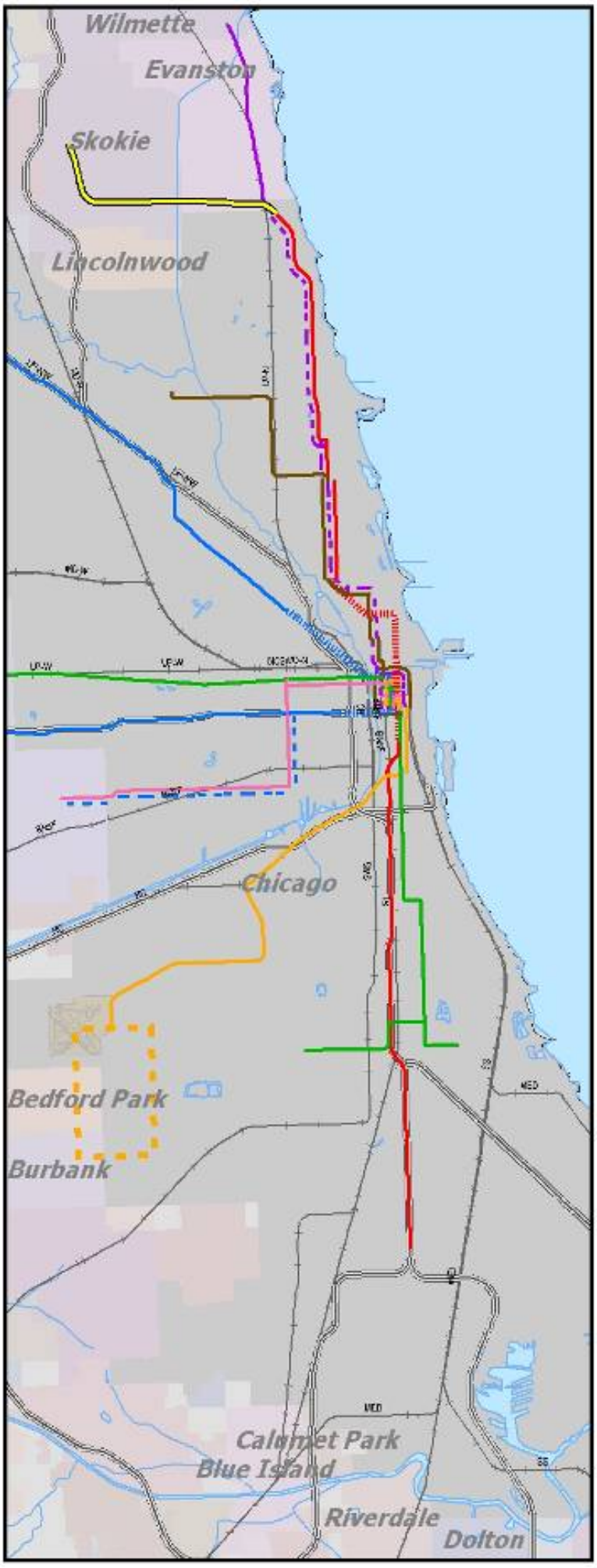

CTA Orange Line Extension Alternatives Analysis

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
BRC	Belt Railway Corporation of Chicago
BRT	Bus Rapid Transit
CATS	Chicago Area Transportation Study
CDOT	Chicago Department of Transportation
CMAP	Chicago Metropolitan Agency for Planning
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
NICTD	Northern Indiana Commuter Transportation District
O&M	Operations and Maintenance
PE	Preliminary Engineering
PRT	Personal Rapid Transit
RA	Redevelopment Area
SCC	Standard Cost Categories
TIF	Tax Increment Finance
TSM	Transportation System Management
V/C	Volume-to-Capacity Ratio
VdB	Vibration Decibels
VHD	Vehicle Hours of Delay
YOE	Year of Expenditure

1.0 INTRODUCTION

1.1 Context of the Alternatives Analysis

With the 1993 opening of the Orange Line, the southwest side of Chicago gained rapid transit service and Midway Airport became conveniently accessible by transit for a greater number of airport workers and air travelers. The original Orange Line project proposal was for the southern terminus of the Orange Line to be located in the vicinity of the Ford City Mall. However, due to funding shortfalls at the time, the Orange Line terminus was shortened to Midway Airport.

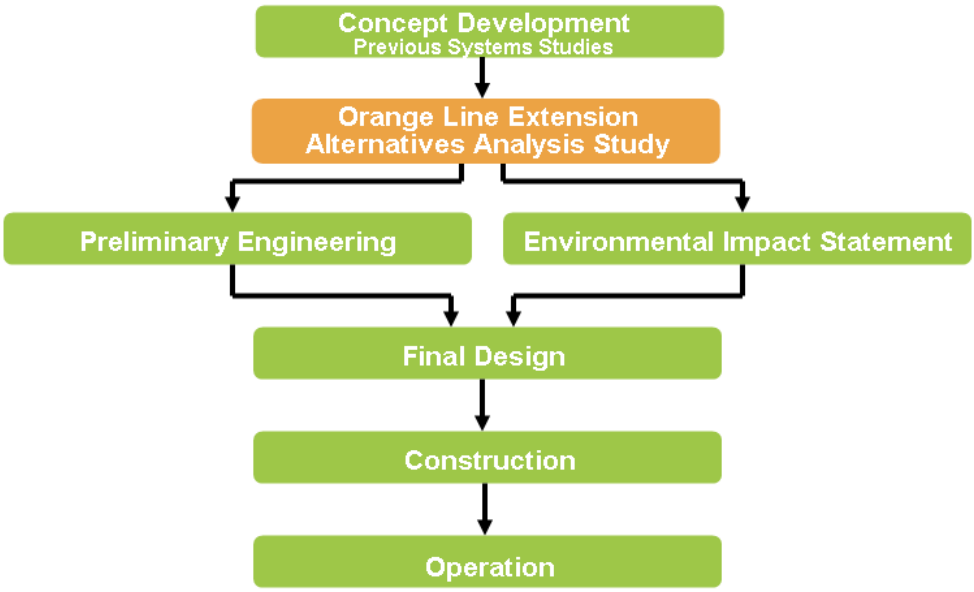
Proposed extensions of the Chicago Transit Authority (CTA) Orange Line to the south from its current terminus at Midway have been consistently included in the Chicago region's long range transportation plan developed by the Chicago Metropolitan Agency for Planning (CMAP), formerly the Chicago Area Transportation Study (CATS), since the 1990s.

A terminal station in the vicinity of Ford City Mall would provide improved access for southwest side and southwest suburban residents, as well as improved access for other city residents to the large concentration of jobs in this area. 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. The Orange Line Midway station has also become congested. There are nineteen CTA and Pace buses serving the Midway station and access has become difficult to the station due to roadway congestion and parking constraints.

To address these issues, CTA conducted an Alternatives Analysis (AA) study to identify and evaluate potential major fixed guideway solutions. This AA study documents the identification, evaluation, and selection of a Locally Preferred Alternative (LPA) for the CTA, consistent with the planning and project development process defined by the Federal Transit Administration (FTA). The AA study is the first major step in the FTA New Starts process (shown in Figure 1.1). Transit agencies that are seeking federal New Starts funding must follow this process. The CTA integrated results from past concept development studies into the AA study. The AA study is completed with the selection of a LPA.

The next steps in the process are preparation of an Environmental Impact Statement (EIS) and Preliminary Engineering. The 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 all transit projects nationally, then the FTA can grant permission to enter Preliminary Engineering. Preliminary Engineering consists of more detailed design and refinement of the LPA to a much higher degree of understanding and 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, construction can begin following Final Design. Each of these steps typically takes a minimum of two years. Public involvement is an integral part of each of these steps. Figure 1.1 illustrates the FTA New Starts Process.

Figure 1.1: FTA New Starts Process



1.2 Purpose of the Alternatives Analysis Report

The purpose of the Orange Line Extension AA Study is to identify transit improvements that would provide improved access to the Orange Line and improved mobility to residents and businesses located in the study area. The report summarizes the results of an AA that followed FTA New Starts project development guidance. It provides information on the costs, benefits, and impacts of a wide range of alternatives that went through a two step screening process. The result of the Orange Line Extension AA is a LPA that is adopted by the Chicago Transit Board.

1.3 Organization of this Report

This report is organized into 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, and 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 Screen 1 and the recommendation of a LPA. Section 5 describes the LPA and how well the LPA achieves project goals and objectives. Section 6 provides and overview of public involvement and Section 7 describes the next steps for the project.

2.0 PURPOSE AND NEED

2.1 Description of Study Area

The Chicago metropolitan region has the second largest transit system in the nation. The CTA bus and heavy rail systems provide service to much of the City of Chicago and 40 suburbs. The CTA system served over 520 million trips in 2008. Daily 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.

Since the opening of the Orange Line in 1993, transit ridership on the southwest side of Chicago has grown. The growth in Midway Airport has also spurred economic development in the area that has included several hotels and commercial establishments. The Ford City Mall is a regional shopping center that serves the southwest side and southwest suburban residents. Midway Airport and the other employment and retail opportunities would benefit from having more convenient access to an expanded labor force as well as an expanded market area.

Shortening the lengthy bus access trips to the Orange Line would also improve access to downtown Chicago and other employment centers for southwest side residents. The Orange Line Midway station has become congested. There are nineteen CTA and Pace buses serving the Midway station and access has become difficult to the station due to roadway congestion and parking constraints.

The purpose of the Orange Line Extension Alternatives Analysis (AA) Study is to identify transit improvements that would provide improved access to the Orange Line and improved mobility to residents and businesses located in the study area.

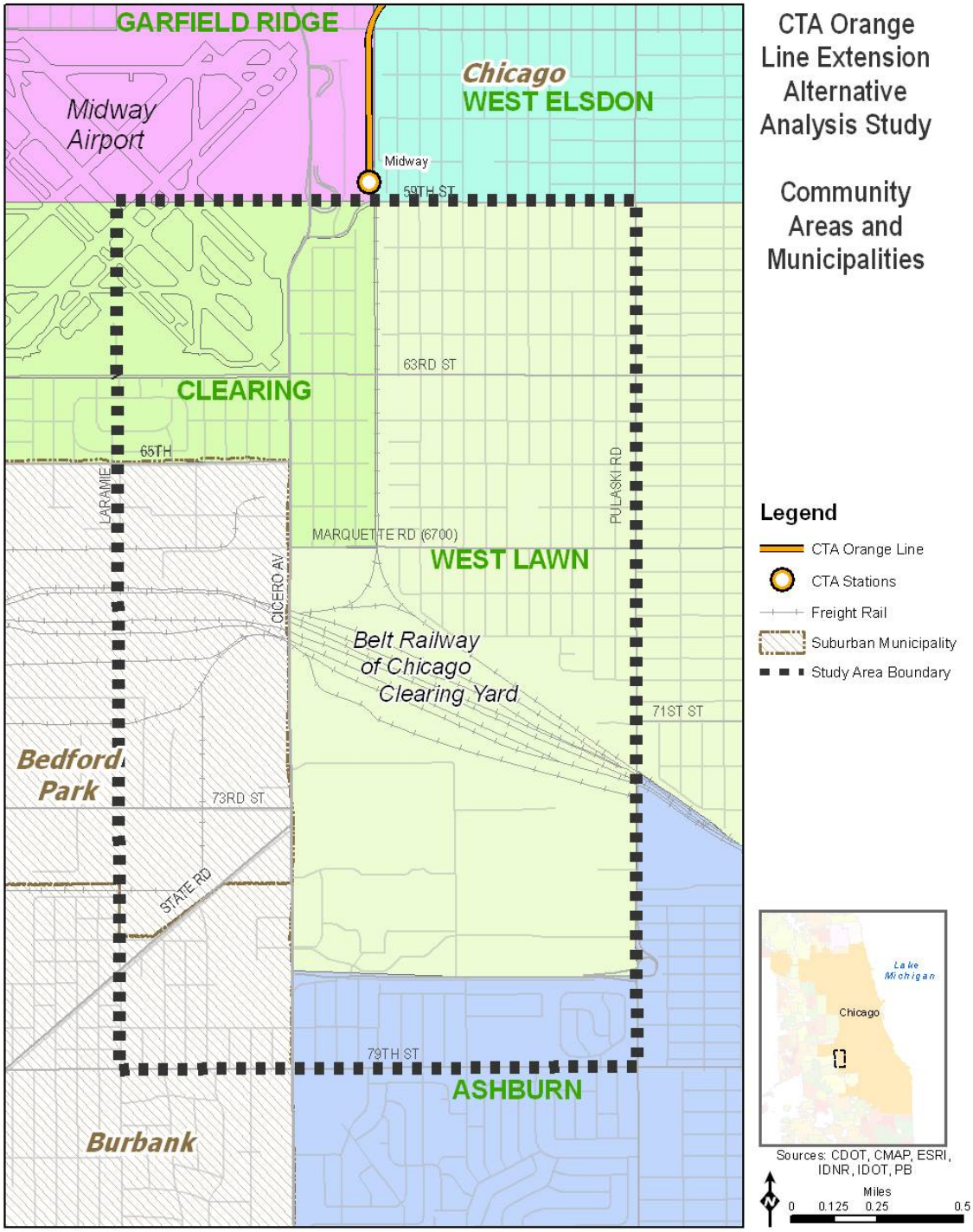
2.1.1 Study Area Boundaries

The study area (Figure 2.1) is situated about 10 miles southwest of the Chicago Central Area (commonly referred to as the “Loop”) and encompasses approximately four square miles. The boundaries of the study area are 59th Street on the north, 79th Street on the south, Pulaski Road on the east, and Laramie Avenue on the west. Chicago Midway Airport is located in the northwestern portion of the study area.

The study area boundaries are major, recognizable streets, used to clearly define where possible alternatives would be considered. However, travel patterns and analyses beyond the study area are integral components to the study and are included as necessary.

The study area encompasses parts of three community areas within the City of Chicago, along with portions of the Village of Bedford Park and the City of Burbank. Chicago community areas include portions of Ashburn, Clearing, and West Lawn. The study area is highly developed, with significant residential (primarily single family), industrial, transportation and commercial (retail and office) development.

Figure 2.1: Study Area and Community Area Boundaries



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 has a population of 2.9 million and is the nation's third largest municipality. In 2000, the study area had over 23,000 residents living in 7,600 households. Study area population is expected to grow by 8 percent and households by 1 percent between 2000 and 2030.

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%
Orange Line Study Area	23,200	25,000	+8%	7,600	7,700	+1%

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

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 existing CTA Orange Line service.

The minority population in the study area included 35.5 percent Hispanic population and 2.2 percent African American population in 2000. The Hispanic population density within the study area is shown in Figure 2.3.

In 2000, the population below the poverty line was 7.1 percent in the study area, as shown in Figure 2.4.

2.1.3 Employment and Economic Development

In 2000, employment in the study area was 14,300 jobs (excluding Midway Airport). Employment is estimated to increase by 36 percent in the study area between 200 and 2030. In addition, Midway Airport is a major employment site, with nearly 5,200 jobs in 2000, and is expected to grow to 12,900 jobs by 2030.

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%
Orange Line Study Area	14,301	19,487	36%
Chicago Midway Airport	5,189	12,908	149%

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

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

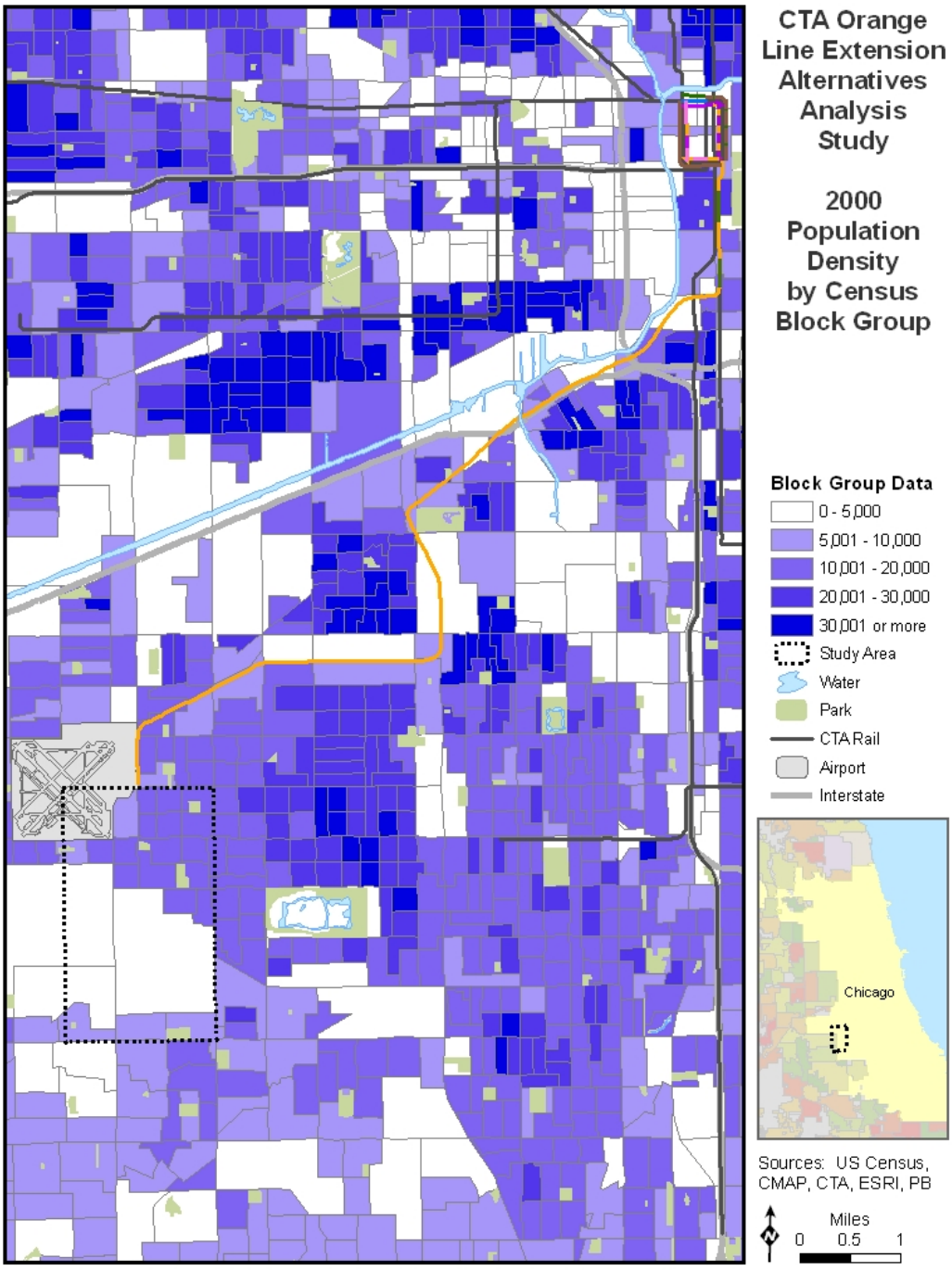


Figure 2.3: 2000 Study Area Hispanic Population (Persons)

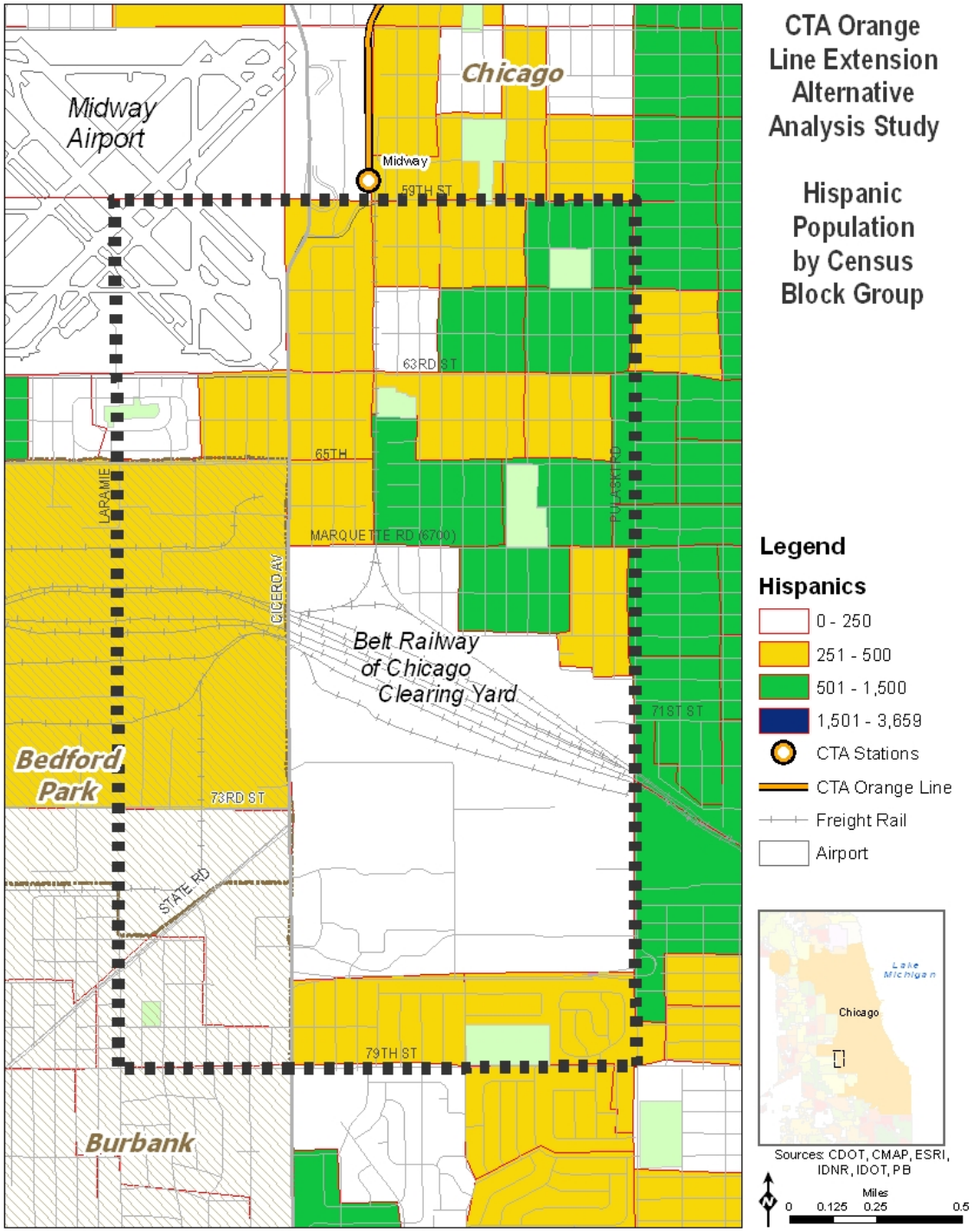
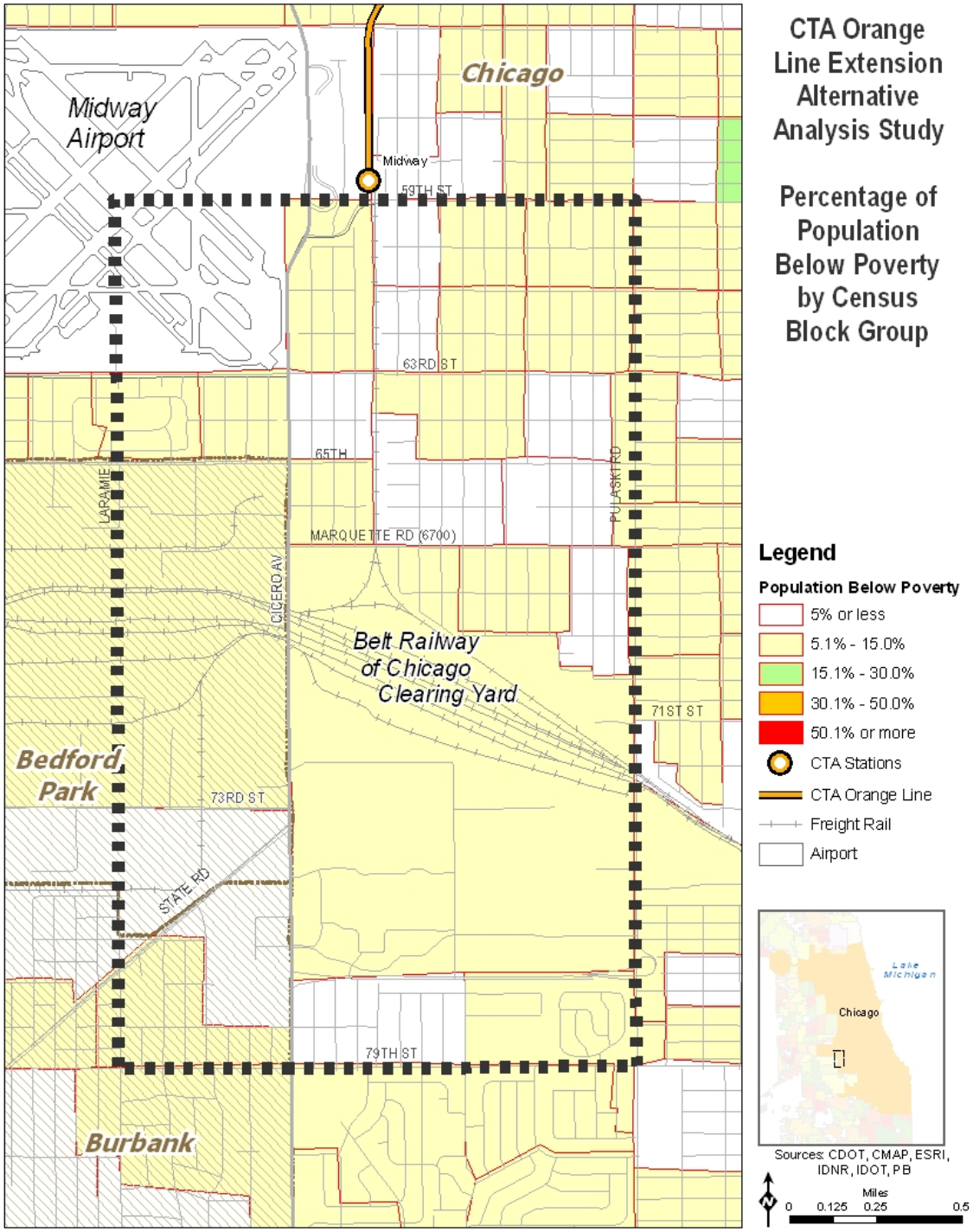


Figure 2.4: 2000 Study Area Low Income Population (Persons)



Midway Airport is also a major activity center. In 2006, Midway Airport had 9.2 million annual enplanements (airplane boardings). According to CMAP, enplanements are expected to increase to 12 million annual enplanements by 2030 (this forecast assumes the implementation of a new South Suburban Airport).

