Executive Summary

This Final Transportation System Performance Report (TSPR) is a comprehensive system evaluation of transportation conditions and problems in the study area. The evaluation has identified travel patterns, trip characteristics, location and extent of major problems, and the reasons for the problems. The findings herein establish the starting point for developing transportation system solutions in the study area with a clear understanding of what the problems are and why they are occurring.

Background

The Elgin O'Hare–West Bypass (EO - WB) study has been undertaken in response to growing transportation needs in northeastern DuPage and northwest Cook counties, as cited in regional transportation plans since the 1960s. Various recommendations and strategies for new or expanded transportation corridors and public transportation linkages in the area have been studied since that time as a means of improving travel mobility and reliability in this major regional and national transportation hub. These include the Elgin-O'Hare corridor connecting growing communities in the western suburbs with established communities in Cook County, the O'Hare Bypass corridor proposal to relieve congestion and to distribute traffic more effectively along the interstate system, and the proposal for a western access to O'Hare International Airport supporting the west terminal and west airport entrance as shown in the federally approved Environmental Impact Statement (EIS) for the O'Hare International Future Airport Layout Plan (2005).

The rapidly growing travel demand in the region has been outpacing the capacity of the region's transportation infrastructure, resulting in transportation facilities characterized by congestion, traffic delays, and increased frequency of incidents. These conditions, coupled with the unique multi-modal, opportunities in the area, underscore the need for a comprehensive and innovative transportation planning solution that considers all modes.

Study Area Characteristics

The study area is bounded by I-90 to the north (the Jane Addams Tollway, formerly the Northwest Tollway), the Eisenhower Expressway (I-290) to the south and west, and the Tri-State Tollway (I-294) to the east (Exhibit 1). Covering slightly more than 100 square miles in the Chicago metropolitan area, the area is represented by 25 communities and the 2 largest counties in the State (Cook and DuPage). The area's proximity to the center of Chicago (15 miles from City center), its unique infrastructure attributes, and its land use characteristics make it an important regional transportation center and employment hub.

The study area is home to more than 410,000 persons (4.2 percent) and 530,000 jobs (10.3 percent) in the 6-county Chicago metropolitan region. The O'Hare area has the second greatest concentration of jobs within the region and the state. The only area greater is downtown Chicago. The transportation infrastructure in the study area is expansive. It

includes five intersecting interstate highways, hundreds of miles of urban arterial roadways, one of the world's busiest airports, freight rail and freight marshalling yards, commuter rail and bus, and pedestrian/bicycle facilities (Table 1).

TABLE 1
Study Area Transportation Infrastructure: 2007 Data

Facilities	Quantities
Roadways	
Freeway	119.4 (route miles) / 385.3 (lane miles)
Principal arterials	65 (route miles) / 284.9 (lane miles)
Minor arterials	126.5 (route miles) / 444 (lane miles)
Collector	78 (route miles) / 212.6 (lane miles)
Transit	
Commuter rail lines	5
Commuter rail stations	34
Bus routes	30
Bicycle/Pedestrian	
Bicycle/Pedestrian routes[a]	310 (miles)
Freight Rail	
Freight rail lines	5
Freight yards	8
O'Hare	
2007 Enplanements	36,526,897 (passengers)
2007 Aircraft movements	935,356 (takeoffs/landings)

[a]Represents designated trails and roadways classified by IDOT as "suitable" or "caution advised" for bicyclists.

Performance Evaluation Process

The assessment of travel performance in the study area serves as a starting point; one that gives the Illinois Department of Transportation a clear understanding of the problems and why they are occurring. The analysis examines both how the system works today and how it will work in the design year (2030) under the No-Action Alternative.

Travel performance in the study area was conducted for two time periods: current (2007) and future (2030) conditions. The performance analysis for 2007 assumed existing transportation system conditions, and the 2030 analysis presumes expected improvements to the future transportation system, identified in the 2030 Regional Transportation Plan but, without the Elgin O'Hare and West Bypass facilities. This level of improvement identified for 2030 is referred to as the No-Action Alternative. The improvements included in the No-Action Alternative were identified with assistance from area transportation providers, and consist of:

- Roadway and transit improvements identified in the 2030 Regional Transportation Plan, excluding the major improvements being considered for this study
- Programmed roadway, transit, and aviation improvements within the study area included in current transportation improvement programs
- Roadway, transit, and aviation improvements located within the study area anticipated to be completed beyond the end date of current Transportation Improvement Programs

A No-Action Alternative population and employment forecast was developed to portray the future travel demand associated with the physical configuration of the alternative. The forecasts were developed with the assistance of the Chicago Metropolitan Agency for

Planning and local planning experts, using the socioeconomic forecasts in the adopted and federally approved 2030 Regional Transportation Plan as a starting point.

