South Lakefront Corridor Transit Study

Comprehensive Report

prepared for

Chicago Department of Transportation

prepared by

Cambridge Systematics, Inc.

with

URS
O-H Community Partners
EJM Engineering
MKC Associates

November 2012

Preface

The South Lakefront Corridor Transit Study began with an assessment of the study area's existing travel markets, analysis of existing and projected land use and an inventory of the transit network infrastructure and operations. This information was documented in a technical report titled Existing Conditions Assessment, which was issued in November 2012.

This Comprehensive Report is a final deliverable of the South Lakefront Corridor Transit Study, which began in November 2010 and was completed in November 2012. This report consists of two parts: a Summary Report on the study, which was also issued as a stand-alone report, and a detailed description of the potential projects to be considered for implementation.

Acknowledgments

The authors of this report wish to acknowledge the following for their guidance and input during this study:

The Technical Advisory Committee

Staff representatives of:

- Regional Transportation Authority
- City of Chicago Department of Housing and Economic Development
- Chicago Transit Authority
- Metra

The Public Advisory Committee

Aldermen representing the study area including:

- Alderman Willie Cochran - Ward 20
- Alderman Pat Dowell - Ward 3
- Alderman Leslie A. Hairston - Ward 5

Representatives of the following organizations and institutions:

- Apostolic Church of God
- Active Transportation Alliance
- Blind Services Association
- Bronzeville Chamber of Commerce
- Center for Neighborhood Technology
- Chatham Business Association
- Claretian Associates
- Developing Communities Project
- Friends of the Park
- Illinois Institute of Technology
- Metropolitan Planning Council
- Quad Communities Development Corporation (QCDC)
- Southsiders Organized for Unity and Liberation (S.O.U.L.)
- Southeast Chicago Development Corporation (SEDCOM)
- South East Chicago Commission
- The Community Builders
- University of Chicago
- Urban Partnership Bank
- Washington Park Consortium

We would also like to thank the Metropolitan Planning Council for providing the facilities for the project PAC meetings.

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CAMBRIDGE SYSTEMATICS

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prepared by

Cambridge Systematics, Inc.
115 South LaSalle Street, Suite 2200
Chicago, IL 60603

with

MKC Associates

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Final

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1.0 Introduction

The South Lakefront study area currently is served by a variety of transit services, including Chicago Transit Authority (CTA) local and express bus routes, CTA Red and Green Line rail rapid transit, Metra Electric District (MED) commuter rail service and local shuttle routes. Over the years, community leaders have expressed a desire for improvements to the public transportation services to meet the area's current and future transportation and economic needs. The study area includes a diverse assortment of neighborhoods from vibrant, active communities to struggling communities overburdened with vacant lots. Each of these neighborhoods, despite their differences, relies on the same bus routes, rail lines, and roadways to meet their diverse transportation needs. The study was initiated in order to identify gaps in the existing public transportation network's ability to meet current and future needs and to develop, evaluate, and recommend improvements to the public transportation network that can address those needs.

1.1 Study Purpose

The purpose of this study was to identify public transportation improvements that will enhance mobility for residents of the study area communities and increase access to jobs located throughout the city and surrounding areas. The study evaluated the costs and benefits of several transit improvement alternatives in order to recommend candidate projects, programs, and policies that merit more rigorous evaluation.

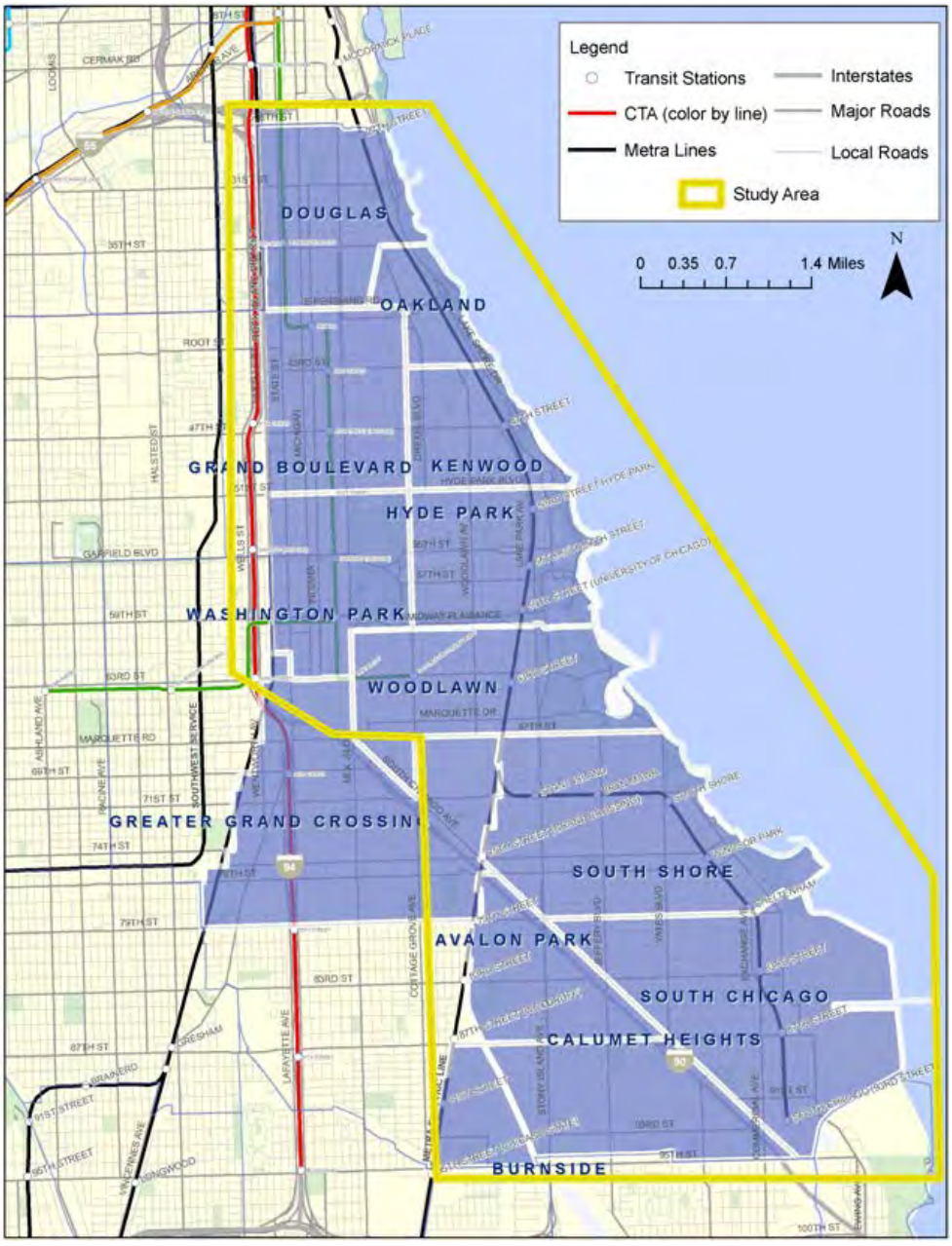
Over the last 20 years, the city, businesses, and the civic community have demonstrated strong leadership and commitment in working to address many of the economic and social challenges in the study area. This study further supports this ongoing commitment by encouraging dialogue among area residents, community leaders, institutions, developers, and city and regional transit and transportation officials.