The Ford City Mall is a regional shopping center that has over 170 specialty stores. The mall is anchored by Carson Pirie Scott, JCPenney, Sears, and an AMC 14-screen theater. The gross leasing area of the mall is nearly 1.4 million square feet and it has 6,400 parking spaces.

As seen in Figure 2.5, other major activity areas include Richard J. Daley College, which had a student enrollment of 9,679 (5,493 full-time equivalent students) in 2007, the Solo Cup Company (7575 S. Kostner Avenue), Tootsie Roll Industries (7501 S. Cicero Avenue), the large industrial areas in Bedford Park and south of the Belt Railway of Chicago Clearing Yard, and the commercial and hotel/restaurant strip along Cicero Avenue south of the airport whose growth has been spurred by its proximity to Midway Airport.

The City of Chicago is focusing on improving and redeveloping communities in the study area. As a result, the City has designated several Tax Increment Finance (TIF) districts, Redevelopment Areas (RA), and Industrial Corridors in the study area. TIF districts direct future tax revenue increases back to the district for development assistance, infrastructure improvements, environmental remediation, building demolition, land acquisition, and employment training. RAs allow for building acquisition and demolition, assembling lots into viable parcels, and improving community facilities, infrastructure, and transportation facilities. Industrial Corridors are designated to help improve opportunities for manufacturers and other industrial users. Major incentive zone areas in the study area include several TIF districts along Pulaski Road, Cicero Avenue, and 63rd Street, a RA south of the Belt Railway Clearing Yard, and the West Lawn Industrial Corridor that includes the Belt Railway of Chicago Clearing Yard and a number of adjacent uses.

2.1.4 Land Use Characteristics

Land uses within the study area have been defined by CMAP and are presented in Figure 2.6. Land use in the study area is primarily residential (37 percent), with substantial industrial/warehousing (18 percent), commercial (17 percent) and open space areas (4 percent).

The majority of the study area is highly developed, primarily with single family residential. Other uses include institutional, industrial and commercial (retail and office) development. There are three elementary schools and Richard J. Daley College within the study area boundaries. There are five parks, ranging in size from 2.5 acres to 19 acres. The study area also contains active manufacturing uses.

Figure 2.5: Study Area Activity Centers

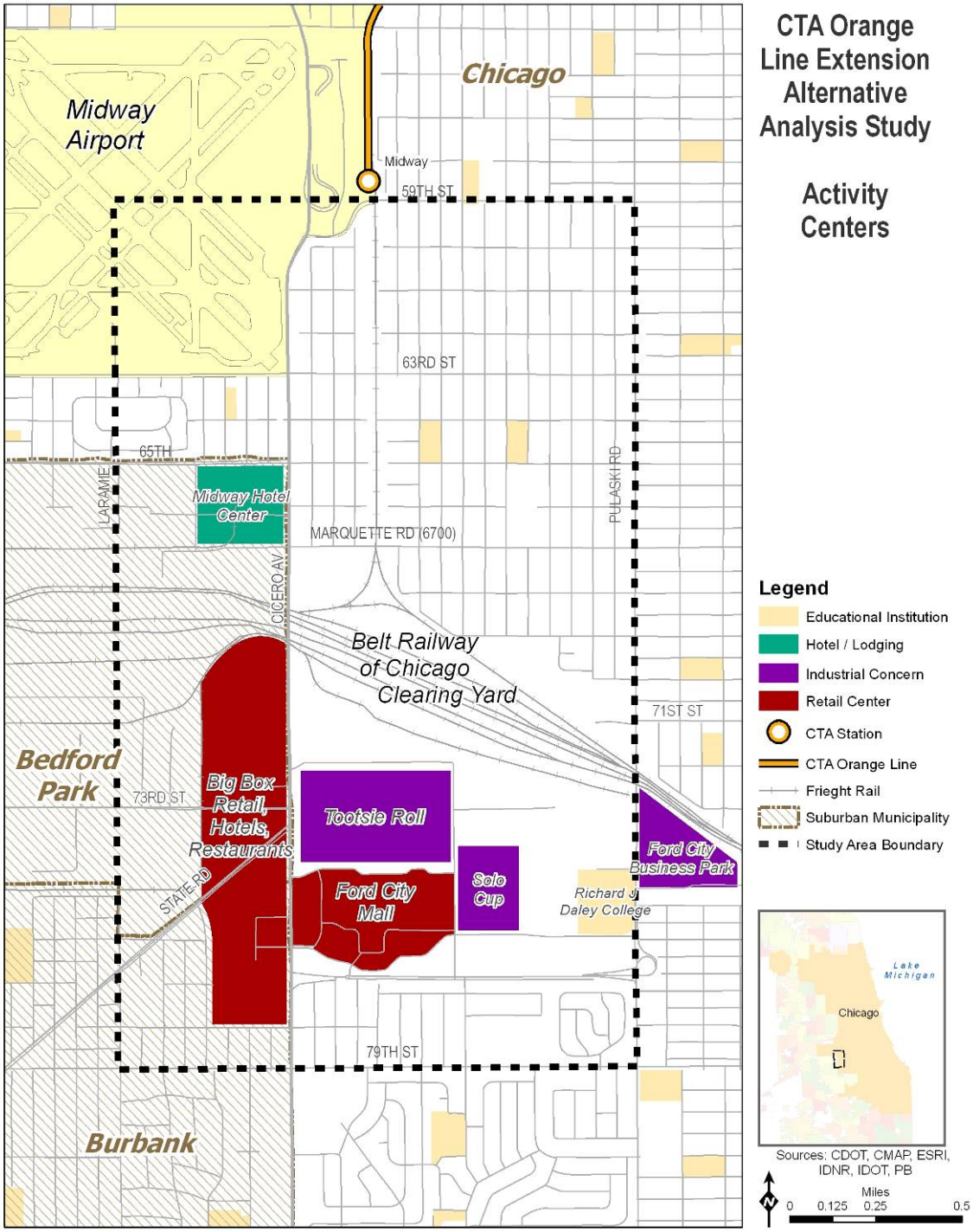
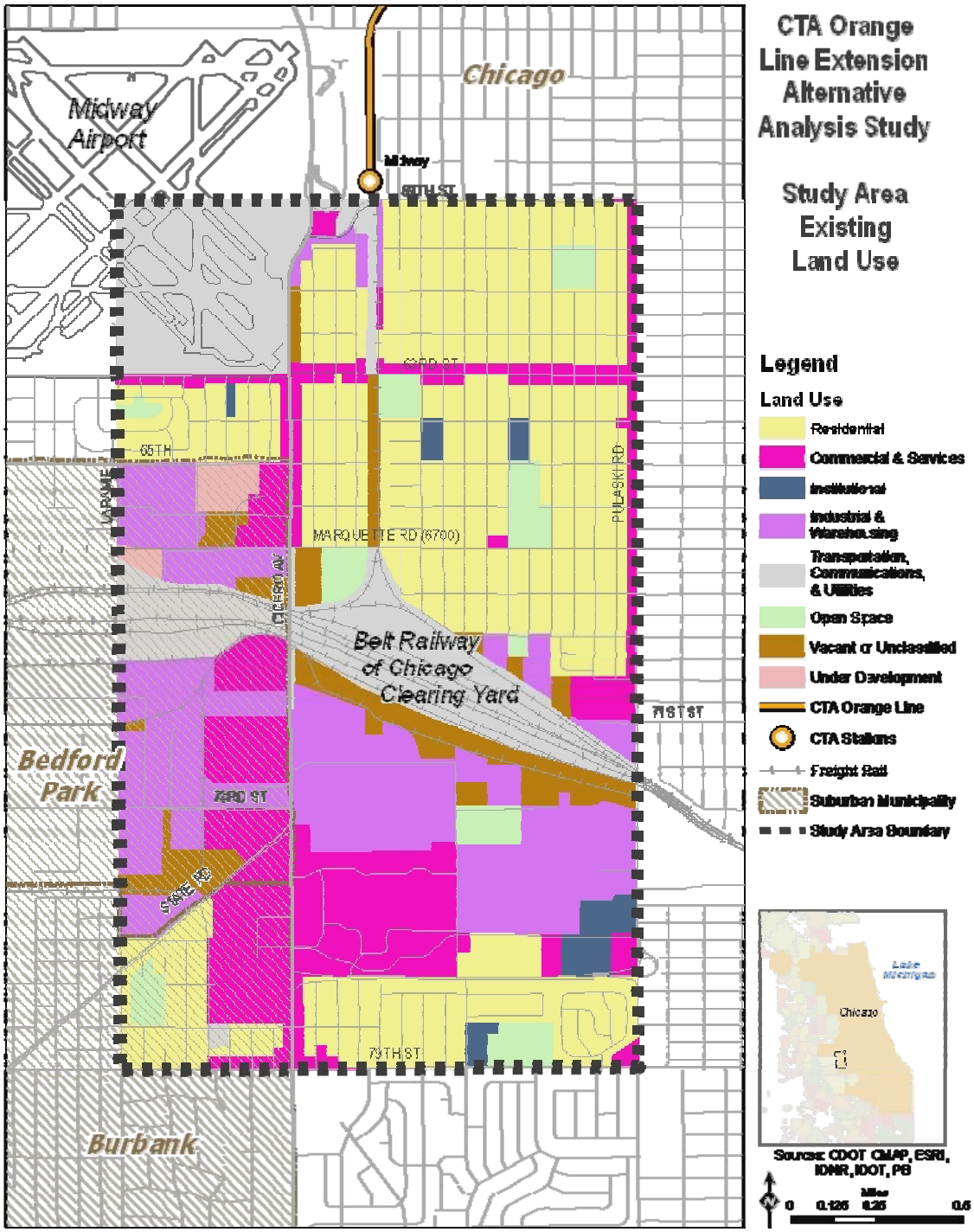


Figure 2.6: Study Area Land Use



Besides the Ford City Mall, the other commercial corridors include Cicero Avenue, Pulaski Road, 59th Street, 63rd Street and 79th Street.

The northwest corner of the study area is dominated by Midway Airport. Other transportation facilities in the study area include parking and services associated with the airport. The Belt Railway of Chicago freight railroad yard traverses the center of the study area in an east-west direction.

2.1.5 Travel Patterns[1]

More than 108,000 total daily trips originated or were destined to the study area in 2000. By 2030, daily trips increase by over 11 percent to nearly 121,000 trips. A district-to-district trip flow analysis was performed using the district boundaries shown in Figure 2.7.

Of the total daily study area trips in 2000, almost 19 percent of these trips were home-based work trips. By 2030, home-based work trips increase 10 percent from 2000.

As shown in Figure 2.7, of the 20,200 daily work trips originated or were destined to the study area (District 3) in 2000, major work trip flows to/from the study area include the district surrounding the study area (District 4) at 14 percent, to the Chicago Central Area (District 7) at 11 percent, the west side (District 14) at 10 percent, the mid-south (District 15) at 10 percent, the far southwest side (District 18) at 6 percent, the south lakefront (District 16) at 5 percent, and major employer areas such as northwest Cook County (District 8) and DuPage County (District 20) at 3.2 percent and 3.9 percent respectively.

Of the total study area daily trips in 2000, approximately 54 percent of these trips were home-based other trips. By 2030, home-based other trips increase 11 percent from 2000. Major home-based other trip flows to/from the study area in 2000 include the district surrounding the study area (District 4) at 25 percent, the internal study area (District 3) at 16 percent, the west side (District 14) at 15 percent, the mid-south (District 15) at 13 percent, the far southwest side (District 18) at 4 percent, the south side (Districts 1&2) at 4 percent, and the Chicago Central Area (District 7) at 2 percent.

Non-home based trips are 28 percent of total trips for the study area in 2000. By 2030, non-home based trips increase 13 percent from 2000.

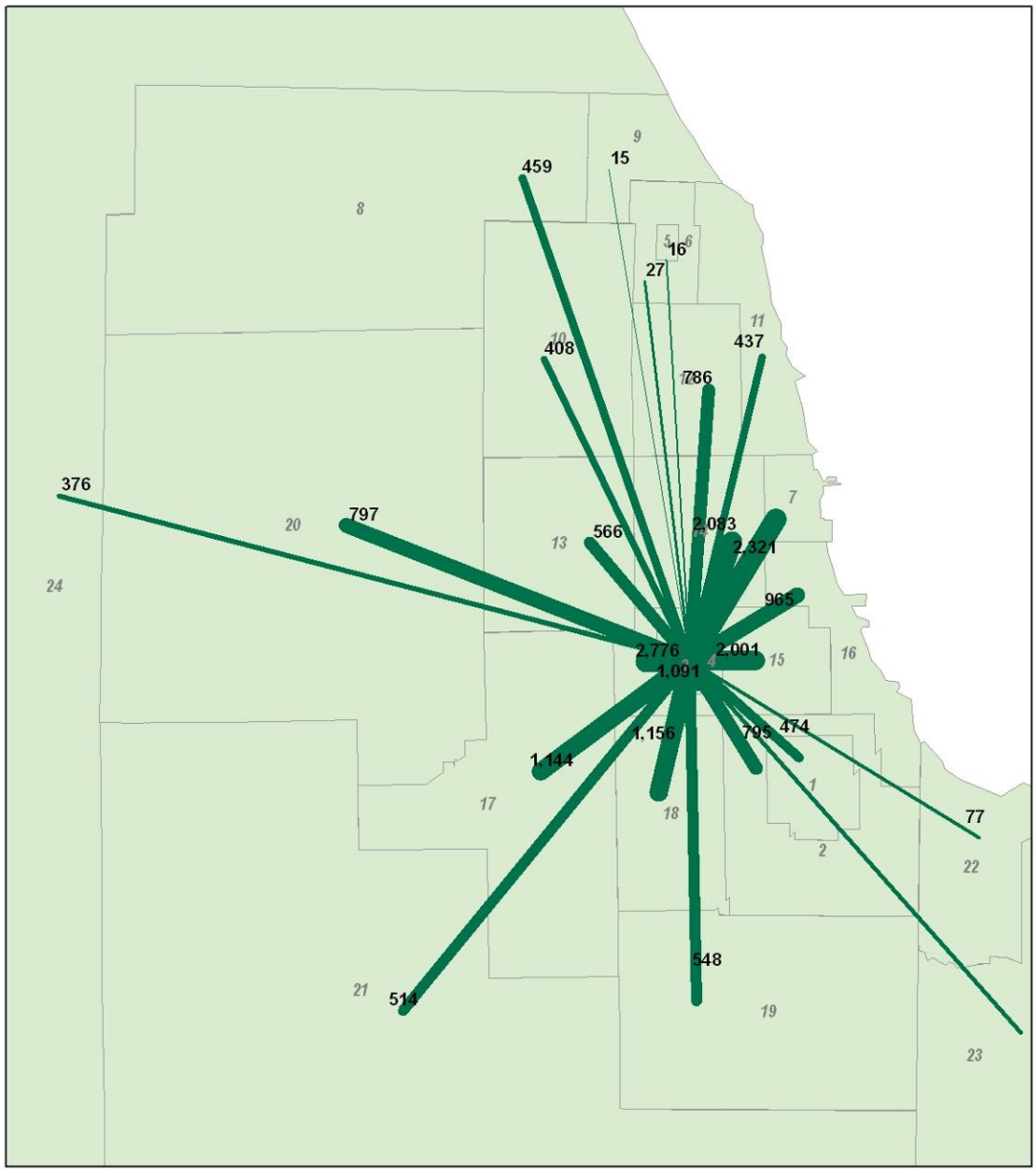
Of the total home-based work trips in 2000 to/from the study area, 7 percent or nearly 1,480 work trips were made by households with zero-car ownership. By 2030, the number of home-based work trips by households with zero-car ownership increases 12 percent to 1,650.

The study area had a 17 percent overall home-based work transit mode share in 2000. The study area shows solid transit usage to the Chicago Central Area for these work trips at 54 percent during 2000, with the transit mode share increasing to 56 percent by 2030.

Home-based other transit mode share for the study area is 2.7 percent in 2000. Non-home based transit mode share for the study area is 4.4 percent in 2000.

[1] Travel data from 2000 Chicago Regional New Starts model run with trip tables provided by AECOM

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



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 CTA and Pace bus service within the study area.

2.2.1 Roadway System

The study area includes regional arterials, truck routes, intermodal connectors, secondary arterials and local streets. The closest expressway to the study area is the I-55 Stevenson Expressway located over two miles north of the study area, and includes interchanges for both Pulaski Road and Cicero Avenue. Average daily traffic (ADT) on I-55 between Cicero and Pulaski is 180,000 and severe congestion exists during peak periods.

The typical street grid in the City of Chicago includes arterial streets spaced every one-half mile. However, due to the Belt Railway of Chicago rail tracks and yards and Midway Airport, there are limited north-south street crossings. The only two major north-south arterial streets in the study area are located a mile apart, Cicero Avenue and Pulaski Road. West of Cicero Avenue, there is a three mile gap to the next north-south arterial through street, Harlem Avenue. Through traffic on Narragansett Avenue, Central Avenue, and State Road located south and west of Cicero Avenue and the study area are forced to filter onto Cicero Avenue. As a result, the limited arterials in the study area serve more through and truck traffic and are severely congested. Cicero Avenue is a six-lane arterial street that carries between 50,000 and 62,000 ADT in the study area. The proportion of truck traffic on Cicero Avenue is 11 percent. Pulaski Road is a four-lane arterial street carrying between 46,000 and 53,000 ADT.[2]

A similar situation occurs for east-west streets through the study area. The only major east-west through streets are 63rd Street and 79th Street. There is a one-mile gap between 55th Street (located one-half mile north of the study area) and 63rd Street due to Midway Airport, and a two-mile gap in through streets between 63rd Street and 79th Street due to the freight railroad tracks and yards. ADT on 59th Street, which terminates at Cicero Avenue, is 10,000 vehicles; 63rd Street volume averages 18,500; and 79th Street carries 27,000 vehicles. As with the north-south arterials, these roads experience congestion during peak periods.

2.2.2 Transit System

CTA's Orange Line Midway terminal is at the northern boundary of the study area. Average frequency of service (headway) during the peak periods are 6.5 minutes. The Orange Line weekday span of service is 4:00 a.m. until 2:00 a.m. on the following day (22 hours). Saturday service begins at 4:30 a.m. and ends at 2:00 a.m. on the following day (21.5 hours). On Sundays and holidays service begin at 5:30 a.m. and end at 12:30 a.m. on the following day (19 hours).

Entering weekday passengers at the Midway station was 9,120 in April 2008, or an estimated total of 18,240 passengers entering and exiting the station. Midway station is the CTA's fourth highest entering station traffic outside of the Chicago Central Area and is tenth overall in the system (excluding cross-platform transfers).

