

2040 *Comprehensive Regional Plan* (adopted in October 2010 and developed by the Metropolitan Planning Organization [MPO] for the area, CMAP). The update included development of the 2040 No-Build Alternative travel forecasts, an analysis of system travel performance using the 2040 No-Build forecasts, and a revision to the scope of the improvements in the No-Build Alternative to be representative of reasonably anticipated agency program investment levels. Based on the updated analysis, the Tier Two Purpose and Need continues to preserve the Purpose and Need statements presented in Tier One, and the re-analysis of travel performance supports the need for the proposed transportation improvements in the area.

## 1.2 Transportation Purpose and Need

A transportation needs analysis was conducted to evaluate the range of transportation issues and problems for the existing roadway and transit systems, as well as bicycle and pedestrian accommodations in the study area. The evaluation involved a detailed technical analysis and extensive outreach to stakeholders (transportation agencies, regulatory agencies, elected officials, and the public) to obtain their perspective on transportation issues in the study area. See the *Transportation System Performance Report* (FHWA and IDOT, 2009) and *Stakeholder Problem Definition* (FHWA and IDOT, 2008) for details. The technical analysis and the stakeholder outreach approached the identification of issues and problems differently, but the findings have many similarities. The project needs have evolved as major themes from the technical analysis and stakeholder problem identification (see Table 1-1).

<b>Project Needs</b>	<b>Technical Analysis Findings</b>	<b>Stakeholder Problem Statements</b>
Improve local and regional travel	86 percent of the area's roadways will be congested in the peak periods by 2040. Congestion on major roads will spill over to secondary roads. Congestion on arterial and collector streets will grow from 86 percent in 2010 to 88 percent by 2040.	Congestion on major routes. Reduced truck/freight mobility.
Improve travel efficiency	40 percent of the study area has the longest travel times to interstate connections. Lack of local access interchanges along interstate highways results in poor access and inadequate connections with major regional corridors. System interchanges operate inefficiently because of traffic volumes exceeding capacity, lack of all movements, and short weaving sections that reduce speed. Freight rail traffic impedes the movement of vehicle traffic in the study area, with 120 at-grade crossings, 15 on major routes.	Poor access and connectivity in the study area. Travel delays caused by at-grade railroad crossings. Travel management strategies that could improve travel efficiency are minimally applied in the study area.

**TABLE 1-1**  
**Technical and Stakeholder Problem Statements**

Project Needs	Technical Analysis Findings	Stakeholder Problem Statements
Improve access to O'Hare Airport from the west	<p>The proposed West Terminal will rely on high-capacity transportation connections from the west (i.e., roadway, rail transit, bus, shuttle) to serve an estimated average daily traffic of 29,000 in 2040.</p> <p>West Terminal entrance would have the longest travel times in the study area to interstate connections.</p> <p>Western access would be required to serve the terminal need while maintaining local route continuity and supporting local community economic goals.</p>	Improve travel times to O'Hare Airport from the western and northwestern suburbs.
Improve modal opportunities and connections	<p>A relatively small percentage (4 percent) of trips in the study area are made of transit, and future transit trips would increase only slightly (0.5 percent) without major improvements.</p> <p>Ridership is affected by gaps in service, inability to adequately serve the reverse commute or suburb-to-suburb commutes, lack of system capacity, inadequate bus/shuttle connections to rail transit and to employment centers, constrained parking capacity at rail stations, and inadequate pathways for pedestrians and bicyclists to transit.</p>	<p>Public transportation not being a realistic choice: enhanced service options and improved infrastructure are required.</p> <p>Fragmented pedestrian and bicycle system that impairs access to transit stations and major activity centers.</p>

The transportation problems and issues outlined by stakeholders and technical analyses indicate improvements are needed to provide efficient, safe, environmentally sound, and cost-effective transportation facilities. The EO-WB Tier Two EIS will focus on major system deficiencies and will also provide a foundation for planning by other transportation providers.

The purpose of and need for the project is to accomplish the following:

- Improve regional and local travel by reducing congestion.
- Improve travel efficiency.
- Improve access to O'Hare Airport from the west.
- Improve modal opportunities and connections.

The remainder of this section discusses transportation needs supporting the project purpose.

### 1.2.1 Regional and Local Travel

A large volume of traffic enters, leaves, and travels within or passes through the study area (see Table 1-2). In all, about 3,450,000 vehicle trips occur daily (2010 data) in the area, or 18 percent of all trips in the six-county region. By 2040, daily vehicle trips in the study area will grow to around 3,950,000, or about 14 percent. The volume of traffic in the study area is attributable to the major interstates and major traffic attractors including O'Hare Airport, an abundance of industrial and commercial development, and one of Chicago's largest retail malls (Woodfield Mall). Employment in the project area is sizable at 472,550, a concentration of employment second only to that of downtown Chicago.