The study developed consensus on the main transit-related issues and problems in the study area and on the most important transit system investments and related community development projects so that they can be advanced to more detailed study.

1.2 Study Area

The South Lakefront Corridor study borders are the lakefront on the east; the Stevenson Expressway on the north; the Dan Ryan Expressway, Norfolk Southern rail yard and Cottage Grove Avenue on the west; and 95th Street on the south. See the map shown in Figure 1.

Figure 1. Map of Study Area



The study area encompasses all or part of the following 13 communities:

- Douglas;
- Grand Boulevard;
- Oakland;
- Kenwood;
- Hyde Park;
- Woodlawn;
- South Shore;
- South Chicago;
- Washington Park;
- Avalon Park;
- Calumet Heights;
- Greater Grand Crossing; and
- Burnside.

The study area currently is served by the Chicago Transit Authority (CTA) Red and Green rapid transit lines, CTA local and express bus routes, and the Metra Electric District commuter rail trains.

The communities in the study area, though each have their own unique characteristics, share common transit corridors and historically have faced a similar array of economic and social challenges. These challenges include concentrations of low- to moderate-income residents, comparatively high unemployment rates, and limited retail and service businesses.

1.3 Project Approach and Scope

The study scope included analysis of existing transit service and infrastructure conditions in the study area, analysis of demographics and travel markets, analysis of existing land use and development opportunities, identification of needs and opportunities for improvements, and development and evaluation of example projects for further study. The study also included an extensive public and stakeholder involvement component.

Transportation issues within the study area generate a lot of interest within the community and therefore the approach for the study was to include community stakeholders and elected officials, as well as the Regional Transportation Authority, the transit providers, and the City of Chicago, in framing transit options for discussion and analysis. A Technical Advisory Committee (TAC) composed of representatives from the City and the transit agencies, provided technical guidance and direction. A Public Advisory Committee (PAC) composed of TAC members, public officials, and representatives of community organizations, institutions, and business groups provided the study with the community perspective and feedback on technical study components prior to meetings with the broader public.

The study produced several interim documents, described below.

Technical Memorandum 1: Existing Conditions Assessment dated June 7, 2011 documented the study area's socioeconomic profile, travel patterns, land uses, development, and transit services, infrastructure, and utilization.

The *Preliminary Alternatives* report dated September 16, 2011 listed transit improvement options developed for the study area ranging from small bus service improvements to major capital improvements. The list of improvement options was quite long and included projects suggested by the literature review, *Technical Memorandum 1*, and members of the Technical and Public Advisory Committees. In addition, a public meeting was conducted to identify issues important to the community at large and stakeholders were interviewed to determine what they felt were the major issues that needed to be addressed in the study. The detailing of major issues led to a set of objectives for the study to address. With these objectives in mind, the options were evaluated to derive a set of feasible alternatives that warranted more detailed review.

The alternatives were grouped into the following categories and examples from each category were further analyzed:

- Improvements to Existing CTA Bus Network;
- Improvements to Existing CTA Rail Network;
- North-South Bus Rapid Transit (BRT) and Streetcar;
- East-West BRT or Enhanced Bus;
- Changes to Metra Electric District Rail; and
- Other Improvement Ideas.

In addition to the service improvement categories listed above, the *Definition and Evaluation of Potential Projects* dated August 31, 2012 provided an overview and evaluation of Transit-Oriented Development for the study area. Assessments for each example project as well as next steps toward implementation were prepared.

1.4 Overview of Public Involvement Approach

A major activity of this study was the public involvement effort and coordination with key stakeholders. A public involvement plan was prepared early in the study process which identified key stakeholders and specified strategies that were used to inform and invite stakeholders and the public to participate in the South Lakefront Corridor Transit Study.

The goal of the Public Involvement Plan was to give the general public and key stakeholders opportunities throughout the study process to influence the transportation decisions being made for their community. The Public Involvement Plan had three objectives:

1. Identify stakeholder priorities for future transit operations and infrastructure improvements, and transit-oriented economic development to meet current and future needs;

2. Review and refine the recommendations based on stakeholder priorities; and

3. Promote and build broad public awareness of the recommendations.

The Public Involvement Plan included the following key involvement strategies; formation of a Public Advisory Committee, a series of public meetings, an information sharing campaign, and individual stakeholder meetings.

The Public Advisory Committee (PAC) served as the core group responsible for overall advice and guidance throughout the South Lakefront Corridor Transit Study process. The PAC assisted the City and the project team with building partnerships and sharing information with elected officials and community leaders as well as the public at large. The PAC advised the City on how to best engage the broader community. Formal meetings were held with PAC members throughout the project and were particularly helpful in forming the presentations at public meetings.

