. Population trends show that Lake County grew from 382,638 in 1970 to 516,418 in 1990; by 1999 it had reached 617,975 (US Census Bureau 1999) as illustrated in Table 1-1 and Figure 1-2. Job growth was even more dramatic with employment almost doubling between 1970 and 1990. Both population and job growth are concentrated in the southern and central townships of the county (see Figures 1-3 and 1-4).

TABLE 1-1
Population and Employment Statistics for Lake County

	1970	1980	1990	1999
Population	382,638	440,372	516,418	617,975
Employment	116,350	162,030	228,606	289,925
Change (number)		**1970-1980**	**1980-1990**	**1990-1999**
Population		57,734	76,046	101,557
Employment		45,680	66,576	61,319
Percent Change		**1970-1980**	**1980-1990**	**1990-1999**
Population		15.1%	17.3%	19.7%
Employment		39.3%	41.1%	26.8%

Sources: US Census Bureau 1970, 1980, 1990a, 1999 population data
Lake County Department of Planning, Zoning & Environmental Quality 1989 (1970, 1980 employment data)
NIPC 1997 (1990 employment); 1999 Illinois Department of Employment Security (1999 employment data)

Suburban growth in the Chicago metropolitan area is similar to other urban centers across the country. Between 1970 and 1999, the five suburban counties surrounding Cook County grew between 60.4 and 121.3 percent (see Table 1-2). Lake County realized an increase of 235,337 new residents during this period, an increase of 61.5 percent. During this period, Lake County had the second largest change in actual population of any suburban county in the Chicago metro area.

Growth in the suburban counties is projected to continue into the future. The recent increase in population shows that Lake County is growing at a rapid pace despite a lack of major new transportation improvements. Population forecasts by the Northeastern Illinois Planning Commission (NIPC) show that an additional 249,333 people will reside in Lake County by 2020 (over and above 1990 population levels) without any major highway or transit improvements (CATS 1997a). This population growth is expected to be greatest in the northern and western portions of Lake County, where land is available for development. Regional population forecasts show that implementation of all the projects in the 2020 RTP would add 60,530 (8 percent) additional residents to Lake County by 2020 (CATS 1997a) (see Figure 1-5).

Between 1970 and 1999, employment increased by nearly 150 percent, or 173,575 jobs. This trend is expected to continue with regional planning agencies projecting total Lake County employment to continue to increase from 228,606 in 1990 to 389,595 in 2020 without major transportation improvements (see Figure 1-6). There will be 160,989 new jobs in Lake County without provision of transportation improvements. The implementation of all the projects in the 2020 RTP would add an additional 4,444 jobs in Lake County by 2020 (CATS 1997a). Most of the major employment in Lake County continues to be located in the southern and eastern portions of the county.

The rate of employment growth between 1970 and 1999 substantially exceeded the rate of population growth for that same period. The migration of jobs to areas like Lake County is consistent with manufacturing and business interest in locations where an abundance of relatively inexpensive land is available and obtainable in large parcels.

Transportation has not been, nor is expected to be, a major driver in population growth in Lake County; this is supported not only by the 2020 forecasts, but also by the county's historical growth patterns and geographic position in the metropolitan area. Lake County provides quality residential living and offers a favorable setting for business and commerce. All of these have been factors in the fast-paced population growth during the last three decades.

Overall, as population and employment have increased, transportation improvements have not kept pace. Whereas population and employment have substantially increased between 1980 and 1999, less than 5 percent of the major roads have been improved to meet the growing traffic demand. With the county adding an average of 11,000 new residents per

TABLE 1-2
Population Statistics for the Five Suburban Counties Surrounding Cook County

	1970	1990	1999	Absolute Change 1970-1999	% Change 1970-1999
Du Page Co.	491,882	781,666	892,547	400,665	81.5%
Kane Co.	251,005	317,471	402,622	151,617	60.4%
Lake Co.	382,638	516,418	617,975	235,337	61.5%
McHenry Co.	111,555	183,241	246,812	135,257	121.3%
Will Co.	249,498	357,313	478,392	228,894	91.7%

Source: US Census Bureau 1970, 1990, 1999

year over the past decade, the transportation system has not been able to provide adequate service. Major improvements are needed to address the growth that is coming regardless of transportation improvements.

