

# CTA Yellow Line Extension Alternatives Analysis

## Locally Preferred Alternative Report

August 2009



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## Acronyms Used in this Document

|        |  |
|--------|--|
| AA     | Alternatives Analysis  |
| ADT    | Average Daily Traffic  |
| AGT    | Automated Guideway Transit   |
| BRT    | Bus Rapid Transit  |
| CATS   | Chicago Area Transportation Study                                  |
| CDOT   | Chicago Department of Transportation                               |
| CMAP   | Chicago Metropolitan Agency for Planning                           |
| COMED  | Commonwealth Edison  |
| CREATE | Chicago Region Environmental And Transportation Efficiency Program |
| CTA    | Chicago Transit Authority  |
| dBA    | Decibel Using A-Weighted Sound Level                               |
| EIS    | Environmental Impact Statement                                     |
| FTA    | Federal Transit Administration                                     |
| FY     | Fiscal Year  |
| HRT    | Heavy Rail Transit   |
| IDOT   | Illinois Department of Transportation                              |
| LOS    | Level of Service   |
| LPA    | Locally Preferred Alternative                                      |
| LRT    | Light Rail Transit   |
| LUST   | Leaking Underground Storage Tank                                   |
| MOE    | Measures of Effectiveness  |
| NEPA   | National Environmental Policy Act                                  |
| NNHS   | Niles North High School  |
| NWMC   | Northwest Municipal Conference                                     |
| O&M    | Operations and Maintenance   |
| PE     | Preliminary Engineering  |
| PRT    | Personal Rapid Transit   |
| RA     | Redevelopment Area   |
| RTA    | Regional Transportation Authority                                  |
| SCC    | Standard Cost Categories   |
| TIF    | Tax Increment Finance  |
| TOD    | Transit Oriented Development                                       |
| TSM    | Transportation System Management                                   |
| UPRR   | Union Pacific Railroad   |
| V/C    | Volume-to-Capacity Ratio   |
| VdB    | Vibration Decibels   |
| VHD    | Vehicle Hours of Delay   |
| YOC    | Year of Construction   |
| YOE    | Year of Expenditure  |

# 1.0 INTRODUCTION

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## 1.1 Context of the Alternatives Analysis

The Chicago Transit Authority (CTA) Yellow Line began service in April 1964 as the “Skokie Swift.” CTA in cooperation with the Village of Skokie had received a U.S. Department of Housing and Urban Development demonstration grant to rehabilitate the line, including the purchase of new rapid transit cars, the upgrade of facilities, and to operate the service. The origins of the line go back to 1925, when the Chicago Rapid Transit began operations. In 1926, interurban passenger trains of the Chicago North Shore & Milwaukee began operating over the line. In 1948, service on the line was suspended until 1964, when the Skokie Swift opened with service from Howard station to Dempster Street.

Proposed extensions of the CTA Yellow Line to the north from its current terminus at Dempster Street have been included in the Chicago region's long range transportation plan developed by the Chicago Metropolitan Agency for Planning (CMAP), formerly the Chicago Area Transportation Study (CATS), since the 1980s. The Village of Skokie with assistance from the Regional Transportation Authority (RTA) completed a feasibility study in 2003 that examined the potential for a Yellow Line Extension to the vicinity of Old Orchard Road.

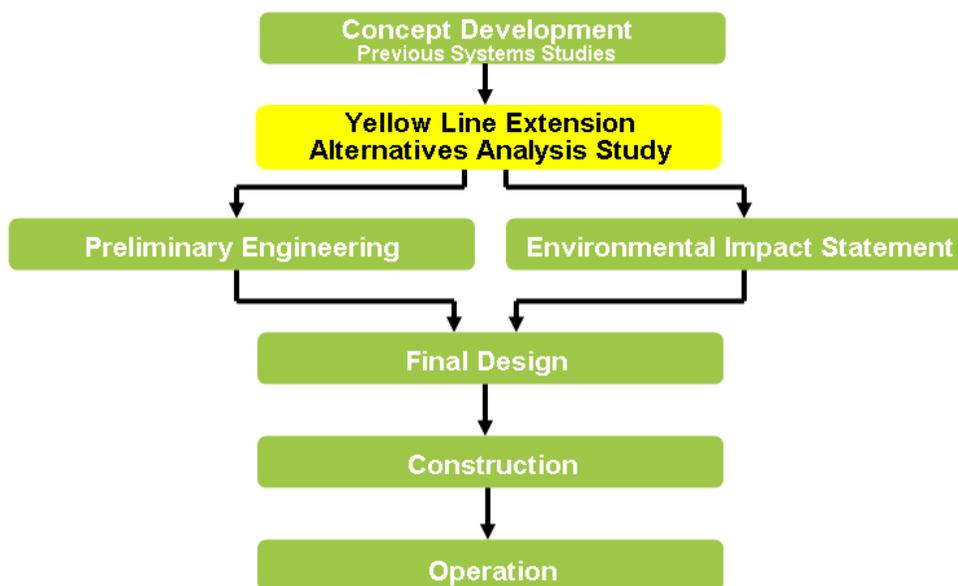
The provision of high capacity transit service to the Old Orchard Road area would provide improved access to a major retail and employment center in the Chicago region. Westfield Old Orchard Shopping Center is the third largest mall by square footage (1.8 million square feet) in Illinois. Westfield Old Orchard recently underwent a \$60 million expansion completed in late 2007 and has 140 stores and nearly 14 million annual visitors. The surrounding area has nearly 15,000 jobs including a Cook County Courthouse, National-Louis University, Niles North High School, hospitals, and offices. These employment and retail opportunities would benefit from having more convenient access to an expanded labor force as well as an expanded retail market area.

In late 2006, CTA initiated an AA study to identify and evaluate potential major fixed guideway transit solutions in the Skokie area. This AA documents the identification, evaluation, and selection of a LPA by CTA, consistent with the planning and project development process defined by the Federal Transit Administration (FTA). The Alternatives Analysis is the first major step in the FTA New Starts process (shown in Figure 1.1). Transit agencies across the country seeking federal New Starts funding must follow this process. CTA used the results of past studies as a starting point to conduct of the AA study. The AA study is completed with the selection of a LPA.

The next steps in the process are Preliminary Engineering and the preparation of an Environmental Impact Statement (EIS). CTA must apply to FTA for entry into Preliminary Engineering. If the LPA from the AA study meets the New Starts criteria thresholds established by FTA for projects nationally, then permission can be granted to begin Preliminary Engineering. Preliminary Engineering consists of more detailed design and costing of the LPA to a much higher degree of confidence. At the same time, an EIS is also prepared to evaluate all potential environmental impacts, as required by the National Environmental Policy Act (NEPA).

Final Design is the last phase of project development, and includes right-of-way acquisition, utility relocation, and the preparation of final construction plans for the LPA. Assuming all funding is in place, and the FTA issues a Full Funding Grant Agreement, construction can begin following Final Design. After completion of construction and testing, the new transit service can begin operation.

Figure 1.1: FTA's New Starts Process



Each of these steps in the New Starts process typically takes a minimum of two years. Preliminary Engineering and preparation of an Environmental Impact Statement can occur concurrently. Funding availability and federal approvals are critical for advancing the project. Public involvement is integral to each step. For the AA study, CTA implemented a public involvement process that included a wide range of stakeholders from the study area, elected officials, agencies, and the general public.

## 1.2 Purpose of the Alternatives Analysis Report

The Alternatives Analysis is the first step in the FTA's New Starts Project Planning and Development process. During the Alternatives Analysis process, a wide range of alternatives are identified and evaluated, the alternatives are screened against established criteria, and the most promising alternative is recommended for further evaluation in the next phase of the New Starts process.

The Yellow Line Extension AA is a study of transportation, economic development and community needs along corridors extending north from the current Yellow Line terminus at Dempster Street to identify opportunities for improved transit accessibility and leveraging existing transportation infrastructure.

## 1.3 Organization of this Report

This report is organized into a summary followed by seven sections. Section 2 describes the purpose and need of the project, including a description of the study area and the existing transportation system, planned growth and improvements in the study area, the need for an improved transit system. Section 3 describes the Screen 1 Evaluation of the Universe of Alternatives. Section 4 describes the Screen 2 Evaluation of the alternatives carried forward from the Screen 1 Evaluation and the recommendation of a Locally Preferred Alternative (LPA). Section 5 describes the LPA and summarizes how it achieves the project goals and objectives. Section 6 provides an overview of public involvement and Section 7 describes the next steps for the project.

## 2.0 PURPOSE AND NEED

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### 2.1 Description of Study Area

The Chicago metropolitan region has the second largest transit system in the nation. CTA's bus and heavy rail system provides service to much of the City of Chicago and 40 suburbs. The CTA system provided over 520 million trips in 2008. Coordination with Metra commuter rail, Pace suburban bus service, and private bus operations results in an integrated regional transit system. The region's transportation system -- both transit and highways -- support the economy of the region, provide access to jobs and other personal and business travel needs, and support development throughout the study area and region.

CTA serves the City of Chicago and surrounding adjacent municipalities. The CTA rapid transit system is historically oriented toward travel to the downtown Loop central business district, the largest employment concentration in the region. In addition, established suburban communities with access to rapid transit include Evanston, Oak Park and Skokie. During the past four decades, the Skokie area has established itself as a major employment and retail destination. Today, significant development activity is taking place and trips to suburban job concentrations are an increasingly important market for public transportation. The Village of Skokie, as an early promoter and implementer of transit oriented development (TOD), has sponsored a host of large scale and successful redevelopment projects. The Old Orchard Road area, one and one-half miles north of the current CTA Yellow Line terminus, now serves as the hub of travel demand in the area, and is likely to remain so for the foreseeable future.

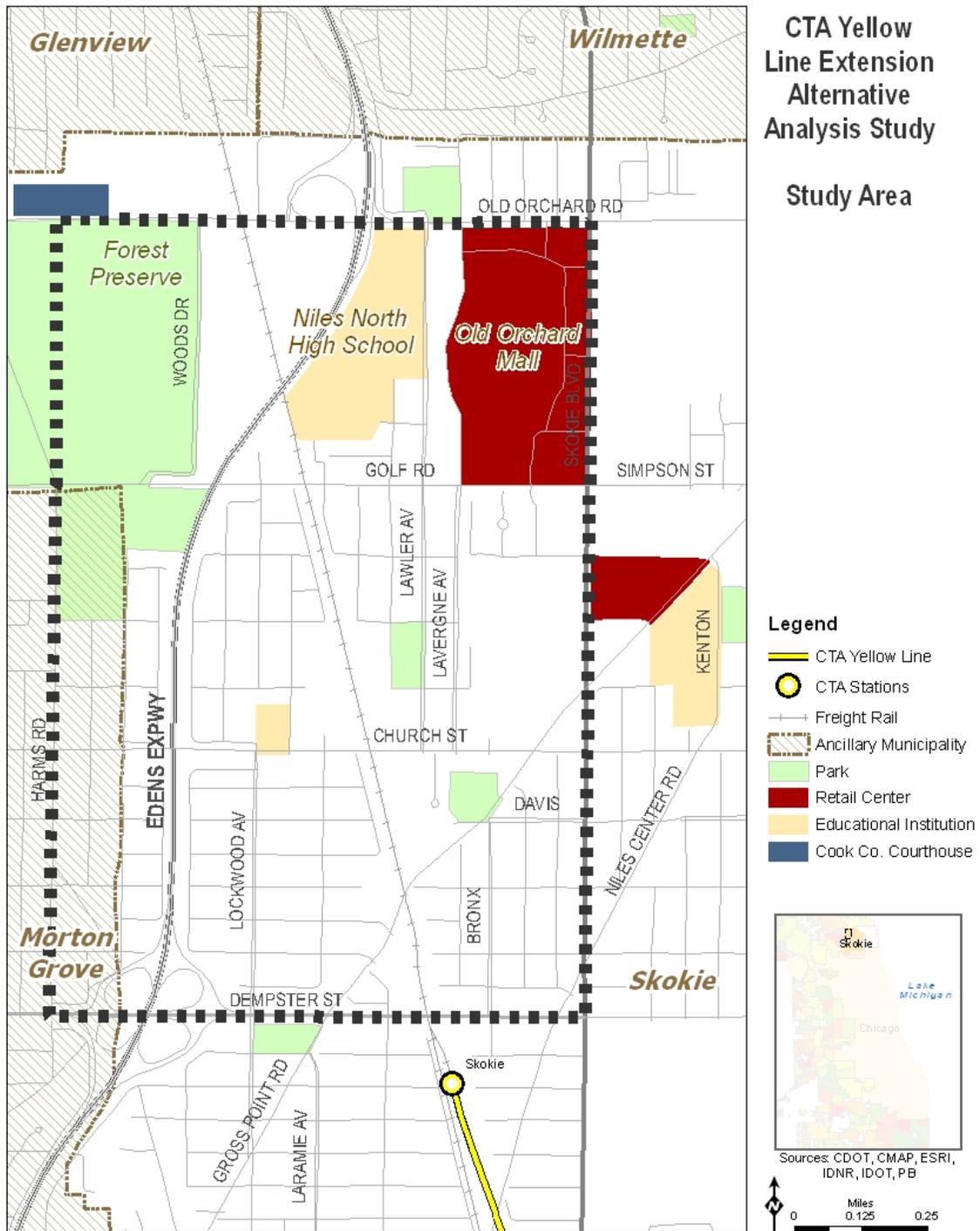
The Yellow Line currently provides shuttle service from a park and ride and bus terminal facility and Dempster Street to Howard Street station where transit customers can connect to CTA's extensive regional rail network and other public transit services. The Village of Skokie is constructing a new station at Oakton Street to enhance local access to activity centers in Skokie's downtown. The City of Evanston is studying an additional station on the Yellow Line near Dodge, Asbury or Ridge Streets to serve southern Evanston. Proposed extensions of the CTA Yellow Line from its current terminus at Dempster Street are part of the Chicago region's long range transportation plan developed by the Chicago Area Transportation Study (CATS), now named the Chicago Metropolitan Agency for Planning (CMAP). The Village of Skokie and other organizations have studied extensions (in varying lengths and alignments) over the past few decades.

The Yellow Line Extension AA is a study of transportation, economic development and community needs along corridors extending north from the current Yellow Line terminus at Dempster Street to identify opportunities for improved transit accessibility and leveraging existing transportation infrastructure.

#### 2.1.1 Study Area Boundaries

The study area (Figure 2.1) is situated 12 miles north of the Chicago Central Area (commonly referred to as the Loop) and encompasses approximately 1.5 square miles of the Village of Skokie. The boundaries of the study area are Old Orchard Road on the north, Skokie Boulevard on the east, Dempster Street on the south, and Central Avenue/Harms Road to the west. The boundaries represent the range of corridors that were contemplated in previous studies. The boundaries capture the area where there is greatest potential to tie into existing transportation infrastructure and services and there is existing demand for transit.

Figure 2.1: Study Area and Community Area Boundaries



However, travel patterns and analyses beyond the study area are integral components to the project study and included where appropriate.

### 2.1.2 Demographic Characteristics

The six-county northeastern Illinois region is the third most populated metropolitan region in the nation. The City of Chicago with 2.9 million residents is the nation's third largest municipality. 2030 population forecasts for the region and study area were prepared in 2006 by the Northeastern Illinois Planning Commission (NIPC), now part of the Chicago Metropolitan Agency for Planning (CMAP). In 2000, the study area had approximately 9,000 residents living in over 3,600 households, as shown in Table 2.1. At the time the forecasts were prepared, the 2030 population in the study area was expected to increase by 1.5 percent, while the number of households was not anticipated to change. Since the forecasts were prepared, a major new residential development was approved and is nearing completion. The Optima Old Orchard Woods condominium complex is located on Golf Road, just west of the I-94 Edens Expressway, and will consist of 665 units when complete, equivalent to an additional 1,760 residents. CMAP will incorporate this and other land use changes in development of forecasts into the 2040 plan.

**Table 2.1: 2000 and 2030 Population**

| Area                          | 2000 Population | 2030 Population | Growth | 2000 Households | 2030 Households | Growth |
|-------------------------------|-----------------|-----------------|--------|-----------------|-----------------|--------|
| Six-County NE Illinois Region | 8,092,145       | 10,050,860      | +24%   | 2,907,201       | 3,636,108       | +25%   |
| City of Chicago               | 2,897,715       | 3,261,464       | +13%   | 1,062,683       | 1,222,082       | +15%   |
| Village of Skokie             | 63,350          | 65,520          | +3%    | 23,220          | 23,410          | +1%    |
| Yellow Line Study Area        | 9,045           | 9,180*          | +1%    | 3,660           | 3,625*          | 0%     |

Source: CMAP 2030 Forecasts, approved 9/27/2006

\* Forecast does not reflect Optima Old Orchard Woods condominium development

As seen in Figure 2.2, population density in the study area generally ranges from 5,000 to 20,000 persons per square mile and is consistent with the population density around the western two-thirds of the existing CTA Yellow Line service. The highest population density is located in the southeastern portion of the study area. The north area of study area is predominately retail and commercial and is under 5,000 persons per square miles.

Low income households in the Yellow Line study area represent a small proportion of the total households in the study area. In the 2000 Census data available for the block groups in the study area, the median household income is \$58,392. The median family income is higher, at \$66,853. In 2000, the percent of population below the Census poverty level is 6.6 percent, which is lower than the regional average.

Skokie and the surrounding northwest suburbs are home to significant concentrations of Asian Americans and other minorities. In 2000, 24 percent of the study area population was classified by the Census Bureau as "other minorities"<sup>1</sup>. Within this grouping, Asians accounted for nearly

<sup>1</sup> Census 2000 other minority category includes: American Indian, Asian, Non-Hawaiian Pacific Islander, and Other.

22 percent of the other minority category. Other minority groups in the study area population include 3.2 percent African American and 5.4 percent Hispanic. The highest minority population density is located in the southeastern portion of the study area in the Village of Skokie, as shown in Figure 2.3.

Figure 2.2: 2000 Population Density (Persons per Square Mile)

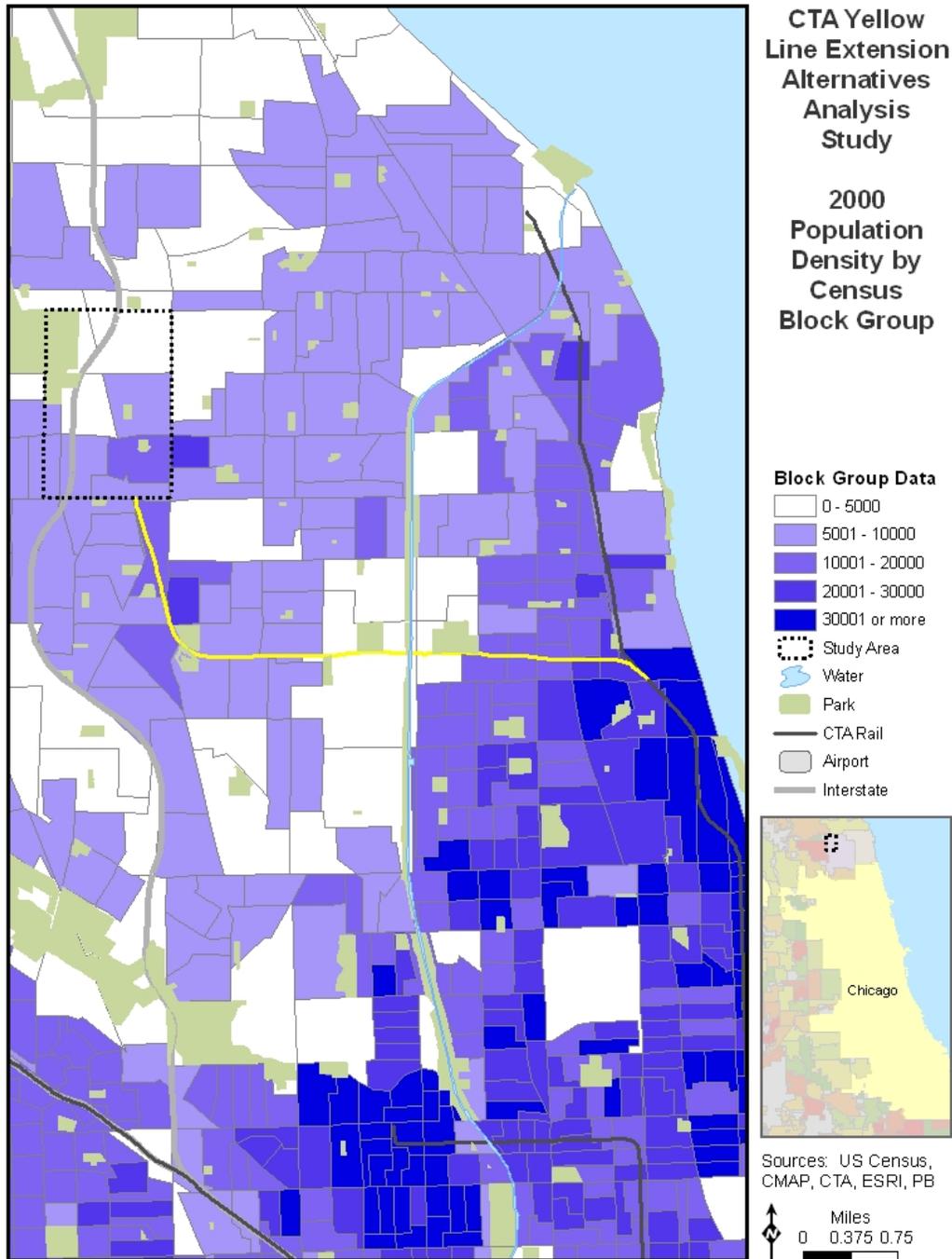
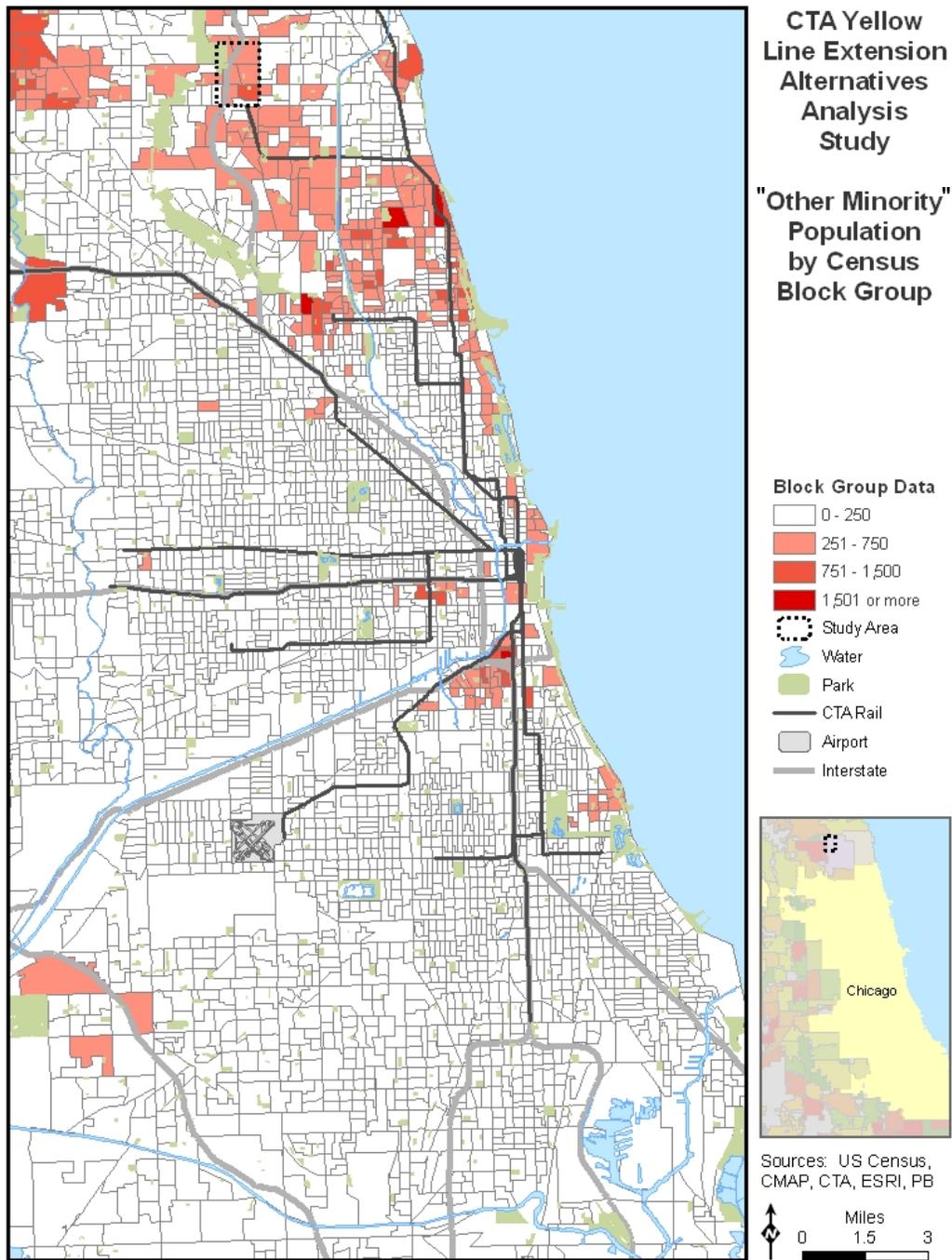


Figure 2.3: 2000 "Other Minority" Population (Persons per Square Mile)



### 2.1.3 Employment and Economic Development

The six-county region employed 4.3 million workers in 2000, and is expected to gain 1.2 million more by 2030. Approximately 40 percent of the job growth (487,000 jobs) is projected to be in Cook County with about half of that occurring in the City of Chicago.

Skokie currently has an estimated employment of 36,700 and is projected to increase by 8,120 to 44,820 by 2030 as shown in Table 2.2. For the northern end of the study area, CMAP projects employment to increase 4 percent from 8,170 to 8,532; however, CMAP data for the study area developed in 2006 is projected to decline slightly. In response to this forecast, the Village of Skokie performed an employment survey for the Northern Skokie Employment Area, which encompasses the Westfield Old Orchard Mall. This comprehensive door-to-door survey found there to be 14,592 employees in the area in 2005, and projected 16,500 employees in the area in 2015 accounting for known development projects. Skokie projects that a substantial portion of Village of Skokie employment growth in 2030, estimated at 22%, will be concentrated in the Northern Employment Area and may be more indicative of development trends than the original CMAP forecasts. Skokie and the CTA are working with CMAP to adjust the forecast for the 2040 planning process to more closely align with these expectations.

**Table 2.2: 2000 and 2030 Employment**

| Area                          | 2000 Employment | 2030 Employment | 2000-2030 Change |
|-------------------------------|-----------------|-----------------|------------------|
| Six-County NE Illinois Region | 4,297,686       | 5,535,236       | +29%             |
| City of Chicago               | 1,499,255       | 1,745,101       | +16%             |
| Village of Skokie             | 36,700          | 44,820          | +22%             |
| Yellow Line Study Area        | 11,290          | 11,025*         | -2%*             |

Source: Northeastern Illinois Planning Commission (now CMAP) 2030 Forecasts, approved 9/27/2006.

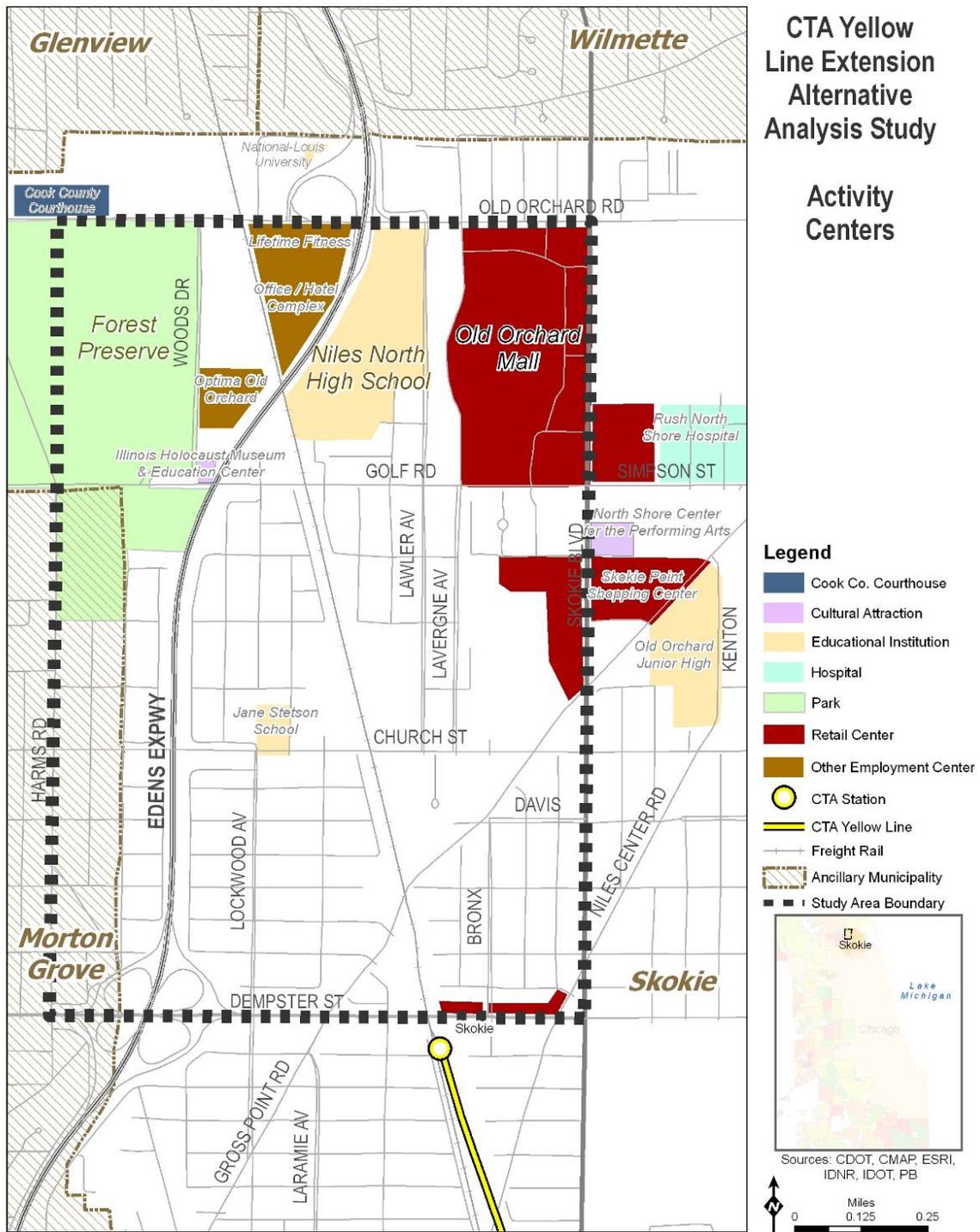
\* Adopted regional forecasts do not reflect conditions revealed in the Village of Skokie employment survey.

The CTA Yellow Line Dempster Street terminal station and the CTA Old Orchard Mall bus transfer station provide access to the major employment sites and activity centers including Westfield Old Orchard Mall, as shown in Figure 2.4. This regional activity center is a 1.8 million square foot outdoor shopping mall featuring 140 stores, theaters and restaurants. The main anchors include Macy's, Bloomingdales, Nordstrom, and Lord & Taylor. Westfield Old Orchard Mall has the highest sales per square foot of all major shopping malls in the Chicago region. It also employs approximately 2,000 persons and has over 13.5 million visitors per year.

Other major activity centers in the study area include the educational facilities of Nilas North High School (2,195 students) and National-Louis University (971 students). There are also several smaller shopping centers, and several large scale office developments. Around the Dempster station are local shopping establishments and residential areas. A branch of the Cook County Courts (675,000 visitors per year) serving the northern portion of the county is located on the north side of Old Orchard Road, west of the I-94 Edens Expressway<sup>2</sup>.

<sup>2</sup> Village of Skokie, Northern Skokie Employment Area Survey, 2008

Figure 2.4: Yellow Line Study Area Activity Centers



Although the study area is extensively built out, numerous significant development changes are now taking place and others are planned. The Westfield Group has undertaken a major \$60 million expansion of their Old Orchard Mall development through additional parking structures that will replace surface parking with new buildings for additional commercial and office use. These changes will greatly expand the density of development on their large tract of land (and increase daily trips for employees, shoppers, and office visitors). In addition, preliminary redevelopment concepts have been developed for the professional office building immediately west of the mall.