The public meetings provided an opportunity for local residents, community leaders, and business owners to hear updates on the transit study, offer their opinions, share their concerns, hear other view points, and provide the project team with a snapshot of community concerns and reactions to particular proposals. Three public meetings were held to encourage dialogue between the project team and the general public. The meetings were advertised to the public through the news media, community organizations, O-H Community Partners' e-mail distribution list, through social media networks, and through the PAC members' networks.

In order to reach a broad spectrum of community members, the information sharing campaign relied on a combination of traditional and new communication techniques to share information about the study. Fact sheets, e-blasts, and e-newsletters were sent to people who sent a note to the e-mail address, Facebook friends, and to the public meeting attendees. PAC members also were asked to send the materials to their networks and to include study information in newsletters and other communication methods that they managed.

Individual Stakeholder Meetings were conducted with individuals recognized as community leaders, elected or appointed officials, agency staff members, and neighborhood activists. The main purpose of the stakeholder interviews was to exchange information on project goals, study process, issues and needs to be addressed, and obtain comments regarding alternative solutions or recommendations. The interviews allowed the project team to learn about the stakeholders' perceptions of study area transit needs. The interviews also provided an opportunity to obtain details on sensitive issues and learn about community priorities that are sometimes difficult to bring forth and address in a more public setting.

1.5 Study Outcome

Transit service and facility improvement ideas were identified through a robust public involvement process. A total of 37 improvements were suggested. All of these projects have merit but it was not possible to evaluate them all. Projects were chosen for analysis based on the goals and objectives, and subsequent evaluation criteria, developed by the stakeholders. The study evaluated 9 potential projects and provided estimates of ridership potential, capital costs, and operating costs for each. An additional 11 projects were identified and described, but estimates of ridership and costs were not developed.

Of particular interest to many stakeholders was the analysis of MED alternatives, and whether any of these alternatives should be advanced for further study and eventual implementation. This study analyzed only one of these alternatives – the Gold Line. Based on several factors, including funding opportunities, cost-effectiveness, and development potential, the Gold Line project is not recommended to advance. However, the upcoming regional fare payment system mandated by the Illinois legislature to be implemented by 2015 may have an impact on ridership patterns in the South Lakefront Corridor. These impacts should be monitored and analyzed to discover any indications that the Gold Line, Gray Line, or extension of Green Line may produce sufficient ridership for cost-effective operation.

This study identified a corridor of relatively high population density without high-speed transit service between 35th and 55th Streets centered along Ellis Avenue. To address this issue and in response to public comment, BRT and streetcar alternatives on Cottage Grove Avenue were evaluated. The BRT is the lower-cost alternative, but with correspondingly lower ridership projections. It is recommended that both alternatives be reviewed further, considering the City of Chicago's BRT plans and with community input, to determine the optimum mode.

The study also identified a need to improve travel in the east-west direction, particularly on 79th Street, 83rd Street, and Garfield Boulevard. Route #79 ranks as the highest ridership bus route in the CTA system. Physical improvements to the 79th Street corridor, such as queue jump lanes and transit signal priority, could significantly improve speed and reliability for this route which represents a relatively large segment of CTA's riders. These improvements will be difficult to implement in this narrow corridor, but are relatively low cost and are recommended.

There is a one-mile gap without east-west bus service between 79th and 87th Streets. North of 79th Street, bus service is provided roughly every half-mile; whereas south of 79th Street, bus service is provided approximately every mile until 119th Street. The community identified this gap as a mobility issue and the study included an evaluation of a bus route on 83rd Street from the proposed Lakeside development to the Walmart at Stewart Avenue and 83rd Street. The evaluation showed that a bus route along 83rd Street would be cost-effective, although it is not clear how many of the projected riders will be diverted from other bus routes as opposed to the route attracting new riders to the system. A JARC grant has been obtained to provide some of the operating cost of this route however, the local match has not been identified. It is recommended that this project be implemented when local match funding is identified, and that ridership in the corridor, including routes #79 and #87, is monitored to determine the net ridership increase.

The number of trips between the study area and area surrounding Midway Airport is high, but the transit share of these trips is relatively low. A BRT service on Garfield Boulevard would provide a higher level of service in this corridor and could increase the transit share of trips to the Midway Airport area. Implementation of gold standard BRT would substantially impact parking availability in the corridor, and this requires further discussion within the community. It is recommended that this alternative be reviewed further, considering the City of Chicago's BRT plans and community input.

The two remaining example project improvements, rail station enhancements and Transit-Oriented Development (TOD), also are recommended for advancement. Guidance to promote station enhancements and TOD are provided in the *Definition and Evaluation of Potential Projects* report.

2.0 Existing Transportation Infrastructure, Services, and Ridership

The study area is entirely urban and is served by a network of transit and transportation infrastructure, including buses, trains, and roadways. This section provides an overview of the study area's existing transit network, and the types, characteristics, and levels of service provided by this network.

2.1 Metra Electric District (MED)

Metra provides commuter rail service in northeastern Illinois, operating 11 different lines that connect one of four downtown Chicago terminals with the region's suburbs and selected urban neighborhoods. Within the study area, Metra provides service on its Electric District (MED) line. The Main line of the Electric District operates between Millennium Station in downtown Chicago and the Village of University Park in Will County, with two branches off of this line serving the southeast side of Chicago (South Chicago branch) and some of the south suburbs of the city (Blue Island branch). The study area is served by stations located on a portion of the Main line and the South Chicago branch. (Blue Island branch trains provide much of the service to Main line stations in the city located south of 59th Street.) Stations from 59th Street north are served by the Main line service and the two branches. A large segment of the South Chicago branch has its two tracks located in the median of an arterial roadway with intersecting streets. The Main line operates on four tracks in an exclusive rail right-of-way located on an embankment. The Main line is shared with Northern Indiana Commuter Transportation District's (NICTD) South Shore Line which provides service between Millennium Station and South Bend, Indiana.

Metra service is primarily designed to serve peak-period commuting trips into downtown Chicago with more limited off-peak and weekend service; this is the most prevalent usage pattern as well. As of 2006 (the most recent year that boarding counts are available), more than 60 percent of boarding customers in the study area are traveling inbound during the a.m. peak period. The South Chicago Branch in particular is very heavily weighted toward use by peak period inbound commuters.