The study area is a national and regional transportation hub with all modes well represented. Therefore, defining the problem is not just limited to a single mode, but demands a complete examination of all modes. The objective of the technical performance evaluation process was structured to answer the following questions:

- How does the roadway system perform today, and how will it perform in 2030? Does the roadway system efficiently accommodate travel patterns and demand in the area?
- Does the area's transit system provide reasonable access to jobs, community centers, shopping services, and housing in the study area? What service gaps should be addressed to increase transit use, and thus to reduce travel demand on area roadways?
- How does the area's freight rail system affect travel on area roadways and transit services? What areas should be addressed to improve the flow of commuter rail traffic and roadway traffic through the area?
- Does the area's bicycle and pedestrian system provide effective transportation connections, both to community destinations and to transit services? What service gaps should be addressed to support expanded transit use, and to make walking and bicycling a more viable travel option?

The technical analysis of travel performance in the study area was complemented by stakeholder input on the topic of transportation problems. The opinions of travelers, residents, and area officials were invited early in the Program on the key system performance issues. Their input helped validate that analytical findings are consistent with the viewpoint of system users.

Technical Analysis Findings and Stakeholder Perspectives

The findings of the technical analysis and stakeholder input indicate that the existing transportation system in the study area is clearly stressed, and does not serve regional or local mobility needs. The existing levels of congestion and mobility are further degraded by 2030 in the study area. Problems generally fall under four topics, as listed in Table 2 and described below.

Widespread congestion levels result in reduced mobility on major area roadways

The area serves a tremendous traffic volume daily. More than 16 percent of all travel in the Chicago metropolitan region enters, leaves, travels within, or passes through the study area. In 2007, 22 percent of all trips passed through the area, 48 percent either enter or leave the study area, and the remaining 30 percent are internal trips; see Table 3 for summary of 2007 and 2030 trip characteristics.

TABLE 2
Technical and Stakeholder Problems Supporting Project Purpose

Stakeholder Problem Statement	Technical Analysis Findings	Project Purpose
Congestion exists on major routes. Truck/freight mobility is low.	Roughly 91% of the area's interstates and major arterials are congested, growing to 94% by 2030. Congestion on major roads will spill-over to secondary roads with 70% of minor arterials congested by 2030, and travel delay increasing up to 52%.	Improve local and regional travel.
Access and connectivity in the study area are poor. At-grade railroad crossings cause travel delays. Travel management strategies that could improve travel efficiency are minimally applied in the study area.	40% of the study area has the longest travel times to interstate connections. Lack of complete service interchanges along existing interstates results in poor access and inadequate connections with major regional corridors. System interchanges operate inefficiently because of traffic volumes exceeding capacity, lack all movements, inefficient loop style ramps, and short weaving sections. Freight rail traffic impedes the movement of vehicle traffic in the study area with 80 at-grade crossings, of which 15 are on major routes.	Improve travel efficiency.
Access to O'Hare International Airport is lacking.	The proposed O'Hare West Terminal relies on high-type transportation connections from the west (i.e.; roadway, rail transit, bus, shuttle, intercity, etc.). West terminal entrance would have longest travel times in study area to interstate connections. Western access is needed to serve the terminal while maintaining local route continuity, and supporting local community economic goals.	Improve O'Hare West Access.
Public transportation is not a realistic choice: enhanced service options and improved infrastructure are required. Fragmented pedestrian and bicycle system impairs access to transit stations and other nodes.	Approximately 4% of the all trips in the study area are made by transit, anticipated to increase to 5% by 2030. Ridership is affected by gaps in service, inability to adequately serve the reverse commute or suburb to suburb commute, lack of system capacity, inadequate bus/shuttle connections between rail transit and employment centers ("last mile connections"), constrained parking capacity at rail stations, and lack of adequate pathways for pedestrians and bicyclists to transit.	Improve modal opportunities and connections.

TABLE 3
Study Area Trips by Autos and Trucks by Trip Origin and Destination

	2007		2030 - No Action	
Trip Origin-Destination	**Trips**	**%**	**Trips**	**%**
Internal-Internal	1,102,000	30	1,243,000	28
Internal-External	885,000	24	1,016,000	24
External-Internal	897,000	24	964,000	22
External-External	828,000	22	1,154,000	26
Total	**3,712,000**	**100**	**4,377,000**	**100**

Today, 92 percent of major roadways are congested during the P.M. peak travel period, and that percentage is predicted to grow to 94 percent by 2030 (Exhibits 5-1 and 5-2, and Table 4). Congestion is defined as levels of service D (congestion), E (severe congestion), and F (extreme congestion). These measures relate to the quality of traffic flows in terms of delay, congested speed, volume to capacity ratio, and vehicle density. Extreme congestion is very slow moving bumper-to-bumper traffic (less than 15 mph on interstates) with limited maneuverability.