[2] ADT's from IDOT website. http://www.gettingaroundillinois.com/

Figure 2.8: Existing Transportation Facilities and Services

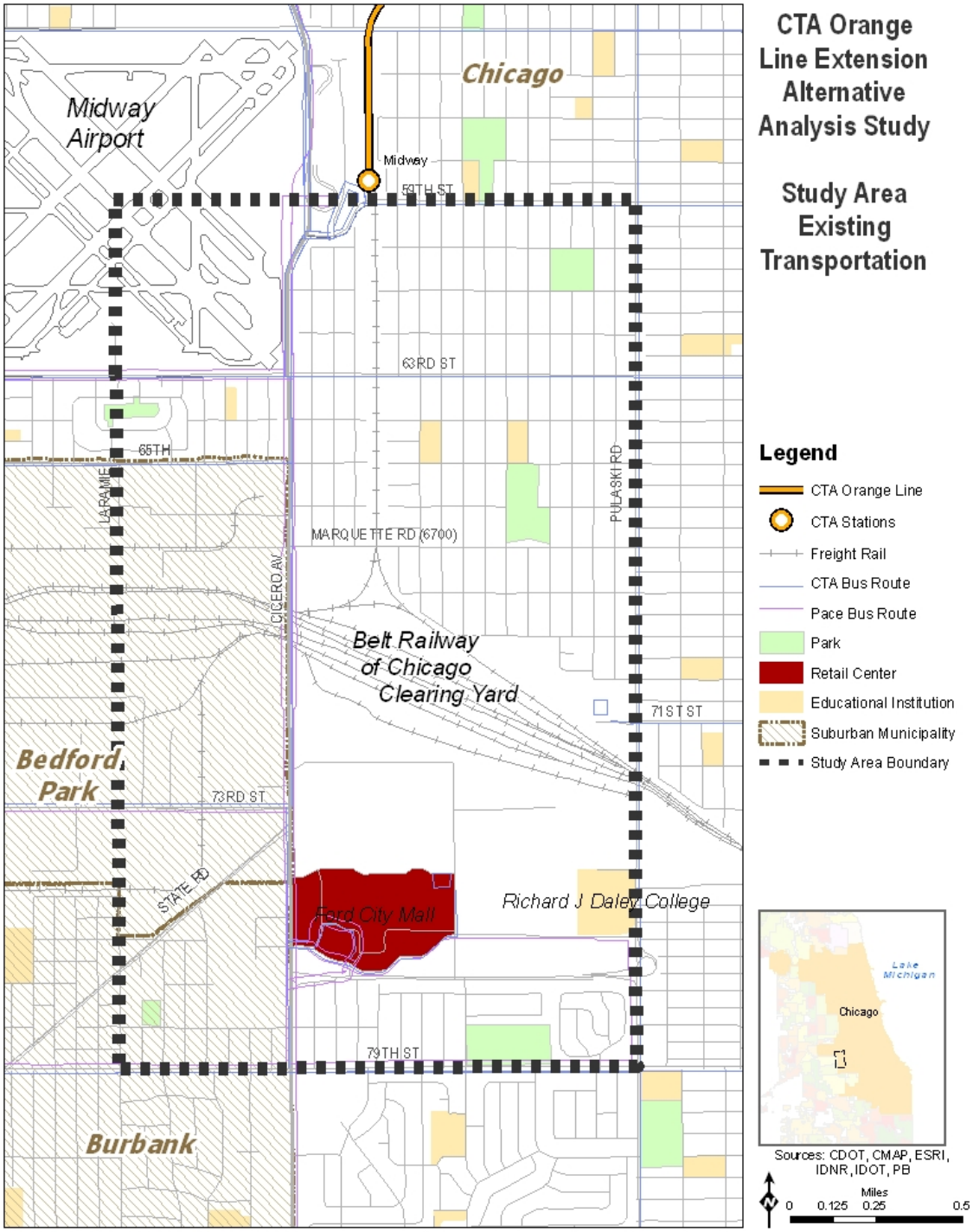
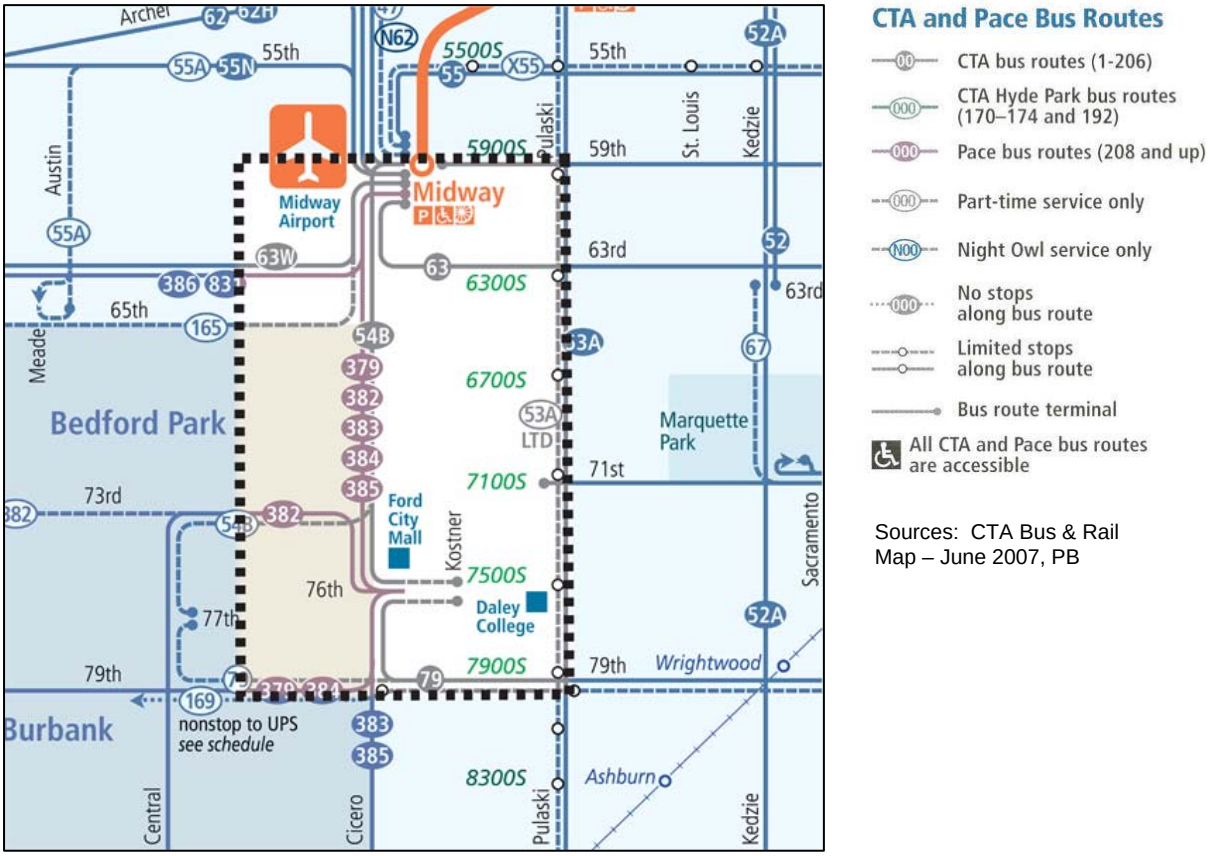


Figure 2.9: Existing Transit System



The Midway station has a 327 space CTA park-and-ride facility that is typically full by 7:00 a.m. on a weekday. In addition, the CTA park-and-ride facilities at the four other Orange Line stations, Pulaski (390 spaces), Kedzie (157 spaces), Western (200 spaces), and 35th/Archer (69 spaces) are also all fully utilized on a typical weekday.

There is no Metra commuter rail service in the study area. The closest Metra station is the Wrightwood station on the SouthWest Service located one mile east of the study area at 79th Street and Kedzie Avenue.

The study area is served by extensive bus service and rapid transit connections via the CTA Midway station located at the northern boundary of the study area as shown in Figure 2.9.

CTA and Pace bus services are provided on north-south and east-west thoroughfares in the study area, with eighteen CTA bus routes and eight Pace bus routes. Twelve of the eighteen CTA routes in the study area stop at the Midway Station bus terminal, which offers access to Midway Airport and connections to the Orange Line heavy rail service to the Loop. Three CTA bus routes and five Pace bus routes stop at Ford City Mall. In addition, the Pace #390 bus route provides reverse commute and job access by serving Midway Station, the Illinois Employment and Training Center at Daley College, and the United Parcel Service facility in Hodgkins. Southwest Cook County suburbs served by Pace bus routes include Alsip, Bedford Park, Blue Island, Bridgeview, Burbank, Chicago Ridge, Crestwood, Hickory Hills, Hodgkins,

Hometown, Oak Lawn, Marionette Park, Palos Heights, Palos Hills, Palos Park, Robbins, and Worth. As seen in Table 2.3, the bus routes serving the Midway station average 11.1 miles in length, 44 minutes in travel time, and 4,318 in daily ridership. These represent fairly long (both in distance and travel time) bus access routes to Midway.

Table 2.3: CTA and Pace Bus Routes Serving Midway Station

Route Number / Route Name	Route Length (miles)	Route Travel Time (hr:min)	Peak Period Headway (hr:min)	2009 Weekday Ridership
CTA #47 / 47th Street	9.6	0:47	0:20	11,280
CTA #54B / South Cicero	8.5	0:40	0:12	3,536
CTA #X54 / Cicero Express	13.8	1:04	0:12	5,753
CTA #55 / Garfield	9.3	0:50	0:08	8,747
CTA #X55 / Garfield Express	4.1	0:18	0:09	5,143
CTA #55A / 55th Street - Austin	4.0	0:20	0:09	3,536
CTA #55N / 55th Street- Narragansett	9.3	0:44	0:12	745
CTA #59 / 59th -61st Streets	9.6	0:47	0:15	3,810
CTA #62 / Archer	10.9	1:04	0:07	13,528
CTA #62H / Archer -Harlem	5.9	0:26	0:15	1,436
CTA#63 / 63rd Street	9.5	0:51	0:06	21,313
CTA #63W / West 63rd Street	4.3	0:18	0:10	2,061
CTA #165 / West 65th Street	4.9	0:15	0:10	81
Pace #379 / West 79th Street	18.8	1:00	0:30	1,178
Pace #382 / Central-Clearing	8.8	0:36	1:00	342
Pace #383 / South Cicero	14	0:57	0:30	1,214
Pace #384 / Narragansett-Ridgeland	12.5	0:35	0:30	670
Pace #385 / 87th -111th-127th	27.6	1:39	1:00	862
Pace #386 / South Harlem	22.3	0:59	0:30	893
Pace #390 / Midway – CTA – UPS	14.6	0:33	Irregular	232
Average	**11.1**	**0:44**	**0:20**	**4,318**

Source: Regional Transportation Asset Management System, RTA

The current and previous transit fare structure for CTA is shown in Table 2.4. 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 2.4: 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[1]	$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

[1] Transfer fare allows two additional rides within two hours of the first boarding.

2.2.3 Midway Airport

Midway Airport is also an important transportation facility partially located within the study area. In 2006, originating enplanements were 73 percent of total enplanements.[3] Thus, there were 6.7 million passengers originating in Chicago, or 13.4 million total passengers originating or destined to Chicago in 2006. The originating and destined enplanements have grown at a 5 percent compound annual growth rate since 1996. Between 1996 and 2006, the number of originating and destined enplanements for Midway Airport grew from 4 .1 million to 6.7 million. With forecasted growth of 30 percent in total enplanements by 2030 (this represents a capped number based on the future phase in of a proposed new South Suburban Airport), Midway Airport will continue to be a major transportation hub for the Chicago region.

CTA estimated in 2001 that 28 percent of all CTA riders to/from the Midway station were Midway Airport air travelers. This represented an absolute increase of 131 percent, taking into account the 48 percent ridership growth at the station since 1994.[4]

[3] Chicago Midway International Airport Request for Qualifications for Long-Term Concession and Lease for a Major Airport in the United States, City of Chicago, February 2008.
[4] Midway Airport CTA Customer Travel Survey, 2001

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 Chicago Department of Transportation, the Illinois Department of Transportation, and the Cook County Highway Department have transportation planning responsibilities in the study area.

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 capacity deficiencies and expressway and arterial traffic congestion limit the mobility and accessibility of the residents of the study area and surrounding communities. 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 is ranked fourth for congestion, with 72 percent of its freeway and street lane-mile congested.[5]

Significant arterial street traffic congestion occurs throughout the study area. As seen in Figures 2.10 and 2.11, traffic volumes on all arterial streets in the study area are 90 percent or greater of capacity during the morning peak hours in 2007 and estimated to maintain this level of congestion in 2030. With only Cicero Avenue and Pulaski Road as through north-south streets, and 63rd Street and 79th Street as through east-west streets in the study area, severe traffic congestion will continue. Since these roads are already at capacity during the peak hours, the traffic congestion will continue to spread throughout the day. Truck traffic on Cicero Avenue is also very high at nearly 7,000 vehicles per day and is projected to increase at a faster rate than car traffic. Additionally, since Midway Airport is not directly served by an expressway, Cicero Avenue and adjacent arterial streets will continue to absorb increasing airport traffic volumes.

[5] Texas Transportation Institute (TTI), 2003 Urban Mobility Report.

Figure 2.10: Estimated 2007 Morning Peak Hour Traffic Congestion

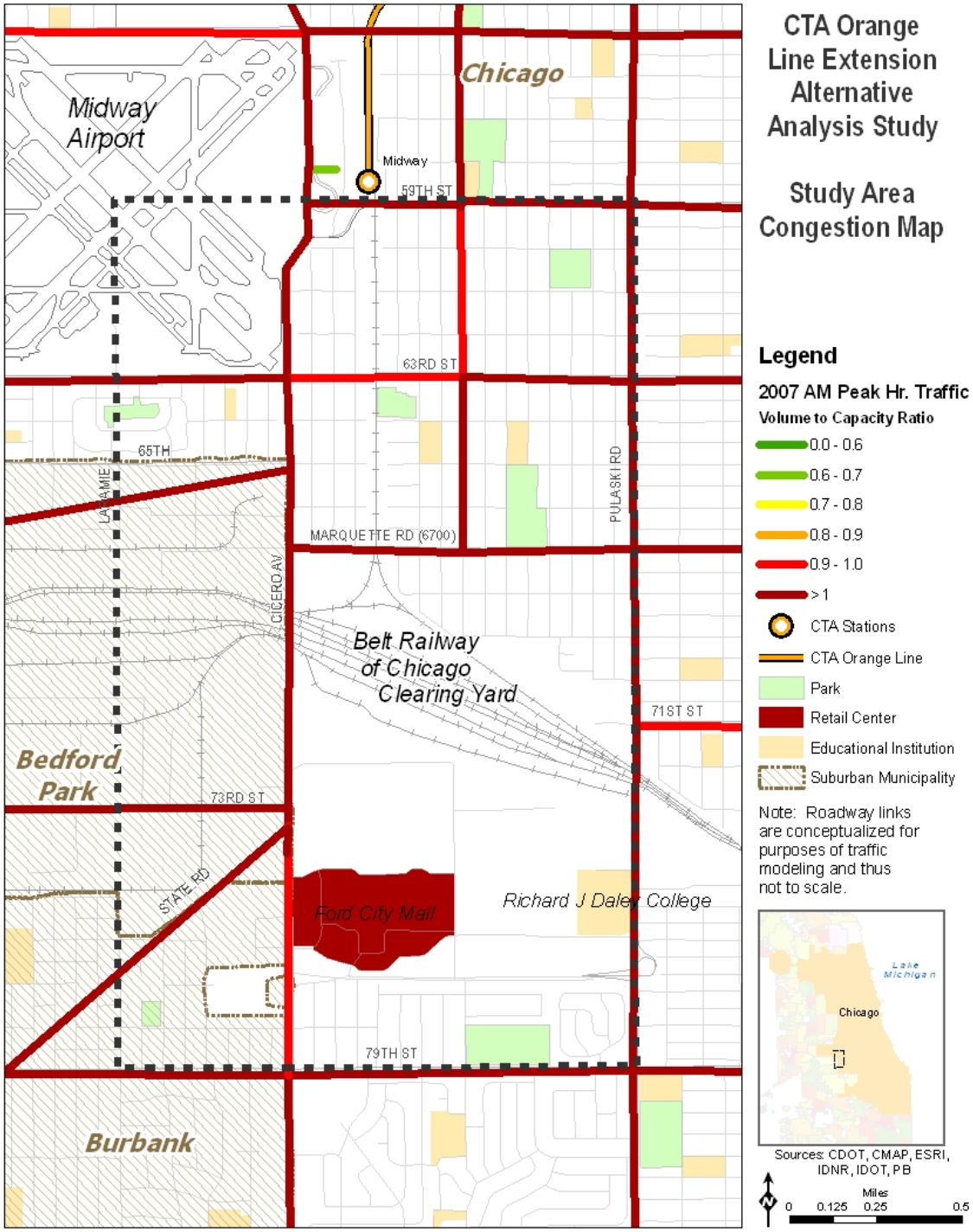
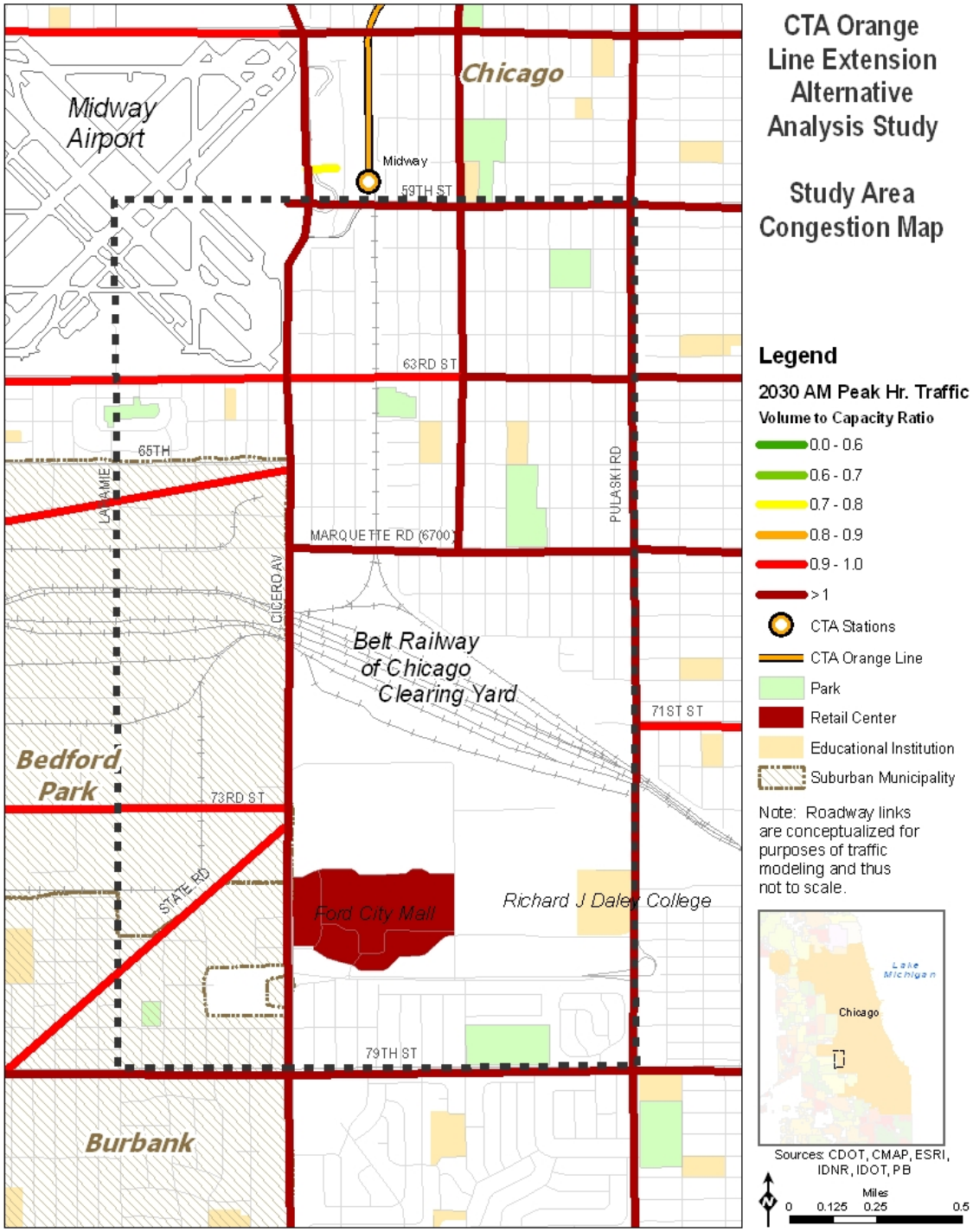


Figure 2.11: Estimated 2030 Morning Peak Hour Traffic Congestion

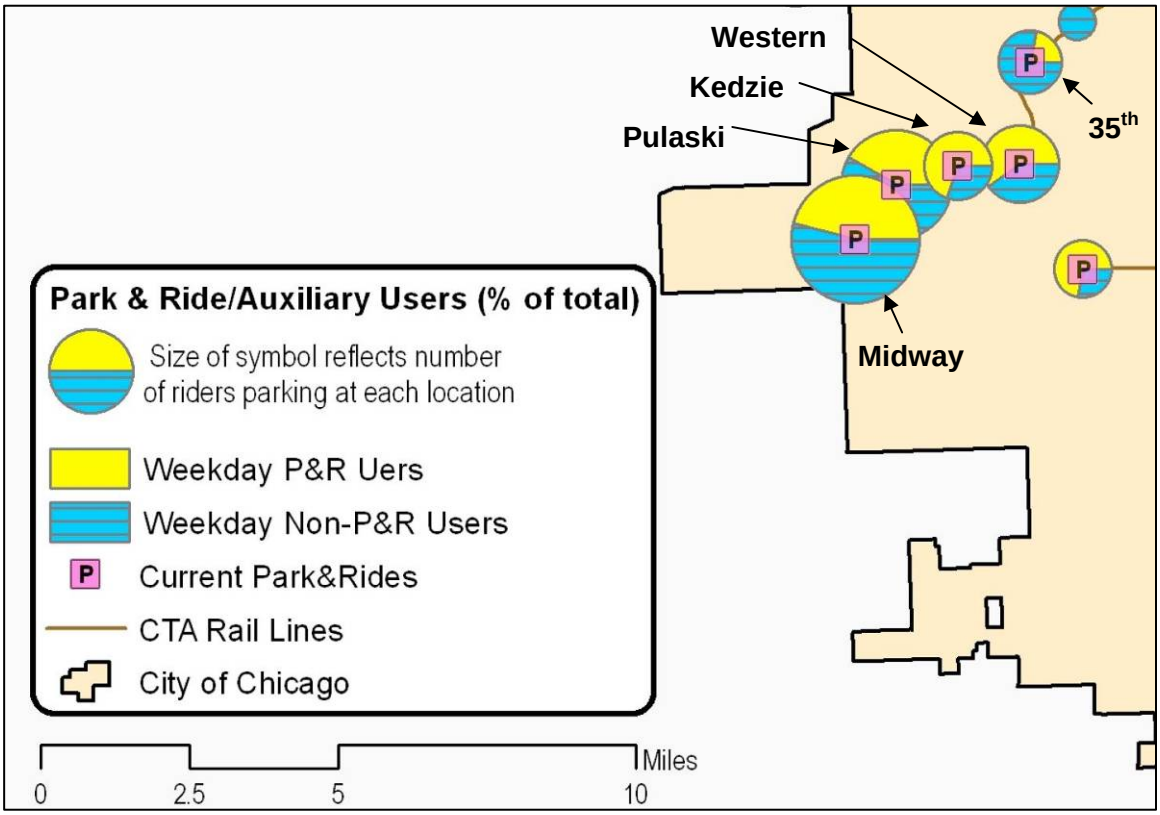


2.3.4 Transit Performance

Auto Access to Transit

Auto access to the Orange Line is capacity constrained. The 327 space park-and-ride facility at Midway station is fully utilized. The remaining 816 park-and-ride spaces at the four most southern stations on the Orange Line are also fully utilized on a typical weekday. As seen in Figure 2.12, park-and-ride access is a significant travel market component of the Orange Line.

Figure 2.12: Weekday Park-and-Ride and Non-Park-and-Ride Users[6]



The geographic market shed of auto access trips to the Orange Line encompasses southwest Chicago and the southwest suburban areas. As seen in Figure 2.13, auto access to the Orange Line extends 20 miles to the southwest of the study area.

Bus Speeds

A review of current bus schedules indicates that speeds are much slower between Ford City and Midway than speeds approaching Ford City from the south or west. This is due to the traffic congestion experienced on Cicero Avenue. This increased congestion is partially caused by the retail and business activity on Cicero Avenue, but is primarily the result of the lack of north-south access over the railroad yards. The closest bridge is Pulaski Road, one mile east, or

[6] CTA 2007 System Origin-Destination Survey Descriptive Statistics: Park & Ride (P&R: Revenue) and non-Park & Ride (NP&R: non-Revenue) Riders, page 4.

Harlem Avenue, three miles to the west. Speeds on Pace bus routes traveling between Ford City and Midway, and beyond the study area, are shown in Table 2.5.