**TABLE 1-2**  
Study Area Daily Trips by Trip Origin and Destination: 2010 and 2040

Trip Origin–Destination	2010		2040 <sup>a</sup>	
	Trips	Percent	Trips	Percent
Internal-internal	1,057,000	31	1,208,000	30
Internal-external	808,000	23	903,000	23
External-internal	794,000	23	902,000	23
External-external	798,000	23	936,000	24
<b>Total</b>	<b>3,457,000</b>	<b>100</b>	<b>3,949,000</b>	<b>100</b>

<sup>a</sup> 2040 travel performance values presume improvements to the future transportation system that are identified in the Statewide Transportation Improvement Program (IDOT, 2011), and Illinois Tollway master plan for I-90 (Illinois Tollway, 2008), but without the Elgin O'Hare and West Bypass facilities. This level of improvement is referred to as the No-Build Alternative.

Between 2010 and 2040, the number of trips in the study area will increase by 14 percent. In the future, increases will occur across all categories of trip types (see Table 1-2). Trips within the study area (internal-internal) show the largest increase in actual trips compared to other types. These increases are attributed largely to the sizable increases in forecast population and employment by 2040, increasing by about 30,000 for population and more than 60,000 for employment with the No-Build Alternative. Trips traveling through the study area account for about 23 percent of all trips in 2010, and the percentage of trips passing through the study area, ranging in length from regional to interstate, will increase to 24 percent of all trips in the future. In addition, trips that either originate in the study area with destinations outside the study area, or originate outside the study area with destinations inside the study area are forecast to account for 1,805,000 trips or 46 percent of all trips in 2040, and have an average trip length of about 15 miles for work trips. Most trips from outside the study area are to the major traffic attractors named above, and the more than 472,000 jobs in the area (CMAP, 2010).

Freeways and primary arterials (I-90, I-290, Thorndale Avenue, York Road, etc.) represent only 47 percent of the total road system mileage, but carry 75 percent of all vehicle miles of travel (VMT) in the peak period. Congestion has overwhelmed the roadway system in the study area (see Exhibit 1-2). In 2010, 86 percent of freeways and 88 percent of primary arterials operated at level of service (LOS) D, E, or F, which are generally defined as moderate, severe, and extreme congestion, respectively (see Table 1-3). By 2040, congestion will worsen with an increase in travel by over nine percent in the P.M. peak period, and when LOS F will be typical for most all freeways and arterials (see Exhibit 1-3). By 2040, the total annual hours of delay would be equivalent to three million workdays, or six workdays for every employee (534,000 hours) in the study area. Extreme congestion on freeways and primary arterials will force traffic to use local collectors and secondary arterials, causing severe congestion on those facilities. By 2040, 91 percent of the secondary arterials and 78 percent of collectors in the study area are anticipated to be congested during the P.M. peak travel period.

**TABLE 1-3**  
Traffic Congestion P.M. Peak Period: 2010 and 2040

Road Type	2010 Existing Condition			2040 No-Build Alternative <sup>a</sup>		
	Total (VMT)	Congested (VMT) <sup>b</sup>	Percent Congested <sup>b</sup>	Total (VMT)	Congested (VMT) <sup>b</sup>	Percent Congested <sup>b</sup>
Freeway	1,289,000	1,111,000	86	1,391,000	1,178,000	85
Primary arterial	430,000	377,000	88	471,000	413,000	88
Secondary arterial	397,000	356,000	90	442,000	403,000	91
Collector	176,000	132,000	75	199,000	156,000	78
<b>Total</b>	<b>2,292,000</b>	<b>1,976,000</b>	<b>86</b>	<b>2,503,000</b>	<b>2,150,000</b>	<b>86</b>

<sup>a</sup> 2040 travel performance values presume improvements to the future transportation system that are identified in the Statewide Transportation Improvement Program and Illinois Tollway master plan for I-90, but without the Elgin O'Hare and West Bypass facilities. This level of improvement is referred to as the No-Build Alternative.

<sup>b</sup> Congestion is a combination of LOS D, E, and F.

The study area is a key air, rail, and roadway transportation hub for the region, and increasing congestion and travel delay have consequences to a major portion of the traveling public and the economic well being of the area and the region. As traffic grows, the effectiveness of the system at moving people and goods through and into the study area is degraded. Fundamentally, there is a need for transportation improvements that maintain longer distance travel on the appropriate type of facility and that assist in relieving travel congestion on the local road network to serve the travel needs of the region and the study area.

## 1.2.2 Travel Efficiency

Several factors other than congestion contribute to inefficient mobility within the study area including partial local access interchanges<sup>1</sup> that impair access to and from the study area, poor accessibility to major business nodes in the study area, at-grade railroad crossings on major arterials, and operational issues at system interchanges<sup>2</sup> (see Exhibit 1-4).