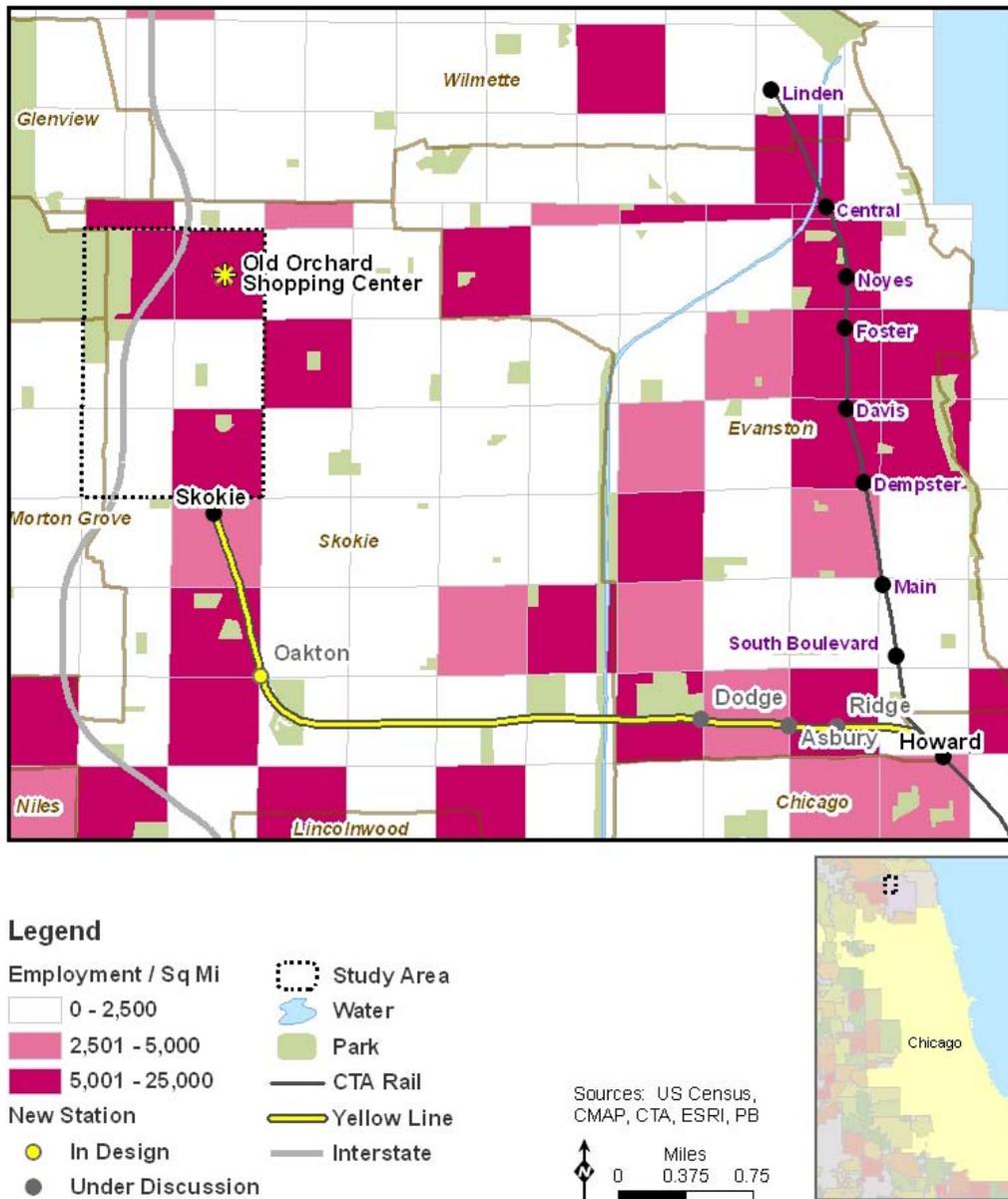
As shown in Figure 2.5, employment density is quite high around the existing Yellow Line from Howard Street to the Yellow Line Dempster Street terminal station. In the study area, the highest densities are north of Dempster Street, around Old Orchard Mall. Rush North Shore Hospital (265 beds) with 1,400 employees is also located on the west of Skokie Boulevard. Skokie, as an early promoter and implementer of Transit Oriented Development (TOD), has seen a diversity of large scale redevelopment projects become a successful reality over the past few years. Among these projects, several are near the Yellow Line station (under design) for Oakton Street or at Golf Road and the Union Pacific Railroad (UPRR) right-of-way (ROW). Other projects near the Dempster Street and Old Orchard Road stations are under consideration by Village authorities who continue to be receptive to new development that complements land use and is sustainable. As shown in Figure 2.5, the City of Evanston is proposing to study the feasibility of in-fill stations along the Yellow Line at Ridge Avenue, Asbury Street and Dodge Avenue.

The Village of Skokie has also updated its Comprehensive Plan to include a focus on intensifying development in core areas, including the downtown and near transit stations. The Comprehensive Plan addresses pedestrian movement, including the strategy of providing a network of pedestrian places that is complete, safe, inviting, and interesting. Specific sets of standards for different sidewalk sections in various parts of the Village were developed. The development of pedestrian intersection design guidelines is underway.

Skokie is applying for funds from the Regional Transportation Authority (RTA) to develop a Skokie-Dempster Station Area Plan. The plan will include area circulation improvements, a market study, and a land use analysis addressing changes needed to support transportation opportunities in the Dempster Station area. Implementation of the Skokie-Dempster Station Area Plan is sought to increase transit ridership through focused land development. Currently, Skokie has two tax-increment financing (TIF) districts outside the study area. The Downtown TIF district is generally along Oakton Street and the Illinois Science and Technology TIF is north of Oakton, between the existing Yellow Line corridor and Niles Center Road.

In the vicinity of the Old Orchard Road area improved pedestrian access has been proposed via a pedestrian crossover to commercial buildings in the northwest and southwest quadrants of the Old Orchard Road / Edens Expressway (I-94) interchange, and to the new residential development and commercial uses to the west of the UPRR ROW. New transit connections would also provide access to other destinations in the corridor, including the Cook County 2<sup>nd</sup> District Courthouse, Old Orchard Mall, and Niles North High School.

Figure 2.5: 2000 Employment Density by Quarter Section



### 2.1.4 Land Use Characteristics

Approximately 43 percent of the study area is residential and 25 percent commercial. Retail and commercial areas are located north-south along Skokie Boulevard and east-west along Dempster Street and Old Orchard Road. Tracts of recreation or forest preserve land are in the northwest corner of the study area. Land uses within the study area as defined by CMAP are presented in Figure 2.6.

### 2.1.5 Travel Patterns<sup>3</sup>

In 2007, Skokie with Evanston sponsored *The Skokie Swift North Shore Corridor Travel Market Analysis*.<sup>4</sup> This study presents travel patterns, mobility issues, and system deficiencies impacting the Corridor. This study area is bounded by Bryn Mawr Avenue in the south, Lake-Cook Road in the north, Lake Michigan shoreline in the east, and Metra's Milwaukee District North commuter rail line in the west. The Yellow Line Extension study area falls within the study area of this North Shore Corridor. Study objectives include:

- To define, characterize and quantify the Corridor's existing and projected demographics, development patterns, transportation facilities, services and usage;
- To identify and assess by magnitude and mode share, the major travel markets that play a key role in impacting Corridor travel patterns;
- To evaluate the ability of the existing Corridor transportation system to efficiently and effectively serve current and projected travel needs;
- To summarize mobility problems and transportation system deficiencies most critical to address within the Corridor;
- To define a combination of new station locations and extension options for the CTA Skokie Swift Yellow Line service that could effectively serve these travel needs; and
- To describe the extent to which an expanded Skokie Swift service would address these travel needs.

The North Shore Corridor, which contains the Yellow Line AA study area, attracts approximately as many daily work trips, 260,000 as it sends to other places; about 11 percent of these trips are from the North Side of Chicago, a market served by the Yellow Line. The northeastern part of Chicago was identified as the strongest market for non-work trips in the corridors.

This analysis study found that the travel movement between the Edgewater area in Chicago and the Old Orchard area in Skokie currently has about 80 percent of commuters driving alone. Greater congestion is expected over time on both I-94 and U.S. 41, increasing drive times. Although a strong grid network of east-west and north-south bus routes exists, the lack of a direct transit option suppresses transit mode share in this submarket. An extension of the CTA Yellow Line to Old Orchard may be part of a solution to improving mobility options in this submarket. The CTA Howard terminal serves as a key transportation hub allowing a wide variety of rail-bus and bus-bus transfer options.

<sup>3</sup> Travel data from 2000 Chicago Regional New Starts model run with trip tables provided by AECOM

<sup>4</sup> Skokie Swift North Shore Corridor Travel Market Analysis: Final Report, July 2007

Similarly, a 2008 CTA analysis<sup>5</sup> found reverse commute travel toward Skokie and Evanston, as well as intra-corridor travel, is substantial and growing:

- In the AM peak, 2,700 customers travel to Evanston or Skokie on CTA rail. Daily, over 10,000 customers travel to Evanston or Skokie – 3,800 from the North Main Line corridor between Addison and Howard stations.
- In the AM peak, more customers travel northbound from Howard (2,400 customers) than southbound from Howard (1,800) toward Chicago in the direction of a traditional commute trip.

Trip information shows that more than 66,000 total daily trips originated or were destined to the study area in 2000. By 2030, daily trips increase by 8 percent to over 68,000 trips. Of the 2000 total daily study area trips, approximately 16 percent of these trips were home-based work trips. By 2030, home-based work trips remain 16 percent.

As seen in Figure 2.7, the study area (District 5) exhibits a strong tie to the Southern Evanston-Chicago North Side (District 11) for work trip flows. Of the 66,000 daily work trips originated or were destined to the study area in 2000, over 18 percent of these trips were to/from District 11 – the North Chicago, South Evanston lakefront area. Other 2000 major work trip flows to/from the study area include the district surrounding the study area (District 6) at 17 percent, north Chicago (District 12) at 14 percent, the west side (District 14) at 2 percent, the internal study area (District 5) at 6 percent, and major employer areas such as northwest Cook County and DuPage County at 11 percent and 3 percent respectively. Note that over one third of these trips go northbound from Chicago to Skokie and Evanston.

Of the 2000 total study area daily trips, approximately 57 percent of these trips were home-based other trips. A sample of districts with 2000 home-based other trip flows to/from the study area include the district surrounding the study area (District 6) at 6 percent, the internal study area (District 5) at 63 percent, the northwest Chicago (District 10) at 5 percent, the Northern Evanston-Chicago North Side (District 11) at 13 percent, north Chicago (District 12) at 9 percent, and the Chicago Central Area (District 7) at 0.2 percent. By 2030, the percentage of home-based other trips are projected to remain unchanged from 2000 at 57 percent.

Non-home based trips are 27 percent of total trips for the study area. By 2030, non-home based trips remain unchanged from 2000.

Of the total home-based work trips in 2000 to/from the study area, 4 percent or over 400 work trips were made by households with zero-car ownership. By 2030, the number of home-based work trips by households with zero-car ownership remains unchanged.

The Yellow Line study area had 7 percent overall home-based work transit mode share in 2000. In particular, the study area shows a growing reverse commute transit market mode share from other districts. The study area shows growing transit usage from Southern Evanston-Chicago North Side (District 11) for these work trips at 15 percent.

Overall, several trends indicate a growing reverse commute market share. As previously stated, work and non work trips are not well represented in regional model trip distribution table.

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<sup>5</sup> CTA Planning, North Main Line Planning Document

Figure 2.6: Study Area Land Use

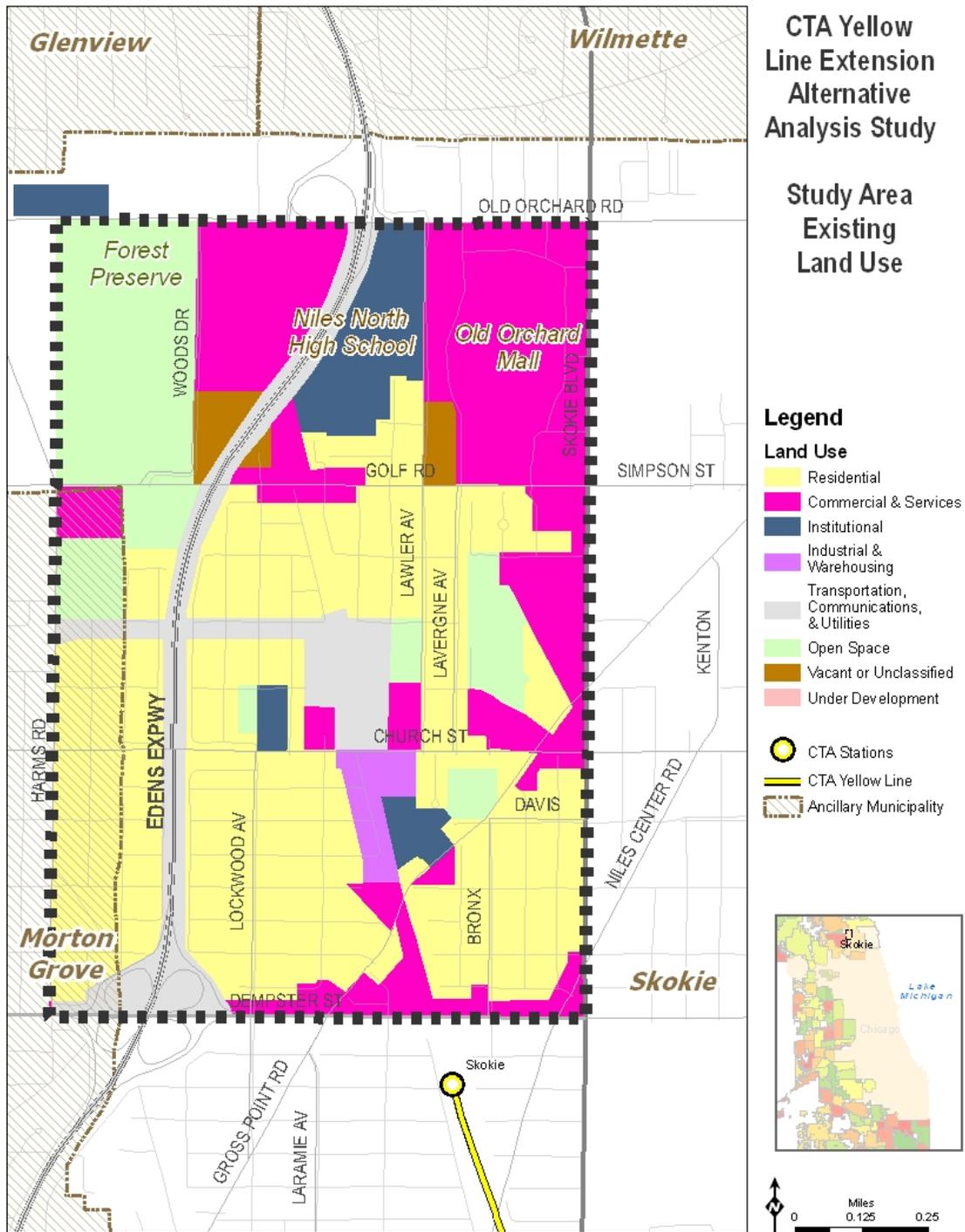
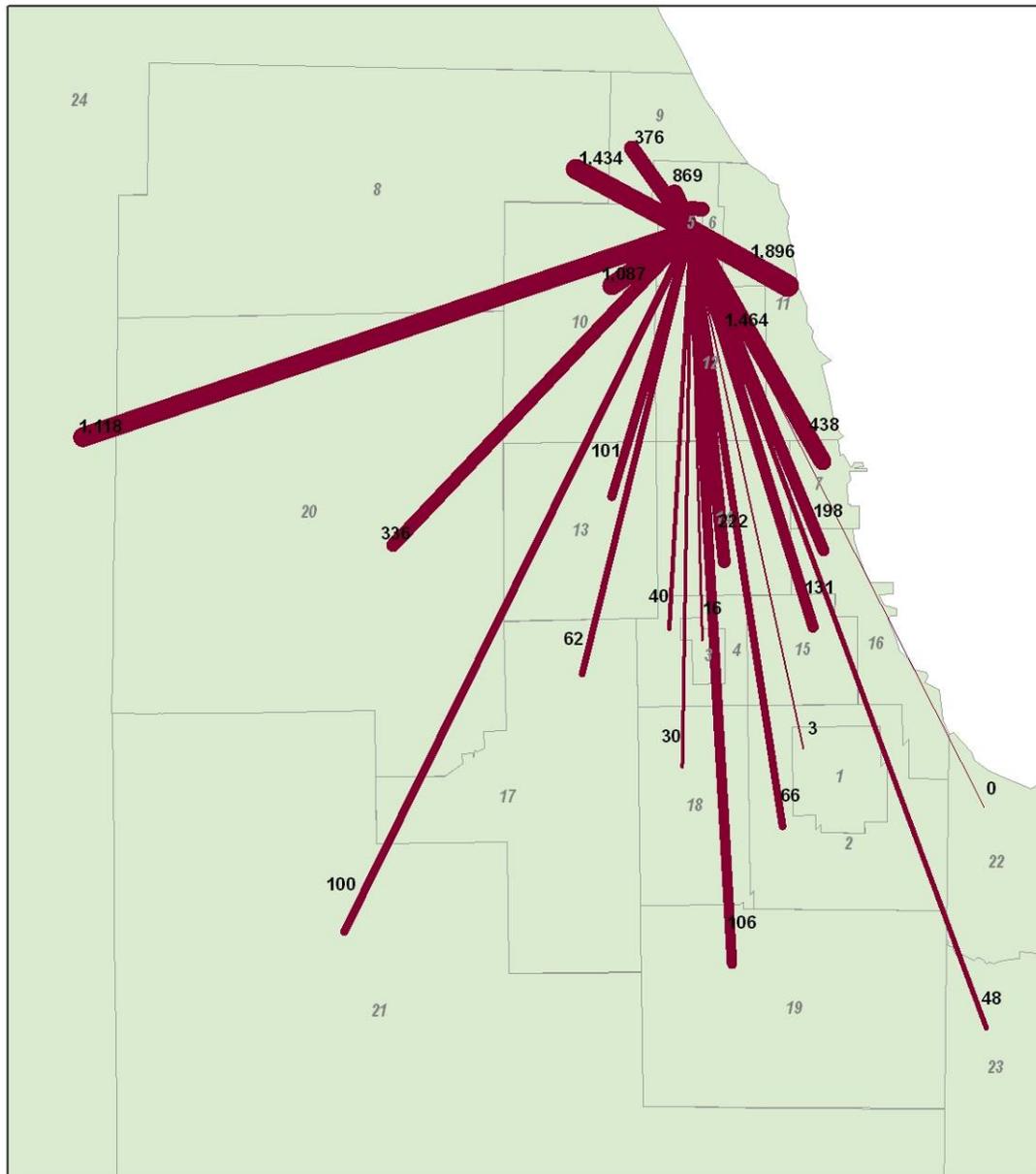


Figure 2.7: 2000 Home-Base Work Trip Flows by District



Number of Trips  
Lowest to Highest

— 0

█ 1,896

█ District

Source: 2000 ROY New Starts model run  
with trip tables provided by AECOM

1 inch equals 6 miles

## 2.2 Transportation Facilities and Services

The study area is served by roadway and transit systems, and pedestrian and bicycle facilities. Figure 2.8 depicts the roadway and rail transit systems within the study area, while Figure 2.9 provides additional details for existing CTA and Pace bus service within the study area.

### 2.2.1 Roadway System

The study area includes expressways, strategic regional arterials, truck routes, intermodal connectors, secondary arterials and local streets. A contributing factor in high travel times is congestion along the Edens Expressway (I-94) between major activity centers outside and within the study area. Congestion, especially on the arterials, is usually the result of accidents or weather related problems. In addition, seasonal factors (such as the holiday shopping season) can affect the traffic conditions around Westfield Old Orchard Mall. The Village of Skokie in cooperation with the Illinois Department of Transportation is implementing phased capacity improvements to Old Orchard Road between Skokie Boulevard and the Edens Expressway interchange.

Current average daily traffic (ADT) on the I-94 Edens Expressway at Dempster Street is approximately 165,700 vehicles<sup>6</sup>. According to the CMAP regional travel demand model, traffic on the Edens Expressway is expected to increase slightly between 2007 and 2030.

### 2.2.2 Transit System

The CTA's Yellow Line Dempster Street terminal is at the southern boundary of the study area. Average frequency of service (headway) during the peak periods is 10 minutes, and service is provided from 4:30 a.m. to 11:00 p.m., as seen in Table 2.3 below. Capacity offered by the Yellow Line is not fully utilized; two-car trains are currently operated on this branch and peak loads rarely require customers to stand.

**Table 2.3: CTA Yellow Line Service Summary**

| Service Period                | Hours | Time Period   | Average Frequency (minutes) | Train Length | Vehicles Required |
|-------------------------------|-------|---------------|-----------------------------|--------------|-------------------|
| Weekday                       |       |               |                             |              |                   |
| Early Morning                 | 1.5   | 04:30 - 06:00 | 10                          | 2            | 6                 |
| AM Peak                       | 3.0   | 06:00 - 09:00 | 10                          | 2            | 6                 |
| Base                          | 6.0   | 09:00 - 15:00 | 10                          | 2            | 6                 |
| PM Peak                       | 3.0   | 15:00 - 18:00 | 10                          | 2            | 6                 |
| Evening                       | 5.0   | 18:00 - 23:00 | 15                          | 2            | 6                 |
| Late Evening/Owl (No Service) | --    | 23:00 - 04:30 | --                          | --           | --                |
| Weekday Total Hours           | 18.5  |               |                             |              |                   |

Source: Yellow Line Extension Service Plan, PB and MKC Associates

<sup>6</sup> ADT from IDOT website. <http://www.gettingaroundillinois.com/>

Figure 2.8: Existing Transportation Facilities and Services

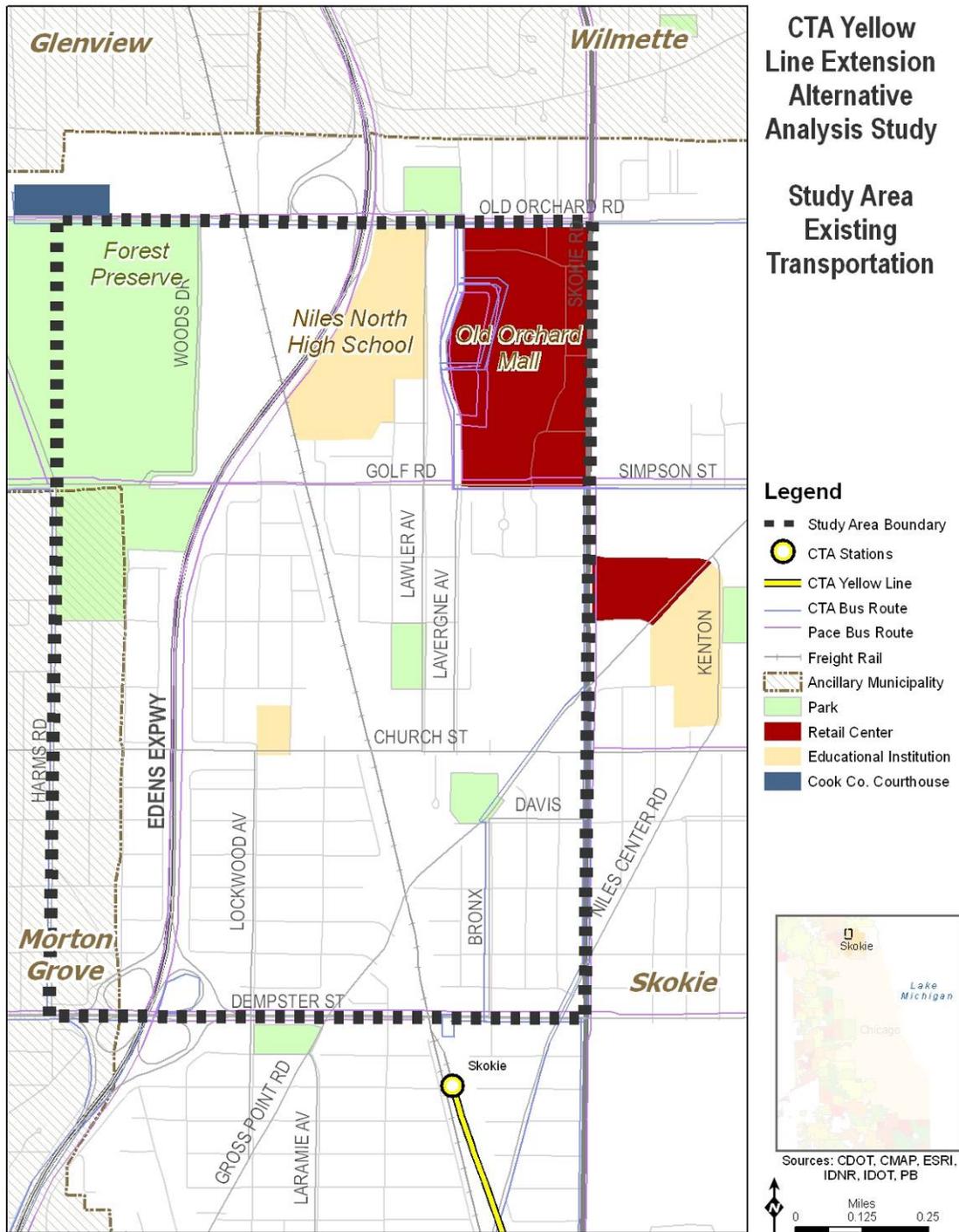
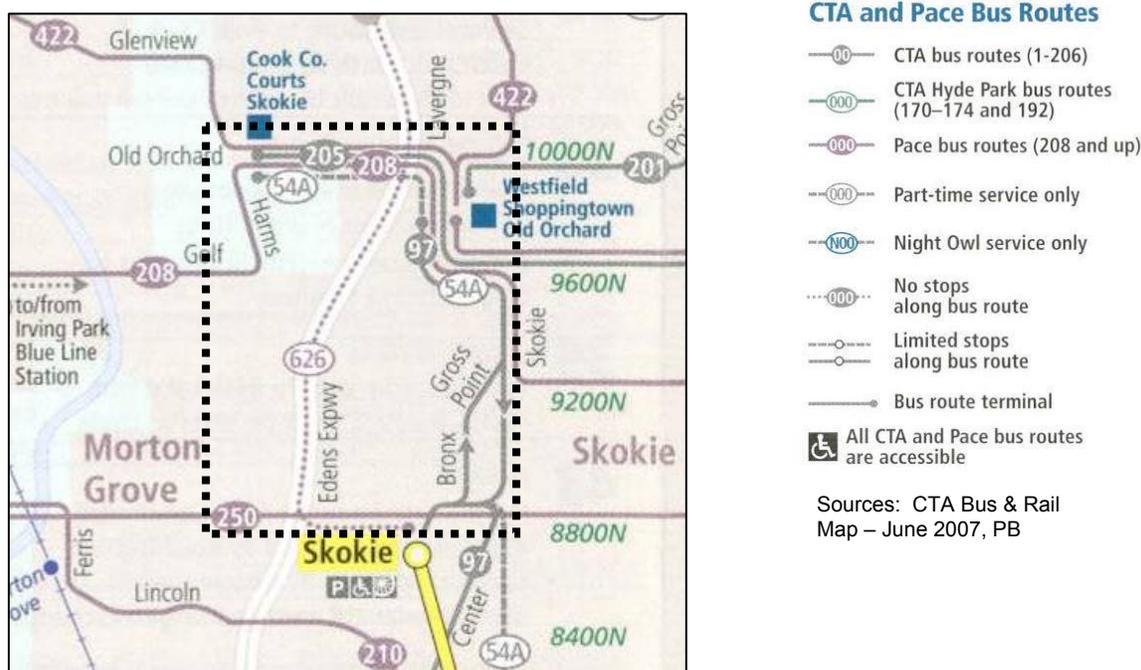


Figure 2.9: Existing Transit System



The CTA’s park-and-ride facilities at the Skokie station on the Yellow Line include 441 spaces. Utilization of this park-and-ride facility is approximately 92 percent (2007).

A bus terminal on the property of Westfield Old Orchard Mall is well integrated with Pace and CTA buses stop within a few feet of entrances to a large parking garage and retail stores on the west side of the Mall. A taxi stand in this location provides additional connections.

The study area is not directly served by Metra commuter rail service; however, the surrounding region is well-served. Metra’s Milwaukee District-North (MD-N) Line is located one mile west of the western boundary of the study area, with the Morton Grove station located just south of Dempster Street and the Golf station located north of Golf Road. The MD-N Line station in Golf is approximately 2 miles (in aerial miles) from most of the proposed locations for the north terminal on the Yellow Line Extension. While these Metra lines provide direct service to/from the Chicago central business district, there is no direct feeder bus service between the MD-N and Old Orchard area making reverse commute trips by Metra more challenging.

CTA and Pace bus services are provided on north-south and east-west thoroughfares in the study area, with four CTA bus routes and seven Pace bus routes operating on the edge or within the study area.

Two CTA and two Pace bus routes serve the current Yellow Line terminal at Dempster. Route #54A/North Cicero-Skokie Boulevard operates from the Yellow Line Dempster station via Dempster Street and Skokie Boulevard into the Westfield Old Orchard Mall and then via Old Orchard Road to the Skokie Courthouse. This route provides a connection to the “Six Corners” retail area (Cicero, Irving Park and Milwaukee) of Chicago and to the Blue Line at Jefferson Park on its south end.

Route #97/Skokie operates via Dempster and Skokie Boulevard between the Yellow Line Dempster station and the Westfield Old Orchard Mall. This route connects to the Red and Purple Lines at the Howard Street terminal on its south end. Pace route #250 /Dempster Street links downtown Evanston to the Des Plaines Metra station via Dempster and then south to the O'Hare Kiss-N-Fly ATS Station. Additionally, Pace route #626/Skokie Valley Limited provides express service from the existing Yellow Line terminal to the Lake-Cook Office Corridor and Lincolnshire. The route travels express via the Edens Expressway from Dempster to Dundee Road, and there is limited service between the Buffalo Grove parking lot and the Yellow Line terminal at Dempster. As seen in Table 2.5, these bus routes average 14.0 miles in length, 55 minutes in travel time.

**Table 2.5: CTA and Pace Bus Routes Serving Dempster Street Station**

| Route Number / Route Name           | Route Length (miles) | Route Travel Time | Peak Period Headway | 2009 Ridership |
|-------------------------------------|----------------------|-------------------|---------------------|----------------|
| CTA #54A /North Cicero-Skokie Blvd. | 10                   | 0:51              | 0:20                | 965            |
| CTA #97 /Skokie                     | 8.6                  | 0:40              | 0:17                | 3,866          |
| #250 / Dempster Street              | 15.8                 | 1:07              | 0:20-0:30           | 2,782          |
| #626 / Skokie Valley Limited        | 21.9                 | 1:02              | 0:20                | 462            |
| <b>Average</b>                      | <b>14.0</b>          | <b>0:55</b>       | <b>0:20</b>         | <b>2,000</b>   |

Source: Regional Transportation Asset Management System, RTA

The current transit fare structure for CTA is shown in Table 2.6 below. Pace regular bus fares are \$1.75 with \$0.25 transfers. The Pace/CTA 7-day pass is \$28.00 and the 30-day pass is \$86.00.

**Table 2.6: CTA Fare Structure**

| CTA Fare Types                  | Fare Structure (Effective 1/1/2009) |
|---------------------------------|-------------------------------------|
| Full Fare Cash (Bus only)       | \$2.25                              |
| Full Fare Transit Card (TC) Bus | \$2.00                              |
| Full Fare TC Rail               | \$2.25                              |
| Full Fare Chicago Card (CC) Bus | \$2.00                              |
| Full Fare CC Rail               | \$2.25                              |
| TC or CC Transfer <sup>1</sup>  | \$0.25                              |
| 1-Day Pass                      | \$5.75                              |
| 3-Day Pass                      | \$14.00                             |
| 7-Day Pass CTA only             | \$23.00                             |
| 7-Day Pass CTA/Pace             | \$28.00                             |
| Full Fare 30-Day Pass           | \$86.00                             |
| Link-Up Pass                    | \$39.00                             |
| Reduced Fare TC or CC           | \$0.85                              |
| Reduced Fare Cash (Bus only)    | \$1.00                              |
| Reduced Fare TC or CC Transfer  | \$0.15                              |
| Reduced Fare 30-Day Pass        | \$35.00                             |

<sup>1</sup> Transfer fare allows two additional rides within two hours of the first boarding.