TABLE 4
P.M. Peak Period Traffic Performance: 2007 and 2030
P.M. Peak Period Vehicle Miles Traveled

Functional Class	2007 Existing VMT			2030 Baseline VMT		
	Total	Congested	% Congested	Total	Congested	% Congested
Freeway	1,501,000	1,377,000	91.7	1,871,000	1,751,000	93.6
Principal arterial	352,000	312,000	88.6	359,000	336,000	93.6
Minor arterial	342,000	217,000	63.5	356,000	247,000	69.4
Collector	107,000	42,000	39.5	125,000	54,000	42.8
Total	**2,302,000**	**1,948,000**	**84.6**	**2,711,000**	**2,388,000**	**88.1**

Congestion will result in 128,000 hours of vehicle delay on an average weekday with 2007 traffic and increase to 176,000 of delay daily by 2030, or an increase of 38 percent. Widespread congestion and delay on interstates and major arterials will increase demand on secondary roads resulting in decreasing travel efficiency and mobility throughout the study area. By 2030, travel delay will increase by 34 percent on minor arterials and by 52 percent on collectors.

Growing travel demand and congestion levels on area roadways will result in extended durations of congested conditions on area roadways, as peak traffic demand spills over into the pre- and post-peak periods.

Poor access and connectivity to major regional roadways result in travel inefficiencies

Stakeholders cited convenient access to and from the study area as an issue of concern. The technical analysis shows that 40 percent of the area lacks convenient access to major regional roadways, and much of the area is in the location of industrial and commercial development whose competitive position relies upon convenient access. The availability of convenient access to interstate corridors is particularly important in light of the fact that 48 percent of all highway traffic in the study area has a trip origin or destination outside the study area. Similarly, stakeholders commented that access into the study area from the surrounding interstate system needs improvement. There are 22 locations on the interstate system that interchange with local roads in the study area. Ten are partial interchanges, contributing to out-of-direction travel, impaired access, and travel inefficiency.

Large volumes of travel on the interstates in the study area exchange between the interstate routes. The three major system interchanges in the study area have operational issues that contribute to system congestion. These conditions are the result of demand exceeding

capacity, inefficient ramp types in use, and short weaving sections where vehicles must enter or exit the system abruptly.

Travel inefficiencies in the study area are also attributed to the 80 at-grade railroad crossings in the area. Freight rail service in the area is extensive, and 15 of the crossings are on major roads. High volume freight rail used connector rail movement at these locations is the cause of numerous roadway delays where lengthy trains can keep traffic stopped up to 15 minutes.

Inadequate connections to O'Hare from the west

O'Hare International Airport is the second busiest airport in the world and until recently long held the rank of number one. A common complaint among stakeholders about the airport is that it has only one major access. Although secondary access points into the airport exist on the north and south airfields, they do not provide passenger access but access to airport employee parking and to air cargo facilities. Discussions have been ongoing for years about improved access to O'Hare that would reduce the roadway operational problems that occur with only one primary passenger access on I-90/I-190. Further emphasis is now placed upon this issue with the development of the O'Hare Modernization Program.

In 2001, the City of Chicago announced a modernization plan for O'Hare International Airport. In 2005, the federal government signed a Record of Decision and approved plans that included a western terminal and a western airport entrance. Better access to the airport particularly from the west has been supported by suburban communities for several years. The proposed terminal now gives rise to an examination of the type of access that would be appropriate. It is evident worldwide that major airports rely on efficient regional access with the provision of high-capacity transportation facilities to serve terminal and cargo complexes. The proposed west entrance of the airport is in a location with the longest travel times in the study area to interstate access, and by 2030 those times will be more than 20 percent greater. The object of access from the west is to provide a gateway to the airport and the study area that balances efficient travel to and from the airport while maintaining and improving local mobility needs.

Transit service falls short of being a feasible choice

Today, 96 percent of all trips in the study area are made by automobile; the remaining 4 percent are made by transit, underscoring the point that in its present form, transit is not the mode of choice for area residents and commuters. The effectiveness of the transit system is affected by transit capacity constraints, inadequate reinvestment in some aging infrastructure, and connectivity to other modes and destinations. To effectively increase the transit mode split, the issues above, as well as the following, need to be addressed: better intermodal connections; adjusting the systems to serve the needs of reverse and suburb-to-suburb commuters; making "last mile" connections by linking rail stations to employment sites; and reducing transit travel times to trip lengths that compare to auto travel times.