Service along both the Electric District Main line and South Chicago branch operates on a set timetable. During the week, Metra provides service from 5:00 a.m. until midnight. Service frequency during the peak period varies by location with some of the busiest Main line stations at 10-minute frequencies, but frequencies at most stations is every 20 to 30 minutes. Hourly service is provided at other times during weekdays and on Saturdays. On Sundays, Metra operates limited service with trains generally running every two hours in either direction from early

in the morning until late at night. Many of the stations along the Main Line, particularly those south of 59th Street, are "flag stops" where trains do not stop unless requested by a passenger.

The Metra Electric District line operates bi-level trains powered by catenary wire. Average age of the electric cars is approximately 32 years of age and Metra is using state capital bond funding to purchase new cars that will completely replace the existing fleet of Highliner electric cars. Full delivery of vehicles is anticipated within the next 5 years.

Metra reports that track along the Metra Electric District line is in good condition. Some elements of the supporting infrastructure would benefit from upgrades, including substations, signals, and catenary. Metra stations along the Main line vary in character, access, and passenger amenities from those along the South Chicago branch. The Main line stations are typically concrete pads next to the tracks that are located on top of embankments and accessed by stairs. These stairways are generally located within the track viaduct infrastructure and accessed from the sidewalk of the adjacent roadway. The typical pedestrian environment when accessing these stairways is unwelcoming, and locating the access point to the station can be difficult because of a general absence of pedestrian signage. With the exception of the 53rd Street (Hyde Park) and 55th-56th-57th Street Stations, Main line stations typically have passenger waiting areas that offer limited protection from the weather, limited seating and are not staffed by Metra personnel. Main line stations were built in 1925; stations at 47th Street (Kenwood), 53rd Street (Hyde Park) and 55th-56th-57th Street were reconstructed in 2005.[1]

The South Chicago branch station platforms are located in the middle of the tracks and are typically accessed from either an ADA-compliant ramp or small set of stairs. Pedestrians typically access these station entrances via crosswalks across East 71st Street or South Exchange Avenue. Metra personnel do not staff these stations. Stations along the South Chicago branch were all rehabilitated/rebuilt between 2000 and 2007.[2]

Although the most recent Metra ridership data available is from 2006, shown in Table 1, the service patterns and schedule for Metra has been relatively stable and consistent along the Electric District line. Public concerns about the MED service in the study area (elaborated on in subsequent sections) include infrequent service (compared to CTA rapid transit), lack of fare integration with CTA which discourages multimodal trips (use of CTA for access and egress) and conditions at stations.

[1] URS Corporation, et al., "Regional Transportation Authority Capital Asset Condition Assessment," August 2010, Appendix A-3a: Metra Inventory Tables, page 80.

[2] Ibid.

Table 1. 2006 Typical Weekday Boardings and Alightings from Study Area Metra Stations

Station Name	Inbound Boardings				Outbound Boardings			
	AM Peak	Midday	PM Peak	PM	AM Peak	Midday	PM Peak	PM
Main Line	1,731	392	247	86	76	289	697	93
South Chicago Branch	1,938	265	77	40	6	5	11	3
Total	**3,669**	**657**	**324**	**126**	**82**	**294**	**708**	**96**

Source: RTAMS, 2006.

2.2 CTA Rail

The CTA operates a heavy rail (i.e., rapid) transit network that is centered on downtown Chicago and serves much of the city as well as a number of near-in suburban areas. There are two CTA rail lines serving the study area, the Red Line and the Green Line.

The Dan Ryan (i.e., southern) Branch of the Red Line operates in the median of the major south-side expressway, with stations located at major street overpasses. Red Line service is provided 24 hours a day throughout the week, with trains operating at less than 5-minute headways during peak periods, 10 minutes during off-peak times, and every 15 to 20 minutes overnight or on weekends. During late night and overnight time periods, some CTA bus routes alter service patterns to feed into the Red Line to transport people to the downtown area.

The South Branch of the elevated Green Line operates to the east of the Dan Ryan, generally along South State Street and South Prairie Avenue. South of 59th Street, Green Line service splits into two branches, with the East 63rd Branch terminating at South Cottage Grove Avenue in the study area and the West Branch terminating outside the study area. Green Line service is provided seven days a week between 4:00 a.m. and 1:00 a.m. Headways are generally 8 minutes during peak periods and 10 to 15 minutes off-peak. Because trains alternate serving the two branches south of 59th Street, the two stations along the East 63rd Branch see half as many trains as the remainder of the Green Line stations in the study area.

The CTA is in the process of purchasing new (5000-series) rail cars. These cars will replace 2200- and 2400-series cars, which have exceeded their expected service life of 25 years. These new cars will make up a large portion of the CTA's current fleet requirement of 1,190 rail cars.

As rail infrastructure ages but funding is unavailable for repair work, the CTA institutes "slow zones" to reduce operating speeds over the affected track. The Red Line has been disproportionately affected by such slow zones. In June 2012, CTA announced its proposal to close the Red Line in the study area for five months to accommodate an accelerated schedule for these repairs.

CTA Red and Green line stations in the study area vary in that Red Line stations are located within the median of the Dan Ryan expressway and Green Line stations are elevated. Both Red and Green Line stations house ticket vending machines, CTA personnel, system information, and turnstiles. Platforms are reached via escalator, stairway, or elevator from the main station structure, and typically offer a covered canopy, seating, a public audio address system, and variable message boards. (Note that several stations in the study area are not ADA accessible, including King Drive on the Green Line and Garfield, 63rd Street, and 87th Street on the Red Line.) Connections to CTA bus routes are typically located immediately adjacent to the station entrances. Red Line stations within the study were placed in service in 1969 and were either reconstructed or repaired in either 2001 or 2005.[3] Green Line stations were placed in service in 1892 and 1893. Station reconstruction occurred between 1983 and 2001; the 35th Street-Bronzeville-IIT station was repaired in 2001 and the King Drive station was repaired in 1991-1993.[4]

There are roughly 29,000 average weekday boardings at CTA rail stations in the study area, and approximately 60 percent of this ridership occurs at Red Line stations. None of the Green Line stations has a higher number of station boardings than any of the Red Line stations in the study area as shown in Table 2.