## 2.3 Performance of the Transportation System

### 2.3.1 Agencies Involved in Transportation Planning

The Policy Committee of the Chicago Metropolitan Agency for Planning (CMAP) is the designated Metropolitan Planning Organization for the northeastern Illinois region. CMAP was formed in 2005 by combining the region's two previously separate transportation and land-use planning organizations – the Chicago Area Transportation Study (CATS) and the Northeastern Illinois Planning Commission (NIPC) – into a single agency.

The Regional Transportation Authority (RTA) is a fiscal oversight agency responsible for the overall budgets and financial condition of the three operating agencies or “service boards”-- CTA, Metra, and Pace. Other agencies, such as the Illinois Department of Transportation, and the Cook County Highway Department have transportation planning responsibilities in the study area.

The Village of Skokie administers local planning and development within village boundaries.

### 2.3.2 Local Transportation Goals and Objectives

The current CMAP 2030 Regional Transportation Plan, adopted in October 2008, contains three overarching goals: maintain the integrity of the existing transportation system, improve transportation system performance, and employ transportation to sustain the region’s vision and values. Relevant objectives include:

#### Transportation mobility and accessibility objectives

Promote transportation proposals that:

- increase access to job opportunities
- provide efficient modal alternatives for short trips
- reduce traffic congestion

#### Transportation system efficiency objectives

Promote transportation proposals that:

- reduce highway congestion
- increase the availability of public transit
- support regional or local efforts to balance the location of jobs, services, and housing to reduce travel distances

#### Congestion management objectives

Promote transportation proposals that:

- reduce highway congestion
- improve system reliability
- increase person throughput capacity in congested corridors by increasing vehicle occupancy, providing transit options, and encouraging transit use
- increase the share of trips made by walking, bicycling, and transit
- improve coordination and connectivity between and among different modes
- support regional or local efforts to balance the location of jobs, services, and housing to reduce travel distances

**Transportation and social equity objectives**

Promote transportation projects that:

- provide improved transportation choices to economically disadvantaged persons
- stimulate balanced and sustainable development in communities with concentrations of disadvantaged residents
- support programs providing financial incentives to low-income persons residing in communities that provide a wider variety of transportation choices
- support links from disadvantaged communities to jobs and services

**2.3.3 Roadway System Performance**

Roadway system deficiencies and expressway and arterial traffic congestion limit the mobility and accessibility of workers and residents traveling to and from the study area. Traffic congestion in the metropolitan area has steadily grown over the past decades along the region's expressways and major arterials. Chicago is ranked as second in the nation for travel time ratio (peak travel times versus free flow travel time), third for travel delay, excess fuel consumed, and congestion costs, and has the fourth highest with 72 percent of its freeway and street lane-mile congested.<sup>7</sup>

Contributing factors to congestion in the study area are expressway congestion and limited arterial connections to major activity centers outside of the study area. Traffic congestion on Edens Expressway is at its worst outbound during the PM peak, when the average speed is 25 mph, and inbound during the AM peak with an average speed of 37 mph. The ability to expand the system significantly in the future is limited due to lack of available right of way and the disruption that it would cause to adjacent properties.

Arterial street traffic congestion occurs at many locations throughout the study area. Several of the arterials that carry high traffic volumes include Dempster Street at 33,900 ADT, Golf Road at 29,400 ADT, Skokie Boulevard at 20,900 ADT, Old Orchard Road at 16,200 ADT and Gross Point Road at 14,400 ADT. As seen in Figures 2.10 and 2.11, traffic volumes on the I-94 Edens Expressway and major arterial streets (Dempster Street, Church Street, Golf Road, Old Orchard Road, and Skokie Boulevard) in the study area are 90 percent or greater of capacity during the morning a peak hours in 2007 and 2030. With only Skokie Boulevard as a through north-south street, and Dempster Street, Church Street, Golf Road and Old Orchard Road as through east-west streets in the study area, traffic congestion will continue to impact travel.

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<sup>7</sup> Texas Transportation Institute (TTI), 2003 Urban Mobility Report.

Figure 2.10: Estimated 2007 Morning Peak Hour Traffic Congestion

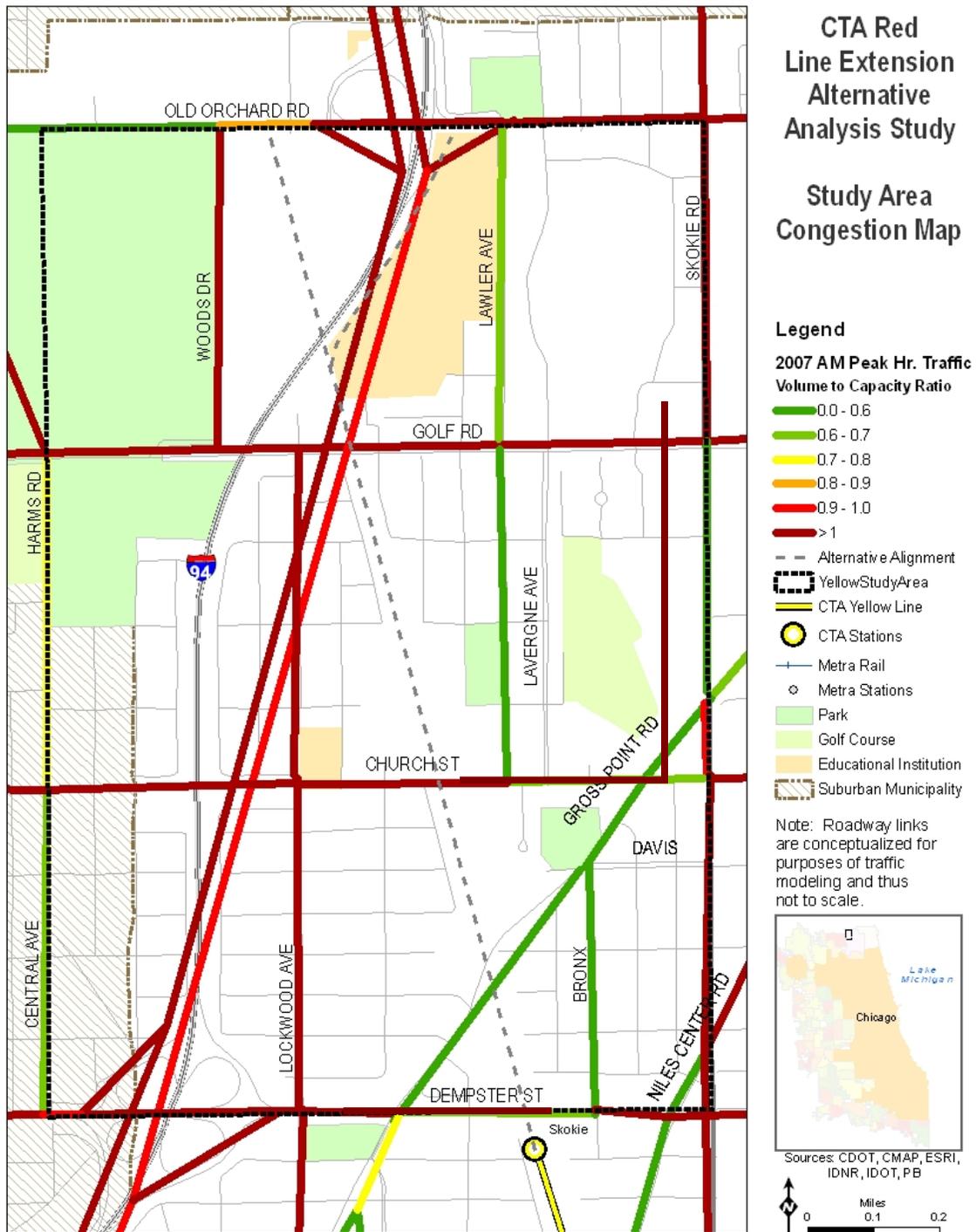
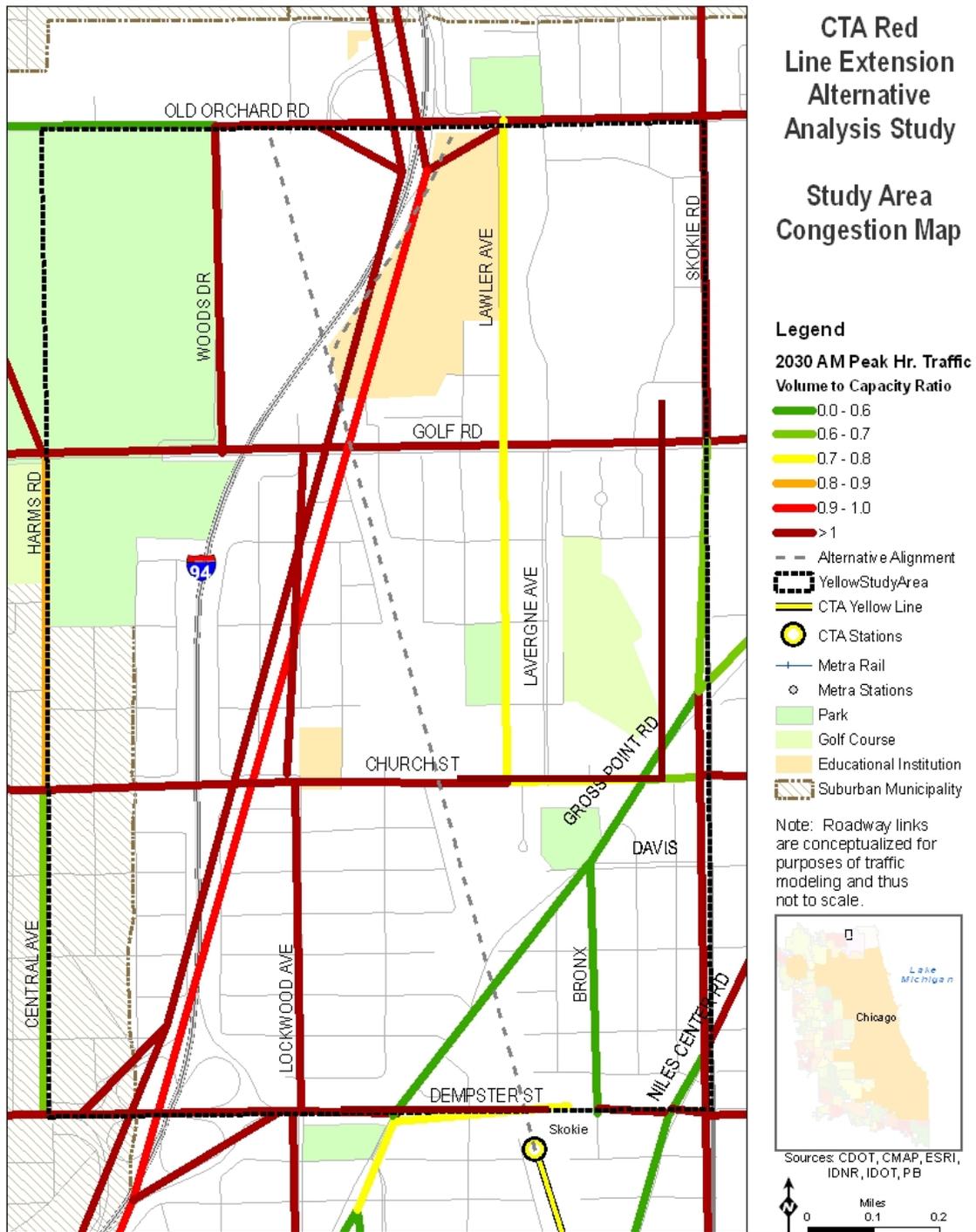


Figure 2.11: Estimated 2030 Morning Peak Hour Traffic Congestion



### 2.3.4 Transit Performance

#### *Yellow Line Ridership*

In March 2008, CTA implemented weekend Saturday and Sunday service on the Yellow Line. Yellow Line weekend ridership is highest in the months of July and August, reflecting the attraction of the Yellow Line for recreational activities in the summer months including ball games in Chicago. Weekend service on the Yellow Line appears to have favorably impacted weekday ridership, as shown in Table 2.7. 2008 weekday ridership on the Yellow Line increased 11 percent, compared to 3.4 percent for the CTA rail system overall. These Yellow Line ridership increases since the inception of weekend service may suggest that service industry employment is more accessible by transit when seven-day service is available.

Overall CTA rail ridership from the North Shore is less Loop-oriented; reverse commute and intra-corridor travel is growing. In the morning peak period, more customers travel northbound at Howard than southbound, to suburban employment centers shown in Figure 2.7.

According to CTA October 2006 transit transfer data, 532 rides (nearly 22 percent of all CTA Yellow Line Dempster station boardings) transfer from CTA or Pace buses during an average weekday. Transfers from CTA buses at Dempster Station on an average weekday total 323 rides (13 percent). The total transfers from Pace buses at this location are 209 rides (9 percent).

**Table 2.7: Yellow Line 2008 and 2009 Average Daily Ridership by Month**

| Month            | Weekday |       | Saturday |       | Sunday |       |
|------------------|---------|-------|----------|-------|--------|-------|
|                  | 2009    | 2008  | 2009     | 2008  | 2009   | 2008  |
| <b>January</b>   | 2,175   | 2,013 | 637      | N/A   | 542    | N/A   |
| <b>February</b>  | 2,302   | 2,126 | 793      | N/A   | 409    | N/A   |
| <b>March</b>     | 2,260   | 2,137 | 842      | N/A   | 501    | 55    |
| <b>April</b>     | 2,472   | 2,562 | 962      | 836   | 490    | 715   |
| <b>May</b>       | 2,570   | 2,630 | 1,280    | 865   | 1,014  | 589   |
| <b>June</b>      | 2,461   | 2,730 | 1,176    | 728   | 1,252  | 661   |
| <b>July</b>      |         | 2,736 |          | 1,323 |        | 1,035 |
| <b>August</b>    |         | 2,876 |          | 1,544 |        | 1,241 |
| <b>September</b> |         | 2,865 |          | 1,005 |        | 876   |
| <b>October</b>   |         | 2,718 |          | 969   |        | 695   |
| <b>November</b>  |         | 2,488 |          | 834   |        | 319   |
| <b>December</b>  |         | 2,020 |          | 754   |        | 391   |

Source: Regional Transportation Asset Management System, RTA

#### *Bus Ridership*

Nine bus routes serve the study area. Average weekday ridership on these bus routes has increased by 6.8 percent since 2005<sup>8</sup>. System-wide the total CTA and Pace bus ridership increase equals 7.7 percent since 2005. Six of the nine bus routes provide service on Saturdays, while service is provided on four bus routes on Sundays. Saturday ridership has

<sup>8</sup> Pace restructured routes 208, 250 and 422 on March 20, 2005. CTA restructured route 201 and implemented route 205 on June 22, 2003.

remained constant since 2005, although Sunday traffic has decreased by over 12 percent. Bus average daily ridership by month is shown in Table 2.8.

**Table 2.8: Bus Average Weekday Ridership by Month**

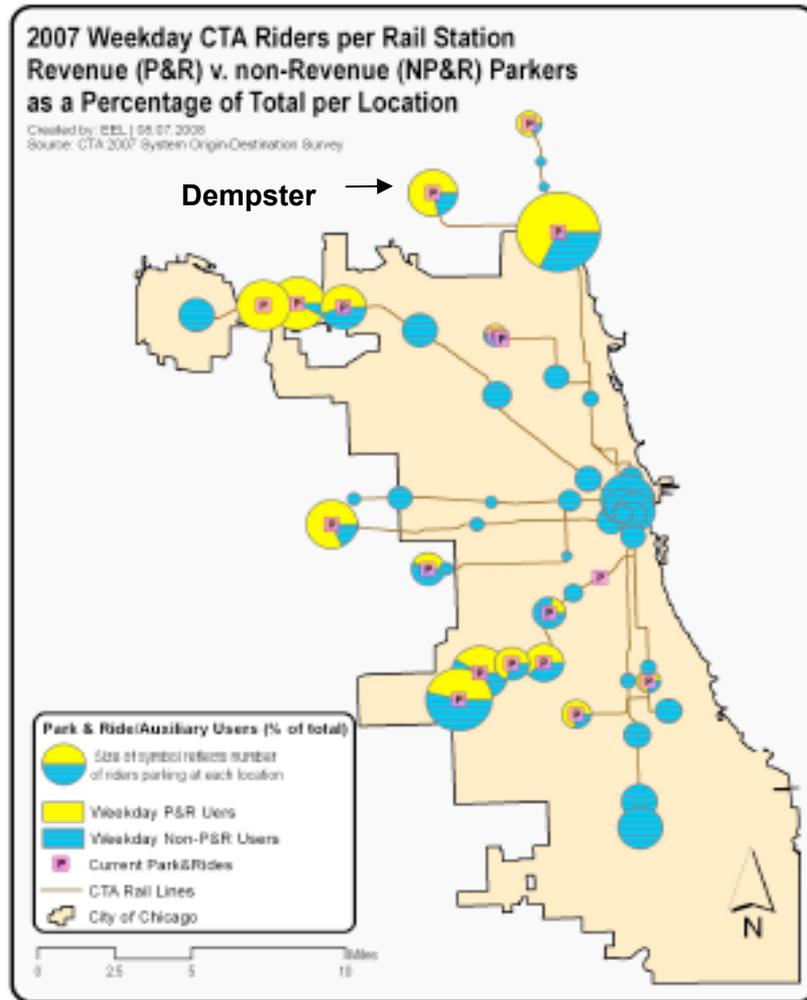
| Bus Route | Weekday Average Ridership |              |
|-----------|---------------------------|--------------|
|           | October 2008              | October 2005 |
| CTA 54A   | 1,155                     | 1,339        |
| CTA 97    | 4,077                     | 3,736        |
| CTA 201   | 1,727                     | 1,677        |
| CTA 205   | 1,033                     | 1,053        |
| Pace 208  | 2,764                     | 2,322        |
| Pace 215  | 1,613                     | 1,522        |
| Pace 250  | 3,273                     | 2,891        |
| Pace 422  | 880                       | 879          |
| Pace 626  | 569                       | 592          |
| Total     | 17,091                    | 16,011       |

Source: Regional Transportation Asset Management System, RTA

#### *Auto Access to Transit*

Auto access to the Yellow Line is approaching capacity. In 2007, the 441 space park-and-ride lot at Dempster station averaged 92 percent capacity. As seen in Figure 2.12, park-and-ride access is a significant travel market component of the Yellow Line. The geographic market shed of auto access trips to the Yellow Line encompasses Skokie and northwest suburban areas.

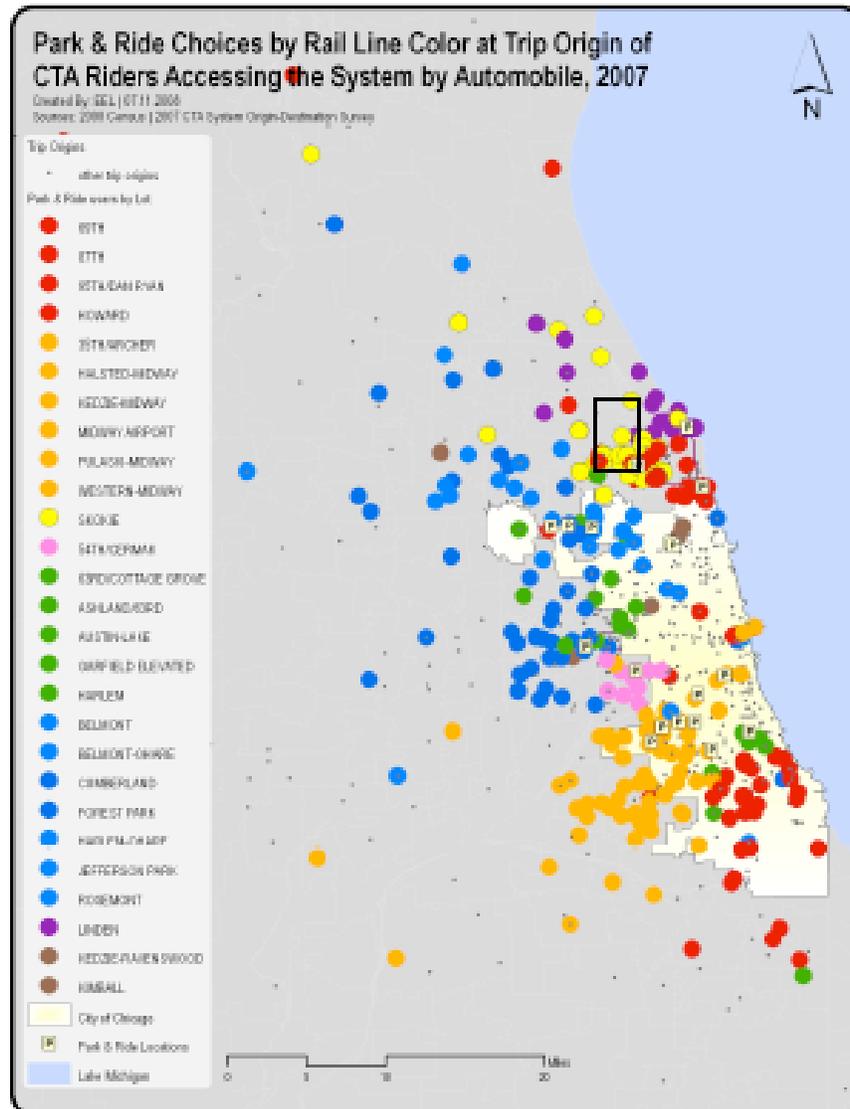
Figure 2.12: Weekday Park-and-Ride and Non-Park-and-Ride Users<sup>9</sup>



As seen in Figure 2.13, auto access to the Yellow Line is predominately within 5 - 8 miles of the Dempster station. The Metra Milwaukee District North Line Morton Grove Station, with a park and ride facility, is located 1 mile west of the Dempster Station, providing direct service to the Chicago central business district. As result, the market area for the Dempster Station is more focused within Skokie and serving local radial trips.

<sup>9</sup> CTA 2007 System Origin-Destination Survey Descriptive Statistics: Park & Ride (P&R: Revenue) and non-Park & Ride (NP&R: non-Revenue) Riders, page 4.

Figure 2.13: Geographic Market Shed for Auto Access Trips to the Yellow Line<sup>10</sup>



<sup>10</sup> CTA 2007 System Origin-Destination Survey Descriptive Statistics: Park & Ride (P&R: Revenue) and non-Park & Ride (NP&R: non-Revenue) Riders, page 3.

## 2.4 Specific Transportation Problems

### 2.4.1 Mobility and Reverse Commute Market

The Old Orchard Road area, one and one-half miles further north of the existing Yellow Line terminal, is the nexus of travel demand in the area, and is likely to remain so for the foreseeable future. Major activity centers in the study area include Westfield Old Orchard Mall, the Illinois Holocaust Museum, and Niles North High School. Located on the edges of the study area are the Cook County Courthouse and National-Louis University located west of the Edens Expressway on Old Orchard Road. Activity centers along Skokie Boulevard include Rush North Shore Hospital, Skokie Arts and Entertainment Center and major commercial strip.

Existing transit service to the Old Orchard Road area via the Yellow Line requires a transfer at the Howard station and another transfer to bus at the Dempster station. As seen in Table 2.9, existing transit travel time from the Howard Yellow Line station to the Old Orchard Mall via the CTA Yellow Line and CTA Bus Route 54A is nearly 34 minutes.

**Table 2.9: Transit Travel Time from Howard Station to Old Orchard Mall**

| Travel Time Element                     | Time (min.) |
|---|-------------|
| Wait time for Yellow Line (1/2 headway) | 4.0         |
| Rail run time from Howard to Dempster   | 8.0         |
| Walk time: curb to platform             | 3.0         |
| Bus wait time at station (1/2 headway)  | 7.5         |
| Run time from Dempster to Mall          | 11.0        |
| <b>Total Travel Time</b>                | <b>33.5</b> |

Source: Yellow Line Extension Service Plan, PB and MKC Associates

There are strong advantages to expanding transit service between Dempster Street and the Old Orchard Road activity area. Improved transit accessibility in the vicinity of Old Orchard Road would more directly serve the development goals of the Village of Skokie in the vicinity of the existing Old Orchard Mall and nearby developments. Westfield Old Orchard Mall management has submitted plans for major expansion that would increase the need for employee and customer access. A regional bus transfer facility already exists at Old Orchard Mall. A new terminal station would function as a new intermodal transportation center that provides improved transit services to more riders in this major employment and shopping destination.

Based on entering traffic counts<sup>11</sup> performed by Westfield Old Orchard Mall, there were over seven million vehicles entering the mall in 2007. Westfield Old Orchard reports an average vehicle occupancy to be 1.85, resulting in over 13 million annual one-way person trips or over 27 million total annual two-way person trips. Daily person trips would be nearly 65,000 (assuming a 417 conversion factor that assumes higher weekend traffic). This is an order of magnitude higher than 6,000 to 7,000 total daily trips shown in that zone (which also includes Niles North High School and an office building) in the CMAP travel model. As a result, this reverse commute market is much stronger than currently reflected in travel modeling tools used by CMAP for regional planning.

<sup>11</sup> Village of Skokie

## 2.4.2 Leverage Existing Transit System

The Skokie Swift North Shore Corridor Travel Market Analysis identified that the movement between north community areas of Chicago and the Old Orchard area in Skokie consists of approximately 80 percent driving alone. Greater congestion is expected between 2000 and 2030 on the Edens Expressway and Dempster Street (U.S. 41), increasing drive times. Although CTA and Pace bus routes provide service to the study area, the lack of a direct transit option suppresses transit mode share in these areas.

The CTA Yellow Line rail service is not being leveraged to its full potential to serve the concentration of employment and retail uses in the area and there is a need for improved transit accessibility in the vicinity of Old Orchard Shopping Mall. The CTA Howard station serves as key transportation hub allowing for a wide variety of rail-bus and bus-bus transfer options.

## 2.4.3 Support Skokie Transit Oriented Development Initiatives

Skokie currently has an estimated employment of 36,700 and is projected to increase by 8,120 to 44,820 by 2030. Neighboring Morton Grove and Wilmette project stable employment over the next two decades. Several planning and development initiatives in the study area suggest that Skokie employment will continue to grow between 2000 and 2030 in the study area. Employment density is quite high in the study area, with the highest densities at or near Old Orchard Road. The Westfield Group is proposing a major expansion of their Old Orchard Mall development and the replacement of surface parking with garages. This improvement will replace surface parking with new buildings for additional commercial and office use. These changes will intensify the density of development on their 79 acre site, and increase daily trips for employees, shoppers, and office visitors.

Skokie, as an early promoter and implementer of Transit Oriented Development (TOD), has seen a diversity of large scale redevelopment projects become a successful reality over the past few years. Among these projects, several are near the proposed intermediate Yellow Line station at Oakton Street, which is in design. Other retail and housing development near Old Orchard Road is being considered in coordination with Village authorities. Improved transit service in the study area will improve access to these jobs and will support the ongoing efforts by the Village of Skokie to spur economic development in the study area.

## 2.5 Potential Transit Markets

### 2.5.1 Reverse Commute Transit Market

The reverse commute transit travel market could represent a significant market. The forecasted increase of more than 8,000 jobs in the Village Skokie by 2030 represents the potential for increased reverse commute to access these jobs. A major regional employment center exists in the Old Orchard Road area that includes Westfield Old Orchard Mall, the Illinois Holocaust Museum, Niles North High School, the Cook County Courthouse and National-Louis University. An employee survey conducted as part of *The Skokie Swift North Shore Corridor Travel Market Analysis* showed that 56 percent of employees at the Old Orchard Mall resided in the City of Chicago and 11 percent in Evanston, both communities served by the existing rapid transit system.

Furthermore, the extent of the trip making in the regional model is underestimated. The CMAP regional travel model does not accurately represent trips generated by the Westfield Old Orchard Mall and Niles North High School within the study area. It is estimated that trip making

could be underestimated from that area by a factor of five based on traffic counts from Westfield Old Orchard Mall.

The Village of Skokie performed its own employment survey for the Northern Skokie Employment Area, which encompasses the Old Orchard Road employment corridor. This comprehensive door-to-door survey found there to be over 14,500 employees in the area in 2005, with an estimated 16,500 employees in the area in 2015. For this analysis, the CMAP forecasts were used, but CTA and the Village are coordinating with CMAP to revise land use forecasts for the 2040 plan.

### **2.5.2 Northern Cook County Transit Market**

Another potential transit travel market is the northern Cook County area located directly north of the study area. The provision of CTA park-and-ride facilities in the northern portion of the study area would provide convenient auto access to the I-94 Edens Expressway or arterial streets that do not currently exist. CTA has successful examples of this expressway-intercept park and ride concept. The Blue Line has park-and-ride facilities at Rosemont and Cumberland that are conveniently located near the I-90 Kennedy Expressway. A previous survey at these Blue Line park-and-ride stations found auto access from 93 suburbs and that 74 percent of all trips originated in the northwest suburbs or northwest Chicago. The Chicago Central Area was the ending location of 78 percent of all park-and-ride trips, followed by the University of Illinois at Chicago at 6 percent.

Similar conditions, such as crowded expressways and expensive parking in the Chicago Central Area, face travelers from north Cook and Lake Counties. Opportunities exist to provide improved access to CTA from north Cook and Lake Counties.

### **2.5.3 Other Transit Markets**

Other potential transit travel markets include schools, with the presence of Niles North High School and National-Louis University. The newly opened Holocaust Museum is another potential travel market.

## **2.6 Project Goals and Objectives**

The following proposed goals and objectives were developed based on the transportation needs described above as well as goals that are included in regional long-range transportation plans. The goals and objectives serve as the basis for evaluating the alternatives throughout the alternatives analysis. The goals and objectives are as follows:

- **Goal 1: Regional and Local Access and Mobility**

Objectives:

1. Increase connectivity between and within neighborhoods and activity centers.
2. Improve access between city neighborhoods and regional centers, and between suburban communities and the greater central area.
3. Increase regional transit competitiveness.
4. Improve customer transfer connections among regional transit modes.

- **Goal 2: Community and Economic Development**

Objectives:

1. Support community development initiatives.
2. Provide opportunity for transit-supportive development.

3. Support efficient land use patterns.
  4. Respect community context and identity.
  5. Promote equitable distribution of project benefits and impacts.
- **Goal 3: Regional Transit System Performance**  
Objectives:
    1. Increase capacity and ridership.
    2. Enhance efficiency and cost effectiveness.
    3. Facilitate connections and linkages.
    4. Reduce transit travel times.
    5. Integrate existing transit infrastructure, where feasible.
  - **Goal 4: Safety and Security**  
Objectives:
    1. Increase transportation reliability.
    2. Improve incident response capabilities.
    3. Incorporate design elements that enhance safety and security.
  - **Goal 5: Environmental Quality**  
Objectives:
    1. Limit impacts.
    2. Support environmental benefits.
    3. Reduce reliance on automobile travel.

## 3.0 SCREEN 1 EVALUATION

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The first step in the Yellow Line Extension Alternatives Analysis was identifying the Universe of Alternatives comprised of all possible transit alternatives for the study area. The Universe of Alternatives included a wide range of transit modal technologies, study area corridors, and profiles (where the transit line is in relation to the ground).

### 3.1 Study Area Corridors

There were four study area corridors identified, listed from west to east within the study area:

- Dempster-Edens Expressway Corridor
- Union Pacific Railroad (UPRR) Corridor
- Gross Point Road / Skokie Boulevard Corridor
- Skokie Boulevard Corridor

Figure 3.1 graphically depicts the four corridors under consideration.