Stakeholders ranked impaired accessibility to and from the interstate system among the top issues within the study area. An analysis has shown that the densest industrial development in the study area has the most impaired accessibility to the interstate system. Exhibit 1-5 shows 2040 travel times from the location of this dense industrial development on the west side of O'Hare Airport to locations inside and outside the study area. Travel times from the west side of O'Hare Airport to interstate locations along I-290, I-90, and I-294 approach 20 minutes. Further analysis examined travel times and speed from the west side of O'Hare Airport to five interstate locations and one U.S. highway location (see Table 1-4).

Travel times increase in the range of 26 to 47 percent by 2040 for shorter trips and by 34 to 50 percent for the longer trips (CMAP, 2010).

<sup>1</sup> Local access interchanges provide access from a fully accessed-controlled roadway to the local road system.

<sup>2</sup> System interchanges provide for the movement of traffic from one fully accessed-controlled roadway to the next.

Overall, poor travel efficiency in the study area was attributed to a lack of roadway capacity and too much traffic, which results in congestion. Where travel performance is already at an unacceptable LOS, the problem only worsens without major improvements. Notably, two longer distance trips (US 20/Elgin-O'Hare Expressway and Arlington Heights Road/I-90) to the west and the northwest areas show sizable increases in travel time between 2010 and 2040. These increases in travel time relate to forecasted increases in both population and employment for the area, and a lack of roadway capacity.

**TABLE 1-4**  
**Travel Time/Speed from the West Side of O'Hare Airport to Study Area Locations**

	Thorndale Avenue/I-290		Arlington Heights Road/I-90		Elmhurst Road/I-90		Irving Park Road/I-294		IL 83/I-290		US 20/Elgin-O'Hare Expressway	
	2010	2040	2010	2040	2010	2040	2010	2040	2010	2040	2010	2040
Travel time (min)	16.3	22.6	16.2	24.3	11.2	14.8	8.5	12.5	12.1	15.2	28	37.5
Distance (mi)	4.5	4.5	6.4	6.4	2.8	2.8	4.6	4.6	5.0	5.0	11	11
Average travel speed (mph)	17	12	24	16	15	11	32	22	25	20	24	18

Note: 2040 travel performance values presume improvements to the future transportation system that are identified in the *GO TO 2040 Comprehensive Regional Plan*, but without the Elgin O'Hare and West Bypass facilities. This level of improvement is referred to as the No-Build Alternative.

Travel efficiency was also analyzed by examining the travel time required to reach interstate access from any location within the study area (see Exhibit 1-6). Considerable time is required to travel a short distance to the nearest interstate access during the P.M. peak period. This is clearly evident for locations near Elmhurst Road/I-90, Thorndale Avenue/I-290, Higgins Road/I-290, Arlington Heights Road/I-90, and Lake Street/I-355. At these locations, travel distances of two miles or less to interstate access experience average speeds of less than 15 miles per hour, and have travel times approaching or exceeding 10 minutes during peak periods. Over 40 percent of the study area has travel times greater than 10 minutes (averaging two to four miles in length) to a freeway connection. Much of the area with the longest travel time to an interstate connection is also the location of the area's prime industrial and commercial land use, which relies on convenient access to interstate roadways.

Commercial/industrial land use in the study area is oriented largely to the transportation/distribution business, a growing business sector in the region that accounts for 50 percent of all occupied space in the Chicago metropolitan area. Ready interstate access for these business types in the study area would have a direct and positive relationship to the area's long-term economic vitality.

Adding to accessibility concerns is the number of local access interchanges on the interstate system that do not provide movement in all directions. There are 21 locations on the interstate system that connect with local roads in the study area, and of those, eight are partial interchanges that do not allow full access between the interstate and the local road system (see Exhibit 1-7). Stakeholders' comments have referenced the number of partial interchanges as contributing to out-of-direction travel and inefficient travel. Considering that 46 percent of all vehicle trips in the area either originate in the study area with destinations outside the study area or originate outside the study area with destinations

inside the study area, the availability of convenient access into and from the area is important.

The more than 120 at-grade railroad crossings in the study area further degrade the efficiency of the system. Fifteen of the at-grade railroad crossings are on major roads (see Exhibit 1-7). Delays at some locations are lengthy (greater than 15 minutes) and can double the length of an average local trip.

Stakeholder input ranked improving interstate connectivity as one of their top issues. There are large volumes of traffic switching from one interstate to another at each of the three major system interchanges in the study area (I-90/I-294, I-90/I-290, and I-290/I-294; see Exhibit 1-7 for system interchange locations), and each interchange has operational issues that contribute to the system congestion. Generally, the system interchanges display the following problems:

- Operating capacity is exceeded.
- Movements are not provided in all directions.
- Loop style ramp capacity is exceeded for the volume of traffic.
- Interchange configurations have many short weaving sections through which vehicles enter or exit the interstate system.