Table 2. Average Weekday Entering Ridership at CTA Stations

Station	Line	September 2011
63rd	Red	3,782
Garfield	Red	4,123
47th	Red	3,680
Sox-35th	Red	6,018
Cottage Grove	Green	1,480
King Drive	Green	695
Garfield	Green	1,463
51st	Green	1,279
47th	Green	1,478
43rd	Green	1,121
Indiana	Green	1,058
35th-Bronzeville-IIT	Green	2,624

Source: RTAMS, CTA Ridership Reports.

[3] URS Corporation, et al., "Regional Transportation Authority Capital Asset Condition Assessment," August 2010, Appendix A-2a: CTA Asset Inventory Tables, page 121.

[4] Ibid, Appendix A-2a: CTA Asset Inventory Tables, page 123.

Ridership at Red Line stations in the study area has grown in recent years, while boardings at Green Line stations have generally fallen over the past five years, particularly at the stations at the far southern end of the line (Garfield, King Drive, and Cottage Grove). Increases in ridership at Indiana and 43rd could be the result of increased residential development that had been occurring in the northern portions of the study area through the mid-2000s.

Some members of the public expressed concerns during this study about the conditions at some CTA rail stations and in the areas around stations that they believed may inhibit ridership. The study undertook a special review of the stations identified by the public and found that stations were not in need of major repairs but recommendations for continuing maintenance in and around the stations were identified.

2.3 CTA Bus

A gridded network of CTA bus service serving the study area can generally be categorized into three service types: local, express and neighborhood circulators.

CTA local bus service in the study area consists of 24 bus routes operating on the street grid network with north-south bus routes connecting to east-west routes. The routes are generally spaced every half-mile to one-mile apart. With the exception of routes #1, #24, #39, #59, and #100, each of the bus routes operates throughout the day seven days per week, with headways ranging from less than 5 minutes during the peak periods to every 15 to 30 minutes during the off-peak. Route #4 provides north/south local bus service overnight as far south as 63rd Street, while routes #55, #63, and #79 provide east-west local bus service overnight.

The five existing express bus routes collect customers from neighborhoods and corridors within the study area and then travel express to downtown along Lake Shore Drive. Routes #2, #6, and #X28 each travel express from 47th Street, while routes #14 and #26 each travel express from 67th Street. Of these routes, only routes #6 and #14 provide daily service outside the peak travel periods on weekdays. The express routes have varying origins in the southern portion of the study area, and also serve different portions of the downtown (thus providing options for commuters working in the various downtown districts). Customers may choose one or another of these routes based not only on proximity to their home, but proximity to their downtown destinations as well. Several express (limited-stop) bus routes in the study area were cut as part of a systemwide service reduction in 2010 due to budget constraints. These include routes on Cottage Grove Avenue, King Drive, and Garfield/55th Street.

Four neighborhood circulators serve the study area. These include three routes (#170, #171, and #172) that serve the needs of students, employees, and visitors at the University of Chicago. In addition, the #N5 bus route connects the South Shore neighborhood to the CTA Red Line during the overnight period, when many other bus routes are no longer operating.

In addition to those mentioned above, route #10 is a special service that operates only during the summer months and on holidays, and exists primarily to shuttle tourists to and from the Museum of Science and Industry. Route #192 also serves a specific market, commuters from the downtown Metra terminals to the University of Chicago and its associated medical facilities.

The CTA currently operates a fleet of 1,782 buses. The CTA has heavily invested in its bus fleet in recent years, including the purchase of 1,293 new buses between 2006 and 2009. These buses are fully accessible and air conditioned, and are equipped with ADA-compliant LED destination signage; automated GPS next-stop announcement system; security cameras; and bicycle racks. CTA's Bus Tracker System enables passengers to use computers, smart phones and/or text messaging to find out when the next bus will arrive at their stop.

The character and level of passenger amenities at CTA bus stops varies widely. While some stops are little more than a metal pole with CTA signage attached, others offer semi-enclosed shelters with seating and real-time transit system information. The shelters are provided through an agreement between the advertising firm, JCDecaux, and the City of Chicago. The CTA works with the City to determine which stops receive shelters, and the process is guided by a number of factors, including available space in the public way, proximity to an electrical connection and aldermanic input.[5]

Ridership on CTA bus service is significantly affected by changes in service levels and patterns on a year-to-year basis, making direct comparisons across years difficult. Table 3 illustrates the average weekday ridership on CTA's current bus routes serving the study area.

Some members of the public expressed concerns during this study about overcrowding, speed, and service reliability on busy routes, particularly on bus routes #79 and #3.

Table 3. Average Weekday Ridership on Current CTA Bus Routes

#	Route Name	Route Type	September 2011
1	Indiana/Hyde Park	Local	3,092
2	Hyde Park Express	Express	2,895
3	King Drive	Local	23,800
4	Cottage Grove – OWL	Local	25,739
N5	South Shore Night Bus – OWL	Circulator	570
6	Jackson Park Express	Express	12,158
10	Museum of Science and Industry	Circulator	1,375
14	Jeffery Express	Express	13,011
15	Jeffery Local	Local	9,518
24	Wentworth	Local	3,792
26	South Shore Express	Express	3,352
28	Stony Island Local	Local	5,781
X28	Stony Island Express	Express	4,558
29	State	Local	16,096
30	South Chicago	Local	4,099
35	35th	Local	5,826
39	Pershing	Local	2,448

[5] Tracy Swartz, "Western wears the shelter crown," *Chicago Tribune*, January 5, 2010.