#### **Dempster-Edens Expressway Corridor**

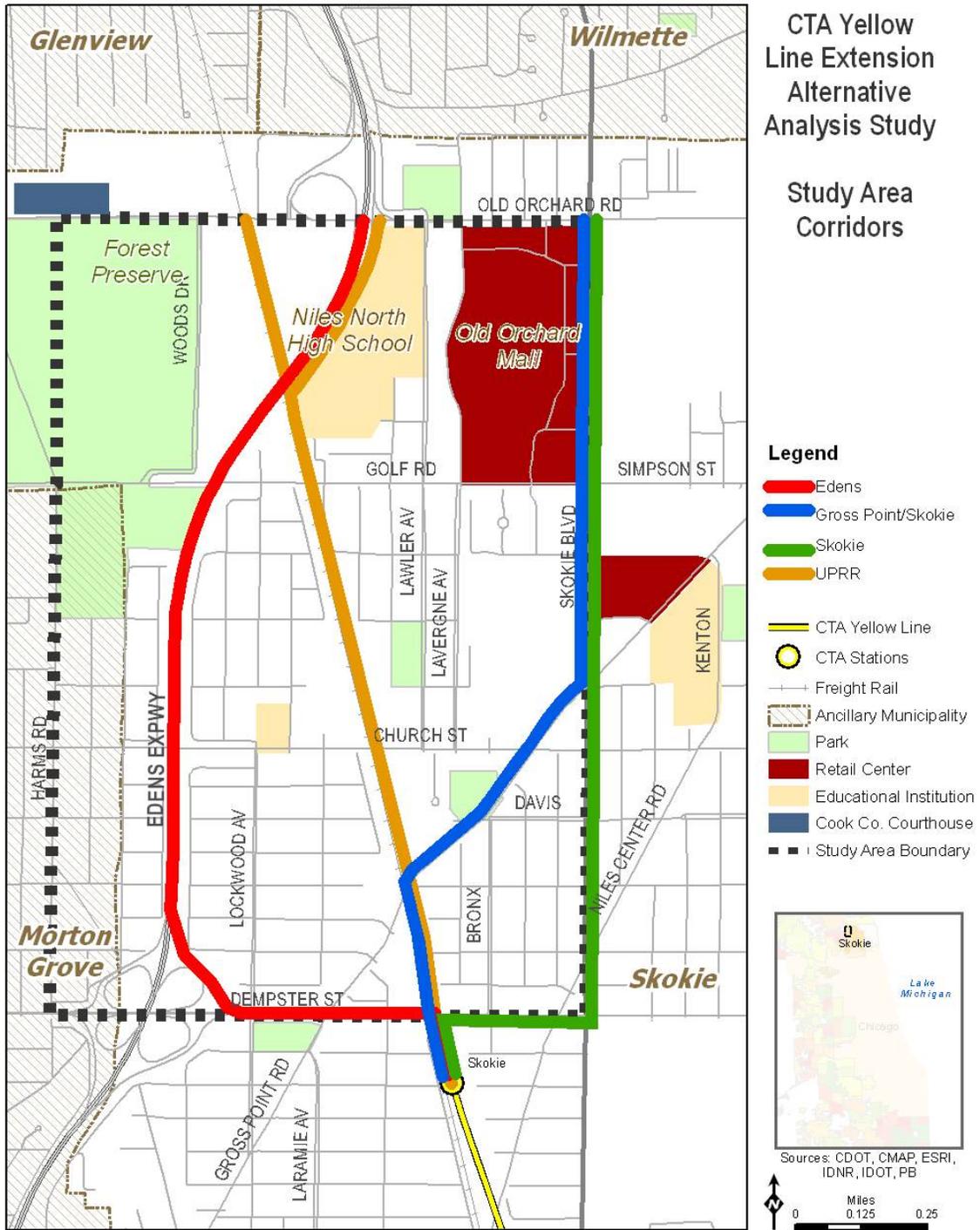
The Dempster-Edens Expressway corridor would extend west from the present Yellow Line terminal facility via Dempster Street to the I-94 Edens Expressway. The approximate length along Dempster is 0.6 miles.

It would transition to an alignment along the Edens Expressway through the Dempster-Edens interchange. From there, this corridor would follow the Edens Expressway, with a couple of possible terminal locations in the vicinity of Old Orchard Road. The alignment could transition from the expressway right-of-way to the at-grade Union Pacific Railroad (UPRR) right-of-way north of Golf Road, and follow that alignment to a terminal in the vicinity of Old Orchard Road. The other possibility is for the transit corridor to remain on the Edens Expressway right-of-way and continue into a terminal adjacent to the expressway and Nilas North High School at Old Orchard Road. Overall length for either option along I-94 is on the order of 1.4 miles, giving an approximate total alignment length of 2 miles.

Dempster Street varies in curb-to-curb width from 55 feet (at LeClaire, west of the CTA station) to 70 feet west of Gross Point Road (on approach to the Edens interchange). The width of the Edens Expressway is 144 feet north of the ends of the Dempster on/off ramps, decreasing to 123 feet on the bridge over Golf Road, and increasing to 190 feet at Old Orchard Road. There are on/off ramps at this location, and the northbound exit ramp is on structure adjacent to the actual highway right-of-way.

The width of the UPRR right-of-way is about 30 feet on the existing single-track, but the total width including the track and ComEd high-tension lines north of the Edens Expressway bridge has a width of about 115 feet. Ownership of the undeveloped land to the east of the UPRR track is presumed to be ComEd, as the utility had first right of refusal to the land when the North Shore Line interurban was abandoned in 1963. The land to the east of the North Shore's main tracks was once occupied by a team track, long gone.

Figure 3.1: Yellow Line Extension AA



Land use is commercial on both sides of Dempster at LeClaire (residential land use exists about a block to the south of Dempster in this section). West of Gross Point Road, the land use is commercial to the north (a strip mall) and recreational to the south.

Along the Edens Expressway, the land use is predominantly residential on both sides in the section from Dempster to Golf Road. North of Golf, the land use is recreational to the west of the expressway and commercial to the east. On the south side of the Old Orchard Road interchange the land use is commercial to the west of the expressway and educational (Niles North High School) to the east.

Land use along the UPRR north of the Edens Expressway bridge is commercial to either side, though as noted previously the commercial use to the east is separated by a wide undeveloped strip, which now accommodates ComEd high-tension lines.

### **Union Pacific Railroad (UPRR) Corridor**

The UPRR corridor is a direct continuation of the existing CTA Yellow Line alignment north from the Dempster Street station along the former rail right-of-way. North of Golf Road, two variations are possible – the west alignment would remain on the former UPRR right-of-way to a terminal in the vicinity of Old Orchard Road, while the east alignment would run along the east side of I-94 to a terminal adjacent to the expressway and Niles North High School at Old Orchard Road. Overall line length is on the order of 1.5 miles via either alignment.

Width of the rail right-of-way varies over the section of interest, but is typically around 35 feet wide. There are no structures associated with the rail corridor, and the only major structure passing over this corridor within the study area is the I-94 bridge, which is wider than the rail right-of-way. The status of the rail line is “discontinued,” which resulted in the rails being removed at the four intermediate grade crossings in the study area (Dempster, Gross Point, Church and Golf). Otherwise, the single-track line remains intact between the grade crossings.

Starting from the existing CTA terminal to the south of Dempster Street, land use along the UPRR corridor is residential to the west and south of Dempster, while the terminal and its associated facilities (bus terminal and parking lot) are east of the right-of-way on either side of Dempster Street. North of Dempster and west of the former rail line the land use is commercial.

North of Gross Point Road the land use is moderate-to-light industrial on either side of the rail right-of-way. This includes the Village Public Works facility on the east side of the former rail line, which extends up to Church Street. To the north of Church Street, ComEd has a substation and related facilities on either side of the rail right-of-way. North of Emerson Street the land use on either side of the rail line becomes residential. Back yards of houses abut the line all the way up to Golf Road on the west side of the right-of-way. An undeveloped strip separates the residential development to the east of the rail line. A commercial use is located west of the right-of-way to the north of Golf Road, while residential use is found to the east.

Following the west terminal alignment, there is an undeveloped area immediate east of the rail line, which extends all the way up to Old Orchard Road (commercial land use lies east of the undeveloped area). Commercial uses are to the west of the right-of-way and extend from the I-94 bridge up to the end of the study area.

On the east terminal alignment, Niles North High School lies to the east of the proposed alignment, while the Edens Expressway would be immediately to the west of this line.

**Gross Point Road / Skokie Boulevard Corridor**

The Gross Point Road/Skokie Boulevard corridor extends north from the present end of the CTA Yellow Line at Dempster Street to Old Orchard shopping center, approximately 1.5 miles (exclusive of any in-mall circulation route). This corridor would extend north along the UPRR right-of-way or extend east along Dempster Street for less than one tenth of a mile, and then north on Bronx Avenue for approximately 0.4 miles. At the intersection with Gross Point Road (either at UPRR or Dempster Street), the corridor would follow Gross Point Road for about one third of a mile to Skokie Boulevard, and then extend up Skokie Boulevard approximately 0.4 miles to Golf Road. This intersection is at the southeast corner of the Westfield Old Orchard Mall's property and several routes are possible from this location into the mall or to other nearby traffic generators. If the high capacity transit corridor were to extend west on Golf Road (as the CTA buses currently operate), entering the mall opposite Lavergne Avenue, the length of this segment of the corridor would be approximately 0.3 miles.

Street widths vary considerably. Dempster is 55 feet wide, Bronx Avenue is 39 feet wide, and Gross Point Road is 40 feet in width. Skokie Boulevard is 88 feet wide. Golf Road varies between 66 and 80 feet wide, with the widest portion being nearest to the Golf Road intersection.

Land uses on either side of Dempster between the CTA bus and rail terminal and Bronx Avenue are commercial. Commercial land use also extends up the first block north of Dempster (to Enfield) on both sides of Bronx Avenue. From there to Gross Point Road, the land use on both sides of Bronx Avenue is multi-story residential.

Along Gross Point, land use is recreational to the west/north, transitioning to commercial. Commercial land use is dominant along the entire length of the east/south side of Gross Point that would be used in this alternative. Both sides of Skokie Boulevard from Gross Point to Golf Road are given over to commercial uses, as are both sides of Golf Road between Skokie Boulevard and Lavergne Avenue. West of Lavergne, the south side of Golf Road is residential, while the north side is used for ancillary facilities associated with Westfield Old Orchard Mall.

**Skokie Boulevard Corridor**

Skokie Boulevard is a major north-south arterial about one-third of a mile east of the CTA Dempster Street Station. This corridor extends east from CTA Yellow Line Dempster station via Dempster Street to Skokie Boulevard. It would remain on Skokie Boulevard for 0.5 miles to Golf Road. This intersection is at the southeast corner of the Westfield Old Orchard Mall's property and several routes are possible from this location into the mall or to other nearby traffic generators. If the high capacity transit corridor were to extend west on Golf Road, entering the mall opposite Lavergne Avenue, the length of this segment of the corridor would be approximately 0.3 miles.

Land uses on either side of Dempster between the CTA bus and rail terminal and Skokie Boulevard are commercial. This is also true for the first two blocks along the boulevard (up to Greenwood). For the next two blocks (Greenwood to Church), land use on either side of Skokie Boulevard is single-family residential. Between Church and Golf, both sides of the boulevard are in commercial use.

Both sides of Golf Road between Skokie Boulevard and Lavergne Avenue are commercial. West of Lavergne, the south side of Golf Road is residential, while the north side is used for ancillary facilities associated with Westfield Old Orchard Mall.

### 3.1.1 Corridor Evaluation

The corridor evaluation involved the analysis of the corridor alternatives based on their performance against relevant Screen 1 evaluation criteria. These criteria represent the Screen 1 measures that apply to each corridor regardless of the modal technology and profile developed within them:

- **Land Use:** Consistency and compatibility with surrounding land uses
- **Neighborhoods and Community:** Neighborhoods and residential population served with improved transit service
- **Poverty-status and Minority Access:** Poverty-status and minority populations served
- **Transit System Usage:** Service to activity centers within the study area and the region
- **Accessibility:** Directness to the existing Yellow Line Dempster terminal station and the regional system

Three corridors, Union Pacific Railroad, Gross Point Road/Skokie Boulevard, and Skokie Boulevard were recommended to be carried forward as described in Tables 3.1 and 3.2.

**Table 3.1: Summary Corridor Evaluation**

| Criteria                         | Edens Expressway | Union Pacific Railroad | Gross Point Road / Skokie Boulevard | Skokie Boulevard |
|----------------------------------|------------------|------------------------|-------------------------------------|------------------|
| Land Use                         | ○                | +                      | +                                   | +                |
| Neighborhoods/ Community         | -                | ○                      | +                                   | +                |
| Poverty Status & Minority Access | ○                | ○                      | ○                                   | ○                |
| Transit System Usage             | -                | +                      | +                                   | +                |
| Accessibility                    | -                | +                      | ○                                   | ○                |
| Advance For Further Screening?   | No               | Yes                    | Yes                                 | Yes              |

Key: + Better than other alternatives; ○ Same as other alternatives; - Worse than other alternatives

**Table 3.2: Summary Corridor Evaluation Conclusions**

| Corridor                            | Advance for Further Screening? | Comments  |
|-------------------------------------|--------------------------------|---|
| Edens Expressway                    | No                             | Highway congestion and the configuration of the Edens Expressway may preclude a suitable transit alignment for all modes and evaluates worse than other corridors in connections to neighborhoods and activity centers. |
| Union Pacific Railroad              | Yes                            | Corridor is well suited for a variety of transit alternatives and evaluates better than other alternatives for land use, neighborhoods served, transit usage, and accessibility.  |
| Gross Point Road / Skokie Boulevard | Yes                            | Corridor land use and neighborhood composition is transit supportive.   |
| Skokie Boulevard                    | Yes                            | Corridor encompasses the densest residential neighborhoods in the study area and is transit supportive.   |

## 3.2 Transit Technologies

A wide range of modal technologies were evaluated as part of the Universe of Alternatives. Eleven transit modal technologies were evaluated. They were grouped into three categories: rail, rubber tire and other modes. Together these encompass the entire domain of current transit technologies. These eleven technologies are:

**Rail Transit:** Rail is the designation for the alternatives operating as traditional rail technologies using steel wheels on steel rail. The rail guideways can be located in dedicated rights-of-way or in some cases, they can share the street with other vehicular traffic and pedestrians. Depending on mode and function, station spacing for these systems can be as close as ¼ to ½ mile in higher populated urban areas and one to five miles in areas with a lower population density. Rail propulsion systems generally obtain propulsion power from either diesel engines on board the vehicle or from electricity delivered from a distant generating location and distributed by overhead wires or a third rail that power the vehicle's electric motors. Hybrid engines, combining diesel and electric power on board the vehicle, are an emerging propulsion technology. The various rail transit alternatives for consideration include:

- Commuter Rail
- High Speed Rail
- Heavy Rail Transit (HRT)
- Light Rail Transit (LRT)
- Streetcar

**Rubber Tire Transit:** Similar to the rail transit, rubber-tire alternatives can travel at higher speeds or lower speeds, operate in dedicated travelways or in mixed traffic, and can use different petroleum based propulsion systems, as well as hybrid, compressed natural gas, and electric systems. The various alternatives for consideration are presented below.

- Commuter Bus
- Local Bus
- Bus Rapid Transit (BRT)

**Other Transit:** Other transit generally represents advanced technology systems recently developed that do not ride on steel or rubber wheels or have so many variations for the guideway that categorization as either a rail vehicle or a bus vehicle would be difficult. These alternatives include:

- Maglev
- Automated Guideway Transit (AGT)/Monorail
- Personal Rapid Transit (PRT)

Figure 3.2 depicts these eleven transit technologies and Table 3.3 provides a summary of the operating characteristics of the eleven transit technologies. These technologies are part of the Universe of Alternatives that will be evaluated in Screen 1.

### 3.2.1 Transit Technology Evaluation

The evaluation of the transit modal technologies was based on:

- **Study Area Suitability** - The modal technology has demonstrated the capability to match basic project operating needs.

Measures of Effectiveness (MOE):

- *Length of Commute:* The typical commute length of the modal technology must be consistent with study area characteristics in terms of dimensions and area.
- *Typical Station Spacing:* The typical station spacing of a modal technology must be consistent with the purpose and need of the project.
- *Operating Speed:* The typical modal speed is consistent with the purpose and need of the project.

To meet the study area suitability criteria, the modal technology must have demonstrated the capability to match basic project needs such as operating speeds, station/stop spacing or length of travel.

- **System Applicability** - The technology has been established as operationally usable. Modal technologies that have not been implemented for public use in the U.S. were not recommended for further evaluation.

Measure of Effectiveness:

- Proven revenue service in North America.

Using these criteria, each transit modal technology was evaluated against its suitability for the study area and its applicability in the U.S. Table 3.4 summarizes this technology evaluation and show that AGT, BRT, HRT, and LRT transit technologies are recommended to be carried forward to the next step of the evaluation.

Figure 3.2: Transit Technologies



*High Speed Rail*



*Metra Commuter Rail*



*CTA Heavy Rail Transit*



*Minneapolis Light Rail Transit*



*Tacoma Streetcar*



*CTA Local Bus*



*Pace Commuter Bus*



*Cvis Bus Rapid Transit*



*Shanghai MagLev*



*Personal Rapid Transit*



*Clarian Automated Guideway Transit*

**Table 3.3: Operating Characteristics of Technology Alternatives**

| Characteristic                                  | Rail Modes                               |   |  |   |   | Rubber Tire Modes  |  |  | Other Modes   |   |  |
|---|--|---|--|---|---|--|--|--|---|---|--|
|   | Commuter Rail                            | High Speed Rail   | Heavy Rail Rapid Transit                           | Light Rail Transit                        | Streetcar                                 | Commuter Bus   | Local Bus  | Bus Rapid Transit  | Magnetic Levitation                                 | Automated Guideway Transit                        | Personal Rapid Transit                 |
| <b>Type of Vehicle</b>                          | Locomotive and train of cars; DMUs, EMUs | Locomotive and train of cars; EMUs  | Trains of self-propelled cars                      | Self-propelled car or train of cars       | Self-propelled car                        | Stand alone vehicle  | Stand alone vehicle  | Stand alone vehicle  | Train of self-propelled cars                        | Train of self-propelled cars                      | Single self-propelled car              |
| <b>Vehicle Capacity</b>                         | 200-1800                                 | 500-600   | 800-1000   | 100-200                                   | 50-70                                     | 40   | 50-70  | 75-150   | 500-600   | Varies per application                            | 4 - 10                                 |
| <b>Propulsion</b>                               | Diesel locomotives; electric motors      | Usually electric motors supplied from catenary wire; also turbine powered locomotives | Electric motors supplied from 3rd rail or catenary | Electric motors supplied by overhead wire | Electric motors supplied by overhead wire | Internal combustion engine (diesel, natural gas or hybrid) | Internal combustion engine (diesel, natural gas or hybrid) | Internal combustion engine (diesel, natural gas or hybrid) | Electromagnetic coils supplied by wires in guideway | Electric motors supplied by power rail            | Electric motors supplied by power rail |
| <b>Service Configuration</b>                    | Connecting suburbs to CBD                | Intercity travel  | Urban network with focus on CBD                    | Urban trunk line service                  | Line service on city streets              | Express service to CBD or other major destinations         | Line service on city streets                               | Urban trunk line service in exclusive lanes or guideway    | Urban applications and intercity travel             | Urban network, as well as shuttle or loop service | Point to point on demand               |
| <b>Travel Speed</b>                             | 30-50 mph                                | 125-200 mph   | 25-50 mph  | 15-25 mph                                 | 10 mph                                    | 30-50 mph  | 10 mph   | 15-25 mph  | 25-250 mph  | 15 mph  | 15 mph                                 |
| <b>Station Spacing</b>                          | 3-7 miles                                | 20 – 50 miles   | 1/4 to 2 miles                                     | 1/4 to 1 mile                             | 2 - 4 blocks                              | Selected stops at each end of trip                         | 2 - 4 blocks   | 1/4 to 1 mile  | 1 to 50 miles                                       | Varies per application                            | Varies per application                 |
| <b>In Transit Revenue Service in N. America</b> | Yes                                      | Yes   | Yes  | Yes                                       | Yes                                       | Yes  | Yes  | Yes  | No  | Yes   | No                                     |

Table 3.4: Technology Evaluation

| Technology                        | Does mode meet the MOE? |                         |                 |                      | Advance for Further Screening? | Comments   |
|-----------------------------------|-------------------------|-------------------------|-----------------|----------------------|--------------------------------|--|
|                                   | Study Area Suitability  |                         |                 | System Applicability |                                |  |
|                                   | Length of Commute       | Typical Station Spacing | Operating Speed |                      |                                |  |
| <i>Automated Guideway Transit</i> | ●                       | ●                       | ●               | ●                    | Yes                            | Typical station spacing and operating speeds suitable to the study area.   |
| <i>Bus Rapid Transit</i>          | ●                       | ●                       | ●               | ●                    | Yes                            | Typical station spacing, operating speeds and flexible commute lengths suitable to the study area.   |
| <i>Commuter Bus</i>               | x                       | X                       | ●               | ●                    | No                             | Typically serves point-to-point suburb to city travel. Trip lengths are not consistent with the study area needs.                            |
| <i>Commuter Rail</i>              | x                       | X                       | ●               | ●                    | No                             | Length of commuter trip and typical station spacing of 3-7 miles is not consistent with the study area needs.                                |
| <i>Heavy Rail Rapid Transit</i>   | ●                       | ●                       | ●               | ●                    | Yes                            | Typical station spacing and operating speeds suitable to the study area.   |
| <i>High-Speed Rail</i>            | x                       | X                       | x               | x                    | No                             | Typically serves intercity travel. Length of commuter trip and typical station spacing of 20 miles not consistent with the study area needs. |
| <i>Light Rail Transit</i>         | ●                       | ●                       | ●               | ●                    | Yes                            | Typical station spacing, operating speeds and flexible commute lengths suitable to the study area.   |
| <i>Local Bus*</i>                 | ●                       | X                       | x               | ●                    | No                             | Typical station spacing and operating speed not consistent with the study area purpose and need.   |
| <i>Maglev</i>                     | x                       | X                       | x               | x                    | No                             | Typical station spacing of at least 20 miles required to achieve operational speeds is inconsistent with the purpose and need.               |
| <i>Personal Rapid Transit</i>     | ●                       | X                       | ●               | x                    | No                             | Typical station spacing, operating speeds and flexible commute lengths suitable to the study area.   |
| <i>Streetcar</i>                  | ●                       | X                       | x               | ●                    | No                             | Typical station spacing and operating speed not consistent with the study area purpose and need.   |

Key: ●Yes, x No

\* Local bus service, along with the CTA Rapid Transit and Metra service is analyzed as part of the No Build and Transportation System Management (TSM) Alternatives

### 3.3 Technology and Profile Evaluation

The transit modal technologies can operate under four possible vertical profiles:

**Elevated:** An elevated structure is above ground, either on an embankment or on a structure. A local example of an elevated structure is the CTA rail track that supports the Red, Green, Pink, Brown and Purple lines. Other elevated structure examples include the embankment that supports the Red and Purple line tracks between Lawrence and Howard. Given that these structures only support one modal technology, service on these lines is faster than those profiles which may result in mixed traffic operation.

**At-Grade:** At-grade service runs at ground level. Examples of at-grade rail service are found on the CTA's Yellow and Brown lines, and throughout Metra's service network. CTA and Pace buses use the existing road network and most are therefore at-grade. At-grade services experience conflict points with other transportation networks, potentially resulting in lower operating speeds.

**Trench:** A trench profile is below ground, but not covered for any distance. Examples of transportation infrastructure that is in a trench can be found on significant parts of the expressway network in Chicago. A specific example of CTA rail in a trench is approaching the Orange Line Midway Airport terminal station. Riders need to ascend to ground level to access additional transportation services. Trench services are usually faster than at-grade due to the dedicated modal technology right-of-way that reduces intersections and potential conflicts with traffic.

**Underground:** Examples of underground rail transit are the CTA Red and Blue lines in downtown Chicago. These subways are tunnels underneath ground level that minimize impacts of the transit facility on adjacent uses and facilitate faster speeds because the train is the only modal technology in the tunnel.

### 3.4 Screen 1 Findings

This section identifies specific issues which led to the recommendation or elimination of each alternative in Screen 1. Tables 3.5 and 3.6 summarize this evaluation.

#### UPRR Corridor At-Grade BRT

- At grade BRT would be cost effective on the UPRR Corridor. The corridor is generally of an appropriate width and should be capable to physically accommodate an enhanced bus service. This alternative is recommended for further screening in Screen 2.

#### UPRR Corridor Elevated BRT

- Elevated BRT provides lower system capacity and travel time savings than HRT for a similar magnitude of cost. This alternative is not recommended for further evaluation.

#### UPRR Corridor Trench HRT

- A trench alignment in the UPRR Corridor might be appropriate in certain situations where a combination of right-of-way grade and grade-crossings would interfere significantly with traffic on the road both during construction and ongoing operation as a result of the necessary right of way reapportionment that would be required. This alternative is recommended for further evaluation in Screen 2.

UPRR Corridor At-grade HRT

- Though there is conflicting traffic for an at-grade HRT profile on the UPRR Corridor, this profile matches the current profile of the existing rail and would have lower costs than other vertical profiles, deeming this a feasible option. This alternative is recommended for further evaluation in Screen 2.

UPRR Corridor Elevated HRT

- The previous use of this corridor for railroad operations and its resulting configuration result in the UPRR Corridor being feasible for elevated HRT service. Additionally, an elevated rail line within this corridor could tie into the existing Yellow Line at or near the Dempster Street station. This alternative is recommended for further evaluation in Screen 2.

Combined Gross Point Road / Skokie Boulevard Corridor At-Grade BRT

- Bus service currently operates along this corridor. Enhancing and upgrading this existing service would be cost effective. This alternative is recommended for further evaluation in Screen 2.

Combined Gross Point Road / Skokie Boulevard Corridor Elevated BRT

- Elevated BRT provides lower system capacity and travel time savings than HRT for a similar magnitude of cost. This alternative is not recommended for further evaluation.

Combined Gross Point Road / Skokie Boulevard Corridor Elevated HRT

- Elevated structures on the Gross Point Road / Skokie Boulevard corridor would be costly and have higher adverse impacts than alternatives in the UPRR corridor. This alternative is not recommended for further evaluation.

Combined Gross Point Road / Skokie Boulevard Corridor At-grade HRT

- Although the Yellow Line currently exists as a primarily at-grade operation, this is based on the historical alignment that preceded the construction of the Yellow Line. When operating entirely within a corridor with high vehicular street traffic, grade separation is the current standard for new HRT alignments as it enhances system safety, while minimizing adverse affects to pedestrian mobility and local traffic. This alternative is not recommended for further evaluation.

Combined Gross Point Road / Skokie Boulevard Corridor Underground HRT

- Despite scoring high on nearly all measures of effectiveness in this screening, underground facilities of all types are cost prohibitive in relation to the benefits provided in this corridor. This alternative is not recommended for further evaluation.

**Table 3.5: Summary of Technology and Profile Evaluation**

| Technology                 | Profile     | Criteria    |                 |             |               |         |              | Advance for Further Screening |
|----------------------------|-------------|-------------|-----------------|-------------|---------------|---------|--------------|-------------------------------|
|                            |             | Air Quality | System Capacity | Travel Time | Compatibility | Traffic | Project Cost |                               |
| Automated Guideway Transit | Elevated    | ○           | ○               | ○           | -             | +       | ○            | No                            |
|                            | Trench      | ○           | ○               | ○           | -             | ○       | ○            | No                            |
|                            | Underground | ○           | ○               | ○           | -             | +       | -            | No                            |
| Bus Rapid Transit          | Elevated    | ○           | ○               | ○           | ○             | +       | ○            | Yes                           |
|                            | At-Grade    | ○           | ○               | ○           | +             | ○       | +            | Yes                           |
|                            | Trench      | ○           | ○               | ○           | ○             | ○       | ○            | No                            |
|                            | Underground | ○           | ○               | ○           | ○             | +       | -            | No                            |
| Heavy Rail Rapid Transit   | Elevated    | ○           | +               | +           | ○             | +       | -            | Yes                           |
|                            | Trench      | ○           | +               | +           | ○             | -       | +            | Yes                           |
|                            | Underground | ○           | +               | +           | ○             | ○       | -            | Yes                           |
| Light Rail Transit         | Elevated    | ○           | +               | +           | ○             | +       | -            | No                            |
|                            | At-Grade    | ○           | ○               | ○           | -             | +       | ○            | No                            |
|                            | Trench      | ○           | ○               | -           | -             | -       | +            | No                            |
|                            | Underground | ○           | ○               | ○           | -             | ○       | ○            | No                            |

Key: + Better than other alternatives; ○ Same as other alternatives; - Worse than other alternatives

**Table 3.6: Summary of Screen 1 Evaluation of Alternatives**

| Technology               | Profile     | Recommended to Advance to Screen 2 |   |
|--------------------------|-------------|------------------------------------|---|
|                          |             | Union Pacific Railroad             | Combined Gross Point Road / Skokie Boulevard Corridor |
| Bus Rapid Transit        | Elevated    | No                                 | No  |
|                          | At-Grade    | Yes                                | Yes   |
| Heavy Rail Rapid Transit | Elevated    | Yes                                | No  |
|                          | At-Grade    | Yes                                | No  |
|                          | Trench      | Yes                                | No  |
|                          | Underground | No                                 | No  |

Based on this evaluation, two Bus Rapid Transit (BRT) alternatives along the UPRR Corridor and combined Gross Point Road / Skokie Boulevard Corridor, and three Heavy Rail Transit (HRT) alternatives along the UPRR Corridor, along with the No-Build and TSM alternatives were carried forward for further analysis in Screen 2.

## 4.0 SCREEN 2 EVALUATION

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The Screen 2 evaluation begins with the alternatives that were carried forward from the Screen 1 evaluation.

### 4.1 Definition of Alternatives

#### Step 1 Evaluation

Alternatives advancing to Step 1 of the Screen 2 are developed and refined beyond the initial corridor and technology descriptions to include the conceptual design of the alternative, the identification of potential station locations, and preliminary service plans. This alternatives definition assists in a more complete understanding of the unique elements and requirements for each alternative. It also provides a more complete level of information about each alternative to support a more detailed evaluation. The alternatives recommended from Screen 1 for further study include:

- No Build Alternative
- Transportation System Management (TSM)
- Bus Rapid Transit (BRT) via Union Pacific Railroad Corridor At-Grade
- Bus Rapid Transit (BRT) via Combined Gross Point Road/Skokie Boulevard Corridor
- Heavy Rail Transit (HRT) via Union Pacific Railroad Corridor Elevated, At-Grade and Trench

#### No-Build Alternative

The No-Build Alternative is defined as the existing transportation system, plus any committed transportation improvements. Committed transportation improvements include projects that are already in the Chicago Metropolitan Agency for Planning (CMAP) financially constrained Transportation Improvement Program. The Yellow Line Study Area has a number of projects included in the FY 2007 – 2012 Transportation Improvement Program (TIP).

There are three intersection improvements included in the TIP. All are located along Skokie Boulevard, including at the intersections of Dempster Street, Golf Road and Old Orchard Road. These projects vary in the type of improvements, available funding and scheduling. The intersection of Golf Road and Skokie Boulevard is scheduled for completion in 2009 and includes upgraded traffic signals in addition to reconstructing the intersection. The Dempster Street intersection is slated to be improved in 2010, while the Old Orchard Road intersection does not have a scheduled completion date.

Road improvements also vary by improvement, funding and schedule. The project that will most affect the Yellow Line extension is the widening of Old Orchard Road from Harms Road to Skokie Boulevard and expansion of the northbound Edens off ramp lanes. Currently, in a preliminary design phase, the project is coordinated by the Village of Skokie, with IDOT and the Cook County Highway Department. Initial plans and recommendations are incorporated into the no-build and build alternatives.