All these issues contribute to inefficient movement through the interchanges, resulting in congestion at the interchange, as well as congestion on the mainline. Further, the absence of directional movements in some locations requires out-of-direction travel, resulting in increased VMT.

### 1.2.3 Access to O'Hare Airport from the West

The O'Hare Airport is one of the busiest airports in the world and once held the rank of number one. The airport has only one major access road, I-190 on the east. Discussions have been ongoing with the City of Chicago/Department of Aviation about how improved access to O'Hare Airport would reduce the roadway operational problems that occur with primary access only on I-190. Further emphasis is now being placed upon this issue with the development of the O'Hare Modernization Program (OMP).

In 2001, the City of Chicago announced a modernization plan for O'Hare Airport and began preparation of an EIS. In 2005, FAA published the Final EIS and issued the ROD for the OMP (FAA, 2005a; FAA 2005b). The approved plan includes a western terminal and a western airport entrance near the intersection of Thorndale Avenue and York Road. Construction on the OMP began in 2005, and by 2015, three new runways, an extension of one runway, and numerous enabling projects will have been completed. In 2010, an agreement was made with airline partners and the City of Chicago that stated the construction of the proposed West Terminal complex would occur when demand demonstrates the need.

In 2040, the net increase in traffic with the addition of the proposed West Terminal would be an Average Daily Traffic (ADT) of 29,000. Examination of appropriate access to the west side of O'Hare Airport is a focus of the EO-WB project, as well as recent studies by others. It is evident worldwide that major airports rely on efficient regional access with the provision of major highway and transit facilities to serve terminal and cargo complexes. This is clearly

the case on the east side of the airport with freeway, toll road, arterial, and transit access. Stakeholders rank improvement in access to O'Hare Airport from the west and northwest suburbs as a priority. Presently, travel to the west side of O'Hare Airport is provided by an arterial system that is severely congested during peak hours. Travel times from the planned west entrance to the airfield is over 20 minutes to an interstate connection on the west, northwest or southwest (see Exhibit 1-5). By 2040, those times will be more than 40 percent greater. The objective of western access is to provide a gateway to both the airport and the study area that balances efficient travel to and from the airport while improving local mobility needs and local economic opportunity.

## 1.2.4 Modal Opportunities and Connections

Stakeholders in the study area place priority on improving the range of transportation mode choices as an alternative to the automobile. Regional and local transportation planning and operating agencies have been working to improve intermodal connections; adjust the systems to serve the needs of reverse and suburb-to-suburb commuters; create more direct and faster service; make "last mile" connections (linking rail stations to employment and activity centers with bus and shuttle service); and reduce transit travel times to trip lengths comparable to auto travel times. Even with these efforts, the current public transit ridership in the study area is presently about 4.0 percent, which is typical of suburbs in large metropolitan areas. By the year 2040, the projected transit ridership will increase to only 4.5 percent of all trips in the study area, even with the completion of several new proposed mostly transit projects. Transit ridership is not projected to substantially change from 2010 to 2040. However, given the magnitude of congestion on the roadway system, the need remains to improve the number and percentage of trips made by transit.

Because suburban employment and housing is dispersed, the transit system is challenged to effectively compete with the auto in connecting origins to destinations (i.e., linking home to work, shopping, recreation, and professional services). More than three million jobs in the Chicagoland area are in the suburbs, with almost 20 percent of them (472,550) within the study area. The challenges of enhancing transit market share in the study area require an approach that gives importance to both rail and bus transit as part of the solution. The absence of reliable, fast, and direct connections to employment and activity centers by bus and rail accounts for lower than desired ridership. Lack of reliable rail transit schedules is attributed to a need for more capacity. Transit service between suburbs is underdeveloped, and a faster and more direct transit service that would establish needed connections between travel modes and home to work trips would be facilitated by an improved bus system. The mobility gap (the last mile) between commuter rail stations and employment centers is a major issue, and as of the year 2010, that connection is lacking at many locations. The study area has an abundance of employers who are relatively close to transit service; however, the absence of convenient, fast, and direct connections to employment and activity centers by bus or shuttle has adversely affected ridership.

Easy access to transit is critical to maintaining and increasing ridership, and an important aspect of access is parking. In a few years, parking will be largely unavailable to new users unless supply is increased. Other accessibility issues are opportunities for non-motorized access to transit service (e.g., bicycle and pedestrian facilities). For example, IDOT classifies 45 percent of more than 550 miles of the roadways in the study area as "not recommended"

for biking. There are also substantial gaps in the trail system where bicycle routes are either completely interrupted or unavailable within one-half mile of transit stations. Finally, safe connections linking pedestrian paths or sidewalks to transit facilities is important, and directly affects 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 in the study area who walk to stations.