1.3.2 Existing System Performance

During the early steps of the LCTIP, a needs analysis was conducted to evaluate the range of transportation issues and problems for the existing roadway and transit systems in the study area. This evaluation involved technical analyses, as well as the gathering of information and experiences from transportation agencies, elected officials, and the public. The transportation deficiencies identified in the study area are extensive—see the LCTIP's *Transportation System Performance Report, January 1999* for complete details. The following are some of the major findings:

- Development is fast outpacing transportation improvements.
- North-south travel patterns are predominant.
- Congestion is widespread. Currently, one-third of the roadway network is congested during peak travel periods.
- Nearly 90 percent of all work trips are made by automobiles.
- Less than 5 percent of all work trips are made by transit.
- Lake County experiences nearly 1.73 million daily vehicle trips; half start and end in the county, and the other half either travel into, leave from, or pass through the county.
- Nearly 50 percent of Lake County's rail stations have insufficient parking.

During the early stage of the study, surveys were taken to gather opinions of residents, agencies, and elected officials concerning the transportation issues in Lake County. Respondents consistently cited congestion as the most important quality of life issue. Respondents broadly supported major highway improvements as a means to relieve congestion, followed by transit.

By 2020, transportation deficiencies will encompass most of Lake County. Even with implementation of committed and reasonably expected improvements (74 miles of roadway capacity improvements and North Central Service [NCS] rail expansion and upgrades), congestion will double by 2020.[2] Major improvements are needed in Lake County to prevent gridlock.

The LCTIP recognized that this project would not be able to address all of the transportation problems. The LCTIP resolved to focus their efforts on the major system deficiencies, and, in doing so, also provide a foundation for transportation planning by other agencies. On the basis of extensive technical studies embodied in the *Transportation System Performance Report—January 1999*, the LCTIP identified four transportation needs:

- Improve north-south travel capacity and efficiency
- Improve regional and local travel
- Improve safety
- Improve modal connections

The remainder of this section discusses these need statements. Together, the project's purpose and need have served to shape the range of reasonable transportation improvement alternatives presented in Section 3.

1.3.3 Improve North-South Travel Capacity and Efficiency

Lake County has widespread roadway congestion. The LCTIP project team performed a comprehensive technical analysis of travel patterns (a travel desire analysis) to evaluate the direction people are traveling within the county. Figure 1-7 clearly shows the travel desire to be predominantly in the north-south direction. Strongly supporting this conclusion are daily

[2] The LCTIP No-Action (Baseline) Alternative. See also Section 3, *Alternatives*.

travel patterns, showing that nearly half of daily trips (about 720,000 trips) either enter or leave Lake County. The general orientation of these trips is to and from the south as well as to and from the north, wherein lie most of the major employment centers (largely located in the southern townships of Lake County and the northern townships of Cook County). Approximately 66 percent of Lake County residents are employed within the county, while 30 percent are employed to the south in neighboring Cook County (Lake County Department of Planning, Zoning, and Environmental Quality 1994).

Currently in the county, almost 50 percent of the vehicle miles of travel occur on interstate and principal arterial facilities during peak travel periods. These roadways account for only 26 percent of the roadway system in the county, and 60 percent of these primary roads are oriented in a north-south direction.

Lake County's geographic position as a major entrance to the State of Illinois and the Chicago metropolitan area also contributes to a high volume of north-south travel. The through trip component is approximately 125,000 vehicles per day, and the largest volumes of through travel are in the eastern half of Lake County, generally along the I-94 corridor.

Overall, travel is expected to worsen considerably by 2020. In the next 20 years, vehicle miles of travel are projected to increase 40 percent, and technical analyses show this increase would impact north-south roadways the most. An analysis of average daily traffic shows that 55 percent of this growth would be on the north-south roadways (LCTIP 1999).

1.3.4 Improve Regional and Local Travel

The roadway network in Lake County serves both local and regional trips equally. Presently, the network supports nearly 1.73 million trips on a daily basis. About 50 percent of those trips start and end within the county, and the other 50 percent either leave, enter, or pass through the county.