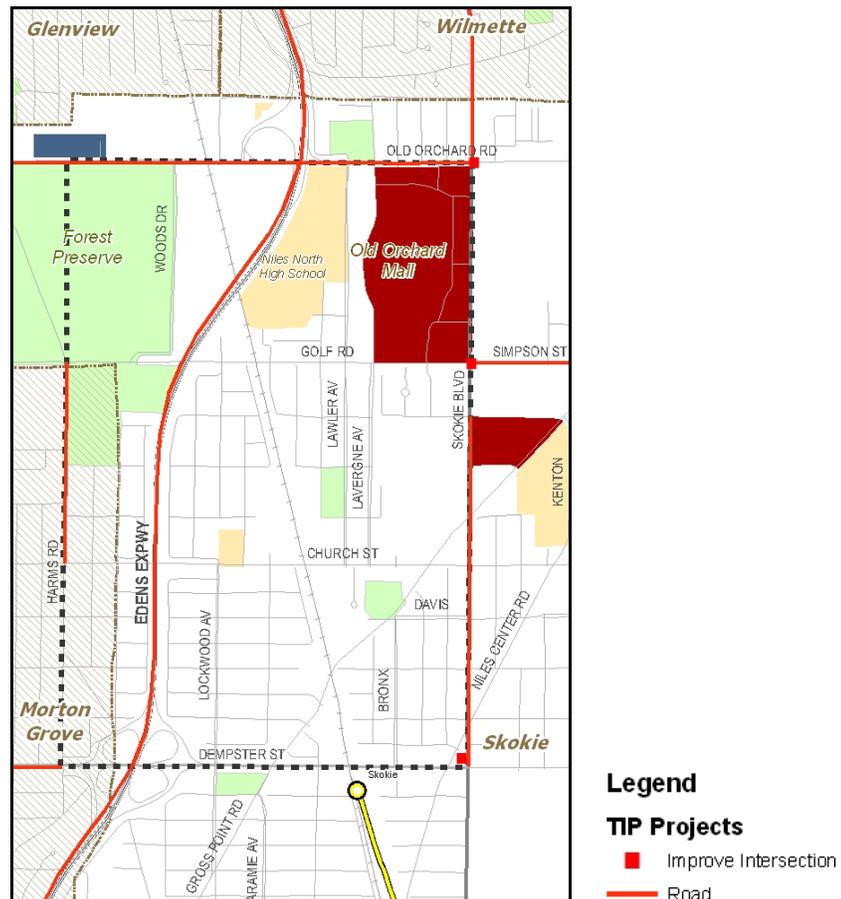
In 2010, three projects are scheduled: resurfacing of Skokie Boulevard from Dempster to Touhy Avenue and of Skokie Road from Old Orchard north, and the reconstruction and widening of Dempster Road from the west to Central Road. The resurfacing of Golf Road from the east to Skokie Boulevard is slated for 2011. The resurfacing of Central Avenue and Dempster Street from Skokie Boulevard east are unscheduled. For additional information on assumed

transportation improvements in the study area, see the CTA Yellow Line Extension Screen 1 Report, Appendix C.

Bus transit service under the No Build Alternative would be focused on the preservation of existing services and projects. By the projection year of 2030, some bus service may be reorganized; however, the transit network within the project area would largely be the same as it is now.

All elements of the No-Build alternative are included in each of the other alternatives except where an alternative replaces services or facilities inside the study area. The No-Build Alternative with TIP projects in the Yellow Line Extension Study Area is shown in Figure 4.1.

**Figure 4.1: No-Build Alternative with TIP Projects**



**TSM/BRT Skokie Boulevard Alternative**

Based on local preference and discussions with the Federal Transit Administration (FTA), consolidation of the TSM and BRT Gross Point Road/Skokie Boulevard Corridor alternatives was analyzed. The TSM and BRT alternatives were initially defined to operate on a two mile alignment between the Yellow Line Dempster Street station and Westfield Old Orchard Mall via Dempster Street, UPRR or Bronx Avenue, Gross Point Road, Skokie Boulevard, and Old Orchard Road.

Dempster Street is 60 feet wide with four lanes, center turn lane, and no parking. Bronx Avenue and Gross Point Road are 40 feet wide with two lanes and parking. Northeast of Church Street, Gross Point Road transitions to four lanes, with a center turn lane and no parking. Skokie Boulevard from Gross Point Road to Old Orchard Road is approximately 80 feet wide with six lanes, a center turn lane and no parking. Old Orchard Road between Skokie Boulevard and Laverne Avenue is four lanes with a landscaped median, center turn lanes and no parking. West of Laverne Avenue, Old Orchard Road is six lanes with center turn lanes and no parking. On Dempster Street, ADT is currently 30,100, ADT on Gross Point Road 14,300, on Skokie Boulevard, ADT is 19,800 and Old Orchard Road, ADT is 16,200<sup>12</sup>.

Full-scale BRT projects are usually greater than four to five miles in length in order to achieve sufficient travel time savings. The estimated travel time savings for implementing BRT on the two mile segment along Dempster/Skokie Boulevard is only 1.5 to 2.0 minutes of time savings relative to the TSM (assuming an order-of-magnitude travel time savings of between 15 and 20 percent that BRT could be expected to achieve over the TSM alternative).

Given the order-of-magnitude capital costs for implementing BRT on Skokie Boulevard of \$40 million and travel time savings of only 1.5 to 2.0 minutes over the TSM, the CTA decided to merge the TSM and BRT alternatives into a single new TSM alternative. This new TSM/BRT Alternative thus replaced the TSM and BRT Alternatives from the Screen 1 analysis and was used for the detailed evaluation in Screen 2.

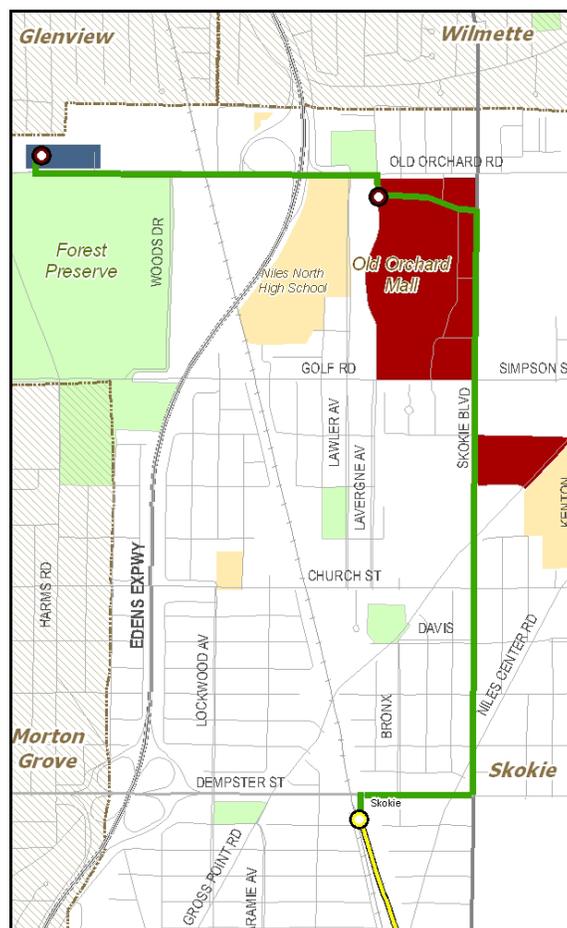
The TSM/BRT Alternative is an at-grade BRT. It is proposed to operate in mixed-traffic between the existing Dempster station and Cook County Courthouse. Refer to Figure 4.2.

- The alternative is 2.6 miles long.
- Intermediate stop located at a new bus transfer station located on the east side of Westfield Old Orchard Mall. The TSM would then continue one mile west on Old Orchard Road to the Cook County Courthouse.
- The average travel time from the Dempster station to Old Orchard Mall is 13.5 minutes and to the Cook County Courthouse is 17 minutes. This includes a five minute wait time at Dempster.
- Implementation of traffic signal priority along Dempster Street, Nilens Center Road, Skokie Boulevard, and Old Orchard Road portion of the route (similar to the previous TSM and BRT alternatives) is included.
- Preliminary schedules indicate that five 40-foot buses (including one spare) would be required.
- A park-n-ride facility is planned at the Old Orchard Mall stop with a preliminary capacity estimate of 350 spaces.
- No exclusive lanes are planned along the route.
- The alternative assumes that all bus routes in the study area will continue current operations.

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<sup>12</sup> ADT's from IDOT website. <http://www.gettingaroundillinois.com/default.aspx?ql=aadt#>  
Year of Count Data - Gross Point Road: 2006, Dempster Road: 2007, Skokie Boulevard: 2007, Old Orchard Road: 2006

Figure 4.2: TSM/BRT Skokie Boulevard Alternative



### BRT UPRR At-Grade Alternative

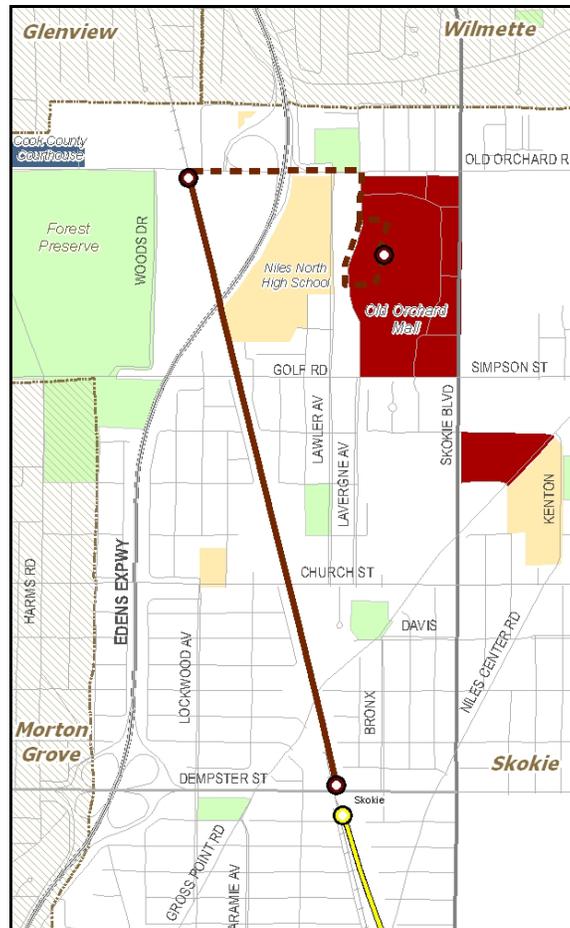
The BRT would operate on exclusive lanes from a new terminal station located on the north side of Dempster Street to a new station at the UPRR and Old Orchard Road. The BRT would then operate in mixed traffic to serve the existing bus transfer station at Old Orchard Mall. The BRT UPRR Alternative is shown in Figure 4.3.

- The alternative is 2.0 miles long.
- The average travel time from the Dempster station to Old Orchard Road is 9.0 minutes and to Old Orchard Mall is 13.0 minutes. This includes a five minute wait time at Dempster.
- This service plan proposes up to three bus routes terminating at a new bus facility on Old Orchard Road, and an additional four bus routes operating through the new terminal. Based on existing facilities of similar capacity, this bus facility will require approximately 40,000 square feet of terminal space, depending upon the configuration of the bus bays.
- Traffic signal priority would be implemented along the UPRR at Gross Point Road, Church Street, Golf Road and Old Orchard Road.
- A BRT terminal station would be located across the street on the north side of Dempster Street from the existing Dempster station. Subject to ongoing discussions, this BRT

terminal station would be located within UPRR/ComEd ROW and the existing Village of Skokie commuter parking area.

- No intermediate station stops between the new BRT Dempster Street and the new Old Orchard Road station are proposed.
- A park and ride facility is planned at the Old Orchard Road station with a preliminary capacity estimate of 350 spaces.

**Figure 4.3: BRT UPRR Alternative**



### HRT UPRR Corridor Alternative Elevated, At-Grade and Trench Alternatives

The HRT UPRR Corridor alternative for a north extension of the Yellow Line from Dempster Street to the vicinity of Old Orchard Road, was identified in Screen 1 for possible routing and location on either along the UPRR right-of-way (ROW) or east of the Edens Expressway. Alternatives included an elevated, at-grade and trench profile.

A conceptual engineering analysis was performed in Screen 2 to determine the desired vertical profile and alignment of the UPRR alternative. A double-track and single-track alignment were also analyzed with both a trench and elevated profile to reduce the relocation cost of utility poles/towers along the UPRR Corridor.

The alignments considered for detailed evaluation in Screen 2 are described as follows:

- While at-grade construction can result in lower capital costs, there are also long-term operating and safety impacts associated with this profile. If implemented, the Dempster Street and Golf Road at-grade crossings would become the highest traffic at-grade crossings in the CTA system. In addition, public perception of traffic conditions and CTA design guidelines support eliminating the at-grade alternative in order to eliminate traffic and safety hazards. For the reasons above, an HRT at-grade alignment is not recommended for inclusion in the UPRR HRT alternative.
- To conform to CTA design criteria, construction of a trench or elevated grade separation at Dempster Street would require that the approach grade begin within the limits of the existing Dempster station. This suggests the existing Dempster station must be replaced to achieve a grade separation of Dempster Street.
- The existing Dempster station layout is not suited to the handling of a north extension. Constructing a second track through the station site is required and would impact the proposed relocation of the bus facilities to the east of the present tail track. With the extension, it will be important to address the issues at Dempster by building a new station to accommodate longer length trains, as well as support bi-directional ridership demands.
- An elevated or trench alignment would place the new station centered above or below Dempster Street. This location would provide enhanced station accessibility from the north and south parking areas without requiring pedestrians to cross Dempster Street.
- Bus transfer, taxi, entrance and parking areas at the Dempster Station would be reconfigured for the new elevated or trench station.

For the reasons above, HRT trench and elevated alignments are recommended for inclusion in the UPRR HRT alternative.

#### **UPRR Segment between Dempster Street and North of Golf Road**

The HRT alternatives would proceed north in a single-track alignment with no intermediate stations within the UPRR ROW from Dempster Street to the area north of Golf Road. Both trench and elevated profiles were considered in order to eliminate grade crossings between Dempster Street and Golf Road.

- A single-track alignment was determined with both a trench and elevated profile to reduce the relocation cost of utility poles/towers. A desirable aspect of a single-track extension is that it would minimize the footprint required both during construction and once the line is in operation. This, in turn, would minimize the number of utility poles and/or high-tension towers that would have to be relocated to facilitate construction or to provide sufficient ROW (ROW) for the CTA line. Reducing the number of poles and/or towers that have to be relocated has a significant effect on capital costs.
- Current headways on the Yellow Line are 10 minutes during peak periods. An operations analysis was performed to verify whether single-track operation was feasible. Based on rail vehicle performance characteristics, a travel time of 3.0 minutes between Dempster and Old Orchard stations is estimated. This travel time is sufficient to provide adequate layover times at Old Orchard and Howard for train turnarounds using single-track operations between Dempster and Old Orchard. Yellow Line headways under a single-track scenario between Dempster and Old Orchard could be reduced to

approximately 7.5 minutes, with additional vehicles. Thus, single-track operation is feasible from an operations perspective.

- For single-track operation, a tail track with diamond crossover would be installed at Dempster to facilitate short-turns, if needed. In a similar context, the terminal station at Old Orchard Road would be built as a double-track facility with an island platform and turnout on approach to the station.
- CTA ROW width for single-track would be a minimum 25-feet for an elevated structure within the UPRR ROW.
- Elevated single-track would be located with the UPRR ROW and is believed to not require the relocation of utility poles and towers in the ComEd ROW. However, this is based on conceptual design and is subject to more detailed verification with ComEd.
- An additional 25-foot strip of adjacent land from ComEd would be needed for a trench structure and require the relocation of utility poles/towers in ComEd ROW.
- No existing residences, businesses or park/recreational areas would have to be acquired to accommodate the HRT extension between Dempster Street and Golf Road. However, certain of the alignment/profile options may require the acquisition of the parking lot on the ROW north of Golf Road.

For the reasons above, an HRT single-track alignment is recommend for inclusion in the UPRR HRT alternative.

#### **UPRR Segment between North of Golf Road and Old Orchard Road**

Beginning north of Golf Road, the alignment would either continue north at-grade along the UPRR ROW to Old Orchard Road or curve east paralleling the east side of the Edens Expressway on an elevated profile to a possible terminal location on the south side of Old Orchard Road. These alignments are described as follows:

##### **West Option - UPRR Alignment to Old Orchard Road**

The West Option remains on the UPRR ROW to a north terminal station on the south side of Old Orchard Road. This alignment would avoid any additional land acquisition or usage agreements other than those required from the UPRR and ComEd, which would already be necessary for the extension between Dempster and Golf for a single-track alignment.

The alignment would transition from an elevated or trench profile to an at-grade profile north of Golf Road. This alignment would continue underneath the Edens Expressway and remain at-grade into a new terminal station.

- A terminal station located on the UPRR ROW or adjacent ROW would provide a space of approximately 259,400 square feet. Approximately 70,000 square feet would be utilized for intermodal facilities. The footprint for the terminal stations is envisioned to include a double-track, island-platform, stub-end station, with a universal crossover located on approach to the station. Commuter parking, kiss-and-ride, taxi and bus interchange facilities would be located alongside and around the rapid transit station. It is possible that the existing low-density office park to the east of the proposed terminal location may have to be acquired to provide sufficient space for the parking facilities and circulation roads.
- The terminal location could provide improved pedestrian access via a pedestrian crossover to commercial buildings in the northwest and southwest quadrants of the Old Orchard/Edens interchange, and to the new Optima towers residential development,

Illinois Holocaust Museum and commercial enterprises to the west of the UPRR ROW. A transit connection would be required to provide access to other destinations including the Cook County Courthouse and Illinois Holocaust Museum to the west, Niles North High School (NNHS) on the east side of the UPRR alignment and to the Westfield Old Orchard Mall and other commercial enterprises to the east.

- This alternative would be less attractive to most users, because the dominant developments at Old Orchard Road and the shopping center would be a longer distance to walk from the terminal. There will also have to be bus transit connections to these area traffic generators. Therefore, operating expenses would be incurred by requiring shuttle bus service or coordinated fixed-route services to link the station to these developments. Imposing a transfer to reach a destination impedes the ridership potential for this option.
- A bus terminal with capacity for at least seven bus routes, which currently serve the Old Orchard Mall area is proposed. One additional bus route would be also be diverted to the terminal station (Pace Route 626), rather than continue to its current terminal at the Dempster station. None of these routes operates on a tight enough headway in the peak to require more than one bay per bus route. Note that expansion bays over the seven routes identified should be provided. Also, no determination has been made relative to accommodating Greyhound intercity buses at the new terminal.
- By remaining within the UPRR ROW, it would be possible to preserve the option to extend the Yellow line beyond Old Orchard Road in the future.
- A multi-use path adjacent to the HRT ROW is desired by the Village of Skokie. ROW of the UPRR property for this multi-use path would not be available with implementation of the HRT alternative. However access to the UPRR ROW for path crossings could be accommodated. The multi-use path would need to be implemented on ComEd ROW by the Village of Skokie.

For the reasons above, an HRT West Option alignment is recommended for inclusion in the UPRR HRT alternative.

Overall, the HRT UPRR West Option Alternative has the following characteristics.

- The alternative is 1.63 miles long.
- The average rail running time along the UPRR ROW from the Dempster station to Old Orchard Road (west of Edens Expressway) is 3.0 minutes. A bus connection to Old Orchard Mall would include an additional 9.5 minutes (includes 5.5 minutes bus transfer time and a 4.0 minutes bus running time) for a total travel time of 12.5 minutes.
- The Old Orchard Road terminal station would be on west side of the Edens Expressway.
- No intermediate stations are planned south of Old Orchard Road.
- Based on the estimated running time for the HRT UPRR alignment, an additional two cars are required for the AM rush period.
- A park and ride facility is planned at the Old Orchard Road station with a preliminary capacity estimate of 350 spaces.
- A bus turnaround is planned adjacent to the West Option terminal station.

The HRT UPRR West Option Alternative is shown in Figure 4.4.

*East Option - East of Edens Expressway Station Location*

The East Option assumes a tangent alignment north of Golf Road, terminating in a station east of the expressway and in the northwest portion of the Niles North High School (NNHS) property. Approximately one-tenth of a mile north of Golf Road this alignment would curve to the east, paralleling the east side of the Edens Expressway. The rail line would run parallel to the west edge of NNHS baseball field, tennis courts, cogeneration plant and a maintenance shed. The single-track alignment and island-platform station would be located primarily within the Cook County ROW adjacent to the Edens Expressway.

The transit station and associated facilities would displace 230 parking spaces currently in the NNHS lot to the north of the campus. This would be replaced by a 580 space multi-story parking structure with dedicated school parking (230 spaces) and dedicated commuter parking (350 spaces).

- For this alignment, the station would be located on the northwest side of the NNHS parking lot. There are some grade changes between the parking lot level and the adjacent expressway, but it is likely that the station would be built at the Old Orchard Road grade level. The 520-foot platform would be elevated and extend south from this location. As in the proposed West Option terminal, the station would be of the double-track, island-platform, stub-end configuration. Universal crossovers would be located on approach to the station, though curves in the approach alignment may mean that the crossovers are located some distance removed from the station itself.
- The conceptual plan suggest that the single-track alignment would not impact the NNHS cogeneration building. However, the maintenance building would require modification or relocation as the elevated structure would be located above a portion of the building. Underground utilities for the cogeneration building may also be impacted.
- Displacement of NNHS parking would be required to construct this alignment. A new multi-story shared use parking facility would be constructed east of the transit station and on the north end of NNHS property.
- This alternative does not displace other properties or land owners.
- The alignment and station location accommodates the proposed future expansion and reconstruction of the Edens Expressway northbound exit lanes as well as reconstruction of Old Orchard Road.
- CTA and Pace bus services would be rerouted to pass through an off-street facility on the east side of the rapid transit station and continue to the existing bus transfer station at Old Orchard Mall.
- A multi-use path north of Golf Road in this area would likely be located underneath the elevated structure or adjacent to the HRT alignment on NNHS property.
- Total length of the extension would be approximately 1.64 miles.

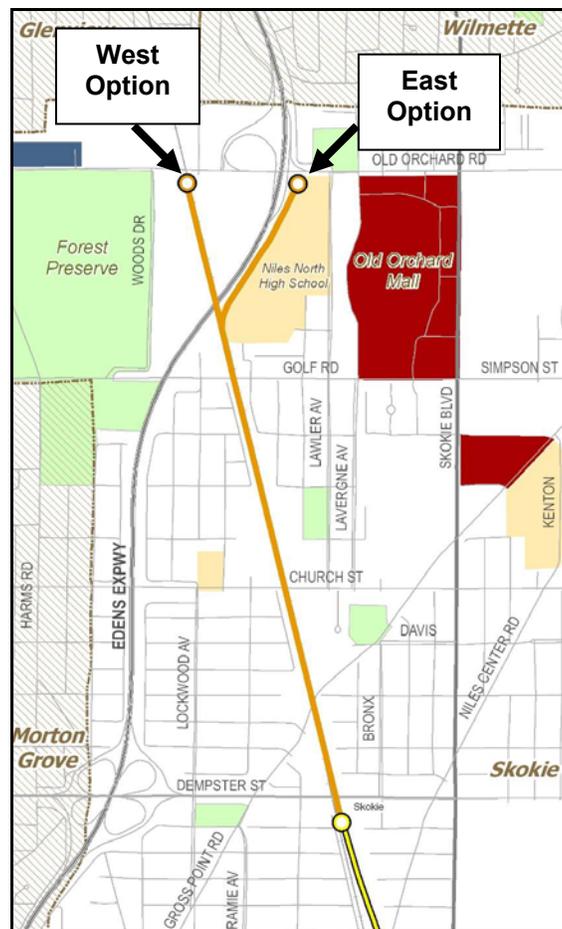
For the reasons above, an HRT East Option is recommended for inclusion in the UPRR HRT alternative.

The HRT UPRR East Option Alternative has similar characteristics as the HRT UPRR West Option. Additional characteristics are summarized below.

- ROW assumptions south of Golf Road are identical for the HRT UPRR East and West options.
- Old Orchard Road terminal station on east side of the Edens Expressway.
- A park and ride facility is recommended at the Old Orchard Road station with a preliminary capacity estimate of 350 spaces for commuters and 230 spaces for NNHS student/faculty parking displaced by the terminal.
- A bus turnaround is planned adjacent to the East Option terminal station. Bus routes would serve the new Old Orchard Station before terminating at the Old Orchard Mall turnaround; without taking recovery time at the new station.
- The average rail running time from the Dempster station to Old Orchard Road (east of the Edens Expressway) is 3.0 minutes. A bus connection to Old Orchard Mall would include an additional 6.5 minutes (includes 4.5 minutes bus transfer time and 2.0 minutes bus running time) for a total travel time of 9.5 minutes.

The HRT UPRR East and West Alternatives are shown in Figure 4.4

**Figure 4.4: HRT UPRR Alternative with East and West Station Options**



## 4.2 Screen 2 Evaluation and Findings

### Step 2 Evaluation

Based on the Screen 2 definition of alternatives described in Section 4.1, Step 2 of Screen 2 consisted of a technical evaluation of alternatives. The step 2 evaluation factors used to assess the performance of the alternatives included:

- Physical Constraints
- Social Factors
- Economic Factors
- Transportation Factors
- Environmental Factors
- Capital Cost Comparison
- Operating and Maintenance (O&M) Cost Comparison
- Ridership Potential

The Screen 2 analysis resulted in a preliminary recommendation for the HRT UPRR Alternative East Option as the Locally Preferred Alternative (LPA), and is shown in Table 4.1.

**Table 4.1: Screen 2 Evaluation Summary and LPA Recommendation**

| Screening Criteria        | No-Build | TSM/BRT | BRT      | HRT              |                  |                  |                  |
|---------------------------|----------|---------|----------|------------------|------------------|------------------|------------------|
|                           |          |         | UPRR     | UPRR West Option | UPRR West Option | UPRR East Option | UPRR East Option |
|                           |          |         | At-Grade | Elevated         | Trench           | Elevated         | Trench           |
| Physical Constraints      | NA       | ○       | ○        | ○                | –                | ○                | –                |
| Social                    | NA       | ○       | ○        | ○                | ○                | ○                | ○                |
| Economic                  | NA       | ○       | ○        | ○                | ○                | +                | +                |
| Environmental             | NA       | ○       | ○        | –                | –                | –                | –                |
| Transportation            | –        | –       | –        | +                | +                | +                | +                |
| Capital Cost              | –        | +       | +        | –                | –                | ○                | –                |
| Operating Cost            | +        | ○       | +        | ○                | ○                | ○                | ○                |
| Ridership                 | +        | ○       | ○        | +                | +                | +                | +                |
| Summary Rating            | 0        | +0      | +1       | 0                | -1               | +2               | 0                |
| <b>LPA Recommendation</b> | No       | No      | No       | No               | No               | Yes              | No               |

Key: + Better than other alternatives; ○ Same as other alternatives; – Worse than other alternatives

This section identifies specific issues described in Table 4.1 – the evaluation summary matrix that led to the recommendation and elimination of each alternative in Screen 2.

TSM/BRT Skokie Boulevard Alternative At-Grade

- The TSM/BRT Alternative scores well on cost criteria but performs poorly on transportation and ridership criteria.
- The TSM/BRT Alternative is expected to be the least costly to build and operate out of all alternatives considered.
- Access to the rapid transit system serving 144 stations across Chicago and nearby suburbs will require a change of vehicle at Dempster Street station. This requirement to transfer limits potential for transit supportive development beyond conditions present in the no-build alternative.
- Overall, the TSM/BRT Alternative would improve regional and local access and mobility to employment at Old Orchard Mall. However, travels times are not significantly better than no-build to Old Orchard Mall due to the short travel distance from the Dempster station.

**Recommended Rating:** The TSM/BRT Skokie Boulevard Alternative is **not recommended** as the Locally Preferred Alternative.

BRT UPRR At-Grade Alternative

- The BRT UPRR Alternative has similar station area physical constraints as the HRT West Option alternative making construction of this alternative less attractive.
- The BRT Alternative has a lower capital cost than the HRT alternatives.
- Employment is significantly lower west of Edens Expressway due to land use and development constraints.
- Operating costs for the BRT alternative is lower than TSM/BRT and HRT Alternatives.

**Recommended Rating:** The BRT UPRR Alternative is **not recommended** as the Locally Preferred Alternative.

HRT UPRR West Option Elevated Alternative

- The HRT West Option Elevated Alternative has a higher capital cost than the HRT East Option Alternatives due to the high cost of ComEd utility relocation in the proposed station area ROW.
- Operating costs for this alternative are comparable to the other elevated HRT alternative, but less than for trench alternatives.
- A station location west of Edens Expressway makes pedestrian access to the higher volume traffic generators and employment opportunities on the east side of the Edens Expressway more challenging.
- Employment is significantly lower west of Edens Expressway due to land use and development constraints.

**Recommended Rating:** The HRT UPRR West Option Elevated Alternative is **not recommended** as the Locally Preferred Alternative.

HRT UPRR West Option Trench Alternative

- A station location west of Edens Expressway makes pedestrian access to the higher volume traffic generators and employment opportunities on the east side of the Edens Expressway more challenging.
- Employment is significantly lower west of Edens Expressway due to land use and development constraints.
- The HRT UPRR West Option Trench alternative has a highest capital cost among all other alternatives.
- Operating costs for the HRT trench alternatives are higher than all other alternatives.

**Recommended Rating:** The HRT UPRR West Option Trench Alternative is **not recommended** as the Locally Preferred Alternative.

HRT UPRR East Option Elevated Alternative

- A station location east of Edens Expressway provides greater access for pedestrians and buses to the higher volume traffic generators and employment opportunities on the east side of the Edens Expressway.
- The HRT East Option Elevated alternative would enhance opportunities for transit-supportive development adjacent to Old Orchard Mall.
- Employment is significantly higher east of Edens Expressway.
- The HRT UPRR East Option Elevated alternative has the lowest capital cost among all other HRT Alternatives.
- Operating costs for HRT elevated alternatives are slightly lower than HRT trench alternatives.

**Recommended Rating:** The HRT UPRR East Option Elevated Alternative is **recommended** as the Locally Preferred Alternative.

HRT UPRR East Option Trench Alternative

- A station location east of Edens Expressway provides greater access for pedestrians and buses to the higher volume traffic generators and employment opportunities on the east side of the Edens Expressway.
- The HRT East Option Trench Alternative would enhance opportunities for transit-supportive development adjacent to Old Orchard Mall.
- Employment is significantly higher east of Edens Expressway.
- The HRT Trench alternative has a higher capital cost than the Elevated alternative due to greater physical constraints and ROW requirements.
- Operating costs for the HRT trench alternatives are slightly higher than the HRT elevated alternatives due to the continued maintenance cost of additional pumping facilities.

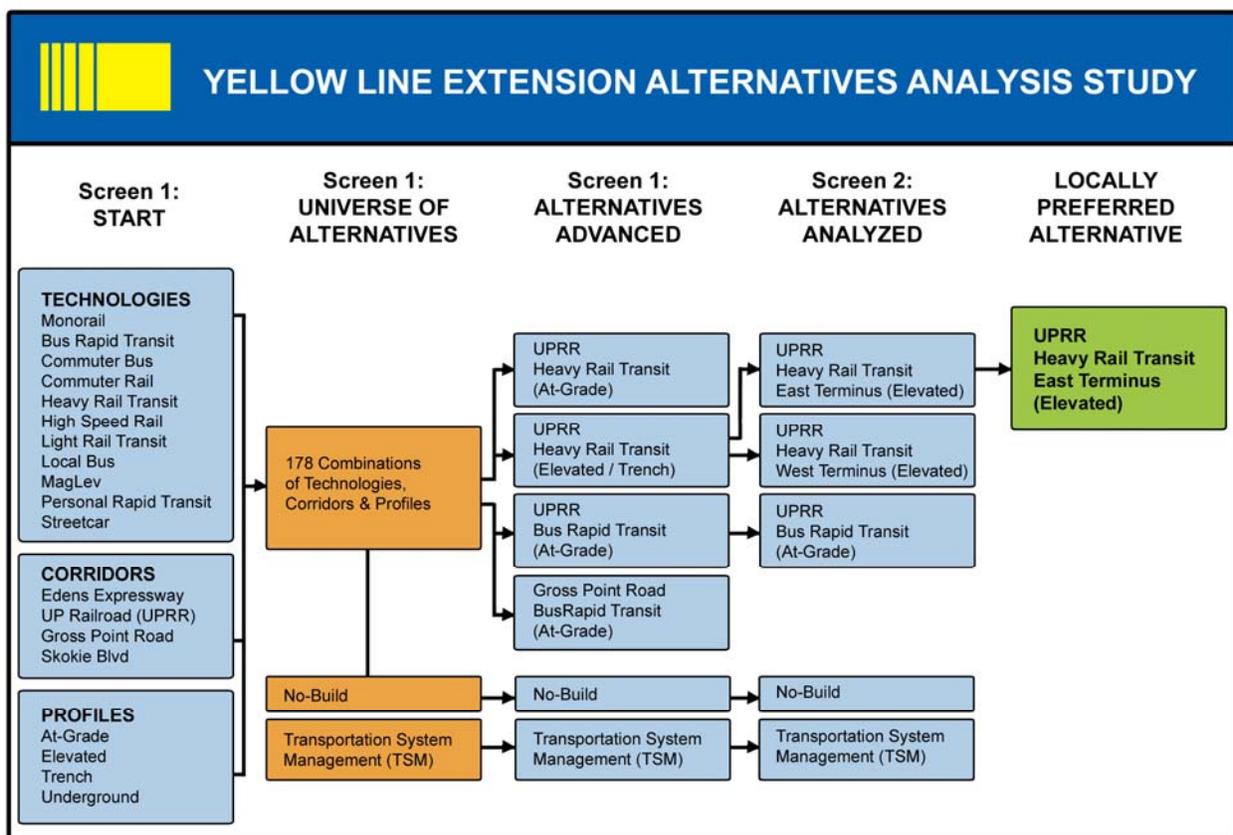
**Recommended Rating:** The HRT UPRR East Option Trench Alternative is not recommended as the Locally Preferred Alternative.