Figure 2.13: Geographic Market Shed for Auto Access Trips to the Orange Line[7]

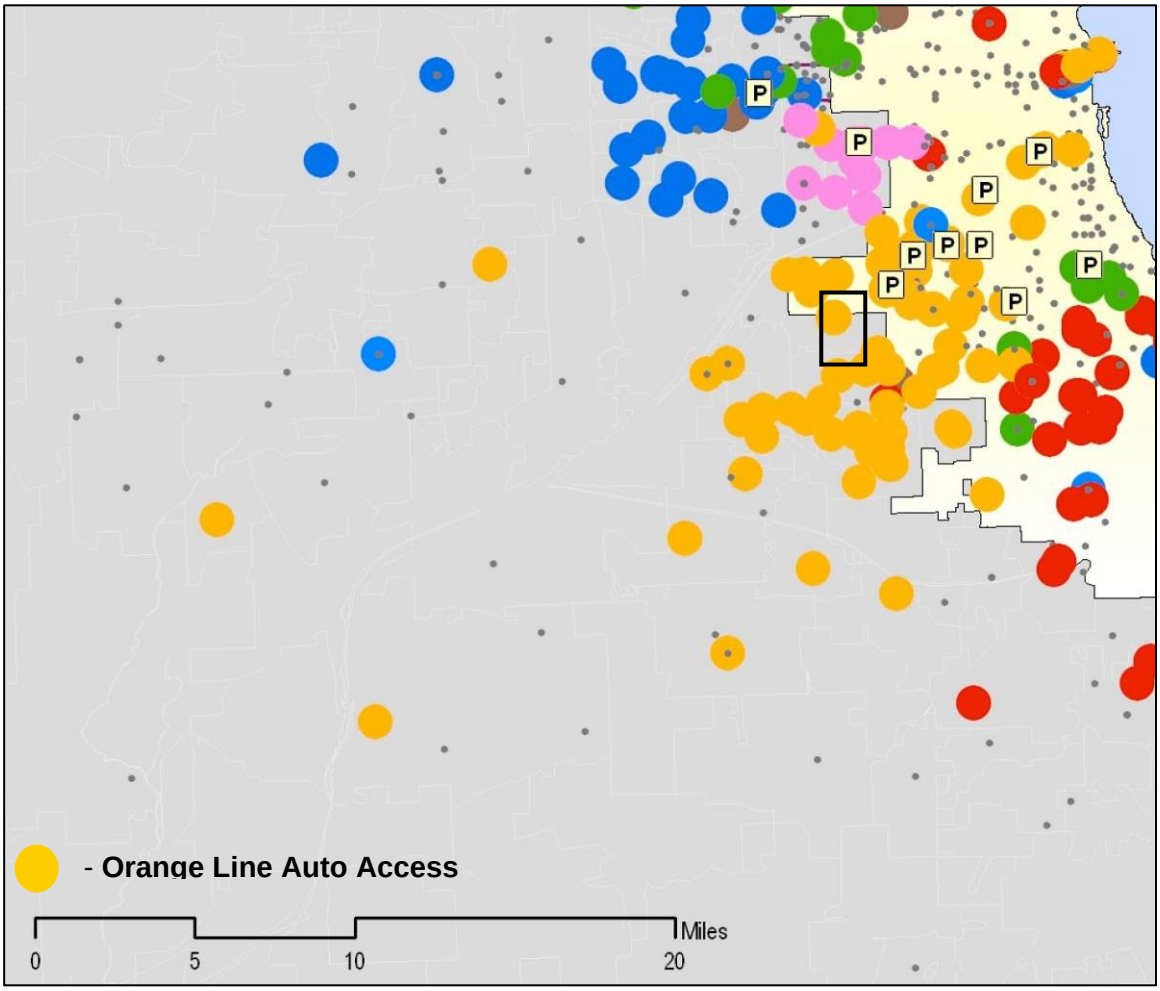


Table 2.5: Speeds for Select Bus Routes Serving Midway Bus Terminal

Pace Bus Route	Scheduled Operating Speed (mph)	
	Approaching Ford City	Ford City to Midway
379	17.9	13.0
382	19.0	13.0
383	16.0	13.0
384	17.3	13.0
385	16.0	13.0

Source: Pace Crew Schedules, Weekday, effective Aug. 25, 2008

[7] CTA 2007 System Origin-Destination Survey Descriptive Statistics: Park & Ride (P&R: Revenue) and non-Park & Ride (NP&R: non-Revenue) Riders, page 3.

These speeds indicate a greater level of traffic congestion as buses approach Midway. As a result, bus customers destined for Midway Station bus terminal and the Orange Line experience delays in travel time on a daily basis.

Orange Line Midway Station Bus Terminal

The Midway Station bus terminal is located at the end of the Orange Line at 59th Street, just east of Cicero Avenue. As seen in Figure 2.14, the bus terminal contains eight bus islands lined up parallel to the station entrance. Each bus island can accommodate one bus. Four additional bus bays are located along the sidewalk adjacent to the station. During the morning rush hour, one of these four bays is utilized as additional space for the drop off area. This bus bay is assigned to a route that operates into the terminal only during overnight hours. Eleven bus bays are available in the terminal in the morning rush period and all bus bays are assigned to at least one bus route.

Twelve CTA bus routes and seven Pace routes utilize the bus terminal for a total of 19 bus routes. Two of the 19 bus routes do not operate into the terminal in the morning rush hour because they operate into the terminal only during overnight hours or operate infrequently. This leaves a total of 17 bus routes serving the Midway Station bus terminal during the morning peak period.

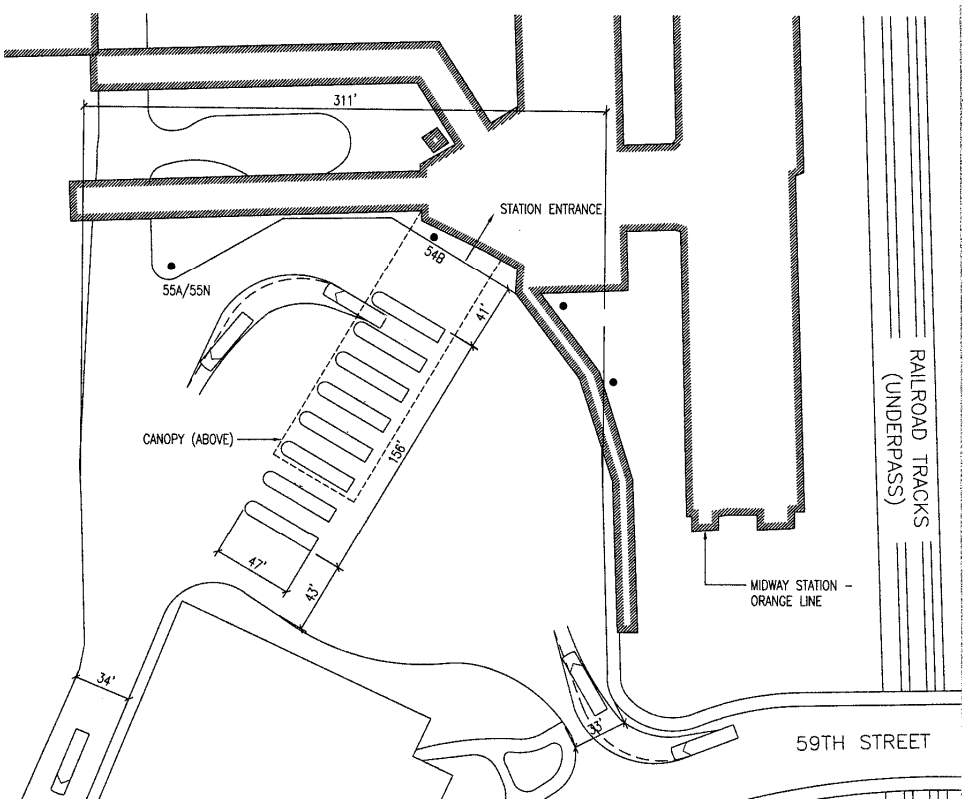
The Transit Capacity and Quality of Service Manual[8] (TCQSM) recommends that bus terminals be designed so that each bus route terminating in the facility receives its own bus bay. Since the Midway Station bus terminal contains only 12 bus bays, and 17 bus routes utilize the terminal in the morning peak period, the terminal is currently over capacity. In addition, several bus routes need more than one bus bay due to high frequency levels. To determine the number of bus bays required in the morning peak period, the actual number of buses scheduled to use each bus bay and the average recovery time for each route must be taken into account.

Schedules for each CTA and Pace bus route were reviewed to determine the maximum accumulation of buses scheduled in the terminal for each bus route. The arrival and departure times of each bus were graphed to identify when more than one bus per route was scheduled in the terminal. If a bus were scheduled to arrive in the terminal at the same time as a departing bus on the same route, no overlap between buses was assumed, and only one bus was counted as being in the terminal.

Of the 17 bus routes utilizing the terminal in the morning peak period, ten routes require space for only one bus at a time, (10 bus bays), six routes require space for two buses, (12 bus bays), while one bus route requires space for three buses (3 bus bays). A total of 25 bus bays are needed in the morning rush hour.

[8] United States, Transit Cooperative Research Program, Transit Development Corporation, & National Research Council. *Transit Capacity and Quality of Service: Manual*. Washington, D.C.: Transportation Research Board of the National Academies, 2003.

Figure 2.14: Midway Station Bus Terminal



Source: CTA, Midway Station Plan

The terminal benefits from its relatively spacious design which provides for waiting space along the south edge of the terminal. Buses can wait in this area of the terminal until the assigned bus bay becomes available. When this area becomes too crowded bus operators on routes serving the six bus islands furthest from the station entrance have the option of waiting behind the bus standing in the bus island. The bus islands closest to the station entrance do not have sufficient clearance from the drop off curb to allow buses to stack up behind the bus island. Although not standard procedure, bus operators may also exit the terminal onto Kilpatrick Avenue and wait on Kilpatrick Avenue until the terminal clears.

The Midway Station bus terminal is currently operating over capacity by two buses in the morning peak period.

2.4 Specific Transportation Problems

2.4.1 Difficult Access to the Orange Line Midway Station

Access to the Orange Line Midway station is difficult. Auto access to the Orange Line is capacity constrained. The 327 space park-and-ride facility at the Midway station, as well as the other 816 park-and-ride spaces at the four most southern Orange Line stations are all fully utilized. As seen in Figure 12, auto access comprises a significant share of transit passengers to the Midway station, as well as other Orange Line stations. This capacity constraint for auto access trips hinders the growth in transit ridership for the Orange Line.

Bus access to the Orange Line Midway station is also difficult. A total of nineteen CTA and Pace bus routes serve the Midway station. These bus routes all operate in mixed traffic with one-way route travel times averaging 44.5 minutes, one-way route distances averaging 11.1 miles, and ridership averaging over 4,300 passengers a day. By 2030, bus travel times are projected to increase by 20 percent.

2.4.2 Midway Station Bus Terminal Capacity

The nineteen CTA and Pace bus routes utilizing the Midway Station bus terminal exceed the capacity of the bus terminal. Seventeen of these bus routes require at least one bus bay during the morning peak period. Based on procedures in the Transit Capacity and Quality of Service Manual, 25 bus bays are required. Since the Midway Station bus terminal contains only ten bus bays, the terminal is currently over capacity. The terminal benefits from its relatively spacious design which provides for waiting space along the south edge of the terminal and on Kilpatrick Avenue (not standard operating procedure). However, due to these waiting buses, circulation within and around the terminal can also be constrained.

With growing population and employment in the study area, and slowing travel times on the bus routes, the number of buses will need to be increased. This will result in exacerbation of the constrained bus capacity at the Midway Station bus terminal.

2.4.3 Increased Transit Options for Greater Mobility and Reliability for Travelers Facing Increasing Traffic Congestion

The roadway system deficiencies in the study area (and beyond) limit the mobility and the accessibility of the residents of the study area. These limitations include pervasive arterial traffic congestion with all arterial streets in the study area exhibiting volume-capacity ratios at 90 percent capacity or above. Furthermore, it is anticipated that the road capacity in the study area is projected to remain static. Given the current and increasing levels of congestion, a need exists to offer an alternative means to travel within the corridor independent of current and projected roadway congestion.

Major factors contributing to the longer bus route travel speeds and times to access the Midway station include the level of overall traffic congestion on the arterial streets in the corridors. As seen in Figures 2.10 and 2.11, 2000 and 2030 morning peak hour congestion levels are very high in the study area, with all major arterial street segments operating at 90 percent or above volume-capacity ratio. These high volume-capacity ratios translate to poor levels of service on the roadway system, such that the ability to maneuver is severely restricted, vehicle speeds are reduced due to the higher volumes, and minor disruptions cannot be absorbed without extensive queues forming. The majority of traffic on these major arterial streets in the study area is through-traffic that begins and/or ends outside of the study area. Consequently, bus operations under these conditions are very difficult. Table 2.5 showed a decline in average bus speeds of three to six miles per hour between Ford City and Midway.

The congested roadway system in the study area is also susceptible to delays caused by incidents, such as crashes, snow or rain. Due to the overall operating conditions in the study area, travel times are not reliable for either transit or automobile trips. Consequently, travelers must allow extra time in their schedules to account for the uncertainty in their travel time. Since the bus system operates in mixed traffic, transit users experience the same level of travel time uncertainty as automobile users.

2.4.4 Reverse Commute and Access to Study Area Jobs and Activity Centers

With the many activity centers in the study area and the forecasted growth in employment, a growing reverse commute market needs to be served. These activity and job centers include Midway Airport, Ford City Mall, Richard J. Daley College, the Solo Cup Company, Tootsie Roll Industries, the commercial and hotel/restaurant strip on the west side of Cicero Avenue, and the large industrial areas in Bedford Park and south of the Belt Railway of Chicago Clearing Yard. With a forecasted 36 percent increase in employment in the study area, plus another 7,700 jobs at Midway Airport, it is important that good access and alternative transportation options to the study area be provided.

Improved transit service in the study area will improve access to these activity centers and jobs and will support the ongoing efforts by the City of Chicago through their tax increment finance districts, redevelopment areas, and industrial corridors to spur economic development in the study area.

2.5 Potential Transit Markets

2.5.1 Southwest Transit Market

A potential transit travel market is the southwest Cook County area located south of the study area. The provision of a CTA park-and-ride facility located in the southern portion of the study area near Cicero Avenue or Pulaski Road would provide more convenient vehicular access possibilities to the CTA Orange Line, given that all 327 parking spaces in the Midway station park-and-ride facility are used prior to 7:00 a.m.

Similar conditions, such as crowded roads and expensive parking in the Chicago Central Area, face travelers from south Cook County and beyond. In 2000, over 11,000 daily home-based work trips between the southwest Cook County area (District 18 in Figure 2.6) and the Chicago Central Area (District 7) were made with a transit mode share of 52 percent. Opportunities exist to provide improved access to CTA from southwest Cook County and beyond.

2.5.2 Drive-Access Transit Market

A potential transit travel market is the study area that needs to be addressed is drive-access transit trips. The existing CTA park-and-ride facilities on the Orange Line are fully utilized (many reach capacity by 7:00 a.m.). In 2000, less than 12 percent of study area home-based work transit trips were via drive access. This is projected to decline to slightly less than 11 percent in 2030. Opportunities exist to provide expanded CTA park-and-ride facilities to residents of the study area and increase the drive-access transit travel market.

2.5.3 Other Transit Markets

Additional potential transit travel markets include Midway Airport, reverse commute, and school trips. The forecasted 30 percent increase in annual enplanements and the substantial job growth at Midway Airport represent a potential transit market. The forecasted increase of 5,000 jobs in the study area by 2030 represents the potential for increased reverse commute to access these jobs. Richard J. Daley College with a student enrollment of 9,679 would also benefit from transit improvements in the study area.

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

The first step in the Orange Line Extension Alternatives Analysis (AA) was to begin Screen 1 by identifying the Universe of Alternatives, which are all the 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:

- Cicero Avenue
- Belt Railway / Cicero Avenue
- Belt Railway / Kostner Avenue
- Pulaski Road

Figure 3.1 graphically depicts the four corridors under consideration.

Cicero Avenue Corridor
The Cicero Avenue Corridor extends south from 59th Street to 79th Street, a distance of 2.5 miles. Cicero Avenue's street width varies, but it is typically 88-90 feet wide. This is also true of the bridge over the Belt Railway of Chicago (BRC) Clearing Yard (at approximately 70th Street) which consists of two 44-foot wide structures, separated by direction. Cicero Avenue's overall right-of-way width at this location is 125 feet.

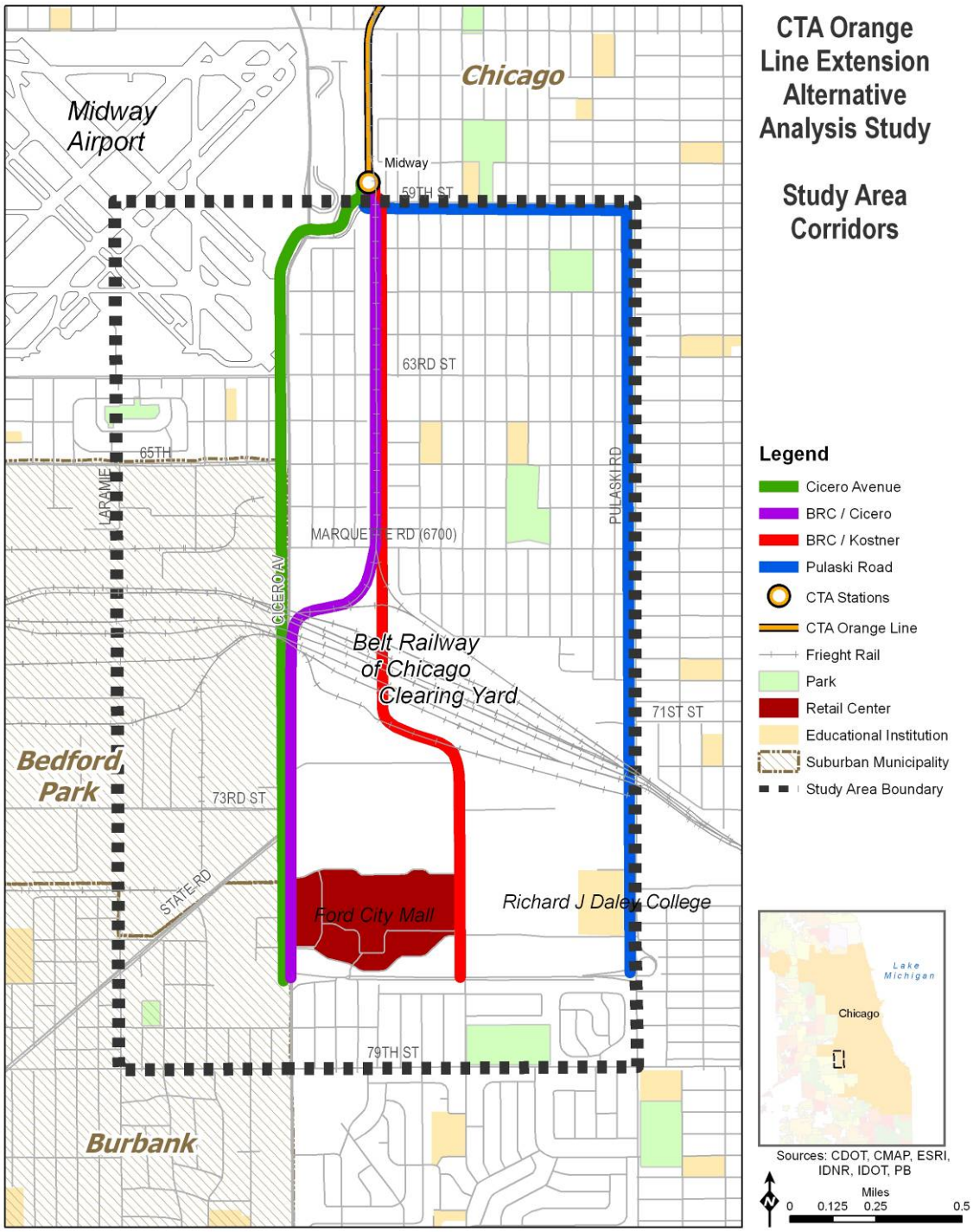
Land use along Cicero Avenue is dominated by Midway Airport and related activities to the north of Marquette Road, while south of the BRC rail yard, the land uses shift to a mix of commercial and industrial. The airfield extends from the north end of the study area down to 63rd Street on the west side of Cicero Avenue, while an airport-related parking facility runs along the east side of Cicero Avenue down to nearly 63rd Street. A residential area extends to the east of this parking facility.

Commercial uses exist in three of the four quadrants of the intersection of Cicero Avenue and 63rdStreet, the fourth (northwest) quadrant being the airport. Both sides of Cicero Avenue south from 63rd have commercial uses. Moving further east or west from the Cicero Avenue corridor, the land use tends to be given over to residential structures, with a mix of single- and multiple-family dwellings being common in this area.

A significant concentration of hotels/motels exists on the west side of Cicero Avenue between 65th Street and Marquette Road (seven hotel chains are represented in this concentration). The east side of Cicero Avenue between these streets includes commercial uses. South of Marquette Road, a self-storage facility is on the west side of Cicero Avenue, while the Autumn Green senior community is located to the east of Cicero Avenue, and is expanding southward towards the limits of the BRC Clearing Yard. The railroad yard extends along either side of Cicero Avenue from approximately 68th to 69th Streets.

Land use to the south of the rail yard includes a major commercial concentration to the west of Cicero Avenue and a former airport remote parking lot (presently unused) is located on the east side of Cicero Avenue. Several shopping centers are located to the west of Cicero Avenue, extending all the way down to 79th Street. East of Cicero Avenue, the land uses include

Figure 3.1: Orange Line Extension AA Corridors



industrial uses (immediately to the south of 72nd Street); a hotel opposite 73rd Street; and, commercial uses in or associated with the Ford City commercial complex from south of 73rd Street down to Ford City Drive (approximately 77th Street).

South of Ford City Drive and extending down to the end of the study area at 79th Street, there is a strip of commercial development fronting on either side of Cicero Avenue, while further away from the thoroughfare, the land use becomes residential. There are also major commercial uses on both sides of Cicero Avenue, south of 79th Street, with the Scottsdale Shopping Center located in the southeast quadrant of this intersection.

Belt Railway of Chicago (BRC) / Cicero Avenue Corridor

The BRC/Cicero Avenue corridor extends south from the present terminal of the CTA Orange Line at 59th Street to approximately 76th Street and Cicero Avenue, just east of the Ford City Mall. The corridor is adjacent to and parallel to the existing BRC north-south rail (at approximately Knox Avenue) down to 69th Street and then transitions west to an alignment along Cicero Avenue. This transition from the BRC north-south alignment to Cicero Avenue could be made while crossing over the BRC Clearing Yard complex. Several possible alignments exist for making this transition.

Land uses along the BRC right-of-way (ROW) include the CTA bus and rail terminal to the north of 59th and to the west of the railroad, while there is a residential area east of the BRC ROW and north of 59th Street. South of 59th Street, the land use to the immediate west of the rail right-of-way is a parking lot (approximately 94 feet in width) that extends to 63rd Street. The area west of the parking facility is industrial around 60th Street, changing to residential around 61st Street. A mix of single- and multiple-family dwellings is located in this area. On the north side of 63rd Street, a church parish hall is located to the west of the parking strip.

Land use immediately to the east of the BRC and south of 59th Street is given over to commercial concerns, which extend all the way down to 63rd Street. Further east of this commercial strip, the area is residential, and again a mix of single- and multiple-family structures.

There are commercial uses on either side of the BRC to the south of 63rd Street. Residential land use exists to the west of the BRC throughout the section between 63rd Street and Marquette Road. Land uses to the east of the BRC south of 63rd Street include recreational uses down to 64th Street, and then residences extending south to Marquette Road. In the southwest quadrant of Marquette Road and the BRC, the Lee Pasteur Hurley Elementary School and athletic fields are under construction. There is recreational land use on the south side of Marquette Road to the west of Knox Avenue, while railroad-owned undeveloped land separates the recreational land from the west wye track 12.

In the transition south and west to an alignment paralleling Cicero Avenue, the corridor would cross run-around tracks and the yard tracks that make up the BRC Clearing Yard. This major rail classification and interchange facility is used by most railroads that serve Chicago. The yard extends over a four-mile length from Pulaski Road all the way west to Harlem Avenue. At its widest point north-to-south (approximately in line with Knox Avenue), the yard and its associated wye/run-around tracks are more than one-third mile wide. Within this alternative, the Orange Line Extension crossing would likely transition west to Cicero Avenue before crossing the BRC in order to cross at the narrowest point.

South of Clearing Yard, the corridor runs along Cicero Avenue, as described above in the Cicero Avenue Corridor description.

Belt Railway / Kostner Avenue Corridor

The Belt Railway of Chicago (BRC)/Kostner Avenue corridor extends south from the present end of the CTA Orange Line at 59th Street to approximately 76th Street and Kostner Avenue, just east of the Ford City Mall. The transit line would be adjacent to and parallel to the existing BRC north-south rail (at approximately Knox Avenue) down to 69th Street and then transition east to an alignment along Kostner Avenue. This transition from the BRC north-south alignment to Kostner Avenue could be made while crossing over the BRC Clearing Yard complex. Several possible alignments exist for making this transition.