#	Route Name	Route Type	September 2011
43	43rd	Local	2,468
47	47th	Local	12,482
55	Garfield – OWL	Local	14,448
59	59th/61st	Local	4,350
63	63rd – OWL	Local	23,095
67	67th – 69th-71st	Local	16,103
71	71s/South Shore	Local	10,840
75	74th -75th	Local	9,148
79	79th -OWL	Local	34,834
87	87th -OWL	Local	17,535
95E	93rd -95th	Local	5,722
100	Jeffery Manor Express	Express	1,090
170	University of Chicago/Midway	Circulator	254
171	University of Chicago/Hyde Park	Circulator	1,031
172	University of Chicago/Kenwood	Circulator	1,667
192	University of Chicago Hospitals Express	Express	797

Source: RTAMS, CTA Ridership Reports.

2.4 Key Findings and System Improvement Opportunities

The study area is generally well served by the existing transit network: CTA bus, CTA rail, and Metra commuter rail service. CTA Service Standards specify that during peak hours buses will have up to 60 passengers on-board a standard 40-foot bus. At these loads, over 20 passengers will be standing. An analysis of CTA rail peak loadings and Metra's capacity utilization rates suggest that the existing travel demand appears to be met by existing service. Changing market conditions and development could change that situation, especially in the northern subareas and at the U.S. Steel (USX Southworks) redevelopment site (proposed Lakeside project).

There are two comparatively high-density areas in the study area that may be seen as underserved, as portions are more than a half-mile from rail stations:

1. The Cottage Grove Avenue corridor between 35th Street and Garfield Boulevard in the Oakland, Kenwood, and Grand Boulevard neighborhoods. This area includes numerous high-density residential districts, and although it is located adjacent to Lake Shore Drive and the Metra Electric District right-of-way, is not within a half-mile of a rapid transit service connecting into the downtown. This corridor is, however, served by CTA's #4 Cottage Grove bus route, which provides daily local service 24 hours per day. The Cottage Grove Corridor between the Loop and Hyde Park, which has higher densities and experiences more development, is probably the only section in the study area that could support major new rail investment.

2. The South Chicago neighborhood along Yates Boulevard south of 79th Street. This area lies between the South Chicago Branch of the Metra Electric District to the east, and the CTA express bus (Routes #14 and #X28) to the west.

The bus network in the study area is well-utilized by residents and workers, and remains the most commonly used mode for north-south trips, despite the presence of the three rail transit corridors. Bus system service improvements that would most directly impact the existing customer base would be improvements to travel times and reliability. This could include improved frequency or span of service on existing routes, additional (or restored) express bus service, or lower-cost infrastructure investments (e.g., transit signal priority, bus-only lanes) that improve schedule adherence and reduce travel time.

Existing and foreseen development patterns along Metra's South Chicago branch would be unlikely to justify major new investment in the line, and it is questionable that the market would support significantly higher service levels. There are other lower-cost changes in service attributes that could improve the quality of service, such as improved headways where and when they are most deficient and more attractive stations with passenger amenities where current stations are deficient. The much- (and long-) discussed regional fare system (now mandated to be in place by 2015) would be especially attractive to transit users in the study area and might significantly increase use of the MED.

All potential investments in new and improved transit services need to be considered in the context of Metra's and the CTA's backlog of State of Good Repair projects and constrained operating budgets, which have delayed already planned rail line projects. The need to obtain a local funding match and the added expense of operating new service (which Federal funds do not pay for) would probably preclude the advancement of any major investment into the process of seeking Federal funding for infrastructure improvements.

3.0 Existing Demographics and Travel Markets

3.1 Demographics

The South Lakefront study area is home to about 340,000 people and 135,000 households in 13 community areas. Together, these 13 community areas constitute about 11.5 percent of the population of the city of Chicago.

The study area has a population density of about 12,800 persons per square mile, which is almost exactly the same as the population density of the city of Chicago as a whole. The most densely populated parts of the study area are concentrated along the Metra Electric District line. Key characteristics of the population in the study area are shown in Table 4.

According to the CMAP 2009 population and employment data, the study area has a total employment of about 67,000 jobs, or about five percent of the 1.3 million jobs in the city. Close to 63,000 of these jobs are in non-retail sectors. Just a little less than half of the employment in the study area is located in the Hyde Park community area, due largely to the presence of The University of Chicago. The Douglas community in the northern part of the study area is the next biggest employment center with about 10,800 jobs. Most of the other community areas host relatively few jobs.

Table 4. Key Characteristics of the Population in the Study Area

Characteristic	Comparison to Citywide	Study Area	Citywide Average
Household Size	Smaller Household	69% are one- or two-person households	64%
Household Workers	Fewer Working Adults	38% of households have no working adults	26%
Household Vehicles	Fewer Vehicles	35% of households have no vehicles	25%
Household Vehicles versus Workers	Same	33% of all households in the study area had fewer vehicles than workers in the household (i.e., a "vehicle deficit"). The highest proportion of households with a vehicle deficit was in Hyde Park, followed closely by Kenwood, Woodlawn and Washington Park.	33%

Characteristic	Comparison to Citywide	Study Area	Citywide Average
Household Income	Lower Income	42% of households in the study area have annual Incomes less than $25,000	29%
Unemployment Rate	Higher Rate	17%	10%
Senior Citizens	Larger Proportion	13% of the population was age 65 and over	10%

Source: American Community Survey 2005-2009 data.