Screen 2 concluded with public involvement including meetings with elected officials and other stakeholder groups, as well as one public open house held at Niles North High School in April 2009.

### 4.3 Screening Summary

Figure 4.5 presents a summary of the two screenings, beginning with the Universe of Alternatives, followed by alternatives advanced in Screens 1 and 2, and the LPA recommendation for the elevated HRT via the UPRR East Terminus.

Figure 4.5: Yellow Line Extension AA Screening Summary



## 5.0 LOCALLY PREFERRED ALTERNATIVE

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### 5.1 Selection of a Locally Preferred Alternative

On August 12, 2009, the Chicago Transit Board approved an elevated HRT extension along the UPRR Corridor as the LPA. This recommendation was based on the technical work described in previous sections of this report, and based on public, stakeholder, and agency input. This section further describes the LPA (and No Build and TSM alternatives, which must be carried forward) and summarizes the benefits of the LPA in terms of how it meets the goals and objectives for the project compared to No Build and TSM/BRT alternatives.

### 5.2 Description of Service Plans

A description of the proposed service plans for the LPA, along with the No Build and TSM/BRT alternatives are summarized below.

#### 5.2.1 Alternative Descriptions

The proposed span of service for all the alternatives is consistent with the current Yellow Line service hours. On weekdays the proposed span is 4:30 a.m. until 11:00 p.m. Saturday and Sunday service would begin at 6:00 a.m. and end at 11:30 p.m.

The frequency of service for all alternatives will mimic the current Yellow Line frequencies. Morning rush hour frequency on the Yellow Line is ten minutes. Weekday midday frequency continues at ten minute intervals. Service frequency in the evening is ten minutes with late evening frequency at 15 minutes. Saturday and Sunday frequency of service is 15 minutes. Results from the ridership forecast may necessitate changes to these proposed frequencies if estimated demand exceeds proposed capacity.

#### No Build Alternative

The No-Build Alternative is defined as the existing transportation system, plus any committed transportation improvements. Committed transportation improvements include projects that are already in the Chicago Metropolitan Agency for Planning (CMAP) financially constrained Transportation Improvement Program. Bus transit service under the No Build Alternative would be focused on the preservation of existing services and projects. By the projection year of 2030, some bus service would have been reorganized and/or expanded; however, the transit network within the project area would largely be the same as it is now with similar service frequencies.

The No-Build Alternative also establishes the baseline for comparison of the cost-effectiveness of the TSM/BRT and LPA. All elements of the No-Build alternative are included in each of the other alternatives except where an alternative replaces services or facilities inside the study area. For additional information on planned transportation improvements in the study area see Section 4.1 – Definition of Alternatives; No Build Alternative.

#### TSM/BRT (Dempster Station bus terminal to Old Orchard Mall)

The TSM is a BRT alternative that operates on a 1.7 mile alignment between the Yellow Line Dempster Street station and Westfield Old Orchard Mall via Dempster Street, Nilens Center Road, Skokie Boulevard, Golf Road and Lavergne Avenue. In Screen 1, the TSM/BRT Alternative was initially defined to mimic bus route 54A with a stop at Macy's on the west side of Old Orchard Mall and continuing service to the Cook County Courthouse west of the Edens Expressway on Old Orchard Road.

In Screen 2, three types of service modifications have been identified for the TSM/BRT Alternative to provide improved mobility in the Yellow Line Study Area as identified in the project Purpose and Need in Section 2 without constructing a new fixed guideway.

- The first includes frequency adjustments to mimic the Yellow Line frequency and span of service.
- The second modification includes shortening route of the TSM/BRT to terminate at the Old Orchard Mall/Macys stop. Route 54A would continue to provide local service to the Cook County Courthouse.
- The third modification would implement BRT operational characteristics short of a dedicated lane in order to improve accessibility and running times along Dempster Street, Nilas Center Road, Skokie Boulevard, Golf Road and Lavergne Avenue. BRT characteristics include transit signal priority at key intersections, improved bus shelters and park-and-ride.

The TSM/BRT alternative will utilize standard 40-foot buses. The capacity of a 40-foot bus is approximately 60 passengers. Preliminary schedules indicate that four vehicles will be required for the TSM/BRT alternative assuming a ten minute peak period headway. At a 20 percent spare ratio, the number of additional buses to be purchased totals five vehicles. The service plan assumes that all bus routes in the study area will continue current operations under the TSM/BRT.

#### LPA (HRT UPRR Elevated form Dempster Street to Old Orchard Road)

The LPA would operate either on an elevated structure along the existing UP Railroad between the Dempster Terminal and the Edens Expressway and then follow the Edens Expressway to Old Orchard Road. The terminal would be located at Old Orchard Road, east of the expressway. No intermediate stations are planned. Bus access and park-and-ride facilities are assumed at the new terminal station and would require property from Nilas North High School.

The LPA is assumed to operate train sets consisting of two cars. The maximum scheduled capacity of each car is 90 passengers, which provides maximum capacity of a 2-car train at 180 passengers. The vehicle requirements during the AM rush period is currently 6 cars. The anticipated running time between Old Orchard Road and Howard is approximately 12 minutes. An additional 2 cars will be required in the AM rush period.

### **5.2.2 Running Time**

The round-trip running time on the Yellow Line is 18 minutes<sup>13</sup>. The one-way running time between Howard and Dempster is 9 minutes. Running times for the LPA was estimated based on the proposed alignment and vehicle performance characteristics. Running times for the TSM/BRT alternative is based on running times for route 97 and assumes some travel time savings associated with transit signal priority and limited stops. Anticipated running times for each alternative are shown in Table 5.1.

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<sup>13</sup> Source: CMAP New Starts Model

**Table 5.1: Estimated Northbound Running Times**

| Route Segment                               | Alternative Running Time (minutes) |         |      |
|---|------------------------------------|---------|------|
|   | Current Yellow Line                | TSM/BRT | LPA  |
| Howard to Dempster                          | 9.0                                |         |      |
| Dempster to Old Orchard Road/Mall (CTA 54A) | 10.0                               |         |      |
| Round trip: Dempster to Dempster            | 17.0                               |         |      |
| Dempster to Old Orchard Road/Mall           |                                    | 8.5     | 3.0  |
| Howard to Old Orchard Road/Mall             |                                    | 17.5    | 12.0 |
| Round trip: Howard to Howard                |                                    | 33.0    | 22.0 |

### 5.2.3 Proposed Bus Route Changes

Table 5.2 lists the bus routes that currently operate within the study area. The route's current terminal is shown as well as proposed changes.

**Table 5.2: Proposed Changes to Bus Routes in the Study Area**

| Bus Route                         | Current Terminal                | TSM/BRT   | LPA   |
|-----------------------------------|---------------------------------|-----------|---|
| 54A North Cicero/Skokie Boulevard | Courthouse (operates thru Mall) | No Change | Operates thru Mall & new HRT station - terminates at Courthouse   |
| 97 Skokie                         | Mall                            | No Change | Northbound operate on Skokie Blvd to westbound Old Orchard Road, operate thru new station and terminate at Mall - Southbound operates in reverse                          |
| 201 Central/Ridge                 | Mall                            | No Change | Operates thru new HRT station and terminates at Mall  |
| 205 Chicago/Golf                  | Courthouse (operates thru Mall) | No Change | Operates thru Mall & new HRT station - terminates at Courthouse   |
| 208 Golf Road                     | Operates thru Mall              | No Change | Operates thru Mall & new HRT terminal   |
| 215 Crawford-Howard               | Mall                            | No Change | Westbound operate on Simpson to northbound Skokie Boulevard to westbound Old Orchard Road, operate thru new station and terminate at Mall - Eastbound operates in reverse |
| 250 Dempster Street               | Operates thru Dempster station  | No Change | No change   |
| 422 Linden-Glenview-Northbrook Ct | Operates thru Mall              | No Change | Operates thru Mall & new HRT terminal   |
| 626 Skokie Valley Limited         | Dempster Station                | No Change | Serve new HRT station and return northbound without layover   |

With implementation of the LPA, the following bus routes would serve the new Old Orchard Station before terminating at the Old Orchard Mall turnaround; 97 Skokie, 201 Central/Ridge, and 215 Crawford-Howard. Route 626 Skokie Valley Limited will serve the new Old Orchard Station and return northbound without taking recovery time at the new station. Bus routes 54A N. Cicero/Skokie Blvd., 205 Chicago/Golf, 208 Golf Road, and 422 Linden-Glenview-Northbrook Ct. would operate through the station's bus turnaround.

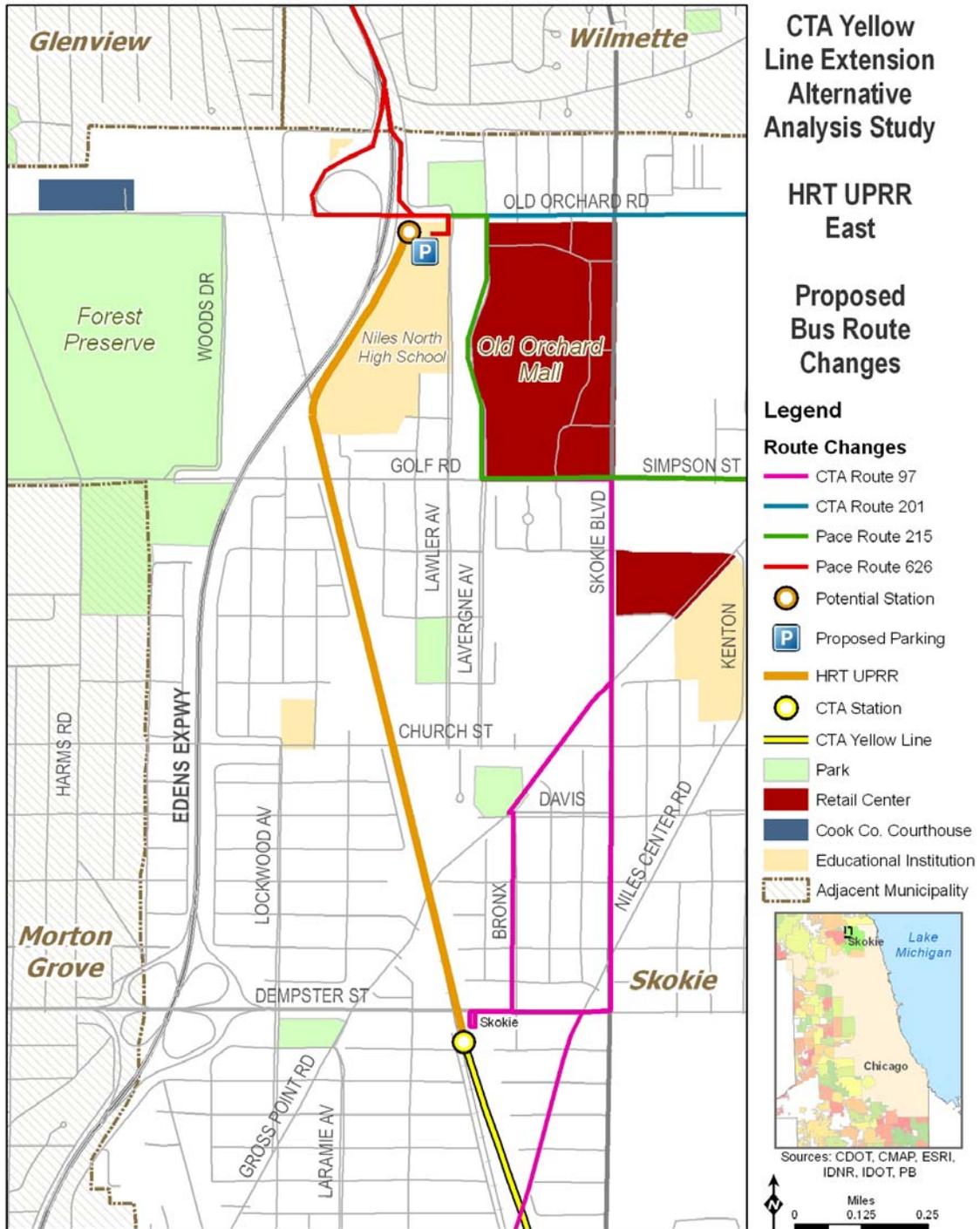
The change in the number of bus routes terminating or operating through Old Orchard Mall, LPA Old Orchard Station terminal and the Dempster Station is shown in Table 5.3.

**Table 5.3: Proposed Changes to Bus Routes in the Study Area**

| Terminal  | Current Yellow Line | TSM/BRT | LPA |
|---|---------------------|---------|-----|
| <b>Old Orchard Mall</b>                         |                     |         |     |
| Terminating routes                              | 3                   | 3       | 3   |
| Routes operating thru                           | 4                   | 4       | 4   |
| <b>New Old Orchard Road Station (LPA Only )</b> |                     |         |     |
| Terminating routes                              |                     |         | 0   |
| Routes operating thru                           |                     |         | 8   |
| <b>Dempster Terminal</b>                        |                     |         |     |
| Terminating routes                              | 1                   | 1       | 0   |
| Routes operating thru                           | 3                   | 3       | 3   |

The LPA with proposed bus route changes is shown in Figure 5.1.

Figure 5.1: LPA with Proposed Bus Route Changes



### 5.3 LPA Transportation Characteristics

Transportation characteristics of the No Build, TSM/BRT, and LPA are described below and include:

- Travel Time
- Access to Jobs
- Reliability and Safety
- Ridership
- Local Roads
- Dempster Station Improvements

#### 5.3.1 Travel Time

Overall travel time has been calculated for the LPA, TSM/BRT, and the No Build alternatives, as shown in Table 5.4. These travel time estimates include wait time, run time (in-vehicle), and walk time.

**Table 5.4: Anticipated Overall Travel Times by Alternative and Route Segment**

| Travel Time Elements                     | Time in Minutes |             |             |
|--|-----------------|-------------|-------------|
|  | No Build        | TSM/BRT     | LPA         |
| Wait time at Old Orchard Mall            | 7.5             | 5.0         | 1.5         |
| Bus run time Mall to Dempster            | 10.0            | 8.5         | -           |
| Bus run time Mall to Old Orchard Rd      | -               | -           | 2.0         |
| Walk time: curb to platform              | 3.0             | 3.0         | 3.0         |
| Wait time at station                     | 5.0             | 5.0         | 5.0         |
| Rail run time Old Orchard Rd to Dempster | 0.0             | 0.0         | 3.0         |
| Rail run time Dempster to Howard         | 9.0             | 9.0         | 9.0         |
| <b>Total Travel Time to Howard</b>       | <b>34.5</b>     | <b>30.5</b> | <b>23.5</b> |

As seen in this table, travel time for the No Build Alternative is nearly 35 minutes to the Howard Station. This represents the existing travel time based on using a bus from the Old Orchard Mall to the Dempster Station and a transfer to the Yellow Line to Howard Station. Travel times for the TSM/BRT Alternative are expected to improve by 4.00 minutes and would also require a transfer to the Yellow Line. Overall, the LPA provides the fastest travel time at 23.5 minutes assuming use of a bus to make a trip from the Old Orchard station to the Mall (although many customers will choose to walk this distance). This represents a 23 percent improvement in travel time versus the TSM/BRT and a 32 percent improvement in travel time versus the No Build Alternative.

#### 5.5.2 Access to Jobs

The LPA would provide increased access to jobs within Skokie and adjacent suburbs using the CTA transit system. A park-and-ride facility for automobile access would be located at the new Yellow Line terminal station in the vicinity of the Old Orchard Mall at NNHS.

Table 5.5 shows the approximate number of transfers required for a transit trip from various origin areas of the study area to the Loop. The LPA has fewer instances of transfers based on the selected routings as compared to No Build and TSM/BRT and BRT alternatives.

The LPA has fewer instances of transfers based on the selected routings as compared to No Build and TSM/BRT alternatives.

**Table 5.5: Number of Transfers between Select Origin-Destination Pairs**

| Criteria   | No Build | TSM/BRT | LPA |
|--|----------|---------|-----|
| <b>Transfers Required Between Loop and (Peak Hour)</b> |          |         |     |
| Old Orchard Mall                                       | 2        | 2       | 1   |
| Cook County Court House                                | 2        | 2       | 1-2 |
| Niles North High School                                | 2        | 2       | 1   |
| Skokie Boulevard Commercial                            | 2        | 2       | 2   |

### 5.5.3 Reliability and Safety

Increased transportation reliability is addressed by measuring operating reliability. The TSM/BRT alternative would utilize transit signal priority to improve overall travel time to Old Orchard Mall. However, the TSM/BRT alternative is expected to have a moderate operating reliability due to characteristics of operating in mixed traffic along Dempster Street and Skokie Boulevard. The LPA would operate on an elevated guideway and receive high operating reliability similar to the existing Yellow Line service.

**Table 5.6: Reliability and Safety**

| Criteria   | No Build | TSM/BRT        | LPA  |
|--|----------|----------------|------|
| Operating Reliability  | N/A      | Moderate       | High |
| Potential Impact on Emergency Vehicle Incident Response Capability | N/A      | Moderate / Low | Low  |
| Mixed Traffic Conflict Points                                      | N/A      | High           | Low  |

In regards to safety, improving incident response was examined in terms of their potential impact on emergency vehicle response capabilities. The TSM/BRT alternative could potentially have low to moderate impacts on emergency response vehicles due to signal priority conflicts which would ultimately go to emergency vehicles. TSM/BRT would operate in mixed traffic and would contribute to the normal traffic delay experienced during incident response. The LPA would be grade separated and would not impact the ability of emergency vehicles to operate.

The LPA and TSM/BRT can incorporate design elements that enhance safety and security. A wide range of safety measures will be identified, evaluated, and used in combination. They include vehicle measures (on-board closed-circuit television cameras, on-board audio and visual message communications to passengers, and emergency alarm systems), and station design (maximizing unobstructed sightlines in and surrounding stations, positioning of customer service booth for maximum presence and visibility in station, closed-circuit television cameras, public address systems, sufficient lighting, and emergency alarm systems). Traffic safety was measured using the criteria of the number potential conflict points with vehicles, pedestrians and bicycles. TSM/BRT alternative has the most number of conflict points with general traffic.

Alternately, the LPA, due to the grade separation, has no conflict points with general traffic, but there are potential pedestrian conflicts accessing the new terminal station.

**5.5.4 Ridership**

Preliminary ridership estimates using computerized travel forecasting models were developed. The LPA exhibits strong ridership, while the TSM/BRT Alternative is expected to only have a slight increase over the No Build Alternative. By 2030, the LPA is expected to carry 1.8 million riders per year. For the TSM/BRT Alternative, 0.4 million riders are projected. The No Build alternative would attract no new riders as no additional service is planned for the corridor. Table 5.7 shows the annual ridership in 2030.

**Table 5.7: Ridership (2030, Millions of Trips)**

| Criteria                | No Build | TSM/BRT | LPA   |
|-------------------------|----------|---------|-------|
| 2030 Annual Ridership   | N/A      | 0.4 M   | 1.8 M |
| Annual Ridership Rating | –        | ○       | +     |

Key: + Better than other alternatives; ○ Same as other alternatives; – Worse than other alternatives  
 Note: Model Results: Screen 2 Evaluation Report, June 2009

For the LPA, year 2030 average weekday station boardings on the Yellow Line are estimated as follows: 2,900 at Old Orchard, 1,800 at Dempster Street, 1,300 at Oakton Street and 5,000 at Howard (excluding rail boardings on the Red and Purple Lines). Total 2030 weekday boardings on the Yellow Line would grow to 11,100, up from 5,000 in 2009.

**5.5.5 Local Roads**

The impact on local roads was measured based on the level of traffic impediments. The LPA is proposed with full grade separation and thus has a low level of potential traffic impediments. The TSM/BRT alternative operates at-grade in mixed flow traffic and has a moderate level of local roadway impacts.

The TSM/BRT Alternative would utilize traffic signal priority (TSP) at major signalized intersections along Dempster Street, Skokie Boulevard and Golf Road in order to improve running times. TSP improvements can be implemented to avoid negatively impacting traffic level of service.

## 5.4 Environmental Consequences of Alternatives

The environmental characteristic of the LPA is based upon currently available information. The Environmental Impact Statement (EIS) process will be conducted for the LPA, and will assess environmental consequences in more detail. In addition, the discussion of the applicable environmental requirements and communication between regulatory and resources agencies and the local project sponsors will be part of the EIS process.

Environmental characteristics of the LPA that were examined include:

- Social Equity / Neighborhoods
- Land Use and Development
- Displacements
- Visual and Aesthetic
- Noise and Vibration
- Air Quality
- Water and Ecosystem Resources
- Hazardous Waste Sites
- Historic, Archaeological and Cultural
- Parklands

### 5.4.1 Social Equity / Neighborhoods

#### Transit Dependent Populations

The location of transit-dependent populations is a measure of the extent to which an alternative improves travel for a key transit market.

The following series of maps illustrates characteristics associated with transit dependent populations including age distribution, low-income households, and those households that reported not owning an automobile in the 2000 Census. Table 5.9 provides the data from the Census on the low-income population and zero-car households in the 0.5 mile station areas.

Figure 5.2 and Figure 5.3 show the distribution of the population of those over 65 and under 18. These two groups may rely more on public transit. Figure 5.4 shows areas where low income households are found relative to alternatives and station areas within the study area. Figure 5.5 shows the concentration of those zero-car households. Lower income households and those that do not own an automobile are more likely to rely on public transportation as their primary mode of travel.

**Table 5.9: Poverty Status and Zero-Car Households within 0.5 Mile Station Areas**

| Criteria                       | No Build | TSM / BRT | LPA |
|--------------------------------|----------|-----------|-----|
| 2000 poverty-status population | N/A      | 152       | 115 |
| 2000 zero-car households       | N/A      | 76        | 53  |