The BRC corridor is the same as that described above in the BRC / Cicero Avenue Corridor. In the transition from the BRC to the south and then southeast to an alignment paralleling Kostner Avenue, the transit line would cross run-around tracks and the yard tracks that make up the BRC Clearing Yard. The yard extends over a four-mile length from Pulaski Road on the east to Harlem Avenue on the west. At its widest point north-to-south (approximately in line with Knox Avenue), the yard and its associated wye/run-around tracks are more than one-third of a mile across.

South of Clearing Yard, this corridor would transition to Kostner Avenue, which begins again at 72nd Street and extends south to Ford City Drive (south of 76th Street). Side tracks from the BRC (through presently unused) cross 72nd Street east of where Kostner Avenue begins. The land use along 72nd Street and on either side of Kostner Avenue is industrial and former industrial. A former trans-loading facility, which was rail served, is to the west of Kostner Avenue, south of an active ComEd substation in the southwest quadrant of 72nd Street and Kostner Avenue.

Active trucking/trailer storage facilities are also present in this section along Kostner Avenue. South of 74th Street, former baseball fields are located east of Kostner Avenue. Land use west of Kostner Avenue and north of 75th Street is occupied by employee parking for the Solo manufacturing facility, which is located to the east of Kostner Avenue and extends south to 76th Street.

Two inactive fast food restaurants in the Ford City development are located along the west side of Kostner Avenue south of 75th Street. There is also a considerable amount of surplus parking for the shopping center in this area that extends down to 76th Street.

A commercial and multi-story, multiple-building residential complex is located to the southeast of Kostner Avenue and 76th Street. The commercial building on the corner appears to be largely vacant. An AMC Theater and its parking lot are located in the southwest quadrant of this intersection.

A portion of the mall's south building closest to Kostner Avenue is occupied by an active JC Penney Store. A stand-alone, single-story JC Penney Furniture store is located to the east of the main mall building. The large parking lots (many of which were under-utilized at the time of the field inspections) surrounding the mall buildings provide several possibilities for an intermodal terminal serving a high-capacity transit extension in this general area. These terminal facilities could also incorporate feeder and connecting bus terminals, as well as offer dedicated parking for transit users.

Pulaski Road Corridor

Pulaski Road is a major north-south arterial a little over three-quarters of a mile east of the CTA Midway station. The Pulaski Road corridor has frequent fixed-route bus service with both local and limited versions of the South Pulaski bus operating during peak periods.

Connecting the CTA Midway station to the Pulaski Road corridor would require the use of an east-west link, such as 59th Street (see Figure 3.1). While 59th Street crosses the BRC railroad at-grade (immediately to the east and south of the CTA station), the high-capacity transit link could be grade-separated.

The overall width of 59th Street varies, but is typically 40 feet from curb-to-curb in the section between the BRC and Pulaski Road. Land use to the east of the BRC is residential on the north side of the street and commercial to the south and immediately east of the railroad tracks. Land use becomes residential on both sides of the street as one goes further east, and there is a mix of single- and multiple-story structures in this neighborhood.

At 59th Street and Kostner Avenue, the current Pasteur Elementary School is located in the northeast quadrant, and west of Pasteur Park. Primarily residential land use resumes on both sides of the street and extends to Komensky Avenue (west of Pulaski Road) where commercial land use is intermixed. All quadrants at 59th Street and Pulaski Road are commercial use.

The width of Pulaski Road varies in the study area, but typically is 80 feet wide from curb-to-curb. Land use on either side of Pulaski Road is commercial, with some older, multi-story, mixed-use structures (as on the northeast quadrant of Pulaski Road and 63rd Street). South of 63rd Street, and north of the Belt Railway bridge (approximately 71st Street), there are multi-story residential structures mixed in with commercial structures; this mixed use tends to be on the east side of Pulaski Road and the west side of the street remains almost exclusively commercial.

A major multi-store retail complex is located in the northwest quadrant of Pulaski Road and 69th Street, while an industrial property is in the southwest quadrant (including rail access from the adjacent BRC line). Both east quadrants at this intersection are commercial uses, though the areas further to the east on either side of 69th Street are residential.

Pulaski Road crosses the BRC Clearing Yard on a structure. The length of the Pulaski structure is about 230 feet.

Immediately south of the rail yard and to the west of Pulaski Road, there is an Army Reserve/ National Guard facility that extends down to approximately 75th Street. To the east of Pulaski Road, the Ford City Business Park runs from the south edge of the rail property down to just south of 75th Street.

Richard J. Daley College, part of the City Colleges of Chicago, extends over a square block south from 75th Street to 76th Street on the west side of Pulaski Road. The campus is composed of a main building and several out-buildings. At the time of the study, an expansion of the main campus was underway. Single-family residential land use is present across Pulaski Road from Richard J Daley College, and a strip mall exists on the south side of 76th Street to the west of Pulaski Road. Some vacant stores and buildings were noted during observations A grade-separated crossing and ramps that link Ford City Drive to Pulaski Road remain in use, though this drive no longer extends west of Kostner Avenue.

Land use on Pulaski Road south of the Ford City Drive bridge includes a firehouse immediately south of the drive on the east side of Pulaski Road with single-family residences to the west of Pulaski Road and to the south of the firehouse. Residential land use extends to 79th Street, where commercial use is present. Bogan High School is located in the southeast quadrant of this intersection, and all other quadrants are commercial uses.

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 Orange Line Midway terminal station and the regional system

Three corridors -- Cicero, BRC/Cicero, and BRC/Kostner -- were recommended to be carried forward as described in Tables 3.1 and 3.2.

Table 3.1: Summary Corridor Evaluation

Criteria	Cicero Avenue	BRC/Cicero Avenue	BRC/Kostner Avenue	Pulaski Road
Land Use	+	+	+	○
Neighborhoods/ Community	−	○	○	+
Poverty Status & Minority Access	○	○	○	○
Transit System Usage	+	+	+	−
Accessibility	○	○	○	○
Advance For Further Screening?	**Yes**	**Yes**	**Yes**	No

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
Cicero Avenue	**Yes**	Corridor offers the opportunity to enhance existing transit while serving the study area's activity centers, including those adjacent to the airport and the Ford City Mall.
BRC/Cicero Avenue	**Yes**	Corridor provides a flexible right-of-way while serving a number of the study area's activity centers along Cicero Avenue south of the BRC Clearing Yard.
BRC/ Kostner Avenue	**Yes**	Corridor provides a flexible right-of-way while serving a number of the study area's activity centers and residential neighborhoods.
Pulaski Road	No	Corridor is transit supportive; however, the corridor has fewer significant activity centers and opportunities for connecting with existing transit routes than other corridors.

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 groups: rail, rubber tire and other modes. Together these generally encompass the entire range 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 now emerging in propulsion systems. 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 propulsion systems, including standard diesel, hybrid, compressed natural gas, and electric. The rubber tire alternatives for consideration include:

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

Other Transit: Other transit generally represents advanced technology systems which have come to fruition recently 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 their operating characteristics.

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 needs for operating speeds, and station spacing.

  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

Civis Bus Rapid Transit

Shanghai MagLev

Personal Rapid Transit

Clarian Automated Guideway Transit

Table 3.3: Operating Characteristics of Technology Alternatives

	Rail Modes					Rubber Tire Modes			Other Modes		
Characteristic	**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**
Type of Vehicle	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
Vehicle Capacity	200-1800	500-600	800-1000	100-200	50-70	40	50-70	75-150	500-600	Varies per application	4 - 10
Propulsion	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
Service Configuration	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
Travel Speed	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
Station Spacing	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
In Transit Revenue Service in N. America	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			
Automated Guideway Transit	●	●	●	●	**Yes**	Typical station spacing and operating speeds suitable to the study area.
Bus Rapid Transit	●	●	●	●	**Yes**	Typical station spacing, operating speeds and flexible commute lengths suitable to the study area.
Commuter Bus	X	X	●	●	No	Typically serves point-to-point suburb to city travel. Trip lengths are not consistent with the study area needs.
Commuter Rail	X	X	●	●	No	Length of commuter trip and typical station spacing of 3-7 miles is not consistent with the study area needs.
Heavy Rail Rapid Transit	●	●	●	●	**Yes**	Typical station spacing and operating speeds suitable to the study area.
High-Speed Rail	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.
Light Rail Transit	●	●	●	●	**Yes**	Typical station spacing, operating speeds and flexible commute lengths suitable to the study area.
*Local Bus**	●	X	X	●	No	Typical station spacing and operating speed not consistent with the study area purpose and need.
Maglev	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.
Personal Rapid Transit	●	X	●	X	No	Typical station spacing, operating speeds and flexible commute lengths suitable to the study area.
Streetcar	●	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 CTA Rapid Transit and Metra service is analyzed as part of the No Build and Transportation System Management 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 Orange, 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, minimize impacts of the transit facility on adjacent land 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.

3.4.1 Cicero Avenue Corridor

Cicero Avenue Corridor At-Grade BRT

- At-grade BRT would be both efficient and cost effective on the Cicero Avenue corridor. The street is generally an appropriate width and can support an enhanced bus service. This alternative is recommended for further evaluation in Screen 2.

Cicero Avenue Corridor Elevated BRT

- Elevated structures on the Cicero Avenue corridor would be cost prohibitive as well as introduce visual impacts with little benefit in travel time savings. Additionally, elevated BRT provides lower system capacity and travel time savings than HRT for a similar magnitude cost. This alternative is not recommended for further evaluation.

Cicero Avenue Corridor Elevated HRT

- Given the physical characteristics of the Cicero Avenue corridor, transitioning to an elevated structure immediately south of the current Orange Line Midway Airport terminal station would be would impact operations at Midway Airport. This alternative is not recommended for further evaluation.

Cicero Avenue Corridor Trench HRT

- A trench alignment in the Cicero Avenue corridor is inappropriate as it would interfere significantly with traffic on the road both during construction and ongoing operation as a result of the necessary right of way that would be required. This alternative is not recommended for further evaluation.

Cicero Avenue Corridor Underground HRT

- Despite scoring high on nearly all measures of effectiveness in screen 1, 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.

3.4.2 BRC / Cicero Avenue Corridor

BRC / Cicero Avenue Corridor At-Grade BRT

- BRT at-grade along the length of the BRC and then transitioning over to Cicero Avenue would not be cost effective when compared to other BRT at-grade corridor options such as Pulaski Road or Cicero Avenue. This alternative is not recommended for further evaluation.

BRC / Cicero Avenue Elevated BRT

- Significant capital cost would be associated with building an elevated BRT running way with lower system capacity and travel times savings compared to rail alternatives. In particular, building structures to transition from the BRC toward Cicero Avenue would be complicated and Cicero Avenue and Pulaski Road currently offer existing bridges over the BRC. Additionally, elevated BRT provides lower system capacity and travel time. This alternative is not recommended for further evaluation.

BRC / Cicero Avenue Elevated HRT

- Given the physical characteristics of the BRC/Kostner Avenue corridor, transitioning to an elevated structure immediately south of the current Orange Line Midway Airport terminal station would require reconstruction of Midway Station and may impact operations at Midway Airport. This alternative is not recommended for further evaluation.

BRC / Cicero Avenue Trench HRT

- The crossing of the BRC Clearing Yard in a trench profile would be expensive and disruptive. This alternative is not recommended for further evaluation.

BRC / Cicero Avenue 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

BRC / Cicero Avenue Trench / Elevated HRT

- A combination of the trench and elevated profiles would provide an efficient and cost effective solution for the length of the corridor. Moving south from the current Orange Line Midway Airport terminal station, the line would remain in a trench until transitioning to an elevated structure to cross the BRC Clearing Yard. This alternative is recommended for further evaluation in Screen 2.

3.4.3 BRC / Kostner Avenue Corridor

BRC / Kostner Avenue Corridor At-Grade BRT

- BRT at-grade along the length of the BRC and then transitioning over to Kostner Avenue would not be cost effective when compared to other BRT at-grade corridor options such as Pulaski Road or Cicero Avenue. This alternative is not recommended for further evaluation.

BRC / Kostner Avenue Elevated BRT

- Based on high costs for elevated BRT running way and the corridor characteristics described in Section 3.2, significant costs would be required to build elevated BRT running way with few commensurate benefits relative to rail alternatives. This alternative is not recommended for further evaluation.

BRC / Kostner Avenue Elevated HRT

- Given the physical characteristics of the BRC/Kostner Avenue corridor, transitioning to an elevated structure immediately south of the current Orange Line terminus would require reconstruction of the existing Midway Station and may impact operations at Midway Airport. This alternative is not recommended for further evaluation.

BRC / Kostner Avenue Trench HRT

- The crossing of the BRC Clearing Yard in a trench would be costly and disruptive. This alternative is not recommended for further evaluation.

BRC / Kostner Avenue 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.

BRC / Kostner Avenue Trench / Elevated HRT

- A combination of the trench and elevated profiles would provide an efficient and cost effective solution for the length of the corridor. Moving south from the current Orange Line Midway Airport terminal station, the line would remain in a trench until transitioning to an elevated structure to cross the BRC Clearing Yard. This new alternative is recommended for further evaluation in Screen 2.

Table 3.6: Summary of Screen 1 Evaluation of Alternatives

Technology	Profile	Recommended to Advance to Screen 2		
		Cicero Avenue Corridor	BRC/Cicero Avenue Corridor	BRC/Kostner Avenue Corridor
Bus Rapid Transit	Elevated	No	No	No
	At-Grade	**Yes**	No	No
	Trench	No	No	No
	Underground	No	No	No
Heavy Rail Rapid Transit	Elevated	No	No	No
	Trench	No	No	No
	Underground	No	No	No
	Trench/Elevated	No	**Yes**	**Yes**

Based on this evaluation, a Bus Rapid Transit (BRT) alternatives along Cicero Avenue, and two Heavy Rail Transit (HRT) alternatives along BRC Railroad and Cicero Avenue, and BRC Railroad and Kostner Avenue, along with the No-Build and TSM alternatives were carried forward for further analysis in Screen 2.

4.0 SCREEN 2 EVALUATION

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 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 step 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 2 for further study include:

- No Build Alternative
- Transportation System Management (TSM)
- Bus Rapid Transit (BRT) Cicero Avenue Corridor At-Grade
- Heavy Rail Rapid Transit (HRT) via BRC/Cicero Avenue Corridor Elevated/Trench
- HRT via BRC/Kostner Avenue Corridor Elevated /Trench

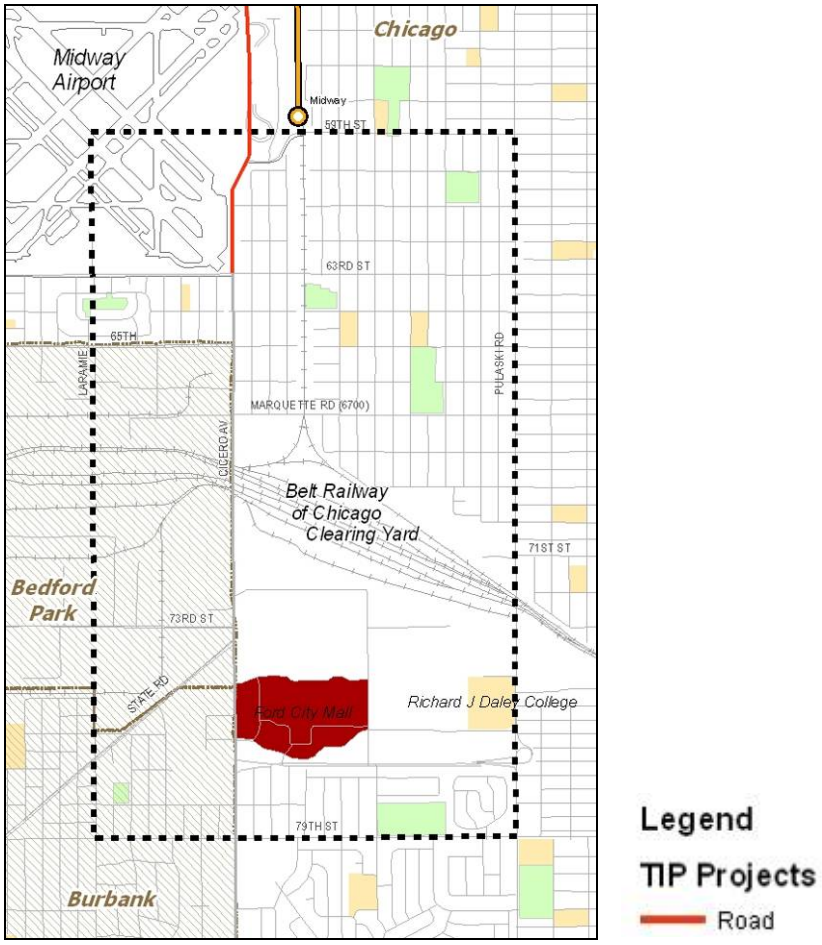
No-Build Alternative

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 (TIP). The Orange Line study area has one road improvement project included in the FY 2007 – 2012 TIP: the Cicero Avenue Smart Corridor Project from 37th Street to 63rd Street that is scheduled for completion in 2009.

Bus transit service under the No Build Alternative would be focused on the preservation of existing services and projects. The transit network within the project area would be substantially the same as it is now.

All elements of the No-Build alternative are included in each of the other alternatives. The No-Build Alternative with TIP projects in the Orange Line Extension study area is shown in Figure 4.1.

Figure 4.1: No-Build Alternative



TSM/BRT Cicero Avenue Alternative

Based on discussions with the FTA, consolidation of the TSM and BRT alternatives was analyzed. The approximate two-mile segment of Cicero Avenue between 59th and 76th Streets on which both the TSM and BRT alternatives would operate has six through lanes, a center turn lane, and no parking. Average daily traffic on this portion of Cicero Avenue ranges between 48,000 and 61,000 vehicles per day. In order for BRT to operate in exclusive lanes along Cicero Avenue, a dedicated lane for the BRT service would be required in each direction. The additional two lanes for the exclusive BRT service cannot be accommodated within the existing street right-of-way. Capital costs can exceed $20 million per mile for implementing BRT in this environment, or approximately $40 million for the two-mile segment along Cicero Avenue.

Typical BRT installations are greater than two miles in length in order to achieve sufficient travel time savings over other bus alternatives. The estimated travel time savings for implementing BRT on the two-mile segment along Cicero Avenue is only 1.0 to 1.5 minutes 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).

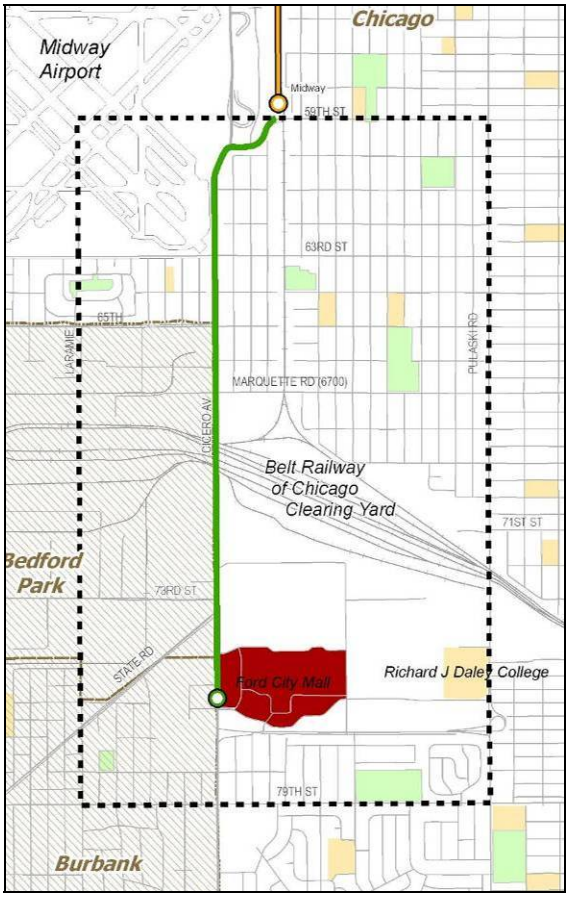
Given the order-of-magnitude capital costs for implementing BRT on Cicero Avenue of $40 million and travel time savings of only 1.0 to 1.5 minutes over the TSM, the CTA decided to

merge the TSM and BRT alternatives into a single new TSM/BRT alternative. This new TSM/BRT Alternative thus replaces the TSM and BRT Alternatives from the Screen 1 analysis and is used for the detailed evaluation in Screen 2.

The TSM/BRT Alternative is an enhanced bus route from the Midway Station to Ford City Mall. It is proposed to operate in mixed-traffic between the existing Midway Station and Ford City Mall. Refer to Figure 4.2.

- The alternative is 2.3 miles long.
- The average running time from Midway to Ford City Mall is 11.5 minutes.
- No intermediate stations are planned.
- No exclusive lanes are planned.
- Traffic signal priority would be implemented along the Cicero Avenue portion of the route.
- The preliminary service plan indicates that five 60-foot hybrid articulated buses (including one spare) would be required.
- A park-and-ride facility is recommended at the terminal station near Ford City Mall.

Figure 4.2: TSM/BRT Cicero Avenue Alternative

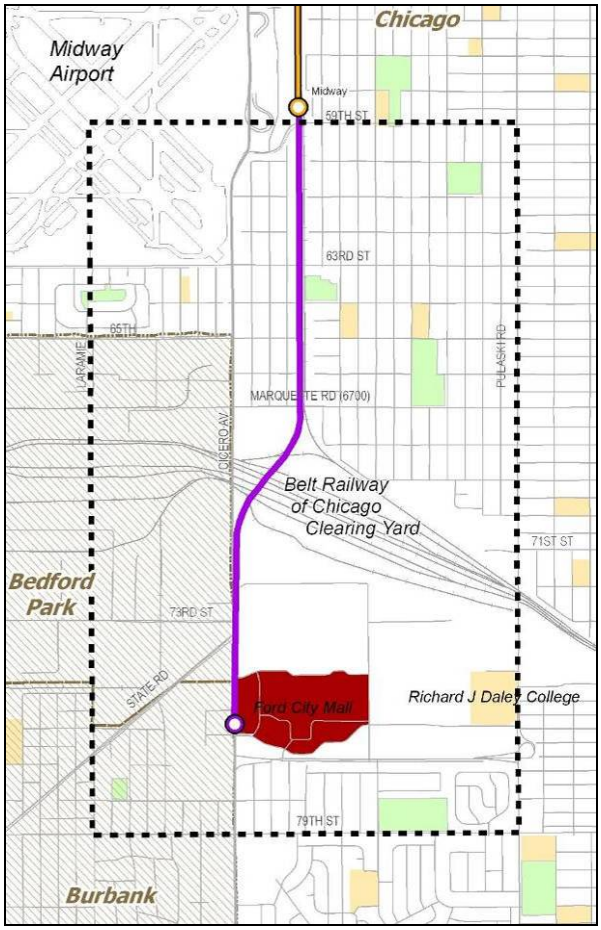


HRT BRC/Cicero Avenue Elevated / Trench Alternative

The HRT BRC/Cicero Avenue Alternative would operate in a trench along the Belt Railway of Chicago (BRC) right-of-way between the existing Midway Station and approximately 6400 South, where it would begin to transition to an elevated structure above Marquette Road; it would then veer to the southwest over the BRC Clearing Yard and then continue south on elevated structure in the median of Cicero Avenue. Refer to Figure 4.3.

- The alternative is 2.3 miles long.
- Ford City terminal station is proposed at Cicero Avenue and 76th Street.
- No intermediate stations are planned.
- Based on the estimated running time for the BRC/Cicero Avenue alignment, an additional 20 cars are assumed for the AM rush period (including four spares).
- A park-and-ride facility is recommended at the terminal station near Ford City Mall.
- An improved bus terminal is recommended at the terminal station near Ford City Mall.