3.2 Trip Patterns

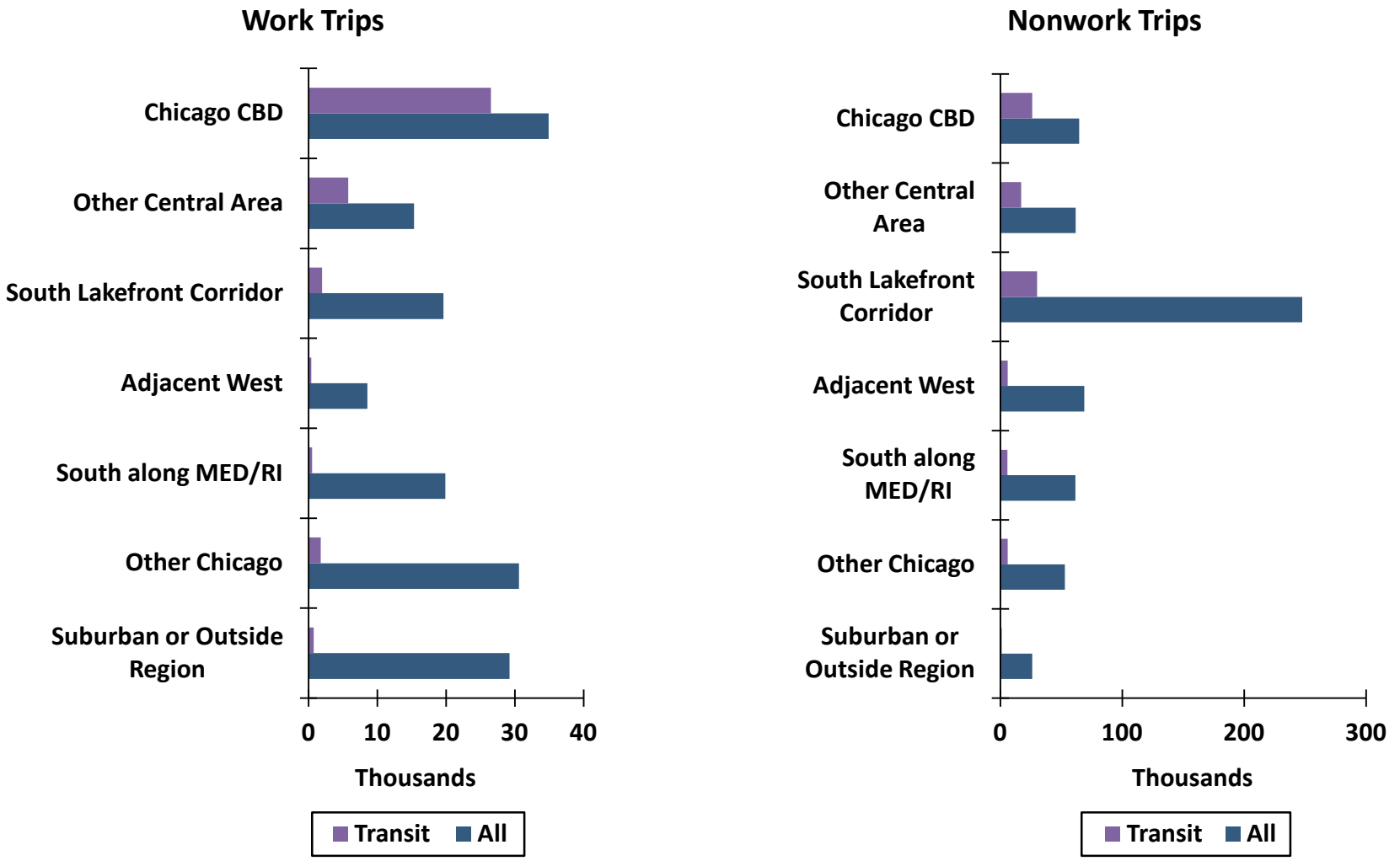
Residents of the study area produce a total of 741,000 daily trips (for all purposes) on auto and transit modes combined. Further, the study area attracts 535,000 daily trips (for all purposes) on auto and transit combined. The large difference between the trips produced and attracted is a reflection of the fact that the study area is more residential than commercial in nature. Of the 741,000 trips produced by the residents of the study area, only 267,300 trips, or roughly 26 percent, have attractions within the study area. The market share of transit for trips that start and end within the study area is about 12 percent.

Of the 741,000 daily trips produced in the South Lakefront study area, 610,000 trips use an automobile, while the remaining 131,000 trips (or 18 percent) use transit. Of the 535,000 daily trips attracted to the study area, 477,000 trips use an automobile, while the remaining 58,000 (or 11 percent) trips use transit. Transit use, therefore, appears more prevalent for trips produced in the study area, than for trips attracted to the study area. The Kenwood and Hyde Park area is the most active portion of the study area, both producing and attracting the highest number of trips in the study area and accounting for 22 percent of all trips.

Residents of the study area generate a little over 158,100 daily trips for work commute purposes, and the jobs located in the study area attract about 82,000 work trips. Transit serves about 24 percent of work trips produced in the study area but only 7 percent of those attracted to the study area. Transit serves 10 percent of those work trips made entirely within the study area. The Hyde Park and Kenwood area is the most active generator and attractor of work trips accounting for 31 percent of work trips.

Figure 2 below shows the destinations of trips generated for work and nonwork purposes by study area residents taken on all travel modes and on transit.

Figure 2. Characteristics of Work and Nonwork Trips From the Study Area



Source: Chicago Metropolitan Agency for Planning (CMAP) 2010 Travel Demand Model Estimate.

3.3 Current Trips on CTA

The CTA Origin-Destination (O-D) survey conducted in 2007 indicated that a little over 100,000 CTA trips were produced in the study area, while about 89,000 trips were attracted to the study area, and more than 35,000 trips occurred entirely within the study area. Riders making trips entirely within the study area were the most transit-dependent, with close to 80 percent of the riders indicating that they did not have a private vehicle available for the reported trip. Walking is the dominant mode for accessing CTA bus and rail.

Work trips constituted the majority of trip purposes on CTA across all time periods. School trips were the next major category. Nearly 20 percent of all CTA riders traveling from the study area were students. More than 25 percent of riders traveling to the study area during the AM peak were traveling for school. This share is most likely influenced by the University of Chicago students.

Of the more than 100,000 inbound CTA trips during the AM peak, about 40 percent had a destination in the CBD. The shares of trips destined to the CBD decrease to 33 percent, 14 percent, and 20 percent for the midday, PM peak, and evening period, respectively.

3.4 Current Trips on Metra

The Metra OD Survey conducted in 2006 indicated that work and school trips predominate. Work was the most popular trip purpose, nearly 85 percent, for trips from the study area towards downtown. School was a popular purpose, particularly for trips in the outbound direction destined to the study area.