Source: 2000 Census

Figure 5.2: 2000 Population Over 65

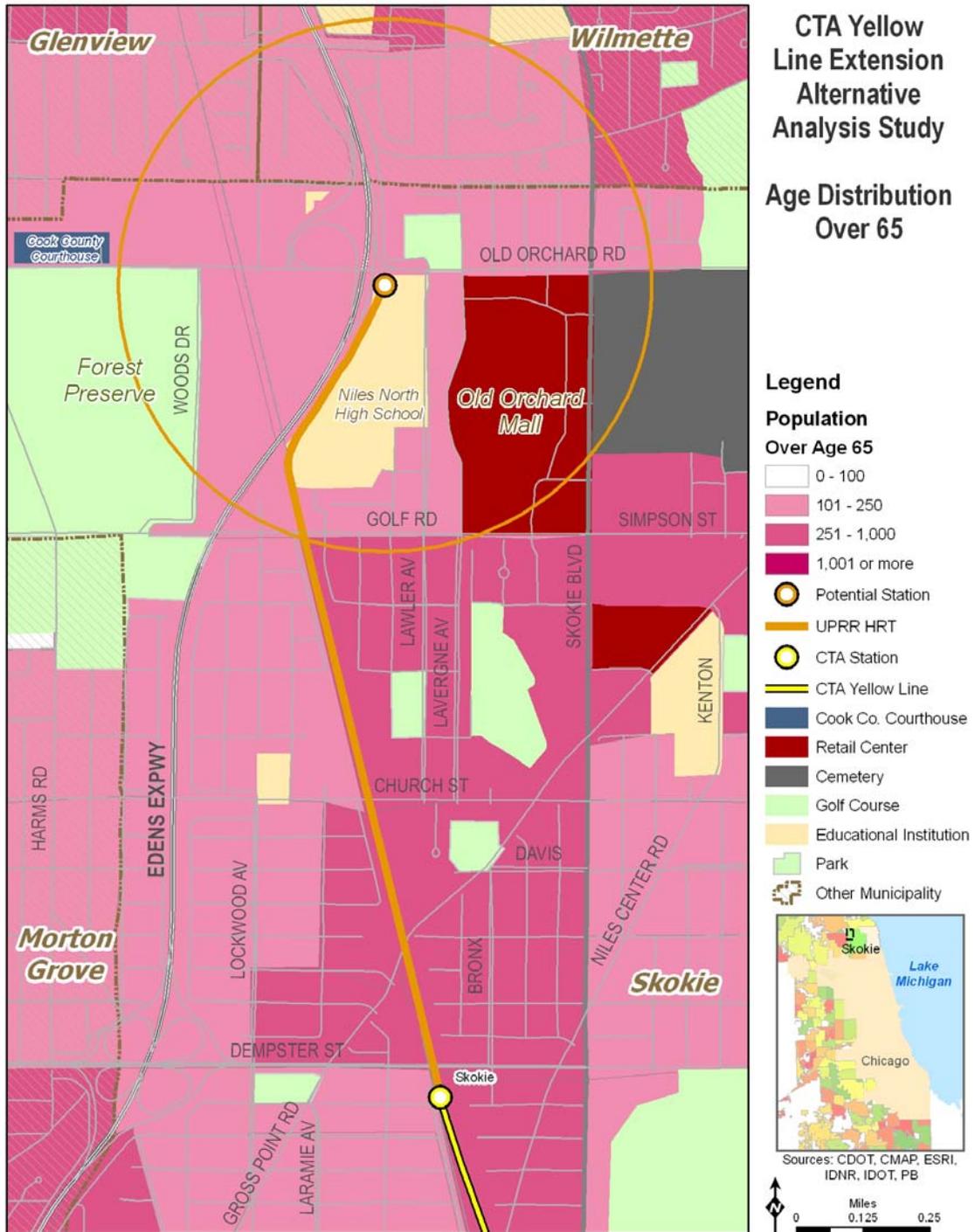


Figure 5.3: 2000 Population Under 18

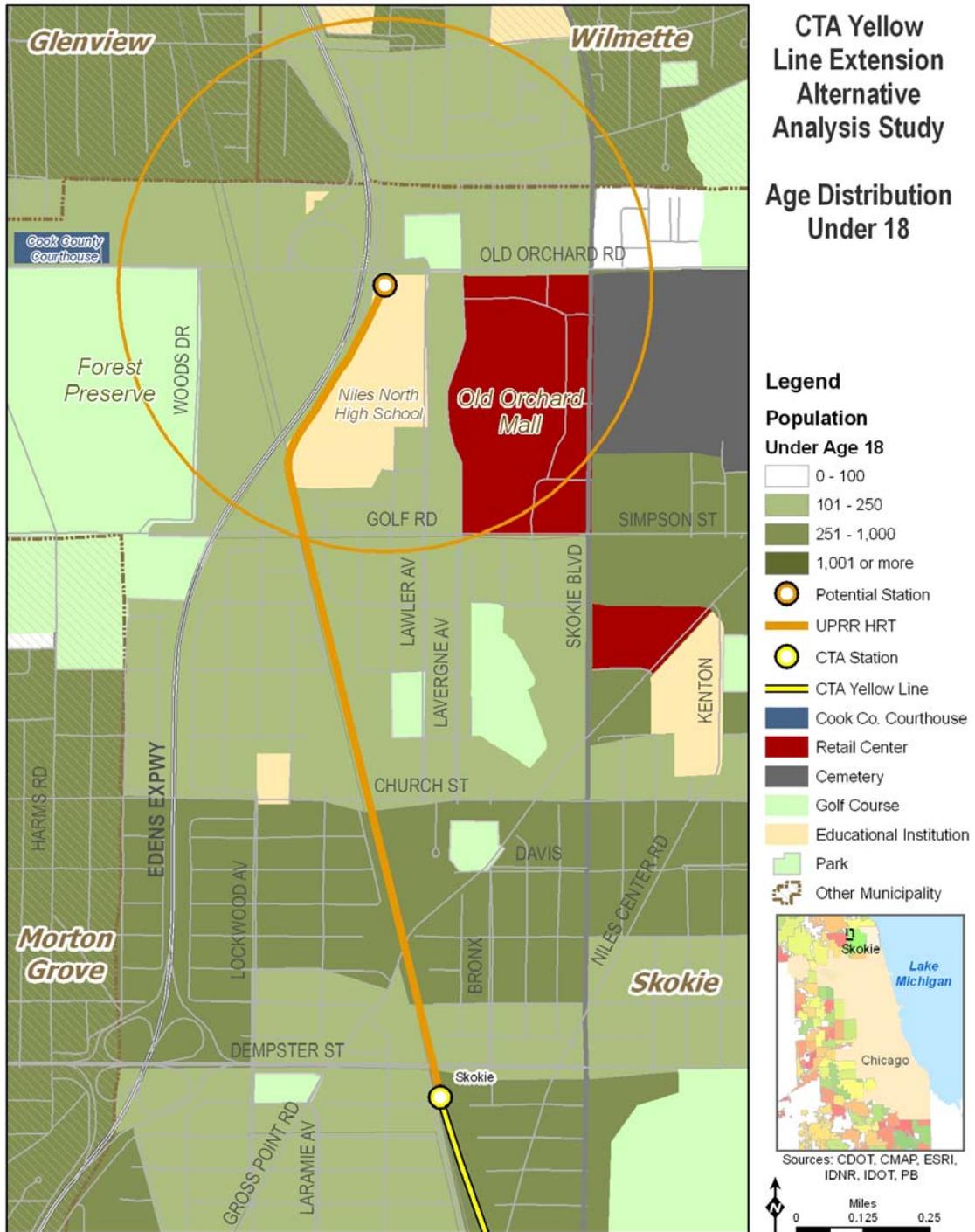


Figure 5.4: 2000 Poverty Status

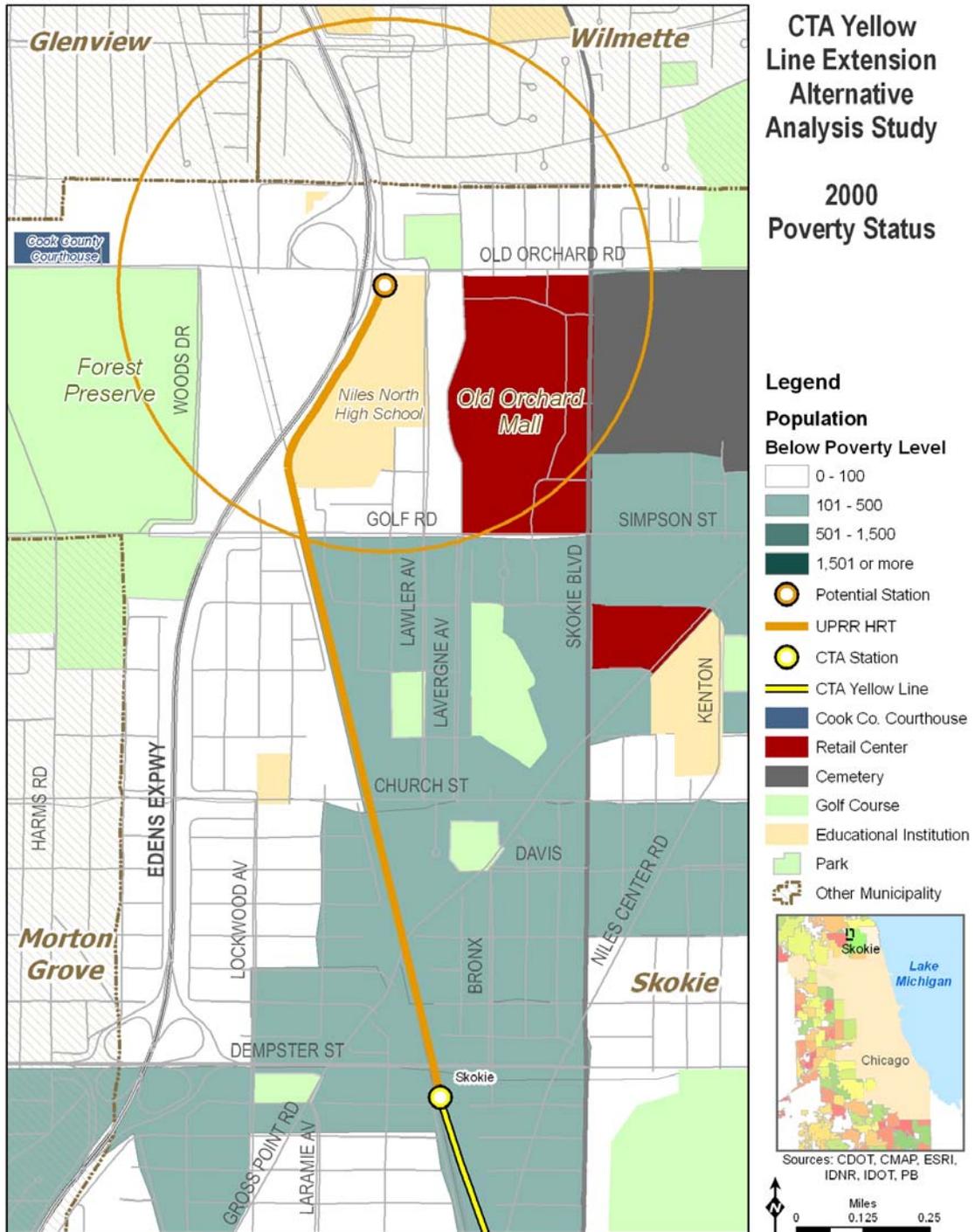
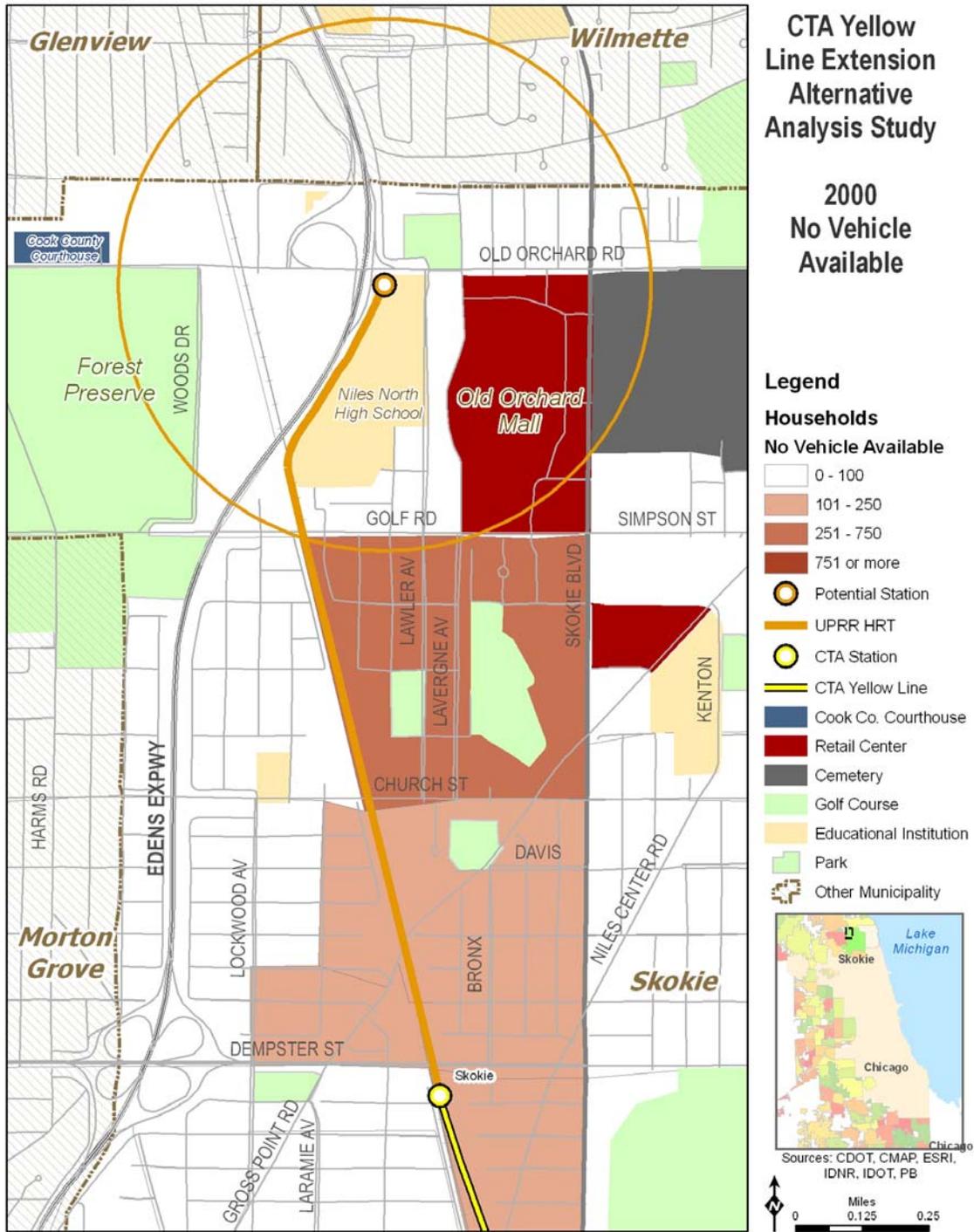


Figure 5.5: 2000 Households without Automobile



### 5.4.2 Land Use and Development

Current land use and development in the Yellow Line Extension study area is built-up urban development, with a mix of residential, commercial, industrial uses and supporting infrastructure. Including this data in the analysis ensures that the objectives of supporting community development and identifying transit-supportive opportunities are met. All of the alternatives had a mix of uses in the corridor. The screening reports assessed these factors under the economic sections of the reports.

The UPRR alignment is an abandoned railroad right-of-way, and is mainly bordered by industrial and residential properties. The existing Yellow Line Dempster Street station has commercial uses nearby, and significant commercial, office and civic uses are located along Old Orchard Road. The Westfield Old Orchard Mall is a regional shopping center, and is less than 0.25 miles east of the proposed LPA terminal station.

In terms of the potential for long term economic development, the Village of Skokie will review opportunities to implement economic development programs around new station areas if the program would benefit the community and station area. Currently, there are no Tax Increment Financing (TIF) Districts, Special Service Areas (SSA), or other special redevelopment designations within any of the terminal station areas.

From Screen 2, the HRT UPRR East alternative was determined to have the greatest potential for future economic development due to the improvement over existing bus conditions. Land between the terminal and the Old Orchard Mall is currently utilized as parking for Niles North High School and other commercial uses. Surface parking presents an opportunity for redevelopment. In addition, an existing gas station and office tower located between the potential HRT UPRR East station and Old Orchard Mall are currently planned for redevelopment. Lastly, any new development in the area will have enhanced pedestrian and bus connectivity to Old Orchard Mall, based on discussions with the owner of the mall, Westfield Shopping Centers, and other surrounding land owners.

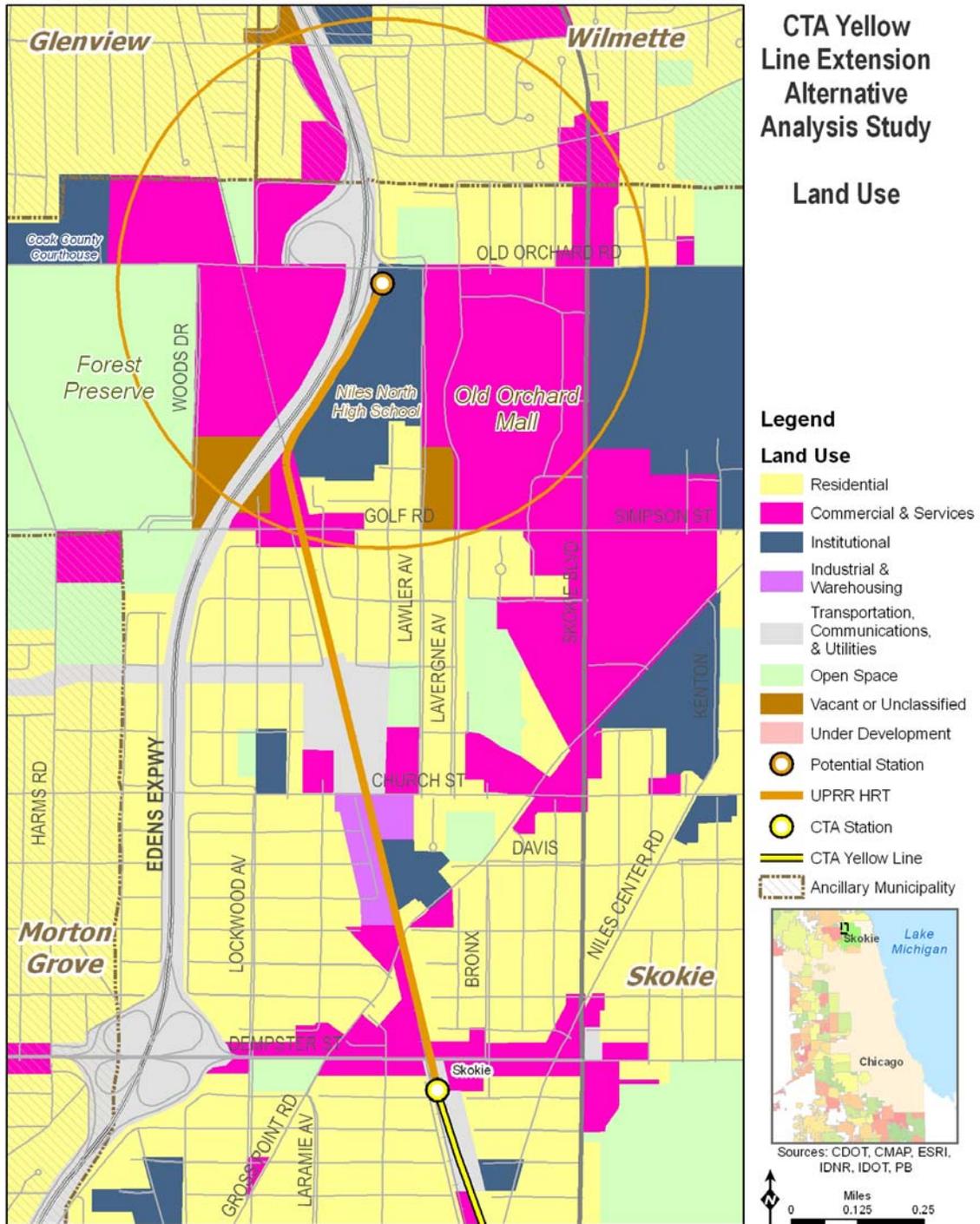
Table 5.10 is a summary of the economic analysis for the four alternatives, and matches the evaluation measure to the goals and objectives set forth in the original purpose and need document. Figure 5.6 shows land use relative to alternatives and station areas within the study area.

**Table 5.10: Land Use and Development**

| Criteria                | No Build | TSM / BRT | LPA |
|-------------------------|----------|-----------|-----|
| Development initiatives | N/A      | ○         | ○   |
| Long-term potential     | N/A      | –         | +   |

Key: + Better than other alternatives; ○ Same as other alternatives; – Worse than other alternatives

Figure 5.6: Land Use and Development



### 5.4.3 Displacements

As reviewed in the land use section, the study area is an urban environment. Adding new transit service that requires a dedicated right-of-way (that is not already available) will impact the existing land uses in the corridor. The assessment of potential displacements helps to understand how the alternatives meet the objective of limiting environmental impacts, as well as respecting community context and identity.

The UPRR Corridor, which does not currently have freight rail service, provides an opportunity to implement new transit service without the need to acquire existing developed land along the corridor. The UPRR corridor right-of-way varies in width over the section of interest, but is typically 36 feet wide.

In the Screen 2 analysis, a discussion on the feasibility of the UPRR alignment noted that the land adjacent to the UPRR corridor is owned by ComEd, and that high-tension towers and/or utility poles might be impacted by new transit service. To reduce the potential for costly relocation of the towers or poles, the HRT UPRR alignment was reduced from a double-track option to single-track service, bringing the anticipated right-of-way need to 25 feet. As this is a preliminary analysis of the corridor conditions, future detailed design and communication with ComEd will determine if there will be a conflict between the HRT tracks and any existing power supply structures.

With the decision to move forward with the HRT UPRR East Elevated (single track) option as the LPA, the only anticipated displacements will occur at the Old Orchard Road terminus, to accommodate the station and a parking facility, and at the existing Dempster Street station.

As defined in Screen 2, construction of a grade separated track at Dempster Street would require that the approach begin within the limits of the existing Dempster station, to conform to CTA design criteria. This will require the replacement of the existing Dempster station. Constructing a second track through the station site is required and will impact the bus facilities to the east of the present track. A new station and the necessary tracks may potentially require purchasing ComEd right-of-way, both north and south of Dempster Street.

The Old Orchard Road terminal station is anticipated to require approximately 259,400 square feet. The footprint for the terminal station is envisioned to be double-tracked with an island-platform. A parking garage, kiss-and-ride, taxi and bus interchange facilities are envisioned to be located alongside and around the station. The existing Niles North High School parking lot is approximately 178,000 square feet: to accommodate the new terminal station and all the supporting facilities, it is possible that the existing office park and its parking lot (about 133,000 square feet) to the east of the proposed terminal location may have to be acquired to provide sufficient space for the parking facilities and circulation roads. As noted earlier, the office building and the adjacent gas station (on a lot of about 30,000 square feet) are being considered for redevelopment.

Table 5.11 provides a summary of the displacement analysis.

**Table 5.11: Displacements**

| Criteria         | No Build | TSM / BRT | LPA     |
|------------------|----------|-----------|---------|
| Affected parcels | N/A      | 0         | up to 3 |

\* Old Orchard station area only

**5.4.4 Visual and Aesthetic**

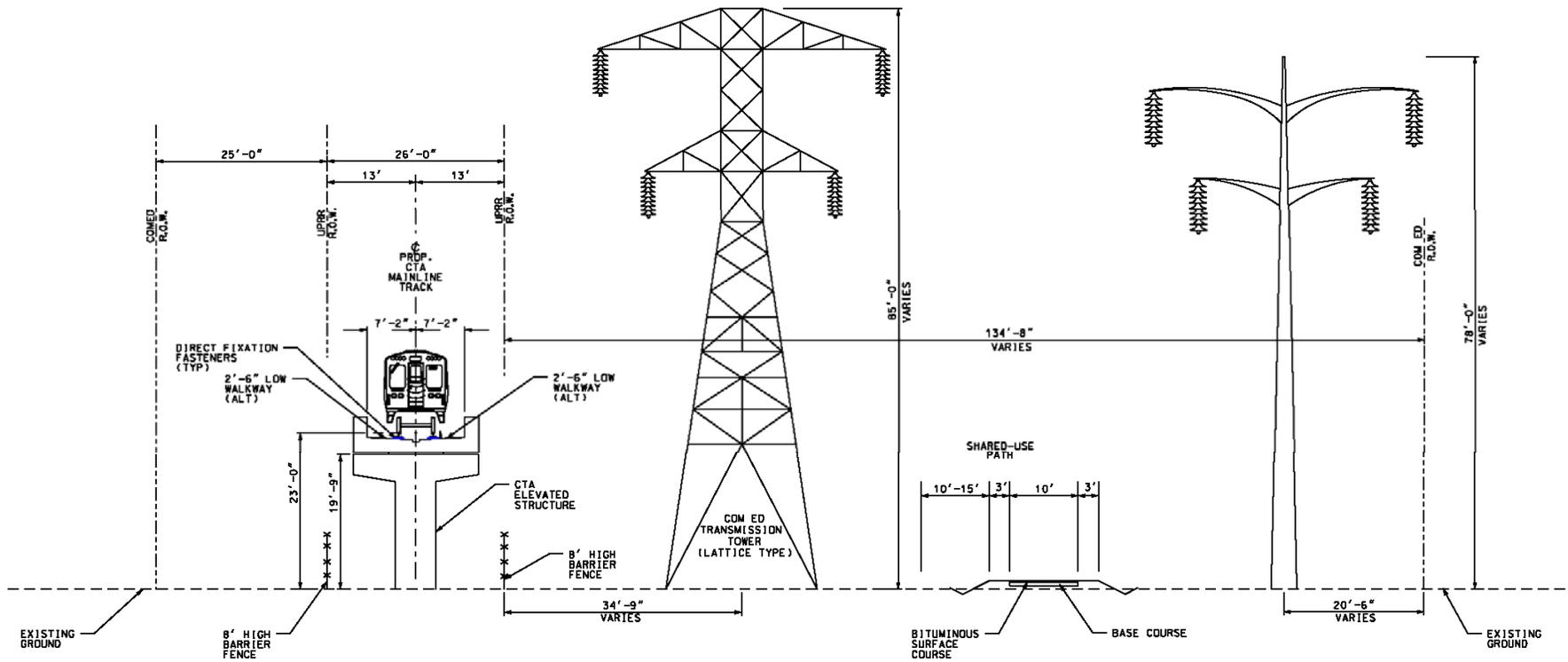
The assessment of visual and aesthetic impacts by alternative was conducted in Screen 2. The visual and aesthetic impact is one factor for consideration, as it is important to look for alternatives that fit into the community context, and that negative impacts are reduced, if possible. The LPA was deemed to have a negative potential impact, relative to the TSM/BRT alternative, due to the elevated portions of the alternatives.

Figure 5.7 illustrates an example rendering of the elevated structure for the LPA Old Orchard Station terminal. A typical proposed section of the LPA along UPRR ROW is shown in Figure 5.8.

**Figure 5.7: Example of the LPA Old Orchard Road Station**



Figure 5.8: Typical Proposed Section of LPA



### 5.4.5 Noise and Vibration

A generalized noise and vibration analysis for the TSM/BRT and LPA was performed. For noise, implementation of the proposed TSM/BRT service may add 2 decibel on the A-weighted sound level (dBA) to the noise environment experienced along Dempster Street, Skokie Boulevard and Golf Road. Properties along Skokie Boulevard between Niles Center Road and Church Street are residential. The land use along Dempster Street and Skokie Boulevard, north of Church Street, is primarily commercial. As result, the new TSM/BRT service is expected to have a moderate ambient noise impact for residential and institutional noise receptors in the corridor.

The LPA is estimated to increase ambient noise by 16 dBA for the elevated portion of the alignment from Dempster Street (from 55 dBA to 71 dBA) to Golf Road. Because there is no existing bus or rail service along the proposed corridor, the new HRT service is estimated to increase ambient noise for the residences closest to the ROW, most about 40 feet from the alignment. Those residents who live along the west side of the corridor between Emerson Street and Golf Road, where houses are located about 40 feet from the centerline of the route would potentially experience the highest impacts.

For Niles North High School, operation of the LPA would result in an 11 dBA (from 55 dBA to 66 dBA) increase. However, because no field observations were conducted, the results should be considered as only an estimate, and may vary substantially depending upon the level of noise generated by the existing Edens Expressway (I-94).

For the LPA, the CTA will evaluate and use a combination of noise abatement measures as necessary. These measures could include rail vehicle measures (vehicle skirts, undercar absorption, and resilient or damped wheels), and guideway measures (sound barriers, rail lubrication on sharp curves, and ballasted track).

Vibration impacts are typically analyzed in terms of ground-borne vibration. Vibration occurs for rail transit when the train wheels rolling on the rails create vibration energy that is transmitted through the track support system into the transit structure. The amount of energy that is transmitted to the transit structure is dependent on a number of factors, such as the type of track support system, the vehicle suspension system, and smoothness of the wheels and rail. Screening level estimates for vibration for the LPA are estimated at 72 vibration decibels (VdB). In general, 65 VdB is the approximate threshold of human perception.

For the LPA, the CTA will evaluate and use a combination of vibration abatement measures as necessary. The type of track support system is a major determinant of ground borne vibration. The highest vibration levels are created by track that is rigidly attached to a concrete trackbed. The vibration levels are much lower when special vibration control track systems, such as ballasted mats and resilient fasteners are used.

### 5.4.6 Air Quality

The issue of air quality was assessed by using the measure of the potential for micro-scale pollution. Air quality affects public health and a community's quality of life. Understanding the impacts of an alternative meets the objective of limiting negative environmental impacts, and supporting positive environmental benefits.

In Screen 2, the HRT alternatives were rated as having a better potential impact, relative to the TSM/BRT alternative. CTA HRT service is powered by electricity, which does not emit gases or particulate matter at the point of use. Buses used for the BRT service, or continued use of existing buses in the case of No-Build or TSM/BRT alternative, would have a higher rating than the HRT service, due to diesel exhaust. CTA is incorporating hybrid buses into its fleet to improve emissions, but the HRT services remain the lowest impact option for air quality analyses.

#### **5.4.7 Water and Ecosystem Resources**

The Yellow Line Extension study area is an urbanized area. Wetlands and critical habitat for protected species in the area were assessed for potential impacts. Assessing potential environmental impacts to the natural environment provides information that can be used to limit or reduce the negative impacts of an alternative, if there are any. No wetlands or critical habitat for protected species was identified in the corridor.

#### **5.4.8 Hazardous Waste Sites**

Hazardous waste sites are an important environmental consideration for two reasons: clean-up of a site can be costly, adding to the overall cost of an alternative, and reusing a site can have positive environmental benefits for a community. Improving the environmental conditions of a community is one of the objectives for this study.

Hazardous waste sites are usually found in industrial areas. Hazardous waste sites can include:

- Brownfields, which are abandoned or underutilized industrial facilities and land
- Waste handlers, which can include any facility that deals with toxic chemicals
- Superfund sites, which are deemed to be the worst brownfields, and are on a priority list for being cleaned by the US Environmental Protection Agency (EPA)
- Other sites, which can include active industrial sites or commercial properties, such as gas stations with leaking underground storage tanks (LUST)

The findings of the environmental overview included a number of hazardous sites in each corridor, with the TSM/BRT corridor at a high of 24 and the LPA with 21. The sites are generally located on properties adjacent the UPRR and ComEd ROW and are classified by the EPA as waste-handlers or leaking underground storage tank (LUST) locations, which are subject to local, state and federal regulations for remediation. These sites will be verified during the more intensive EIS process.

#### **5.4.9 Historic, Archaeological and Cultural**

The analysis of historic, archaeological and cultural sites is important to ensure that the alternatives analysis considers and respects a community's context and identify. Completed in Screen 2, the analysis of historic sites and cultural resources showed that none were located within any of the corridors under review.

#### **5.4.10 Parklands**

Park land and recreational areas are natural areas that add to quality of life and offer environmental benefits to residents of an urbanized area. One of the objectives of this alternatives analysis is to limit impacts to the natural and built environment, so an analysis of these natural areas is needed.

The UPRR corridor alternative had two parks located within the analysis zone (500 feet on either side of the potential corridor) but on the outer edge of the corridor. It is unlikely that any of the parks will be affected, due to their location relative to the final alignment. Emerson Park is east of the ComEd substation yard, which is immediately adjacent to the UPRR right-of-way. Lawler Park is north of Old Orchard Road.

No recreational areas were found in any of the corridors during the environmental analysis.

**5.4.11 Summary of Environmental Impacts**

Table 5.12 below provides a summary of the potential environmental impacts with each of the alternatives as determined in Screen 2. For additional detail on the preliminary environmental impacts for each alternative see the Yellow Line Extension Screen 2 Alternatives Evaluation Report, July 2009.

**Table 5.12: Summary of Potential Environmental Impacts in Screen 2**

| Environmental Factors   | TSM/BRT  | LPA            |
|---|----------|----------------|
| Hazardous Sites: Brownfields                                      | 0        | 0              |
| Hazardous Sites: Waste Handlers                                   | 19       | 11             |
| Hazardous Sites: Superfund Sites                                  | 0        | 0              |
| Hazardous Sites: Others, air                                      | 1        | 1              |
| Hazardous Sites: Others, LUST sites                               | 4        | 9              |
| Wetlands  | 0        | 0              |
| Historic Districts  | 0        | 0              |
| Potential Micro Scale Pollution                                   | Moderate | Low            |
| Potential Noise Impact  | +2 dBA   | +11 to +16 dBA |
| Potential Vibration Impact  | N/A      | +72 VdB        |
| Potential Visual Impacts  | Low      | Moderate       |
| Parklands Impacted  | 0        | 2              |
| Recreation Areas Impacted   | 0        | 0              |
| Critical Habitat Impacts to Protected Species                     | 0        | 0              |
| Potential for Archaeological Site Impacts within the Proposed ROW | 0        | 0              |
| Buildings Listed or Eligible for Listing in the NRHP Within 200'  | 0        | 0              |
| Districts Listed or Eligible for Listing in the NRHP Within 200'  | 0        | 0              |

## 5.5 Costs and Financial Analysis

### 5.5.1 Cost Measures

Capital cost estimates have been developed in accordance with FTA guidelines. The guidelines call for cost estimates to be prepared and reported using the latest revision of FTA's Standard Cost Categories (SCC). In the estimates, cost components for the various alternatives are developed and summarized into the SCC. These cost categories form the basis for the format and structure that is used for the capital cost detail and summary sheets developed for this project. The FTA SCC consist of the following:

- Guideway
- Stations
- Support Facilities
- Sitework and Special Conditions
- Systems
- Right-of-Way, Land, Existing Improvements
- Vehicles
- Professional Services
- Allocated and Unallocated Contingency
- Finance Charges (not included at this stage of the capital costs)

Major capital cost elements for the LPA include the following:

**Table 5.13: LPA Capital Cost (\$M, 2009)**

| <b>FTA Standard Cost Categories (with contingency)<sup>14</sup></b> | <b>LPA<br/>1.64 Miles</b> |
|---|---------------------------|
| Guideways & Track Elements  | 65                        |
| Stations, Terminals, Stops  | 54                        |
| Yards, Shops, Administration Buildings.                             | -                         |
| Sitework & Special Conditions                                       | 20                        |
| Systems   | 29                        |
| Right-of-Way, Land Acquisition                                      | 26                        |
| Vehicles  | 5                         |
| Professional Services   | 49                        |
| Unallocated Contingency   | 15                        |
| <b>Total Project Cost</b>   | <b>263</b>                |
| <b>Capital Cost per Route Miles</b>                                 | <b>160</b>                |

Major capital cost elements for the LPA include the following:

- Two elevated terminal stations with island and side platforms including demolition of the existing Dempster Station: \$34 M.
- Construction of a parking structure with 350 dedicated commuter spaces and 230 dedicated NNHS spaces (replacing parking taken in the construction of the terminal complex) at Old Orchard Road: \$20 M.

<sup>14</sup> An allocated contingency allowance, in the range of 12 percent to 25 percent, is included in the FTA standard cost categories.

- Construction of a Guideway and track elements: \$65 M.
- Allocation for relocation of utility tower and poles, as well as other utility protection measures along the entire extension: \$16 M.
- Allocation for relocation of NNHS maintenance shed and possibly cogeneration facility and/or underground utility lines: \$2.6 M.
- Land acquisition for the single-track extension, terminal facilities and the on-line substation (a total of 6.2 acres of land are estimated to be required for this alternative: \$26 M.
- Purchase of 2 new rapid transit cars: \$5 M.
- A yard and shop facility was determined not necessary in for the Yellow Line extension project.
- TOTAL COST for the LPA is \$263 M

To prepare a financial plan for the Yellow Line extension, cost estimates were adjusted to account for projected inflation between 2009 and the proposed year of expenditure. Inflation estimates were developed for CTA by Moody's Economy.com. Vehicles and right-of-way were assumed to increase at the Consumer Price Index. All other costs, including construction and professional services costs were assumed to increase at the Chicago regional RS Means Construction Cost Index. Total project cost in year-of-expenditure dollars is estimated at \$348 million.

### **5.5.2 Operating and Maintenance Cost Estimates**

Operating & Maintenance (O&M) costs were estimated using CTA's cost model, which is based on actual line item budget expenses. The cost model allocates each budget line item expense to a key service variable such as revenue hours, revenue miles, peak vehicles, route miles, etc. These variables are called "cost drivers" because the cost of service is "driven" by the magnitude of these variables. Thus, the more service hours provided or miles operated, the higher the O&M cost. Table 5.14 summarizes the O&M costs for the LPA estimated at \$2.0 million annually.

Table 5.14: LPA Operating and Maintenance Costs

| Driving Variable                                     | Unit Cost<br>(2009 Dollars) | Level of Service | O&M Cost<br>(2009 Dollars) |
|--|-----------------------------|------------------|----------------------------|
| <b>Rail</b>  |                             |                  |                            |
| Peak Trains  | \$131,552.79                | 1                | \$131,553                  |
| Peak Cars  | \$26,364.48                 | 2                | \$52,729                   |
| Revenue Train Hours                                  | \$76.54                     | 4,329            | \$331,323                  |
| Revenue Car Miles                                    | \$1.38                      | 194,820          | \$268,688                  |
| Station Hours  | \$33.84                     | 6,643            | \$224,812                  |
| Stations   |                             |                  |                            |
| Elevated   | \$304,556.80                | 1                | \$304,557                  |
| Track Miles  |                             |                  |                            |
| Elevated   | \$118,840.61                | 1.5              | \$178,261                  |
| Substations  | \$62,969.30                 | 1                | \$62,969                   |
| Fare Collection Equipment                            | \$6,730.92                  | 9                | \$60,578                   |
| Elevators/Escalators                                 | \$23,027.68                 | 2                | \$46,055                   |
| Yard/Shop (per sq. foot)                             | \$4.75                      |                  | \$0                        |
| Park & Ride (per space)                              | \$521.46                    | 350              | \$182,511                  |
| Rail Ridership                                       | \$0.05                      | 1,849,945        | \$95,797                   |
| <b>Bus</b>   |                             |                  |                            |
| Peak Buses   | \$34,585.92                 |                  | \$0                        |
| Revenue Bus Miles                                    | \$2.75                      | 25,648           | \$70,458                   |
| Revenue Bus Hours                                    | \$44.80                     | 2,332            | \$104,466                  |
| Turnarounds  | \$15,340.54                 | 1                | \$15,341                   |
| Bus Stops  | \$14.14                     |                  | \$0                        |
| Bus Ridership  | \$0.05                      | (616,648)        | (\$31,932)                 |
| <b>Total O&amp;M Cost (Base Year (2009) Dollars)</b> |                             |                  | <b>\$2,098,164</b>         |

\* Station Unit Cost is an aggregated unit cost in CTA O&M cost model

### 5.5.3 Capital Funding Sources

CTA has identified the following preliminary capital funding sources for the LPA:

- *Federal New Starts Program (Section 5309):* A federal match of 60 percent was assumed for the project. Receipt of New Starts grant funds is assumed to commence in fiscal year 2011 and is assumed to be subject to an annual cap of \$150 million annually.
- *State Funds:* State funds are assumed to defray the remaining share of capital costs not covered by federal New Starts grants. This includes 40 percent of the cost of the project. To date, however, no state funds have been identified or committed for this purpose. Therefore, there is presently a capital funding shortfall in the financial plan equal to the projected state funding share estimated at \$139 million. On July 13, 2009, a \$31 billion State capital bill, *Illinois Jobs Now!*, was signed into law. This bill provides \$2.7 billion for the six-county northeastern Illinois region for bringing the transit system to a state of good repair. This capital bill is indicative of the State's commitment to funding public transportation investments and CTA will continue to advocate for additional funds in subsequent capital bills

In addition, the financial plan includes federal transit formula grants that CTA is projected to receive from operating the incremental transit service associated with the project:

- Section 5309 Rail and Fixed Guideway Modernization Program, which grows as a function of fixed guideway directional route-miles and fixed guideway vehicle revenue-miles.
- Section 5307 Large Urban Cities Program, which grows as a function of demographic measures (population and population density, adjusted three years after each decennial census); level of service (vehicle revenue-miles and fixed guideway directional route-miles); and an incentive funding measure (passenger miles x passenger miles/operating cost)

These funds are applied toward future year infrastructure renewal and replacement costs associated with the LPA. These grant programs are subject to review and revision by Congress as part of surface transportation authorization legislation every six years, and could be altered in the future.