Figure 4.3: HRT BRC/Cicero Avenue Elevated / Trench Alternative

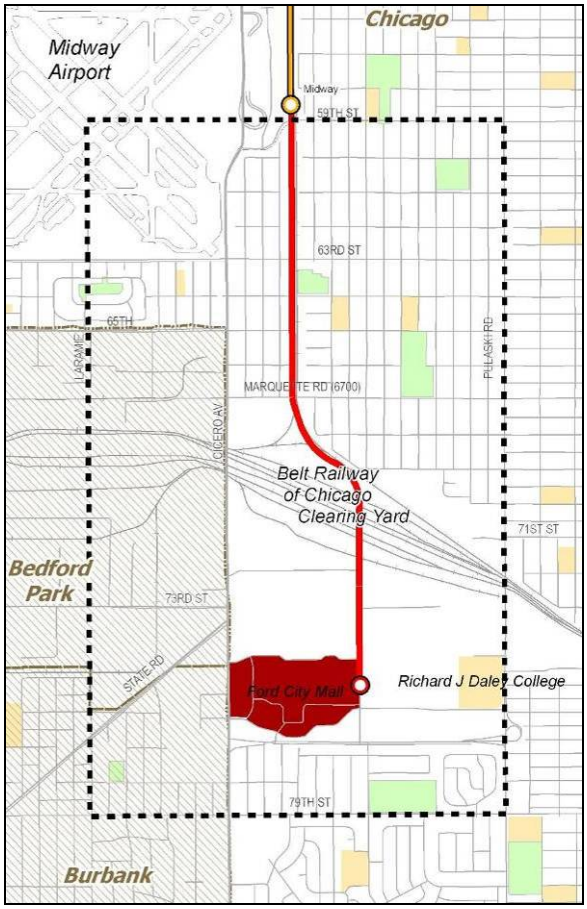


HRT BRC/Kostner Avenue Elevated / Trench Alternative

The HRT BRC/Kostner Avenue Alternative would operate in a trench along the BRC right-of-way between the existing Midway station and approximately 6700 South, where it would transition to an elevated structure and turn east and then south along the Kostner alignment. The proposed Ford City Terminal Station would be located at Kostner Avenue/76th Street. Refer to Figure 4.4.

- The alternative is 2.2 miles long.
- Ford City Terminal Station is proposed on west side of Kostner Avenue at 76th Street.
- No intermediate stations are planned.
- Based on the estimated running time for the BRC/Kostner alignment, an additional 20 cars are assumed for the AM rush period (including four spares).
- A park-and-ride facility is recommended at the terminal station near Ford City Mall.
- An improved bus terminal is recommended at the terminal station near Ford City Mall.

Figure 4.4: HRT BRC/Kostner Avenue Elevated / Trench Alternative



4.2 Screen 2 Evaluation

Step 2 Evaluation
Step 2 of Screen 2 consisted of a technical evaluation of alternatives. The 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 BRC/Cicero Avenue Alternative 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	HRT	
		Cicero Avenue	BRC/Cicero Avenue	BRC Kostner Avenue
		Elevated	Trench/ Elevated	Trench/ Elevated
Physical Constraints	**N/A**	○	○	**−**
Social and Economic	**N/A**	○	○	○
Environmental	**N/A**	○	○	○
Transportation	**−**	**−**	**+**	**+**
Capital Cost	**+**	**+**	○	**−**
Operating Cost	**+**	**+**	○	○
Ridership	**−**	○	**+**	**+**
Summary Rating	○	**+1**	**+2**	**0**
LPA Recommendation	No	No	**Yes**	No

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

This section identifies specific issues discussed in the previous sections, which led to the recommendation and elimination of each alternative in Screen 2.

TSM/BRT Cicero Avenue Alternative At-Grade

- The TSM/BRT Alternative scores well on cost criteria but performs poorly on transportation and ridership criteria. The TSM/BRT Alternative requires a bus-to-rail transfer to get to Ford City Mall and does not significantly reduce the number of buses traveling on congested Cicero Avenue. The low projected ridership is a reflection of travel times that are up to 17 minutes slower than the rail alternatives.
- The TSM/BRT Alternative is expected to be the least costly to build and operate out of all alternatives considered.
- Though it has lower predicted ridership, capital and operating costs in comparison to the HRT alternatives are significantly lower.
- However, compared to the No Build Alternative which has no associated costs, benefits provided do not support the costs.
- Overall, the TSM/BRT Alternative would not improve regional and local access and mobility or significantly enhance opportunities for more transit-supportive development in the Orange Line study area.

HRT BRC/Cicero Avenue Alternative

- The HRT BRC/Cicero Alternative has lower physical constraints and capital cost than the HRT BRC/Kostner Alternative due to significantly lower capital cost for crossing the BRC Clearing Yard.
- The HRT BRC/Cicero Alternative has comparable operating costs with the HRT BRC/Kostner Alternative.
- The HRT BRC/Cicero Alternative provides the potential for future system expansion further south along Cicero Avenue. However, future expansion beyond 79th Street is beyond the scope of the Orange Line AA Study.
- The terminal station for the HRT BRC/Cicero Alternative is adjacent to the Cicero Avenue corridor, providing greater auto and bus accessibility and visibility for intermodal connections.

Recommended Rating: The HRT BRC/Cicero Alternative is **recommended** as the Locally Preferred Alternative.

HRT BRC/Kostner Avenue Alternative

- Discussions with BRC determined that it would not be feasible to place bridge column supports within the central area of the yard. As a result, a long span bridge (1000 feet) was estimated to increase capital costs by $200M.
- The HRT BRC/Kostner Alternative constrains opportunities for future expansion to the south. As previously noted in Step 2, Kostner Avenue ends at 79th Street within the study area and would require a transition towards Cicero Avenue to continue further south.
- The terminal station for the HRT BRC/Kostner Alternative is located approximately 0.5 miles east of Cicero Avenue. However, the terminal station would be more accessible to local employment and Richard J. Daley College.

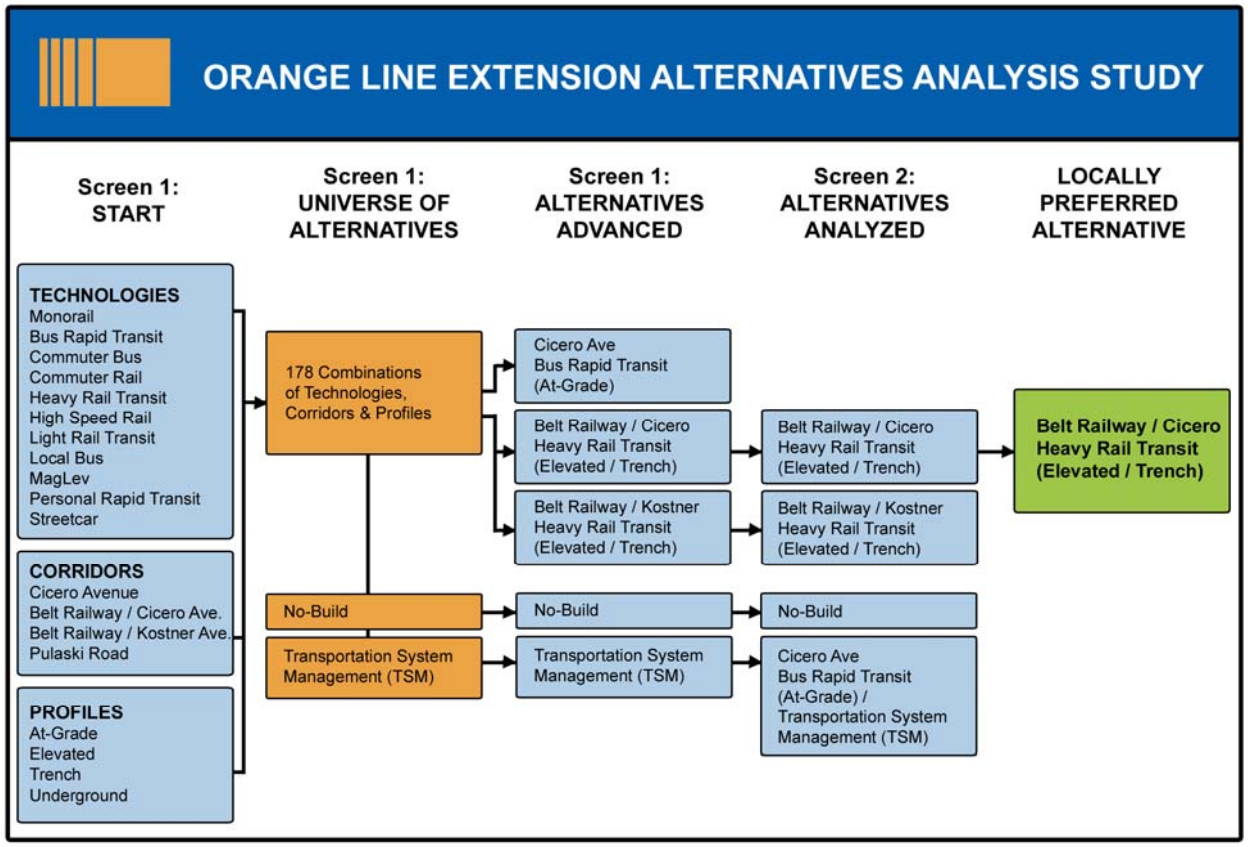
Recommended Rating: The HRT BRC/Kostner Alternative has physical constraints – including crossing the BRC Clearing Yard at its widest point – that do not exist for other alternatives making the capital cost and cost effectiveness of the alternative less attractive. The HRT BRC/Kostner Alternative is **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 a public open house held at Richard J. Daley College in April 2009. Additional information on public outreach is available in Section 6 of this report.

4.3 Screening Summary

Figure 4.5 presents a summary of the three screenings, beginning with the Universe of Alternatives, followed by Screen 1, Screen 2 and the LPA recommendation of the elevated/trench Heavy Rail Transit Orange Line Extension via BRC/Cicero Avenue.

Figure 4.5: Orange Line Extension Alternatives Analysis Study



5.0 LOCALLY PREFERRED ALTERNATIVE

5.1 Selection of a Locally Preferred Alternative

On August 12, 2009, the Chicago Transit Board approved an elevated and trench HRT extension along the BRC/Cicero Avenue 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 how well the LPA addresses 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 the No Build, TSM/BRT, and LPA is consistent with the current Orange Line service hours. On weekdays the proposed span is 4:00 a.m. until 2:00 a.m. on the following day (22 hours). Saturday service would begin at 4:30 a.m. and end at 2:00 a.m. on the following day (21.5 hours). On Sundays and holidays service would begin at 5:30 a.m. and end at 12:30 a.m. on the following day (19 hours).

The frequency of service for the LPA would be consistent with current Orange Line frequencies. Morning rush hour frequency on the Orange Line is approximately 6.5 minutes. Weekday midday frequency is approximately ten minutes. Service frequency in the evening is ten minutes with late evening frequency at 20 minutes. Saturday and Sunday frequency of service is ten minutes during most hours of the day with frequencies expanding to up to 20 minutes in the very early morning and late evening.

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 the same service frequencies.

The No-Build Alternative also establishes the baseline for comparison of the cost-effectiveness of the TSM/BRT and HRT/Cicero Avenue alternative. 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 (Midway Station bus terminal to 76th Street)

The TSM/BRT Alternative is a 2.3 mile long BRT service that operates west on 59th Street from the 59th Street Midway Station bus terminal to Cicero Avenue, and then south on Cicero Avenue from 59th Street to approximately 76th Street.

Three types of service modifications have been identified for the TSM/BRT Alternative to provide the best mobility without a major capital cost project to serve the population and employment growth in the Orange Line study area as identified in the project Purpose and Need in Section 1.

- The first includes frequency adjustments to match the Orange Line frequency and span of service to better serve anticipated demand.
- The second modification would implement BRT operational characteristics short of a dedicated lane in order to improve accessibility and running times. BRT characteristics include transit signal priority intersections, improved bus shelters and passenger amenities and improved terminal facilities including park-and-ride.
- The third modification would re-route Route 67 67th/69th/71st from the Midway Station bus terminal to terminate at the Ford City stop to facilitate connections to the east.

LPA (HRT trench adjacent to BRC to 64th Street and elevated to 76th Street)

The LPA would operate in a trench along the BRC right-of-way between the existing Midway station and approximately 6400 South, where it would begin to transition to an elevated structure above Marquette Road, where it would curve to the southwest over the BRC Clearing Yard and then continue south on elevated structure in the median of Cicero Avenue. The Orange Line extension would end at a new terminal station in the vicinity of Ford City Mall. A bus terminal and park-and-ride facility is proposed at the new terminal station. A provision for a future intermediate station at Marquette Road (67th Street) is included in the elevated guideway and track alignment designs.

The LPA is assumed to operate train sets consisting of four or eight cars. The maximum scheduled capacity of each car is 90 passengers, which provides maximum capacity of a 4-car train at 360 passengers, while the maximum capacity of an 8-car train is 720 passengers. Current car requirements during the AM rush period is 88 cars. Based on the estimated running time between Midway and Ford City, an additional 16 cars would be required in the AM rush period to serve the extension.

5.2.2 Running Time

The current round-trip running time on the Orange Line is 62 minutes[9]. The one-way running time between Midway and Clark-Lake is 32 minutes. Running times for the heavy rail alternatives were estimated based on the proposed alignment and vehicle performance characteristics. Running times for the TSM/BRT alternative is based on observed running times for CTA Route X54. Anticipated running times for each alternative are shown in Table 5.1.

[9] Source: CMAP New Starts Model

Table 5.1: Estimated Running Times

Route Segment	Alternative Running Time (minutes)		
	Current Orange Line	TSM/BRT	LPA
Midway to Library	25.5		
Midway to Clark-Lake	32.0		
Clark-Lake to Midway	30.0		
Round trip: Midway to Midway	62.0		
Ford City to Midway		11.5	4.5
Ford City to Library		37.0	30.0
Ford City to Clark-Lake		43.5	36.5
Round trip: Ford City to Ford City		85.0	71.0

The initial proposed bus service plans are designed to speed passenger travel to downtown Chicago. Subsequent studies may reveal that some bus routes proposed to terminate at Ford City predominantly serve employment sites located at or near Midway Airport. In that event, bus routes with predominant destinations at Midway should continue to serve the Midway bus terminal.

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.

All alternatives assume that CTA Route 67 (67^{th}/69^{th}/71^{st}) would be re-routed to terminate at Ford City. The TSM/BRT alternative assumes that buses from the south would continue to directly serve the Midway station, while the LPA assume that some buses from the south would terminate at a new Ford City terminal. For the LPA, it is anticipated that CTA Route 67 (67^{th}/69^{th}/71^{st}) would be re-routed to serve the new Ford City terminal station. In addition, Pace Route 379 (W. 79^{th} Street), Pace Route 382 (Central/Clearing), Pace Route 383 (S. Cicero), Pace Route 384 (Narragansett/ Ridgeland), Pace Route 385 (87^{th}/111^{th}/127^{th}), and Pace Route 390 (Midway CTA Station-UPS) would be re-routed from the Midway station to the new Ford City terminal station.

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

Bus Route	Current Terminal	TSM/BRT	LPA
54B South Cicero	Ford City	No Change	No Change
X54 Cicero Express	Midway	No Change	No Change
55 Garfield	Midway	No Change	No Change
55A 55th/Austin	Midway	No Change	No Change
55N 55th/Narragansett	Midway	No Change	No Change
X55 Garfield Express	Midway	No Change	No Change
59 59th/61st	Midway	No Change	No Change
62H Archer/Harlem	Midway	No Change	No Change
63 63rd	Midway	No Change	No Change
63W West 63rd	Midway	No Change	No Change
67 67th/69th/71st	71st/Pulaski	Ford City	Ford City
79 79th	Ford City	No Change	No Change
165 West 65th	Midway	No Change	No Change
379 W. 79th Street	Midway	No Change	Ford City
382 Central/Clearing	Midway	No Change	Ford City
383 South Cicero	Midway	No Change	Ford City
384 Narragansett/ Ridgeland	Midway	No Change	Ford City
385 87th/111th/127th	Midway	No Change	Ford City
386 South Harlem	Midway	No Change	No Change
390 Midway CTA Station-UPS	Midway	No Change	Ford City
831 Joliet-Midway	Midway	No Change	No Change

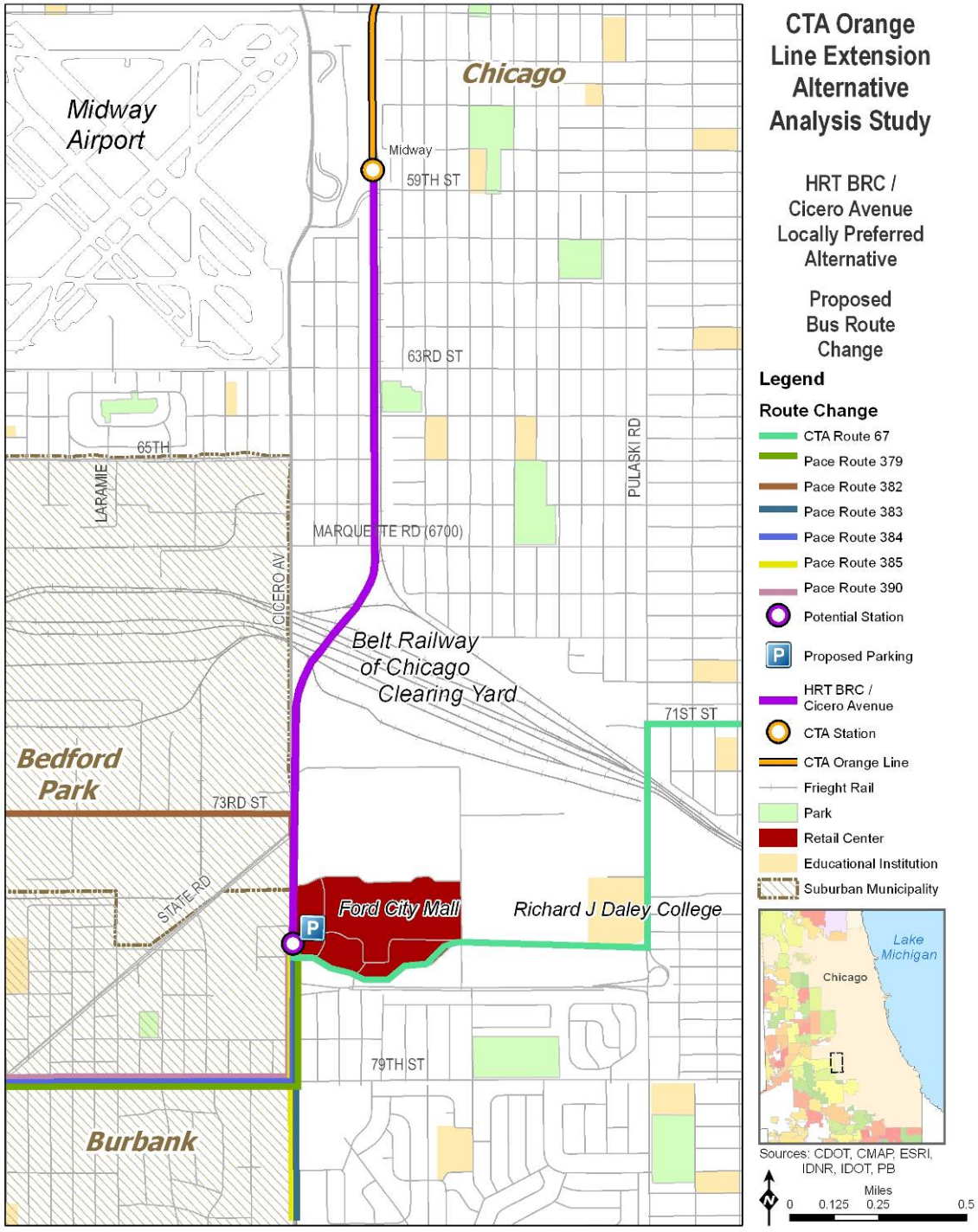
Note: Route 47 serves the Midway Terminal in the late evening and owl periods. Route N62 serves the terminal in the owl period. These routes will continue their current route pattern.

The change in the number of bus routes terminating or operating through Midway and Ford City terminals is shown in Table 5.3 and is depicted in Figure 5.1.

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

Terminal	Current	TSM/BRT	HRT
Midway			
Terminating routes	18	19	12
Routes operating thru	1	1	1
Ford City			
Terminating routes	2	4	9
Routes operating thru	6	6	0

Figure 5.1: Locally Preferred Alternative



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
- Midway Station Bus Capacity and Delay

5.3.1 Travel Time

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

Table 5.4: Anticipated Total Travel Time by Alternative and Route Segment[10]

Travel Time Elements	Time in Minutes		
	No Build	TSM/BRT	LPA
Wait time at Ford City	6.00	3.25	3.25
Run time Ford City to Midway	12.00	11.50	4.50
Walk time: curb to platform	3.00	3.00	0.0
Wait time at Midway	3.25	3.25	0.0
Rail run time to Library	25.50	25.50	25.50
Total Travel Time to Library	49.75	46.50	33.25

As seen in this table, travel time for the No Build Alternative is nearly 50 minutes to the Chicago Loop. This represents the existing travel time based on using a bus from the Ford City Mall to the Midway station and a transfer to the Orange Line. Travel times for the TSM/BRT Alternative are expected to improve by 3.25 minutes and would also require a transfer to the Orange Line. Overall, the LPA would provide the fastest travel time at 33 minutes. This represents a 28 percent improvement in travel time versus the TSM/BRT and a 33 percent improvement in travel time versus the No Build Alternative.

5.3.2 Access to Jobs

The LPA would provide increased access to jobs within Chicago and 40 adjacent suburbs using the CTA transit system. A park-and-ride facility for automobile access would be located at the new Orange Line terminal station in the vicinity of Ford City Mall.

Table 5.5 shows the approximate number of transfers required for a transit trip from various origin areas of the study area to two major regional job centers: the downtown Loop area and the O'Hare Airport/Rosemont area. The trips are considered during peak hour with a possible

[10] Table B.3 is based on the following assumptions: Wait time is one-half the AM peak frequency, run times reflect model coding and walk time is the average walk time between the bus terminal curb and the station platform based on a field check at Midway station.

Pace bus connection for O'Hare/Rosemont area trips. The LPA has fewer requirements to transfer for these trips as compared to the No Build and TSM/BRT alternatives.

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

Criteria	No Build	TSM/BRT	LPA
Transfers Required Between Loop and (Peak Hour)			
Ford City Mall	1	1	0
Richard J. Daley College	1	1	0 - 1
S. Cicero Avenue Commercial	1	1	0
Pulaski Road Commercial	1	1	1
Transfers Required Between Rosemont / O'Hare Area Employment and (Peak Hour)			
Ford City Mall	2 - 3	2 - 3	1 - 2
Richard J. Daley College	2 - 3	2 - 3	1 - 2
S. Cicero Avenue Commercial	2 - 3	2 - 3	1 - 2
Pulaski Road Commercial	2 - 3	2 - 3	2 - 3

5.3.3 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 59th Street. However, the TSM/BRT alternative is expected to have a moderate operating reliability due to operation in mixed traffic along Cicero Avenue. The LPA would operate on a grade-separated guideway and achieve high operating reliability similar to the existing Orange 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 by evaluating potential impact of the alternative 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 or TSM/BRT can incorporate design elements in preliminary engineering and final design 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 grade-separation, has no conflict points with general traffic, but there are potential pedestrian conflicts accessing the new terminal station.

5.3.4 Ridership

Ridership estimates for the year 2030 were developed using computerized travel forecasting models. The LPA exhibits strong ridership potential, while the TSM/BRT Alternative attracts fewer riders. By 2030, the LPA is expected to carry 2.4 million riders per year. For the TSM/BRT Alternative, 1.1 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 estimated weekday boardings at the new Ford City terminal station in 2030.

Table 5.7: Estimated 2030 Average Weekday Station Boardings

Alternative	No Build	TSM/BRT	LPA
Ford City Station Boardings	N/A	1,800	3,900

Note: Model Results: August 25, 2009

For the LPA, total project ridership is estimated at 7,800 boardings per day. For consistency with other rail extensions this includes customers boarding and alighting at the new Ford City terminal station. Annual 2030 ridership is estimated at 2.4 million.