Local trips (shorter distance trips) are a substantial component of daily travel in Lake County, with approximately 884,000 trips beginning and ending in the county. About 50 percent of the vehicle miles of travel in the county are made on 74 percent of the roadway network, comprised of minor arterial facilities, collectors, and local roads. Interim strategies, such as intersection improvements and coordinated traffic signals, have been implemented at a number of locations over the past decades; however, these spot improvements have not been effective at keeping pace with the continued rising levels of congestion.

During the past 15 years, travel has increased on the county-maintained roadway system more than 230 percent (Lake County Division of Transportation 1998). During this same period, added lane miles of improvement have increased less than 5 percent. The rise in local system travel is directly linked to population growth and inefficiencies in travel on Lake County's primary roadway system. Congestion on the primary routes (interstate routes and principal arterial facilities) has caused atypical travel patterns such as travelers diverting to alternate routes; often times using secondary or local roads not intended for longer trips. The result is widespread use of the local road network for commuter trips. The preponderance of cut-through traffic was echoed in the LCTIP's survey of people's opinions on transportation issues facing Lake County (LCTIP 1999). There is a need to attract longer distance travel to the appropriate type of facility (i.e., principal arterial facilities and interstate routes), which would assist in relieving travel congestion on the local network.

Longer distance trips represent another major component of Lake County's automobile travel. Each day over 720,000 trips are entering or leaving the county, and about 125,000 trips are passing through the county. Primary routes (interstates and principal arterials) represent only 26 percent of the total roadway system in the county and carry almost 50 percent of the vehicle miles of travel during peak travel periods. Many of the county's primary routes have reached capacity

and are experiencing severe congestion during peak travel periods.

1.3.5 Improve Safety

Much of Lake County's highway system is reflective of its past. Nearly 80 percent of the roadway network is comprised of 2-lane roadways that once served a rural/agricultural landscape. Today, many of those same roadways are over capacity and serve a suburban county with one of the largest populations in the state.

An outdated roadway system carrying traffic volumes that far exceed its capacity is an important contributing factor to vehicular crashes. Based on available data (1993-1995), the total number of crashes in Lake County ranged from 17,072 to 18,149 (IDOT 1993-1995). Slightly over 50 percent of all crashes occur during the peak P.M. travel period. The majority of all crashes involve property damage, and are followed by injury crashes. Fatal crashes account for a fraction of the total crashes. Data shows that the proportion of crashes on the primary road system has steadily increased with rising traffic volumes. In 1993, 70 percent of all crashes occurred on the primary roadway system. In 1995, the number had risen to 78 percent. While the number of crashes on primary roads has increased, the crash rates (crashes per million vehicle miles of travel) are the lowest when compared to other facility types. This is consistent with regional as well as national trends that show that the lowest crash rates occur along higher type facilities (e.g., freeway, tollway) with more limited access.

The average crash rate in Lake County for all roads is similar to other urban counties in the Chicago metropolitan area. Lake County had a calculated crash rate of 3.5 per million vehicle miles driven (IDOT 1993-1995). The county's rate is slightly higher than the annual statewide rate of 3.0 in 1995.

National research involving the relationship between automobile crashes to highway features confirms that an important factor in crash occurrence is traffic congestion. In Lake County, congestion on the primary routes is well documented, and is spreading to the secondary and local roadway system. This is supported by the fact that without major transportation improvements future travel is projected to increase by 28 percent on minor arterial facilities, by 50 percent on collectors, and by 69 percent on local roads (LCTIP 1999). Major improvements are needed in order to increase capacity, improve safety performance, and attract non-local trips to the primary system, thereby reducing the potential for crashes on the secondary system.

There are a number of basic, well-established principles relating roadway safety to elements of the highway, including the relationship of roadway type and volume to congestion, the relationship of traffic congestion to crash frequency, and differences in the safety performance of various roadway types. In the Chicago metropolitan area and Lake County, it is apparent that the increase of crashes is linked to more vehicles traveling more miles than before, as well as increased congestion on roadways with inherent capacity problems. Lake County's present roadway network is attempting to manage a large volume of long- and short-distance trips to and from work, shopping, school, entertainment, and other destinations. This situation has contributed to widespread travel safety concerns on the county's major and secondary roadway networks.