Parts of the area transit system, particularly along select Metra and Pace corridors, are operating near capacity. Travel times are growing less reliable on parts of the transit system, in particular along the CTA Blue Line, because of deteriorating infrastructure conditions, and

across the Pace system because roadway congestion levels. The combination of capacity constraints and declining travel reliability is affecting transit ridership.

The gap between commuter rail stations and employment centers is a major issue contributing to the current levels of ridership. The "last mile" connection either does not exist or is of poor quality circuitous, or non-direct. Although the study area has an abundance of employers with over 500,000 employees in proximity to transit, the absence of reliable and fast connections by bus or shuttle services to employment and activity centers is a barrier to ridership. Convenient access to transit is critical to maintaining and increasing ridership. Another important element of station access is parking availability. On average, 52 percent of Metra's commuters in the study area drive to the station and park. In a few years, parking will be largely unavailable to new users unless supply is increased. Other accessibility issues are safety and attractiveness of pedestrian paths and bikeways, and connectivity of the paths. There are substantial gaps in the system where bicycle routes are either completely interrupted or unavailable within ½ mile of stations. Improving accessibility is key to increasing the proportion of cyclists who can access Metra on bicycles. Safe connections linking pedestrian paths or sidewalks to transit facilities are important and directly affect the 21 percent of Metra riders who access the system by walking. The absence of lighting, signage, safe crossings at major roads, and dedicated paths compromise safety for transit riders that access stations by walking.

Conclusions

The primary findings from the TSPR were:

- Study area roadways experience severe congestion in peak periods, imposing significant delays and impairing mobility for a major transportation hub in the Chicago metropolitan area. The total number of daily vehicle trips in the study area is 3.7 million, or 16 percent of the total regional vehicle travel. In 2007, over 90 percent of major roadways were congested during the P.M. peak travel period, and that percentage is predicted to grow to 94 percent by 2030. Travel delay for the study area in 2007 totaled 32 million hours, which translates into 4 million work days – equivalent to 7.5 work days lost for every employed person in the study area.

- Lack of access to and from the interstate roadway system impairs mobility to destinations inside and outside the study area. While 48 percent of all trips either enter or leave the study area, over 40 percent of the study area requires travel greater than 10 minutes to access the surrounding interstate system. Correspondingly, the areas within the study area that are most reliant on good access to interstate roadways (i.e., commercial and industrial land uses) are the most disadvantaged which threatens the economic viability of the area.

- Reduced travel efficiency on the roadway system is affected by several factors including out-of-direction travel caused by partial interchanges along the interstate system, too many at-grade railroad crossings, and lack of options for major travel movements.

- Inadequate transit infrastructure and connectivity impairs the opportunity to increase transit mode share, and thus to reduce congestion on roadways. Whereas, the study area is a major regional destination for air travel, employment, and shopping, a transit

system supporting the travel opportunities in the area are underserved. Specific problems are attributable to a number of gaps in the system such as capacity constraints, low percentage of on-time service, gaps in service to major employment areas, limited station parking, and poor connectivity between stations and destinations.

Given the extent and magnitude of congestion on area roadways, it is apparent that congestion cannot be completely eliminated and that no single transportation solution will address all the problems. Transportation solutions must be multimodal focusing on strategic roadway capacity and mobility projects, improving transit accessibility, reducing connectivity gaps to encourage greater transit ridership, and easing freight movement to reduce current conflicts and to maintain the economic viability of the area.

Revised Study Area and Transportation System Performance Report Addendum

In October 2008, the study area was enlarged to address projected changes in travel patterns related to the project alternatives under consideration with the EO-WB study. The study area was expanded farther west from its original boundary to include corridors where supporting off-system capacity improvements may be needed, including the length of the existing Elgin O'Hare Expressway from I-290 to its western terminus in Hanover Park.

The expanded study area comprises 127 square miles and 27 communities in northwest Cook and DuPage counties, and is home to roughly 509,900 persons (5.3 percent) and 569,500 jobs (11.1 percent) within the 6-county Chicago metropolitan region. This represents increases of 25 percent in population and 7 percent employment, as compared to the original study area.

An assessment of travel performance characteristics in the expanded study area was performed to identify additional problems that should be considered as part of this study. The assessment was performed using procedures comparable to those for the original travel performance analysis. Findings indicate that the character of transportation problems in the revised study area is consistent with those identified in the original study area.

Characteristics and performance of the transportation system in the revised study area are documented separately in the *Final Transportation System Performance Report Addendum*.