5.3.5 Local Roads

Impacts on local roads were measured based on the magnitude of traffic impediments. The LPA is proposed with full grade separation and thus has a low level of potential traffic impacts. 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 at major signalized intersections along Cicero Avenue to improve running times. TSP improvements can be implemented to not negatively impact traffic level of service.

The LPA operates in a trench along the BRC right-of-way between the existing Midway Station and approximately 6400 south. Both 59th and 63rd Streets will cross over the LPA in this section. The LPA will then transition to an elevated structure above Marquette Road, where it would curve to the southwest over the BRC yard and then continue south on elevated structure along Cicero Avenue.

5.3.6 Midway Station Bus Capacity and Delay

The LPA is expected to improve bus and passenger congestion at the Midway station bus terminal. The No Build and TSM/BRT Alternatives are expected to have steadily increased passenger traffic at the Midway station in 2030. Table 5.8 shows the current and forecasted

annual ridership at the Midway station for the TSM/BRT and LPA. Under the TSM/BRT, ridership is expected to increase by 0.3 million in 2030. Under the LPA, ridership at Midway is expected to match current levels with new growth diverted to Ford City.

Table 5.8: Midway Station Ridership (2030, Millions of Trips)

2030 Ridership	Current Orange Line (2007)	TSM/BRT	LPA
Midway Station	2.7	3.0	2.7

Note: Model Results: August 25, 2009

Currently, nineteen CTA and Pace bus routes utilize the Midway station bus terminal. The LPA would result in the re-routing of up to six bus routes to a new Orange Line Ford City terminal station, relieving congestion at the Midway Station. The TSM/BRT alternative would result in no additional bus routes and re-routing of CTA Route 67 (67th/69th/71st) to terminate at Ford City.

5.4 LPA Environmental Characteristics

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 the 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 another measure of the potential for high transit ridership: the closer an alternative is to individuals who are dependent upon transit, the greater the opportunity to improve service to a core transit market.

The following series of maps illustrates characteristics associated with transit dependent populations including age and income status, and the number of vehicles per household.

Figures 5.2 and 5.3 depict the residential population that is over 65 and under 18. The young and elderly often rely on public transit for transportation. Figure 5.4 shows areas where low income households are found relative to alternatives and station areas within the study area. Figure 5.5 reflects Census data on households that report not owning a vehicle. Lower income persons and households without an automobile are more likely to rely on public transportation as a primary mode of transportation. Table 5.9 reflects the U.S. 2000 Census data for these two variables.

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

Criteria	No Build	TSM/BRT	LPA
2000 poverty status households	N/A	172	172
2000 zero-car households	N/A	90	90

Figure 5.2: 2000 Population Distribution Over Age 65

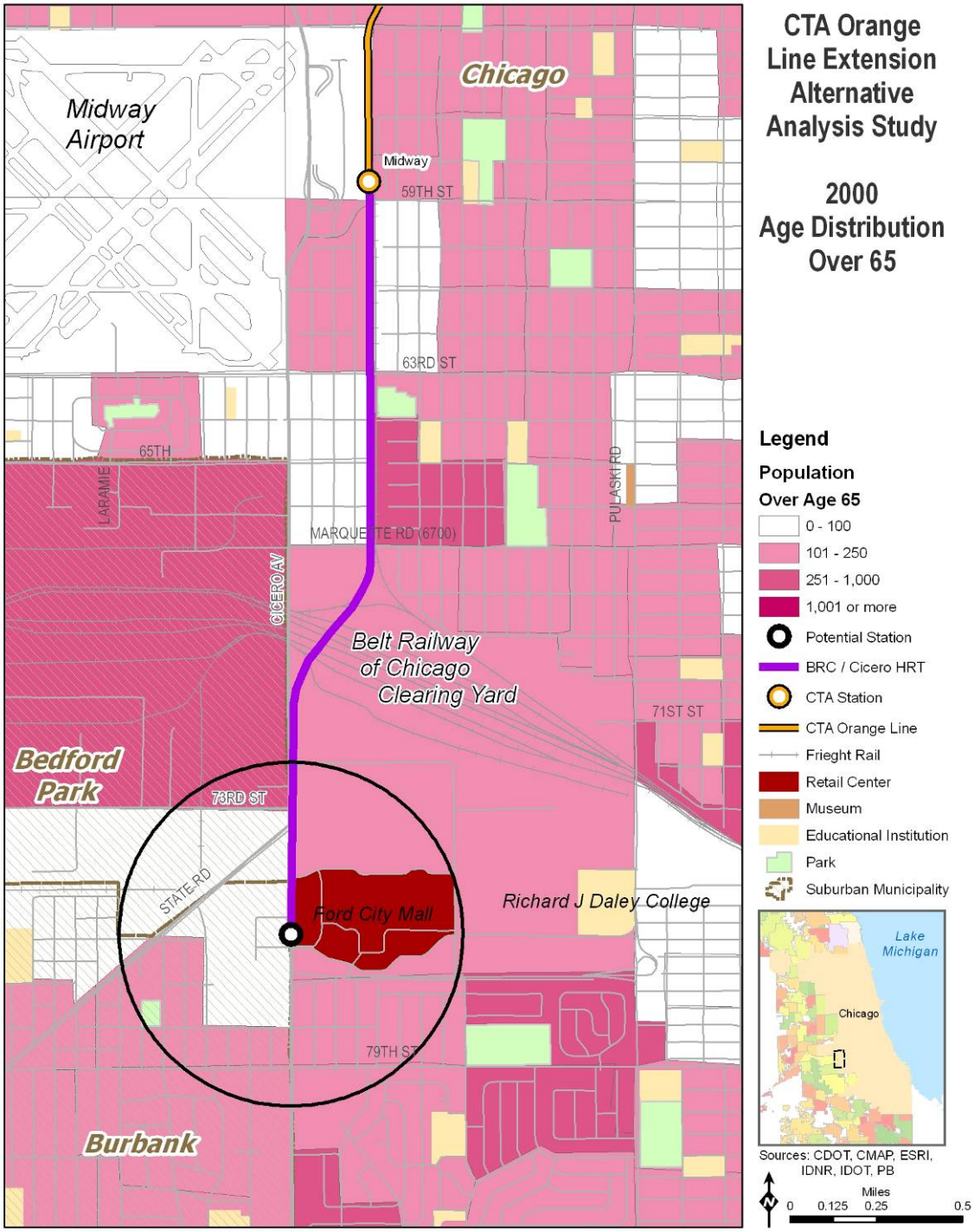


Figure 5.3: 2000 Population Distribution Under Age 18

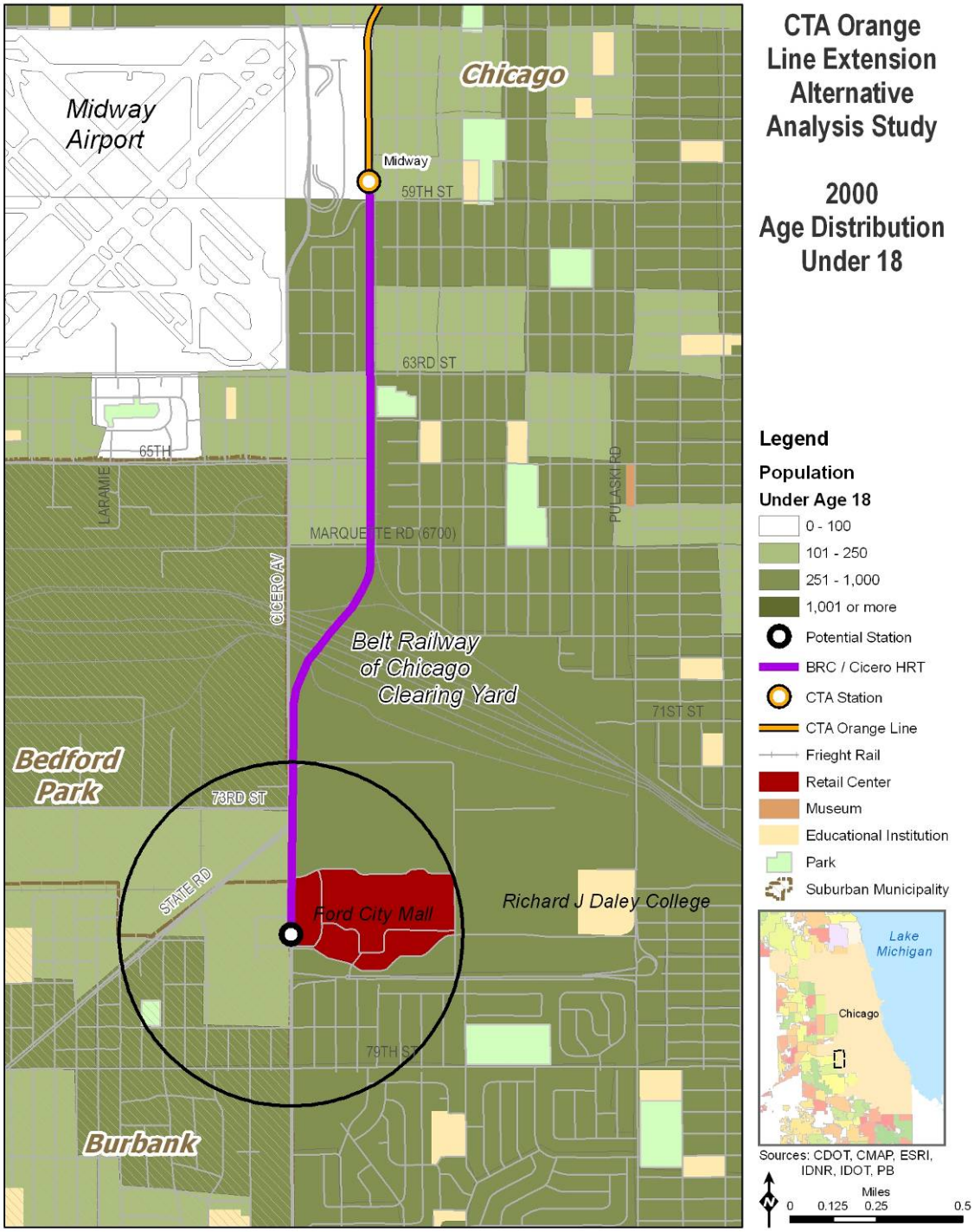


Figure 5.4: 2000 Poverty Status

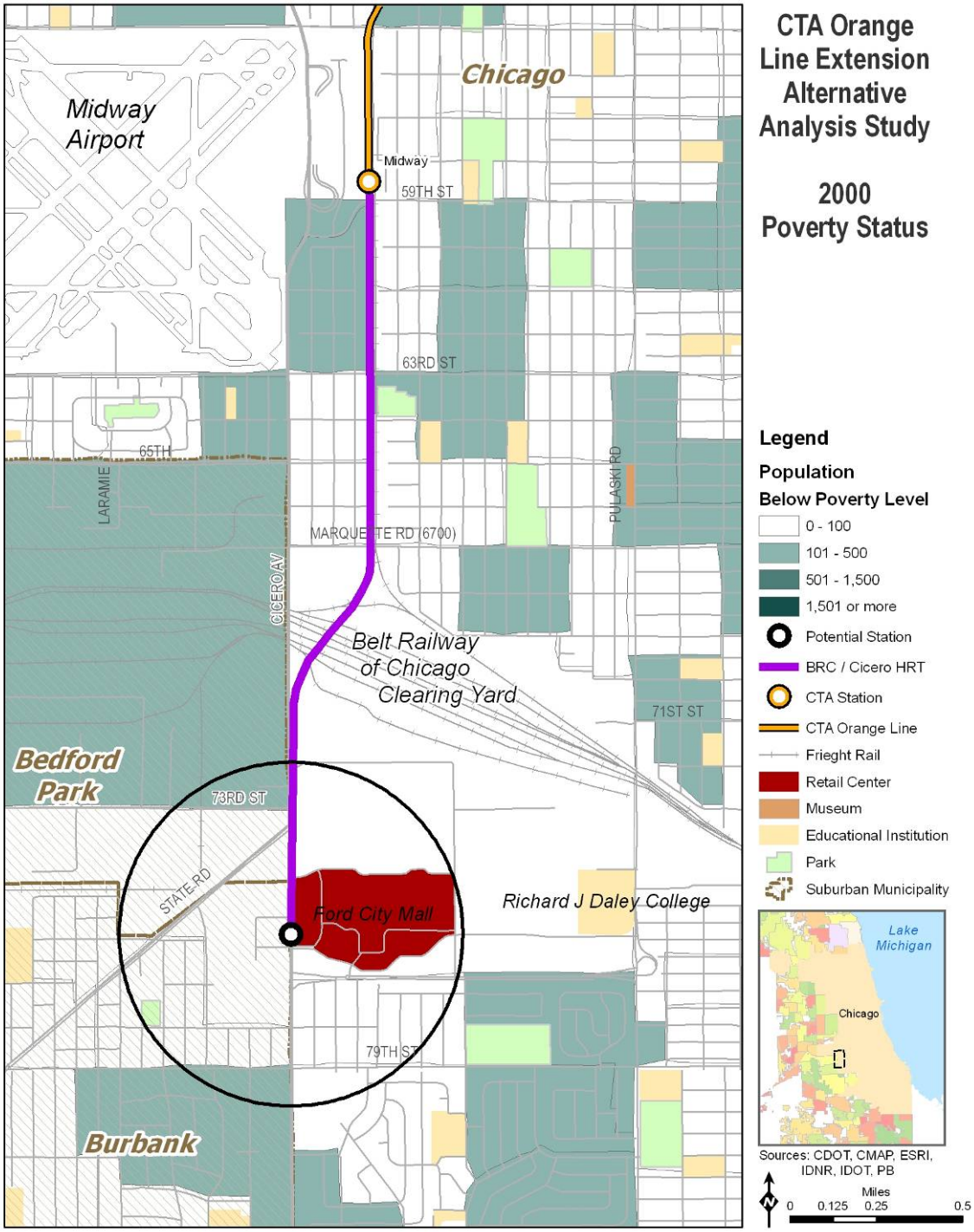
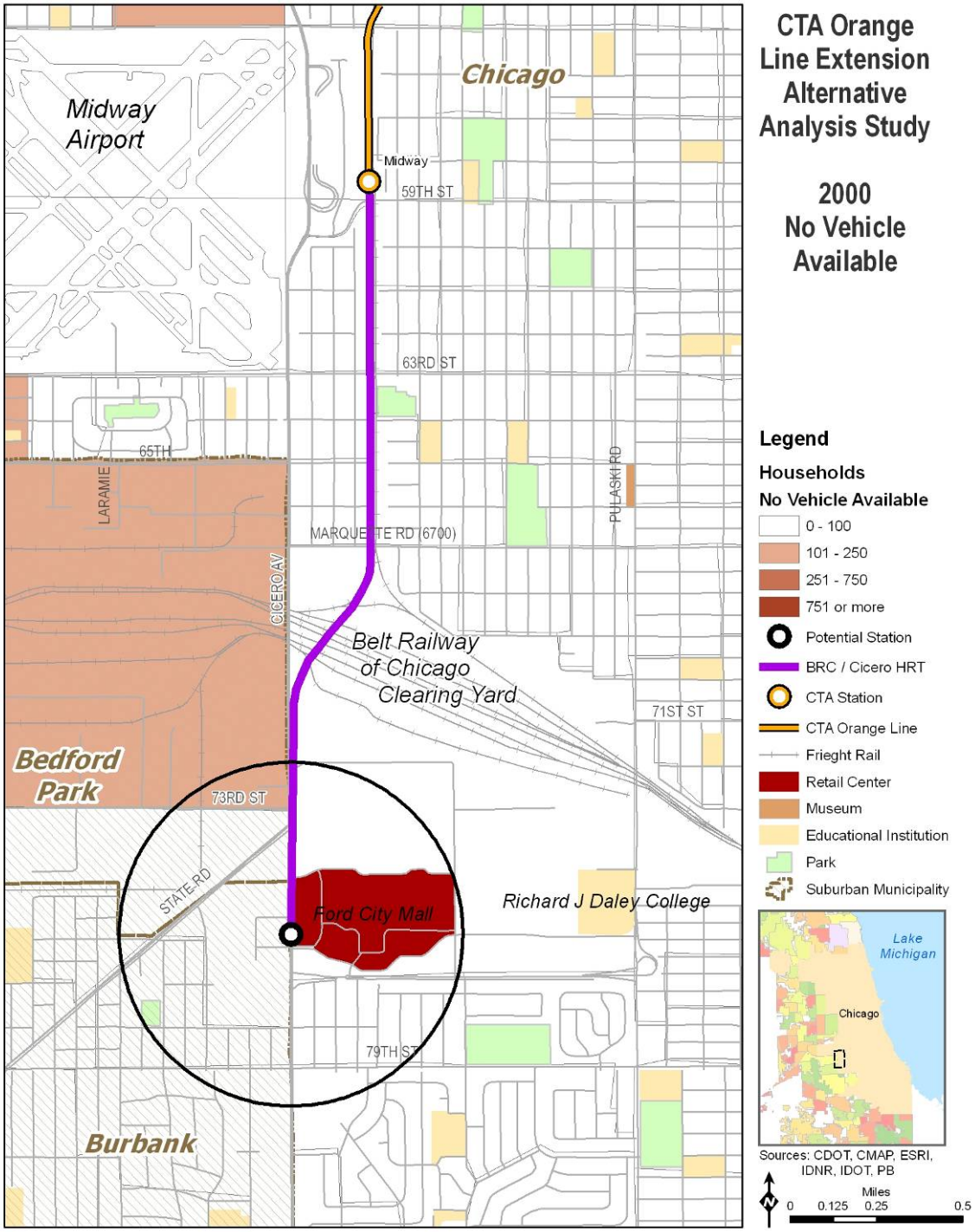


Figure 5.5: 2000 Households without an Automobile



5.4.2 Land Use and Development

Current land use in the Orange Line extension study area is a mix of urban residential, commercial, and industrial land uses and supporting infrastructure. The LPA and TSM/BRT alternatives are adjacent to three Tax-Increment Financing (TIF) districts, one Enterprise Zone and one Industrial Corridor. The TSM/BRT is anticipated to have a relatively lower impact on businesses during construction. In contrast, the LPA is predicted to have a greater impact on long term economic development.

The BRC railroad right-of-way from the current Orange Line Midway station at 59th Street to the BRC Clearing Yard south of Marquette Road is bordered by residential properties. Cicero Avenue south of Midway Airport is a mix of commercial and industrial uses. Ford City Mall, along with the other retail in the area, draws from a large regional market shed. Richard J. Daley College, a public two-year community college with a student population of 9,500, is located on the west side of Pulaski Road between 74th and 76th Streets.

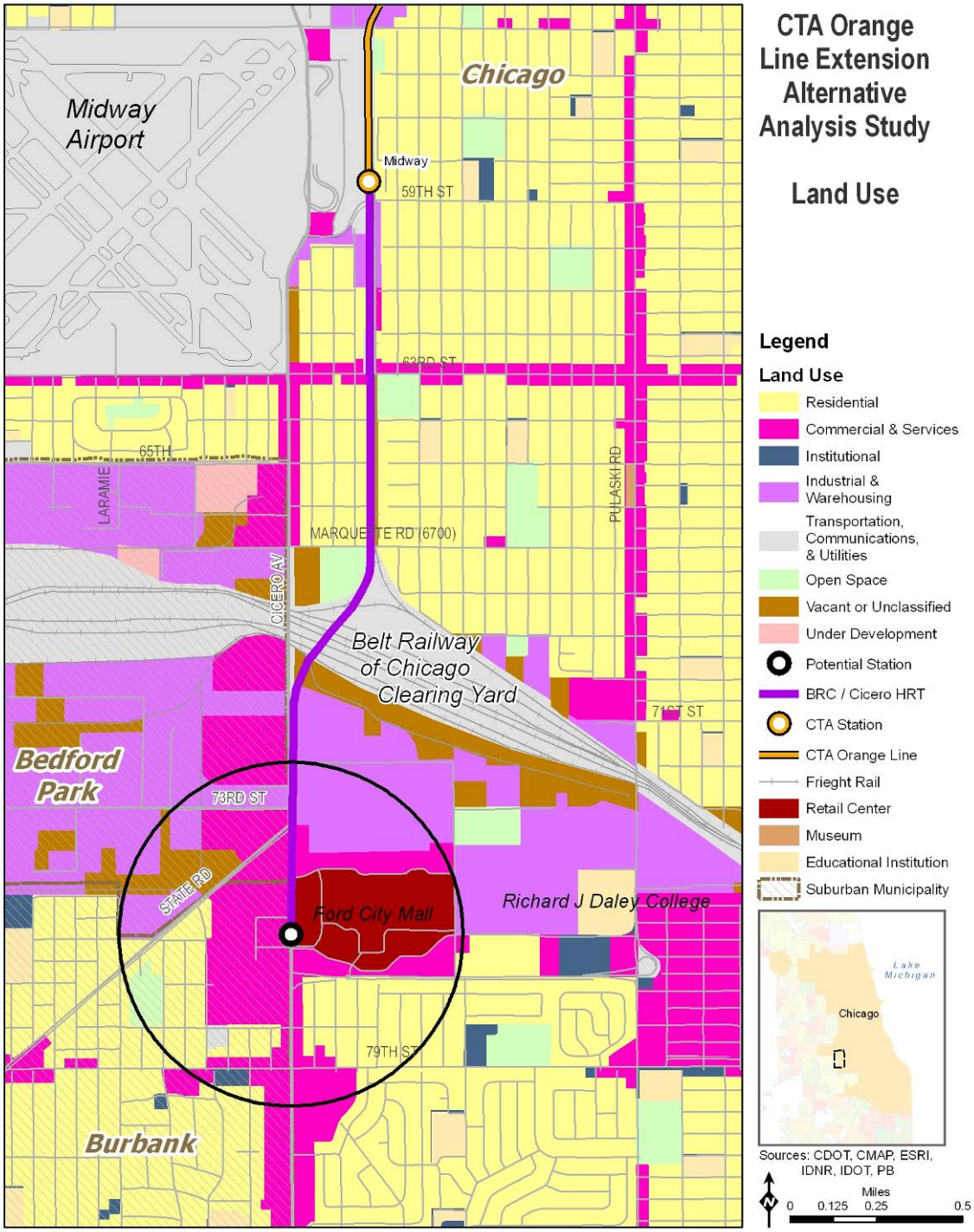
Table 5.10 is a summary of the economic analysis for the three alternatives, and matches the evaluation measure to the goals and objectives set forth in the original purpose and need document. Figure 5.6 reflects the land use in the area, as identified in 2001.

Table 5.10: Land Use and Development

Criteria	No Build	TSM/BRT	LPA
Development initiatives	N/A	5	5
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 a built-up urban environment. Adding new transit service that requires a dedicated right-of-way (that is not already available) would impact the existing land uses in the corridor. Assessment of potential displacements helps to understand how the alternatives meet the objectives while limiting environmental impacts, as well as respecting community context and identity.

The BRC rail corridor has two active freight rail tracks but also vacant land that could accommodate the HRT service. The available vacant land provides an opportunity to implement new transit service. However, the BRC corridor is just part of the alignment, and other parcels would likely need to be acquired, depending upon the design of the alignment.

For the LPA, a parcel immediately south of the 59th Street, currently a parking lot for travelers using Midway Airport, would need to be acquired in part or in full. The parking facility manager states that it has 1,200 parking spots. The size of the entire parcel is estimate to be a little more than 92,000 square feet.

Further south, the LPA leaves the BRC corridor and travels along the edge of the BRC Clearing Yard. Crossing over the yard to head south along Cicero Avenue would require supporting columns to elevate the track over the yard, but discussions with the BRC determined that the locations of the columns would not negatively impact existing BRC operations.