Projected future-year unit grant values are multiplied by projections of applicable transit service characteristics for the project (e.g., revenue vehicle miles, fixed guideway directional route miles, passenger miles, and operating costs). The resulting projection of incremental federal formula grants for the LPA in the design year (2030) is \$0.2 million (2009 dollars).

Other federal funding program sources include:

- Section 9 (5307) Congestion Mitigation and Air Quality Program: Federal formula grants for transportation projects that reduce criteria air pollutants regulated from transportation-related sources in National Ambient Air Quality Standards nonattainment areas. Fixed funding of \$4.0 million annually beginning in fiscal year 2010, based on historic average funding levels.
- Job Access and Reverse Commute Program: A federal formula grant program to address the unique transportation challenges faced by welfare recipients and low-income persons seeking to get and keep jobs. One-time funding applied in fiscal year 2009.
- Homeland Security/Department of Justice Grants: Federal formula grants for transit security improvements. Fixed funding of \$6.5 million annually beginning in fiscal year 2009, based on historic average funding levels.

#### 5.5.4 O&M Funding Sources

CTA O&M funding sources include passenger revenue, public funding, system generated revenue, and additional public funding. Passenger revenue reflects the fares received from customers. Projected fare revenue for the proposed Yellow Line Extension LPA is a function of projected passengers and projected average fare paid per passenger. It is expected that \$1.4 million (2009 dollars) in fare revenue will result in 2030 due to implementation of the Yellow Line Extension project.

Public funding includes sales tax and discretionary funding from the 1983 Regional Transportation Authority (RTA) Act, and new funding from the 2008 legislation.

- **Sales Tax (1983 Formula):** The RTA Sales Tax authorized in 1983 is the primary source of operating revenue for CTA. The tax is authorized by Illinois statute, imposed

by the RTA in the six-county region of northeastern Illinois and collected by the State. The sales tax is the equivalent of 1 percent on sales in Cook County and 0.25 percent on sales in the collar counties of DuPage, Kane, Lake, McHenry and Will. The 1 percent sales tax in Cook County is comprised of 1 percent on food and drugs and 0.75 percent from all other sales, with the State then providing a “replacement” amount to the RTA equivalent to 0.25 percent of all other sales. CTA receives 100 percent of the taxes collected in the City of Chicago and 30 percent of those collected in suburban Cook County, after the RTA retains its 15.0 percent share. Revenues are projected to grow beyond fiscal year 2009 based on a projection of Cook County sales tax revenue developed for CTA by Moody’s Economy.com.

- **Sales Tax and Public Transportation Fund (PTF):** RTA sales tax increased by the enactment of PL (P.A. 95-0708) in January 2008 equivalent to a 0.25 percent on sales in each county in the six-county region. By statute, 100 percent of the sales tax receipts and PTF funds, excluding the 25 percent PTF on Real Estate Transfer Tax (RETT) which goes to the CTA, are disbursed by formula to the Service Boards after setting aside funds for ADA paratransit service, suburban mobility, and for innovation, coordination, and enhancement (ICE). Funding for these three initiatives increase or decrease annually based on the percent change in the previous year’s receipts from taxes imposed by PL (P.A. 95-0708) under Section 4.03. The RTA deposits funds each year into an ICE fund as directed by Section 4.03.3 of PL. ICE funds may be used by the RTA based on the affirmative vote of 12 RTA Directors for operating or capital grants or loans to Service Boards, transportation agencies, or units of local government that advance the goals and objectives of the RTA Strategic Plan. This funding is projected to grow on the basis of projected growth in sales and real estate transfer taxes in the six-county region.
- **RTA Discretionary:** Apportionment from RTA’s 15 percent share of the sales tax (1983 Formula) and the State Public Transportation Fund (PTF) equal to 25 percent of the sales tax (1983 Formula) are the source of the RTA discretionary fund. This funding is projected to grow on the basis of projected growth in sales tax in the six-county region.
- **Real Estate Transfer Tax – RTA Formula:** As authorized by the 2008 Legislation (P.A. 95-0708), CTA receives the portion of PTF revenue earned from real estate transfer taxes. This funding is projected to grow on the basis of projected growth in Cook County real estate transfer taxes.
- **Real Estate Transfer Tax – City of Chicago:** In addition to the PTF real estate transfer tax revenue, the 2008 Legislation (P.A. 95-0708) authorized CTA to receive funds at a tax rate of 0.3 percent on real estate transfers in the City of Chicago. This funding is projected to grow on the basis of projected growth in Cook County real estate transfer taxes.

System generated revenue includes:

- **Reduced Fare Subsidy:** The reduced-fare subsidy is the State of Illinois reimbursement to CTA for discounted fares to seniors, people with disabilities and students. This revenue source is projected to grow with inflation.
- **Advertising, Charter, and Concessions:** Includes revenue from advertising, charter transit service, and concessions on CTA property. This revenue source is projected to grow with inflation.

- **Investment Income:** Interest income on CTA fund balances. Calculated annually in the financial plan on the basis projected cash balances. Applies a forecast of three-month U.S. Treasury Bills as the interest rate.
- **Statutory Required Contributions:** The Regional Transportation Authority Act requires the City of Chicago and Cook County to contribute \$3.0 million and \$2.0 million, respectively, towards CTA operations each year. This amount is projected to remain fixed at \$5.0 million annually.
- **All Other Revenue:** Includes parking fees, sale of real estate and rentals. This revenue source is projected to grow with inflation.

### 5.5.5 Capital and Operating Shortfalls

#### Additional Revenue Sources

Additional revenue sources must be identified to address projected CTA and Yellow Line Extension project-specific shortfalls. A state-supplied funding source or mixture of multiple sources to address capital and operating shortfalls has not yet been identified by the State of Illinois or the RTA.

#### Risks and Uncertainties

As the Yellow Line Extension project progresses, there are several strategies that CTA could utilize to address these risks, if one or more should occur. These strategies include:

- Further staging the construction of the project;
- Controlling the growth of service;
- Raising fares at a higher annualized rate and/or more often;
- Redefining the scope of the project; and
- Introducing additional short and long term financing strategies.

#### Implementation

Based on the funding shortfalls identified above, CTA is developing a strategy to fund the capital and operating needs of the LPA. Overall, the strategy assumes that 60 percent of the project capital cost would be funded by FTA Section 5309 New Starts grants, with the remainder covered by state funding. CTA and the RTA are working with the Illinois Department of Transportation and the relevant committees of the state legislature to identify stable and reliable sources of funding to fully fund operations and maintenance of existing services, renew existing infrastructure, and fund the operations, maintenance, and eventual infrastructure renewal of capacity expansion projects, including the Yellow Line extension project.

As the Yellow Line Extension progresses through the project development process, CTA will work with its funding partners to further develop and refine this funding strategy, which would ultimately form the basis of a Full Funding Grant Agreement between CTA and FTA.

## 5.6 Selection of a Locally Preferred Alternative

### 5.6.1 Achievement of Project Goals and Objectives

Five goals were identified for the Yellow Line Extension AA. Specific criteria and measures were developed for each goal as a means of assessing whether an alternative meets the goal. Figure 5.9 depicts how the LPA achieves these goals and objectives. These include:

**Goal 1 – Regional and Local Access Mobility**

The purpose of the Yellow Line Extension Alternatives Analysis (AA) Study is a study of transportation, economic development and community needs along corridors extending north from the current Yellow Line terminus at Dempster Street to identify opportunities for improved transit accessibility and leveraging existing transportation infrastructure.

To evaluate the goal of Mobility, the analysis examined how well each alternative improves the ability of residents and employees to reach desired destinations through the provision of high quality, convenient, and reliable transit service. The alignment of the LPA provides access to a high number of residents, according to 2000 U.S. Census data, there are a total of 18,655 people and 6,663 households in the UPRR Corridor. Over 11 percent (2,104) of the corridor population is within 0.25 miles of the proposed Old Orchard Road Station terminal.

Skokie projects that a substantial portion of Village of Skokie employment growth in 2030, estimated at 22 percent, will be concentrated in the Northern Employment Area and may be more indicative of development trends than the original CMAP forecasts as described in the Purpose and Need. The LPA would provide increased access and improved transit service to employment within the Old Orchard Road Corridor. The Yellow Line Extension would also provide connections with the CTA Red and Purple rail rapid transit lines at the Howard Station.

Currently, the 444 space park-and-ride at the Dempster Station is increasing in utilization. However, the Dempster Station is increasingly difficult to access due the daily traffic congestion on Dempster Street from Edens Expressway. The LPA would provide an alternative to commuter parking at the Dempster Station with a 350 space park-and-ride facility at the new Old Orchard Station and adjacent Edens/Old Orchard interchange. An Old Orchard location would also serve the growing north east Cook and Lake County transit market as identified in the project Purpose and Need.

**Goal 2 – Community and Economic Development**

A major aspect of this goal is to locate transit alignments and stations in areas with existing land uses conducive to transit use or in those areas which have the greatest potential to develop transit supportive land uses. The LPA fits well with the purpose and need for this project, providing a corridor that connects the major activity centers in the study area to the Yellow Line. The Village of Skokie and Old Orchard Mall area has been experiencing increased growth and redevelopment in recent years.

The LPA terminates within 900 feet to west side Old Orchard Mall. The space between the proposed terminal and related facilities and Westfield Old Orchard Mall is currently utilized as parking lots for the mall. Based on discussions with Westfield Shopping Centers and surrounding land owners, future development in the area between the station and the mall would support enhanced pedestrian and bus connectivity to Westfield Old Orchard Mall.

**Goal 3 – Regional Transit System Performance**

This goal ensures that both the capital and operating costs of the project are commensurate with its benefits. The LPA is the most promising alternative to reduce travel times, improve trip reliability, provide sufficient transit capacity to meet 2030 transit demand, maximize potential transit ridership, and to enhance linkages within the CTA and regional transit system.

Based on the Screen 2 analysis, the LPA provides the best opportunity to meet the FTA's current cost-effectiveness requirements. The CTA is seeking approval to advance to subsequent project phases and funding for construction from the federal government through the FTA New Starts grant program. In general, projects advancing into the FTA PE phase of project development must achieve a cost-effectiveness measure of below \$25 in project cost per hour of travel time savings. CTA anticipates continued refinement of the cost-effectiveness of the LPA during the EIS and PE phase of the project development as more information is developed.

**Goal 4 – Safety and Security**

The Yellow Line extension would increase safety and security by improving access and circulation at Dempster Station. The LPA would remove the existing at-grade platform and construct an aerial station above Dempster Street. This would provide enhanced pedestrian access to existing park-and-ride lots located north and south of Dempster Street. Reconfiguration of the station area would also reduce passenger-bus conflicts as passengers walk from their bus drop-off/pick-up locations to the station house.

During the next steps, PE and the preparation of an EIS, a wide range of safety measures will be identified and evaluated and identified into project design as necessary. These include vehicle measures (on-board closed-circuit television cameras, on-board audio and visual message communications to passengers, and emergency alarm systems), and station design (maximizing unobstructed sightlines in and surrounding stations, positioning of customer service booth for maximum presence and visibility in stations, closed-circuit television cameras, public address systems, sufficient lighting, and emergency alarm systems).

**Goal 5 – Environmental Quality**

The fifth goal, Environmental Quality, is to develop solutions which minimize impacts to environmental resources and communities within the study area. The AA identified several potential impacts, including displacements, noise and vibration impacts. The next step, the preparation of an EIS will analyze these impacts, as well as the other social, economic, and environmental consequences in detail. The goal of the environmental analysis will be to avoid, minimize and mitigate potential environmental impacts. This environmental review process is required by the National Environmental Policy Act of 1969 (NEPA) and related laws.

Figure 5.9: Effectiveness of Alternatives Meeting Goals and Objectives in 2030

| Goal / Objectives  | Evaluation Measures / Criteria  | HRT UPRR East                            | Notes  |
|--|---|--|--|
| <b>Goal 1: Regional and Local Access and Mobility</b>  |   |  |  |
| 1 Increase connectivity between and within neighborhoods and activity centers.   | Population Served 2,104 (2000)  | Medium                                   | Within 0.5 mile of station area  |
|  | Population Served 2,095 (2030)  | Medium                                   |  |
|  | Community Facilities Served   | Medium-High                              | Within 500 feet of either side of corridor   |
|  | Community Facilities Impacted   | Medium-High                              |  |
|  | Degree of Potential Effect on Community Facilities  | Medium                                   | Within 0.5 mile of station area  |
|  | Employment 7,426 (2000)   | High                                     |  |
|  | Employment 9,030 (2030)   | High                                     |  |
| Service to Activity Centers within the Study Area  | High  | Based on alignment and station locations |  |
| 2 Improve access between city neighborhoods and regional centers, and between suburban communities and the greater central area. | Service to Activity Centers in the Region   | High                                     | How well alternatives provide service to activity centers  |
| 3 Increase regional transit competitiveness.   | Enhancing Linkages and Major Trip Attractors/Generators within the Region                 | High                                     | Based on travel forecast with the best improvement in transit trips and reduction in vehicle trips |
| 4 Improve customer transfer connections among regional transit modes.  | Quality and Convenience of Trip   | High                                     | Number of transfers required and travel time   |
|  | Quality of Intermodal Connections   | High                                     | Based on quality of intermodal connections   |
| <b>Goal 2: Community and Economic Development</b>  |   |  |  |
| 1 Support community development initiatives.   | Consistent with Planned Development and Local Plans                                       | High                                     | Consistent with TIF district, local economic development and housing plans                         |
|  | Joint Development Potential   | High                                     |  |
|  | Potential for Job Creation  | Medium-High                              | Screen 1 and 2 public comments and public  |
|  | Public Comments   | Medium                                   |  |
| 2 Provide opportunity for transit-supportive development.  | Property Acquisition  | High                                     | Available sites for stations, bus transfer and parking   |
| 3 Support efficient land use patterns.   | TOD Potential   | High                                     | Station area development and market trends   |
|  | Compliant with Zoning and Future Land Use   | High                                     | Based on City of Skokie planning and development documents   |
| 4 Respect community context and identity.  | Number of Anticipated Displacements   | High                                     | Number of displacements required   |
|  | Degree of Potential Effect on Neighborhoods   | High                                     | Based on public comments for the alternative   |
|  | Effects on Community Cohesion   | High                                     |  |
| 5  | Low-Income or Minority Neighborhoods Served   | High                                     | Minority population within 0.5 mile of station area  |
|  | Low-Income or Minority Neighborhoods Impacted   | High                                     | Minority population negatively impacted within 0.5 mile of station area                            |
|  | Potential for Displacement of Low-Income and Minority Households                          | High                                     | Number of displacements required   |
|  | Potential for Displacement of Low-Income and Minority Businesses                          | High                                     |  |
|  | Potential for Community Facilities Impacts in Low-Income or Minority Areas                | High                                     |  |
| <b>Goal 3: Regional Transit System Performance</b>   |   |  |  |
| 1 Increase capacity and ridership.   | Opening Year Preliminary Daily Ridership  | Medium                                   | Travel forecast results compared to other alternatives (July 2009)                                 |
|  | Forecast Year Preliminary Daily Ridership   | Medium                                   |  |
|  | Opening Year Annual Riders (System-wide)  | Medium                                   |  |
|  | Forecast Year Annual Riders (System-wide)   | Medium                                   |  |
|  | Daily Station/Stop Boardings  | Medium                                   |  |
| 2 Enhance efficiency and cost effectiveness.   | Capital Costs per Passenger Mile (xxx M)  | Medium-High                              | Capital cost / one-way route miles (July 2009 capital cost estimate)                               |
|  | Cost Effectiveness Index (potential for a medium rating)                                  | Low                                      | FTA CEI Rating (July 2009 capital cost and ridership results)                                      |
| 3 Facilitate connections and linkages.   | Number of Transfers between Select Origin-Destination Pairs                               | High                                     | Travel forecast results  |
| 4 Reduce transit travel times.   | Transit Travel Times between Representative Origin-Destination Pairs                      | High                                     | Old Orchard terminus to Howard Street station  |
| 5 Integrate existing transit infrastructure, where feasible.   | System Criteria Compatibility   | High                                     | Compatible with existing Yellow Line or Dempster Street terminal station                           |
|  | Interoperability with Existing Service  | High                                     |  |
|  | Consistency with Existing Infrastructure  | High                                     |  |
| <b>Goal 4: Safety and Security</b>   |   |  |  |
| 1 Increase transportation reliability.   | Operating Reliability   | High                                     | Transit mode and service plan supports travel forecast   |
| 2 Improve incident response capabilities.  | Potential Impact on Emergency Vehicle Incident Response Capability                        | High                                     | Number of potential impacts to disrupt emergency vehicles (example rail grade crossings)           |
| 3 Incorporate design elements that enhance safety and security.  | Extent of Vehicle/Transit/Pedestrian Conflicts that are not Fully Protected               | High                                     | Number of pedestrian/transit and vehicle/transit potential conflicts                               |
| <b>Goal 5: Environmental Quality</b>   |   |  |  |
| 1 Limit impacts.   | Potential for Negative Visual Impact  | Medium                                   | Proximity to community facilities, residences and businesses with frontage to alignment            |
|  | Potential for Archaeological Site Impacts Within the Proposed Right-of-Way                | High                                     | Number of archaeological site impacts within the proposed right-of-way                             |
|  | Buildings Listed or Eligible for Listing in the NRHP Within 200 Feet                      | High                                     | Number of historic structures within 200 feet of the proposed right-of-way                         |
|  | Districts Listed or Eligible for Listing in the NRHP Within 200 Feet                      | High                                     | Number of existing historic or eligible districts within 200 feet of the proposed right-of-way     |
|  | Parklands and Recreation Areas Impacted   | High                                     | Number of parkland and recreation areas impacted   |
|  | Anticipated Noise and Vibration Impact Potential for Mode (contour based on FTA guidance) | Medium                                   | Noise and vibration analysis   |
|  | Wetland Impacts   | High                                     | Number of delineated or potential wetlands impacted  |
| 2 Support environmental benefits.  | Critical Habitat Impacts  | High                                     | Number of critical habitats impacted   |
|  | Consistency with Regional Air Quality Plans   | High                                     | CMAP conformity analysis   |
| 3 Reduce reliance on automobile travel.  | Travel Forecast Modal Split   | High                                     | Based on travel forecast with the best improvement in transit trips and reduction in vehicle trips |
| <b>Performance Rating Scale:</b>   |   |  |  |
|  |   |  | Poor (Low) ----- Medium ----- Good (High)  |

## 6.0 PUBLIC INVOLVEMENT

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### 6.1 Public Involvement Approach

As part of the FTA's Alternative Analysis process the CTA conducted an array of public involvement activities. In order to achieve a high level of participation, a comprehensive public involvement plan was developed and implemented.

#### 6.1.1 Description of Outreach Program

Over the course of the AA study, two presentations were conducted within the Yellow Line Extension Alternatives Analysis Study area to encourage the general public's participation at key project stages described in this document. Through presentations and displays, the public learned about the methodology of the prescribed New Starts federal planning processes and how the evaluation criteria was developed and applied to the universe of alternatives for the Yellow Line AA. A formal question and answer process allowed the general public to make comments and ask questions on the study's findings.

Individual and group briefings for elected and public officials; community, civic, business and religious leaders; and other stakeholders were conducted along the same timeline, providing them the opportunity to comment and inquire about this project.

The public had continual access to the project's public outreach presentation materials on the Yellow Line Extension AA Study weblink via the CTA's website ([www.transitchicago.com](http://www.transitchicago.com)). In addition to presentation materials, the website provided information on how to submit comments and questions to CTA via email and standard mail. At the end of each public comment period, all questions and answers were posted on the project's website. In addition, a database of participants in the outreach process was developed and is continually updated, and CTA's community outreach database was also used. CTA's existing database includes organizations such as community groups, non-profits, community development organizations, and chambers of commerce.

Throughout the public involvement process, the CTA monitored participation from the general public, elected officials, and stakeholders to gauge public interest and opinion regarding the proposed project. To identify potential modification to the public notification process, CTA also analyzed the number of attendees and the geographic diversity through regularly scheduled discussions with local elected officials and through monitoring attendance at the public meetings.

#### 6.1.2 General Public

Each affected community within the study area has had different levels of interest in the project, due to many factors such as intended use; direct or indirect impacts; support for or lack of support for transit improvements; and potential or perceived degree of project impact on property and/or daily routines. This acknowledgement was integral to CTA's evaluation of whether the public education and involvement process was targeted properly or if it requires adjustment to better reach and inform the public.

Two rounds of presentations took place over the course of the study: one for each level of alternatives screening. Prior to each presentation, the public was informed of the meetings through advertisements in local newspapers and car cards posted on CTA buses, trains, and stations. During the second phase previous participants were also notified by letter or email.

Local stakeholders and elected officials were also recruited to help conduct outreach to generate more project and public interest in attending these meetings.

The first meeting outlined the purpose and need of the Yellow Line Extension AA Study and presented the preliminary findings of Screen 1. The second round of public meeting reviewed the findings of Screen 1, presented the preliminary findings of Screen 2, announced the recommended Locally Preferred Alternative (LPA), and solicited comments and questions particularly relating to the recommended LPA.

### **6.1.3 Stakeholders and Elected Officials**

Individual and group briefings were held to allow stakeholders and elected official to share perspectives, interests, and potential concerns, as well as to offer their recommendations for strengthening candidate alternatives or to identify additional alternatives. Following the same schedule as the general public program, two rounds of briefings are scheduled for the Yellow Line Extension Alternatives Analysis Study. Stakeholders and elected officials also were invited to attend the public meetings. Stakeholder and elected official categories include the following:

#### **Civic Organizations**

Civic organizations include transportation, environmental, regional-growth or business-related groups.

#### **Activity Generators**

Members of this category include retail locations, area attractions, and parks.

#### **Religious Organizations & Neighborhood Groups**

Members of this category include local chambers of commerce, block clubs, and other community groups.

#### **Government Facilities, Infrastructure, and Institutions**

This category includes schools, operational facilities, neighborhood parks, railroads, and universities.

#### **U.S. Representatives and U.S. Senators**

Individual briefings for the Congressmen and Senators and/or their staff were conducted for the initial round of briefings. They were also invited to attend all public meetings. As the screening process proceeded and the study entered the final stages, another round of briefings were held with the Congressmen and Senators to provide the opportunity for them to comment on the recommended LPA.

#### **State and County Officials**

These officials were informed of the AA study's progress. They also served as another resource to CTA to identify other stakeholders, and to explain potential local issues to CTA.

#### **Surrounding Municipalities**

CTA contacted the Village of Skokie and the Northwest Municipal Conference to identify potential stakeholders and other interest groups to be included in this public involvement process. CTA also sent alerts to other surrounding municipalities to keep them informed of the process.

## 6.2 Implementation and Execution of Public Involvement

The CTA Yellow Line Extension AA Study public involvement included various meetings held in conjunction with each alternatives screening. Each round of meetings focused on the respective Screening phase. Both meetings were conducted in a similar manner to ensure consistency.

### Public Meeting Locations

The first step entailed identifying appropriate locations within the study area to hold the public presentations. Locations were identified in conjunction with the Aldermen in the study area. Locations identified changed in the next of meetings to ensure thorough study area coverage:

The locations identified met the following criteria:

- Location must be available on date of presentation;
- The facility must be able to accommodate a theater type presentation that can hold at least 100 people and the presentation boards, technical staff, and public;
- Must be ADA accessible;
- Near public transportation; and
- Free of charge.

Meeting facilities were booked for public meetings several weeks in advance of the actual meetings to enable informative and accurate public notification. All logistical arrangements were arranged and confirmed.

### Elected Official Briefings

All elected officials were informed them of the public meetings that were scheduled. Those officials interested in a scheduled meeting were:

- Briefed using a flip board presentation
- Encouraged to identify stakeholders to be contacted in their area
- Encouraged to identify potential public meeting locations

Officials were contacted for follow-up meetings to fully update them on issues to be discussed at public meetings and to provide opportunity to comment prior to the meeting.

### Meeting Announcements

CTA used the following methods to ensure stakeholders and the general public were aware of the meetings take took place:

- Meeting announcements appeared in local community papers two weeks in advance of the scheduled meetings.
  - Some community papers were weeklies and required meeting notices to run twice
- Stakeholders were given information regarding upcoming meetings as a supplement to these advertisements
- Meeting announcements were posted on CTA's website
- Meeting announcement were posted at CTA stations and in CTA trains and buses via car cards
- CTA distributed and posted a press release including meeting details

Any member of the public interested in attending was welcome. No pre-registration was required.

### **6.3 Meeting Format**

Each meeting included the following formats: an arcade open house, in which an area was dedicated to project maps and alternatives analysis process displays, a formal presentation including a PowerPoint presentation on Screen 1 or 2, and a question and answer session.

The entire session was allotted two hours, beginning at 6:00 P.M. and ending at 8:00 P.M. This schedule allowed sufficient time to conduct the presentation, answer questions, and allow attendees to view the information on the presentation boards. The time was expanded when public involvement warranted.

Prior to each meeting, an internal client/consultant meeting and rehearsal was held to evaluate the effectiveness of the presentation materials and identify potential improvements.

#### **Arcade Open House**

When attendees first arrived at the facility at 6:00 P.M., they signed in and provided contact information. They were given a question/comment card and directed to the arcade. In the arcade, attendees had an opportunity to review project information. The arcade also allowed attendees to familiarize themselves with the project so they can prepare questions or comments before the formal presentation and question and answer session.

The arcade was staffed by CTA and the project consultant team and included a series of poster boards (35 inches across and 47 inches tall) displaying maps, evaluation results and recommendations.

#### **Formal Presentation**

The presentation consisted of a PowerPoint presentation lasting approximately 25 minutes. An interpreter for the hearing impaired was available.

#### **Question & Answer Session**

At the conclusion of the presentation, the moderator explained the procedure for the question and answer session. There was a short break for participants to formulate their comments and/or questions. All questions were submitted in writing using question/comment cards provided to attendees at the sign-in table. The comment cards were collected by CTA grouped into like categories. The moderator read question/comment categories to the audience and the presentation panel provided answers verbally.

All questions received regarding the Yellow Line Extension Alternatives Analysis Study also were answered in writing and posted on the CTA website.

## 6.4 Screen 1 Public Involvement Summary

The CTA hosted a community meeting on August 26, 2008 at National-Louis University from 6:00-8:00 P.M. to present the findings of Screen 1 of the AA study.

The CTA placed advertisements to inform the community of the proposed project and upcoming meetings through local community newspapers, websites, local universities and colleges, elected officials' offices, customer alerts on CTA buses and stations and postings at village halls adjacent to the study area. The community newspapers included The Chicago Jewish News (August 8th), the Evanston Review (August 21st), and the Skokie Review (August 14th). Additionally, NBC 5, the Chicago Tribune, the Chicago Metropolitan Agency for Planning, the Regional Transportation Authority, Progressive Railroading Daily News, the Metropolitan Planning Council, SkokieNet, and the Village of Glenview posted the meeting information online via their websites. Village hall postings included Evanston, Glenview, Golf, Lincolnwood, Morton Grove, Niles, Northfield, Skokie, and Wilmette.

Prior to the public meetings, CTA met with community leaders, chamber of commerce executive directors, and local elected officials and/or their staff. Additionally, CTA staff asked these leaders to assist them by submitting names of local groups/organizations that are active in the community and would be interested in this extension study, as well as becoming proactive participants of the public involvement process of the AA study. Recommended groups were added to the community outreach database. CTA contacted by letter 18 elected officials. Four meetings were held to brief interested elected officials. Included was a suburban mayors meeting where 4 suburban mayors and/ or their representatives met collectively. There were 48 stakeholders invited to participate in a briefing on the morning of August 26th, 2008. This briefing was held at National-Louis University. Fifteen individuals attended representing 12 organizations.

Fifty-seven people attended the meeting. A total of 138 comments were received either at the meetings, via e-mail, or U.S. Postal Service. The majority of comments received were related to technology and corridor clarification or preferences. While some members of the public expressed strong preferences or opposition for one corridor route over another, there were several general comments providing support for improving transit access to the Old Orchard area. Additionally, several participants asked about environmental impact issues.

The official two week comment period was extended one week to September 16, 2008. Questions and comments were responded to by CTA staff and posted to the website. Once posted, elected officials, stakeholders and meeting participants received either an email or letter notifying them that the comments and responses were available on-line and via hard-copy upon request.

## 6.5 Screen 2 Public Involvement Summary

The CTA hosted a community meeting at Niles North High School on April 30, 2009 from 6:00-8:00 P.M. The meeting presented Screen 2 findings and the recommendation of a Locally Preferred Alternative (LPA).

The CTA placed advertisements to inform the community of the proposed project and upcoming meetings through local community newspapers, websites, elected officials' offices, customer alerts on CTA buses and stations, and postings at village halls adjacent to the study area. The community newspapers included The Chicago Jewish News (April 10-16), the Evanston Review (April 9), and the Skokie Review (April 9). Additionally, the RTA, the CMAP, Progressive

Railroading Daily News, SkokieNet, the Village of Skokie, the Village of Morton Grove, Cook County Commissioner Larry Suffredin, and DevCorp North posted the meeting information on-line via their websites or e-newsletters. The Nadig Newspaper also published the information in their weekly paper. Village hall postings included Evanston, Glenview, Golf, Lincolnwood, Morton Grove, Niles, Northfield, Skokie, and Wilmette.

Similar to the first phase of the AA Study, CTA met with community leaders and local elected officials and/or their staff prior to the public meeting. CTA staff briefed these leaders on the Screen 2 findings and presented the recommended LPA. Additionally, CTA staff asked these leaders to identify local groups/organizations that are active in the community and would be interested in this extension study. Recommended groups were added to the community outreach database. CTA contacted by letter 18 elected officials. Six individual briefings were held with interested elected officials. Represented in the meetings were State Senators and Representatives and their staff, a Cook County Commissioner, and Presiding Judge of the Second Municipal District - Circuit Court of Cook County. In addition a meeting was held where 9 suburban mayors and/ or their representatives met collectively. CTA staff also presented findings and the LPA at a Northwest Municipal Conference (NWMC) Transportation Committee meeting. There were 65 stakeholders invited to participate in a briefing on the morning of April 30, 2009. This briefing was held at the Skokie Village Hall. Nineteen individuals attended representing 12 organizations.

Sixty-two people attended the meeting. A total of 103 comments were received either at the stakeholder and public meetings, via e-mail, or U.S. Postal Service. This included letters from 4 stakeholders, 7 letters from elected officials, as well as a letter from the NWMC, all supporting the extension. In addition the majority of comments related to support or opposition of the extension. Many comments received were related to economic and environmental impacts, focusing potential noise impacts.

The official two week comment period was extended one week to May 21, 2009. Questions and comments were responded to by CTA staff and posted to the website ([transitchicago.com](http://transitchicago.com)). Once posted, elected officials, stakeholders and meeting participants received either an email or letter notifying them that the comments and responses were available on-line and via hard-copy upon request.

On August 12, 2009 the Chicago Transit Board met and the adopted an LPA. A letter was sent to participants, stakeholders and agency outreach inviting them to submit comments or participate in the Board action. At the meeting comments and a petition were submitted and a statement was read on behalf of the Mayor of the Village of Skokie. The Transit Board adopted the recommended LPA. The CTA will now move onto the Environmental Impact Statement step of the FTA process. There will be additional opportunities for public involvement in subsequent steps of the FTA process.

## 6.6 Final Reporting

Upon the completion of all the public involvement activities CTA completed public involvement binders for each corresponding screen. These included all related information for public meeting announcements, elected official meetings, stakeholder meetings, public meetings, public involvement, media coverage, examples of the CTA website, any follow up activity, as well as copies of all registration cards and any comment that was submitted during each screen. This public involvement summary will become part of the Federal record.

## 7.0 NEXT STEPS

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The preparation of a Draft Environmental Impact Statement (DEIS) will be the next step following the recent selection of a LPA. After completion of scoping for the EIS, the CTA will prepare an application to the FTA for advancement into Preliminary Engineering phase of the New Starts process. Issues that will be addressed in these next steps include:

- Detailed alignment analysis for the LPA
- Details of intermediate and terminal station locations
- Right-of-way requirements
- Impacts identification and proposed mitigation measures
- Costs and possible phasing
- Evaluation of the cost effectiveness of project elements

There will be opportunities for public involvement in subsequent project phases.