A combination of factors has lead to increasing concern for vehicular safety in Lake County. The challenge in improving travel safety is linked to shifting automobile travel to the appropriate types of roadway facilities that suit the travel and are specifically designed to minimize conflicts between the local and long-distance trip.

1.3.6 Improve Modal Connections

Regional and local transportation planning agencies have continually explored ways to improve the connectivity between transportation modes. In Lake County, several examples of better connections between transportation modes have occurred in recent

years, including the Lake Cook Transportation Management Association's (TMA) shuttle bug service between rail stations and major employment centers. The TMA's and other efforts represent a start; however, additional steps to improve connections between modes would further enhance the efficiency of each mode and the overall transportation system.

The overwhelming use of the highway network in both Lake County and elsewhere in the Chicago metro area has come about through the evolution of a well-connected system of roadways—a network that connects most locations with every other location. However, transit serves a relatively small percentage of the total travel in Lake County. According to the latest census data (US Census Bureau 1990a), less than 5 percent of the commuter trips in Lake County were made by rail and bus. In 1990, 3.7 percent of the work trips were made by rail and 0.5 percent were made by bus. The transit system in Lake County (particularly rail) has served the downtown Chicago work trip well, but as employment and housing have steadily increased in the suburbs, transit service to these varied locations is more problematic.

Research has shown that a successful transit service must be competitive with the automobile in terms of origin and destination.

- **The origin of travel**—Easily accessed with connection from other modes
- **The destination of travel**—Connecting people to where they want to go (i.e., employment centers, activity [shopping, commercial, etc.] centers, recreational centers)

Easy access to the rail stations in Lake County is critical for maintaining and increasing rail transit ridership. The needs assessment for Lake County (LCTIP 1999) showed that 90 percent of the commuter rail patrons arrive at rail stations by automobile. An examination of station parking in the study area shows that 50 percent have usage that is at capacity, but in a few short years this figure could grow to over 80 percent. The need for parking at rail stations will continue to grow (projected to be more than 3,500 additional spaces by 2020), and past experience shows that parking supply is used as quickly as it is provided. It is apparent that an ample supply of parking is crucial to improving the transit user connection at trip origins.

Other forms of access to rail stations (i.e., park-and-ride facilities and feeder bus services) could also expand the ridership catchment area, thereby increasing patronage. In recent years, the bus market in Lake County has shown some flexibility in the type of services provided. The most successful bus services have been those that connect major job centers with other transportation modes (i.e., rail stations). These are good examples, but much more is needed to expand the linkage of transit between the home-to-work trip and employment centers and major transportation nodes (i.e., rail stations, park-and-ride, etc.).

Transit has rarely served the same role as many modern highways by providing bi-directional flow during the commuting period or, to some extent, throughout the day. Changes in employment patterns, however, have been contributing to changing commute patterns (such as suburb to suburb or Chicago downtown to suburbs). These changing patterns of employment are causing transit providers to respond with better connections for reverse commuters. Once again, the needs assessment for Lake County (LCTIP 1999) identified some inherent short comings in the system that currently frustrate appropriate service in the reverse direction, but these encumbrances can be overcome with modest physical improvements. Combined with these physical improvements, the transit community agrees that enhanced reverse commute services would require improved linkages between rail stations and employment centers with a system of feeder/shuttle bus service.

The relationship between origins of travel and major employment centers in Lake County was examined as part of this study. The conclusion showed that a number of these origins and destinations are accomplished by automobile only. The flexibility of rail service is limited, and bus transit is not configured to serve these major travel corridors. However, the LCTIP concluded

that better connection between modes, coupled with enhancement of existing modes (i.e., express bus service from major collection points to employment/activity centers) reflect concepts that begin to address the needs in these corridors by use of other mode choices.

In Lake County, some steps have been taken to improve connections between the roadway, rail, bus, and other modes. However, expansion of the concepts enumerated above would further enhance the efficiency of each mode and the overall transportation system.