South of the BRC Clearing Yard, Cicero Avenue is a major arterial road with right-of-way that varies from 100 to 110 feet, with six through lanes and median left turn lanes. An elevated profile within the Cicero Avenue right-of-way would require the closure of median and left turn lanes, and construction of crash barriers to protect the elevated support columns spaced approximately every 50 feet. Additional street right-of-way may be required to preserve the existing through traffic lanes, but the alignment is not yet finalized. However, land use in the corridor is commercial, with some setbacks from the street, so any acquired right-of-way may have only a minor impact on buildings and business operations. Other design options include placing the alignment along the east side of Cicero Avenue. The property impacts of this option will be considered in detail in the Environmental Impact Study.

The new terminal station area at Ford City Mall can be accommodated on land located on the out-lots of the shopping center that are currently used for parking. A new parking garage and terminal facility would require approximately 135,000 square feet, and require coordination between the mall owner and CTA for shared use, access and location of the structure.

Lastly, the LPA would have to address the issue of high-tension wires that cross Cicero Avenue around 7100 South. The cost estimate for the relocation of the towers is estimated at $12 million.

Table 5.11: Displacements

Criteria	No Build	TSM/BRT	LPA*
Affected parcels	N/A	0	1

* Does not include parcels required relocation of high-tension towers, if needed or strips of property along Cicero Avenue.

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 reduce negative impacts, 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 along southbound Cicero Avenue. The structure would be similar in design and construction to existing Orange Line elevated structure southwest of Halsted Street.

For the Alternatives Analysis, the elevated structure was assumed to be located in the median of Cicero Avenue to reduce to impact to commercial properties along Cicero Avenue. The EIS and Preliminary Engineering phase will examine locating the elevated alignment along east side Cicero Avenue as a design alternative.

Figure 5.7: Example of the LPA Elevated Structure - South Bound Cicero Avenue

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 Cicero Avenue not accounting for Midway Airport and freight rail noise. Properties along Cicero Avenue are commercial and primarily used for parking from 59th Street to Ford City. The closest residential properties are located parallel to the east side of Cicero Avenue on South Keating Avenue between 59th and 61st Streets. The back sides of these houses are approximately 100 to 180 feet from Cicero Avenue. Between 63rd and 65th Streets, the backsides of houses along South La Crosse and South Keating Avenues are more than 150 feet from the west and east traffic lanes and separated by commercial properties along Cicero Avenue. Midway Airport is located along the west side of Cicero Avenue and north of 63rd Street in this area. The BRC corridor is currently an active freight rail line, with an average of 49 trains per day, bordered primarily by residential properties between 59th Street and the BRC Clearing Yard, which is located south of Marquette

Road. Because of Midway Airport and existing freight rail service in the corridor, sensitive receptors along the alignment are likely to experience a higher level of noise that residential areas without a similar transportation facility. As result, the TSM/BRT alternative is expected to have no ambient noise impact for residential and institutional noise receptors in the corridor.

The LPA is estimated to increase ambient noise by 10 dBA for the at-grade portion of the alignment from 60th Street to 62nd Street (from 55 dBA to 65 dBA), 6 dBA for the trench portion between 62nd Street and 64th Street (from 55 dBA to 61 dBA) and 14 dBA for aerial portion of the alignment between 64th Street and the BRC Clearing Yard (from 55 dBA to 69 dBA) for the residences closest to the right-of-way again not accounting for noise associated Midway Airport, air traffic and freight rail. South of Marquette Road, the Orange Line extension is elevated and transitions southeast to towards Cicero Avenue. Lee Pasteur Elementary School and ball fields (under construction) are located directly northwest of alignment and noise at this receptor is estimated to increase 14 dBA, from 55 dBA to 69 dBA.

For the LPA, 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 range from 58-62 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

Northeastern Illinois is classified as a moderate non-attainment area for the 8-hour ozone standard, and a non-attainment area for the annual fine particulate matter (PM2.5) standard. Air quality was assessed through the potential for micro-scale pollution.

The LPA includes heavy rail transit technology that is powered by electricity, which does not emit gases or particulate matter at the point of use. In addition, the LPA reduces the length of bus access trips, resulting in a reduction of emissions.

Buses used for the TSM/BRT service or continued use of buses for the No-Build alternative would have a higher rating than the LPA due to diesel exhaust. CTA is incorporating hybrid buses into its fleet, but the LPA has lower air quality impacts.

5.4.7 Water and Ecosystem Resources

The Orange Line extension study area is a very urbanized area, so major impacts to natural resources were not anticipated. No critical habitats for protected species were identified in the vicinity of the LPA and TSM/BRT corridors. One wetland, less than one acre in size, was identified in the LPA corridor, located in the BRC right-of-way. This wetland will be verified during the subsequent EIS process.

5.4.8 Hazardous Waste Sites

Hazardous waste sites are an important environmental consideration for two reasons: a 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 U.S. Environmental Protection Agency (EPA)
- Other, 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. The sites were for waste-handlers or leaking underground storage tank (LUST) locations which can be remediated, if necessary.

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.

5.4.10 Parklands

Parkland 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.

No parks were found to be within any of the analysis corridors. One recreational area, the field associated with the new Lee Pasteur/Hurley High School, is expected not be affected by the LPA alignment.

5.4.11 Summary of Environmental Impacts

Table 5.12 provides a summary of the potential environmental impacts for the LPA and TSM/BRT alternatives. For additional detail on the preliminary environmental impacts for each alternative, see the *Orange Line Extension Screen 2 Alternatives Evaluation Report, June 2009.*

Table 5.12: Summary of Potential Environmental Impacts

Environmental Factors	TSM/BRT	LPA
Hazardous Sites: Brownfields	0	0
Hazardous Sites: Waste Handlers	15	6
Hazardous Sites: Superfund Sites	0	0
Hazardous Sites: Others- LUST sites	18	19
Wetlands	0	<1 acre
Historic Districts	Low	Low
Potential Micro Scale Pollution	Moderate	Low
Potential Noise Impact	+2 dBA	+6 to +14 dBA
Potential Vibration Impact	N/A	58-62 VdB
Potential Visual Impacts	Low	Moderate
Parklands Impacted	0	0
Recreation Areas Impacted- Lee Pasteur / Hurley School Yard	0	1
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'	2	0
Districts Listed or Eligible for Listing in the NRHP Within 200'	0	0

5.5 Costs and Financial Analysis

A description of the capital and operating and maintenance cost estimates for the LPA and a preliminary financial analysis is presented in this section.

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)

Table 5.13 summaries the capital costs for the LPA.

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

FTA Standard Cost Categories (with contingency) [11]	LPA 2.26 Miles
Guideways & Track Elements	130
Stations, Terminals, Stops	62
Yards, Shops, Administration Buildings.	-
Sitework & Special Conditions	18
Systems	66
Right-of-Way, Land Acquisition	20
Vehicles	45
Professional Services	79
Unallocated Contingency	25
Total Project Cost	**445**
Capital Cost per Route Miles	**197**

Major capital cost elements for the LPA include:

- One elevated terminal station with island and side platforms to serve three station tracks: $30 million.
- Construction of a 750 space parking facilities at the Ford City Station terminal: $25 million.
- Construction of a structure and track elements from 59th Street to 74th Street with a provision for a future station at 67th Street: $130 million.
- Site work and demolition (including earthwork, excavation, utility work and relocation, and environmental mitigation): $18 million.
- Land acquisition for the extension, stations and amenities, terminal facilities, on-line substations: $20 million.
- Purchase of 20 new rapid transit cars: $45 million.
- Total cost for the LPA is $445 million in 2009 dollars.
- A yard and shop facility is not necessary in for the Orange Line extension project.

To prepare a financial plan for the Orange 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 $585.3 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.

[11] An allocated contingency allowance, in the range of 12 percent to 25 percent, is included in the FTA standard cost categories.

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 summaries the O&M costs for the LPA which is estimated at $4.5 million in 2009 dollars.

Table 5.14: LPA O&M Costs

Driving Variable	Unit Cost (2009 Dollars)	Level of Service	O&M Cost (2009 Dollars)
Rail			
Peak Trains	$131,552.79	2	$263,106
Peak Cars	$26,364.48	16	$421,832
Revenue Train Hours	$76.54	6,746	$516,309
Revenue Car Miles	$1.38	553,911	$763,931
Station Hours	$33.84	7,830	$264,982
Stations			
Elevated	$304,556.80	1	$304,557
Track Miles			
Elevated	$118,840.61	2.8	$332,754
Subway/Open Cut	$118,839.78	1.6	$190,144
Substations	$62,969.30	1	$62,969
Water Pumps	$198,777.06	1	$198,777
Fare Collection Equipment	$6,730.92	15	$100,964
Elevators/Escalators	$23,027.68	2	$46,055
Yard/Shop (per sq. foot)	$4.75		$0
Park & Ride (per space)	$521.46	750	$391,094
Rail Ridership	$0.05	1,541,621	$79,831
Bus			
Peak Buses	$34,585.92	3	$103,758
Revenue Bus Miles	$2.75	46,609	$128,040
Revenue Bus Hours	$44.80	6,111	$273,753
Turnarounds	$15,340.54	1	$15,341
Bus Stops	$14.14		$0
Bus Ridership	$0.05		$0
Total O&M Cost (Base Year (2009) Dollars)			**$4,458,196**

* 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 on the federally funded portion of the Project. Receipt of New Starts grant funds is assumed to commence in fiscal year 2011 (FY11) 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 $234 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 $0.7 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 FY10, 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 FY09.
- Homeland Security/Department of Justice Grants: Federal formula grants for transit security improvements. Fixed funding of $6.5 million annually beginning in FY09, 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 Orange Line extension LPA is a function of projected passengers and projected average fare paid per passenger. It is expected that $1.7 million (2009 dollars) in fare revenue will result in 2030 due to implementation of the Orange 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 FY09 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 based on projected cash balances. The model 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 Orange 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 Orange 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, 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, renewal of existing infrastructure, and fund the operations, maintenance, and eventual infrastructure renewal of capacity expansion projects, including the Orange Line extension project.

As the Orange Line extension project 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 Orange Line Extension Alternatives Analysis (AA) Study. Specific criteria and measures were developed for each goal as a means of assessing whether an alternative meets the goal. Figure 5.8 depicts how the LPA achieves these goals and objectives. These include:

Goal 1 – Regional and Local Access Mobility
The purpose of the Orange Line Extension AA Study is to identify transit improvements that would provide improved access to the Orange Line and improved mobility to residents and businesses located in the study area.

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 LPA provides access to a high number of residents. According to 2000 U.S. Census data, there are a total of 19,900 people and 7,100 households in the BRC/Cicero Avenue corridor. fifteen percent (2,700) of the corridor population is within .25 miles of the proposed Ford City Station terminal.

With a forecasted 36 percent increase in employment in the study area, plus another 7,700 jobs at Midway Airport, the LPA would provide increased access and improved transit service in the study area. The Orange Line extension would provide connections with the other CTA rail rapid transit lines at transfer stations (Roosevelt, Library, LaSalle, Quincy, Washington, Clark, State, Randolph, Madison and Adams Stations).

Currently, the 372 space park-and-ride at Midway Station is fully utilized and difficult to access due traffic congestion around Midway Airport. The LPA would provide an alternative to commuter parking at the Midway Station with a park-and-ride facility adjacent to the new Ford City Station. A Ford City location would also serve the growing southwest Cook 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 Report* for this project, providing a corridor that connects the major activity centers in the study area to the Orange Line. The study area has been experiencing increased growth and redevelopment in recent years. The forecasted increase of 5,000 jobs in the study area by 2030 represents the potential for increased reverse commute to access these jobs. Richard J. Daley College, with a student enrollment of 9,679, would also benefit from transit improvements in the study area. The forecasted 30 percent increase in annual enplanements and the substantial job growth at Midway Airport would also be better served by the LPA.

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 cost-effectiveness in comparison with current FTA standards. The CTA is seeking approval and funding for construction from the federal government through the FTA New Starts grant program. In general, projects advancing into the FTA Preliminary Engineering (PE) phase of project development must achieve a cost-effectiveness measure of below $25 per hour of travel time savings. The cost-effectiveness of the LPA is expected to be refined during the EIS and PE phase of the project as environmental mitigation development in order to meet the FTA criteria for New Starts funding.

Goal 4 – Safety and Security

The LPA meets the fourth goal of the project by enhancing the linkage to the existing Orange Line service at the Midway Station. The LPA would have same characteristics as the existing Orange Line service. As result, the elevated 2.3 mile extension to Ford City would be a high quality and reliable transit service, similar to the existing Orange Line.

The Orange Line extension would increase the safety and security by relieving congestion at the Midway Station. Up to six of the nineteen CTA and Pace bus routes that currently serve the Midway Station would be shortened and re-routed to terminate at Ford City. It is anticipated that Pace Routes 379-West 79th Street, 382-Central/Clearing, 383-South Cicero, 384-Narragansett/ Ridgeland, 385-87th/111th/127th, and 390-Midway CTA Station-UPS would be re-routed to serve the Ford City Station. In addition, CTA Route 67 67th/69th/71st would be re-routed from terminating at 71st/Pulaski to the Ford City Station.

These bus re-routings will result in the reduction of current Midway Station bus terminal congestion, both in terms of the number of bus vehicles serving the station, a reduction in passenger-bus conflicts as passengers walk from the their bus drop-off/pick-up locations to the station house, and the total number of passengers on the station platform.

During the next steps, PE and the preparation of an EIS, a wide range of safety measures will be identified, evaluated, and used in combination as necessary. 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).

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, park lands, and noise and vibration. The next step, the preparation of an EIS will analyze these impacts, as well as the other social, economic, and environmental consequences and benefits 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 5.8: Effectiveness of Alternatives Meeting Goals and Objectives in 2030

	Goal / Objectives	Evaluation Measures / Criteria	HRT BRC / Cicero Avenue	Notes
Goal 1: Regional and Local Access and Mobility			○	
1	Increase connectivity between and within neighborhoods and activity centers.	Population Served 2,698 (2000)	Medium	Within 0.5 mile of station area
		Population Served 2,638 (2030)	Medium	
		Community Facilities Served	Medium-High	
		Community Facilities Impacted	Medium-High	Within 500 feet of either side of corridor
		Degree of Potential Effect on Community Facilities	High	
		Employment 4,844 (2000)	High	Within 0.5 mile of station area
		Employment 7,002 (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
Goal 2: Community and Economic Development			◔	
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	
		Public Comments	High	Screen 1and 2 public comments
2	Provide opportunity for transit-supportive development.	Property Acquisition	High	Available sites for stations, bus transfer and parking
		TOD Potential	Medium	Station area development and market trends
3	Support efficient land use patterns.	Complient with Zoning and Future Land Use	High	Based on City of Chicago planning and development documents
4	Respect community context and identity.	Number of Anticipated Displacements	1	Number of displacements required
		Degree of Potential Effect on Neighborhoods	High	Based on public comments for the alternative
		Effects on Community Cohesion	High	
5	Promote equitable distribution of project benefits and impacts.	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	
Goal 3: Regional Transit System Performance			◔	
1	Increase capacity and ridership.	Opening Year Preliminary Daily Ridership	Medium-High	Travel forecast results compared to other alternatives (July 2009)
		Forecast Year Preliminary Daily Ridership	Medium-High	
		Opening Year Annual Riders (System-wide)	Medium-High	
		Forecast Year Annual Riders (System-wide)	Medium-High	
		Daily Station/Stop Boardings	Medium-High	
2	Enhance efficiency and cost effectiveness.	Capital Costs per Passenger Mile (163 M)	Low	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	Ford City terminus to Loop
5	Integrate existing transit infrastructure, where feasible.	System Criteria Compatibility	High	Compatible with existing Orange Line or Midway terminal station
		Interoperability with Existing Service	High	
		Consistency with Existing Infrastructure	High	
Goal 4: Safety and Security			○	
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
Goal 5: Environmental Quality			◔	
1	Limit impacts.	Potential for Negative Visual Impact	Medium-High	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-High	Noise and vibration analysis
		Wetland Impacts	Medium-High	Number of delineated or potential wetlands impacted
		Critical Habitat Impacts	High	Number of critical habitats impacted
2	Support environmental benefits.	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
Performance Rating Scale:			● ◕ ◒ ◔ ○ Poor (Low) -------- Medium -------- Good (High)	

6.0 PUBLIC INVOLVEMENT

6.1 Public Involvement Approach

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

6.1.1 Description of Outreach Program

Over the course of the AA study, two presentations were conducted within the Orange Line Extension AA study area to encourage the general public's participation at key project stages described later 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 Orange 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 has had continual access to the project's public outreach presentation materials on the Orange Line Extension AA study web link via the Chicago Transit Authority's website (www.transitchicago.com). In addition to presentation materials, the website provides information on how to submit comments and questions to CTA via e-mail 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. CTA's community outreach database was also used. This database includes 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.

The study area encompasses parts of three community areas within the City of Chicago, along with portions of the Village of Bedford Park and the City of Burbank. Chicago community areas include portions of Ashburn, Clearing, and West Lawn. Outreach was conducted to the study

area as a whole, and CTA was also aware of the distinct neighborhoods and was able to identify critical local issues.

Two rounds of presentations took place over the course of the study: one for each level of alternatives screening. Because of the length of the Orange Line extension's alternative corridors, each round consisted of one public meeting. 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 screen previous participants were also notified by letter or e-mail. 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 round of meetings outlined the Purpose and Need of the Orange Line Extension Alternatives Analysis Study and presented the preliminary findings of Screen 1. The meeting's objective was to solicit public comments and questions. The second round of public meetings 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 potential LPA.

6.1.3 Stakeholders and Local Officials

Individual and group briefings were held to allow stakeholders and elected officials 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 were scheduled for the Orange 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 ministers, 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 was held with the Congressmen and Senators to provide the opportunity for them to comment on the recommended LPA.

Aldermen
Establishing a dialogue with aldermen inside and adjacent to the study area was critical for the public involvement efforts. Local aldermen served as a CTA resource to assist in helping CTA to expand the list of local stakeholders, engage their residents in the process, and identify local

issues pertinent to the AA process. Aldermen were briefed regularly and invited to participate in public meetings and local stakeholder meetings.

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 informed and explained potential local issues to CTA.

Surrounding Municipalities
The study area included portions of the Village of Bedford Park and the City of Burbank. CTA contacted these communities and the Southwest Conference of Mayors 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 Orange Line Extension AA Study Public Involvement included various meetings held in conjunction with each alternatives screening. Both rounds were conducted in a similar manner to ensure consistency.

Public Meeting Locations
The first step involved 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 during each round 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; and
- Encouraged to identify potential public meeting locations.

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

Public 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 Screens 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. Each facility accommodated 100 attendees.

Prior to each meeting, an internal rehearsal was held to evaluate the effectiveness of the meeting and identify potential improvements for future meetings.

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, technical project details, analysis, and recommendations.

Formal Presentation
The presentation consisted of a PowerPoint lasting approximately 25 minutes. An interpreter for the hearing impaired and translators for Polish and Spanish speaking individuals were 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 and given to staff to group into issue-themed categories. The moderator read the questions/comments to the audience and the presentation panel provided answers verbally.

All questions received regarding the Orange Line Extension Alternatives Analysis Study also were answered in writing, provided in a public meeting screening report to the Federal Transit Administration, and posted on the CTA website.

6.4 Screen 1 Public Involvement Summary

The CTA hosted a community meeting on August 19, 2008 at Ford City Mall from 6:00 to 8:00 P.M. The meeting presented 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, Chicago public libraries, local universities and colleges, aldermanic offices, customer alerts on CTA buses and stations (English, Spanish, and Polish) and postings at village halls adjacent to the study area. The community newspapers included the Clear Ridge Reporter (August 3rd), La Raza, a Spanish newspaper, (August 3rd-9th), Dziennik Zwiazkowy, a Polish newspaper, (August 1st-3rd), The Lawndale News (August 7th), The Southwest News Herald (August 3rd), The Southwest Shopper (August 3rd), and The Southtown Star Newspaper (August 4th). An online text only advertisement was placed with the Chicago Latino Network for their August E-Newsletter. Additionally, the Chicago Metropolitan Agency for Planning, Progressive Railroading Daily News, the Regional Transportation Authority, the Metropolitan Planning Council, and Escape Latino.com posted the public meeting information online via their websites. Village hall postings included Bedford Park, Bridgeview, Burbank, Evergreen Park, Forest View, Hometown, Oak Lawn, Stickney, and Summit.

Prior to the public meetings, CTA met with community leaders, chamber of commerce executive directors, and aldermen 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 rail line 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 29 elected officials. Ten meetings were held to brief interested elected officials. Included was a suburban mayors meeting where 3 suburban mayors met collectively. There were 82 stakeholders invited to participate in a briefing on the morning of August 19th, 2008. This briefing was held at Ford City Mall. Ten individuals attended representing seven organizations.

One hundred one people attended the public meeting. A total of 108 comments were received either at the meetings, via e-mail, or U.S. Postal Service. The majority of questions received were related to the likelihood of residential property acquisition. Additionally, community members asked specific environmental impact questions related to potential noise impacts. They inquired about station and community safety as well as the economic impacts related to the possibility of local jobs created during construction or after the completion of the transit line.

The official two-week comment period was extended one week to September 9, 2008. Questions and comments were responded to by CTA staff and posted to the website (www.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.

6.5 Screen 2 Public Involvement Summary

The CTA hosted a community meeting on April 22, 2009 at Richard J. Daley College from 6:00 to 8:00 P.M. The meeting presented Screen 2 findings and the recommendation for a LPA.

The CTA placed advertisements to inform the community of the proposed project and upcoming meeting through local community newspapers, websites, aldermanic offices, customer alerts on CTA buses and stations (English, Spanish, and Polish) and postings at village halls adjacent to the study area. The community newspapers included the Clear Ridge Reporter (April 5th), La Raza, a Spanish newspaper, (April 5th), Dziennik Zwiazkowy, a Polish newspaper, (April 3rd-5th), The Lawndale News (April 2nd), The Southwest News Herald (April 5th), The Southwest Shopper (April 7th), and The Southtown Star Newspaper (April 6th). An online text only advertisement was placed with the Chicago Latino Network for their April E-Newsletter. Additionally, the Chicago Metropolitan Agency for Planning, Progressive Railroading Daily News, the Regional Transportation Authority, and the Metropolitan Planning Council posted the public meeting information online via their websites and/or their e-newsletters. Village hall postings included Bedford Park, Bridgeview, Burbank, Evergreen Park, Forest View, Hometown, Oak Lawn, Stickney, and Summit.

Similar to the first phase of the AA Study, CTA met with community leaders and elected officials and/or their staff prior to the public meetings. 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 29 elected officials. CTA staff met with ten elected officials and/or staff during seven briefings that were held. Represented in the meetings were staff from a U.S. Congressional office, Illinois State Senators and Representatives, City of Chicago Aldermen, and Mayors and representatives from surrounding municipalities. There were 85 stakeholders invited to participate in a briefing on the morning of April 22, 2009. This briefing was held at Richard J. Daley College. Six individuals attended representing five organizations.

Using the database from the prior public meeting, the CTA invited participants whom attended the Screen 1 public meeting. One hundred and nine people were invited to participate by letter or e-mail. Translators for the Spanish and Polish speaking communities were available at the public meeting as was an interpreter for the hearing impaired. The presentation and meeting materials were made available on the CTA's website on the morning after the public meeting.

Fifty people attended the public meeting. A total of 50 comments were received either at the meetings, via e-mail, or U.S. Postal Service. The majority of questions received were related to economic and environmental impacts, focusing on the affect on local businesses in the area. In addition, almost a quarter of the comments received were in support of the LPA presented.

The official two-week comment period was extended one week to May 13, 2009. Questions and comments were responded to by CTA staff and posted to the website (www.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 online.

On August 12, 2009 the Chicago Transit Board met to adopt the LPA. A letter was sent to participants, stakeholders and agency outreach inviting them to submit comments or participate in the Board action. 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.

6.7 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.

7.0 NEXT STEPS

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 Federal Transit Administration (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 potential intermediate and terminal station locations;
- Right-of-way requirements;
- Impacts identification and proposed mitigation measures;
- Costs and possible phasing; and
- Evaluation of the cost effectiveness of project elements.

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