A substantial share of inbound travelers on the South Chicago branch, more than 35 percent, use drive access. Drive access also is high for inbound travelers destined to the study area from the Main line stations located south of the study area. This segment also had a sizeable share using the "drop-off" mode. This may point to relatively long access trips and limited mobility options among this segment.

A sizeable share of outbound travelers from the study area used carpools for access to the stations. This also may imply that travelers in this segment have low levels of vehicle ownership and limited mobility options for their work and school trips.

Riders traveling to the study area on the outbound trains predominantly walk to their downtown stations but some also use other transit options.

As expected, most of the riders boarding Metra at study area stations were destined to downtown. The majority of destinations are located within the Loop. Riders alighting at Van Buren seem to travel to locations along Van Buren and Jackson Street and probably all the way to the locations near Union Station by CTA buses. In the morning hours (until noon when the survey ended), more than 2,200 riders from the study area exited at Randolph Street (Millennium Station) and more than 1,000 riders exited at Van Buren Street station.

Hyde Park stations attract most of the riders traveling to the study area. Three stations in Hyde Park attracted more than 1,100 riders combined (until noon). Other stations with sizable alightings include 27th Street, 63rd Street, and 93rd Street (South Chicago).

There is a compact group of riders residing in Hyde Park close to station locations. The South Chicago branch riders seem to reside along the rail line, however, the 93rd South Chicago station attracts a substantial amount of riders from outside the study area. Concentrations of riders were observed along Torrence Avenue and South Commercial Avenue, in the East Side as far south as 115th Street, and in the Whiting area in Indiana.

3.5 Key Findings and Market Opportunities

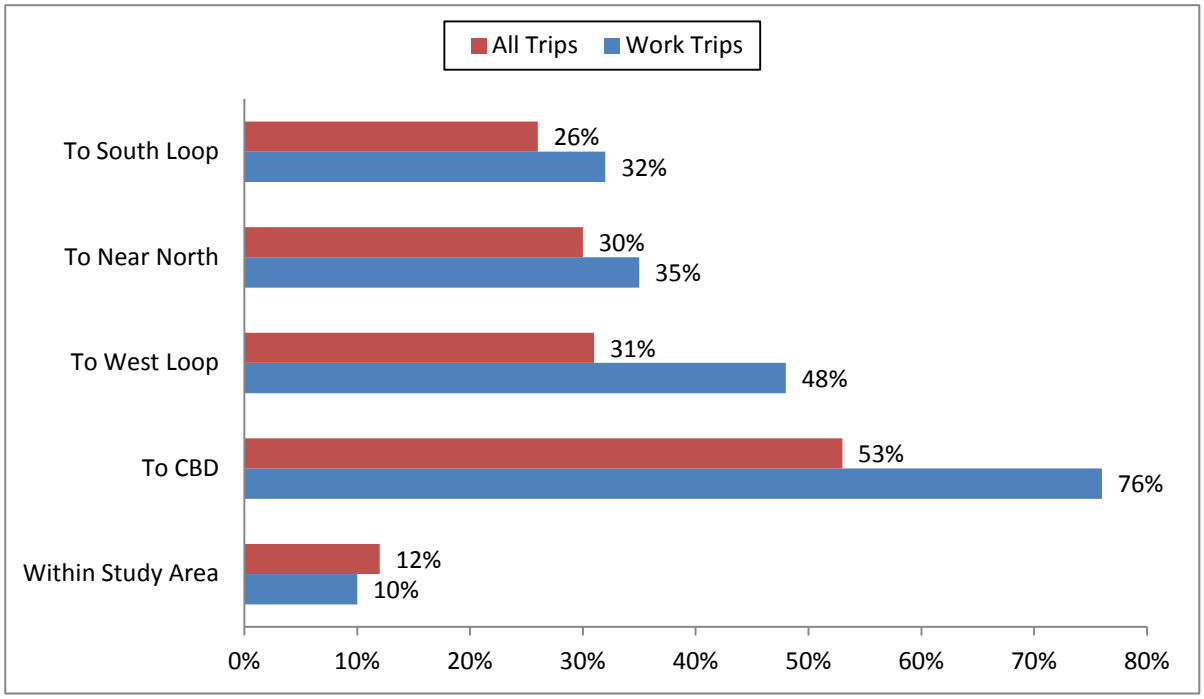
The market analysis focused on three major items: socioeconomic conditions of the study area; travel patterns to, from, and within the study area; and finally the transit use patterns to, from, and within the study area. Several key insights emerged from this analysis.

Although the individual neighborhoods that make up the study area are not homogenous, the study area generally has higher unemployment, lower-income levels, and lower auto-ownership levels, than the city in general, indicating the presence of a large transit-dependent population. This population relies on transit for both work and nonwork trips and for the unemployed nonwork travel is obviously the current primary need. While some of these destinations are found downtown and can be accessed by transit services geared to downtown travel, others are located in various places in the study area, in other parts of the city and in suburban areas. The Hyde Park area is a major center for jobs, higher education, and medical services within the study area and is, therefore, a destination of particular interest. Other destinations are more dispersed and many are outside the study area. Locations that are hard to reach by transit may not be observed in the data on current travel patterns.

The region is expected to experience a modest population and employment growth over the next 30 years. Therefore, current transportation needs, rather than anticipated growth, would be the primary basis for transportation planning in this area. However, the large new development proposed for the U.S. Steel (Lakeside) site and other large developments merits consideration in planning future improvements.

Despite the high levels of transit dependency, market share of transit for work trips made entirely within the study area is only 10 percent. In contrast, the transit share for Chicago CBD-bound work trips from the study area is 76 percent, and to areas near the CBD is between 32 and 48 percent as shown in Figure 3. Similar differences between travel destinations hold true when the universe of trips is expanded from work trips to all purposes. The low market share of transit combined with the high proportion of transit-dependent population in the study area indicates that there may be potential to increase the transit market share within the study area by improving transit services.

Figure 3. Transit Market Share



Transit market share is somewhat lower for trips between different parts of the study area than for trips within smaller areas around existing transit lines. To some extent this is to be expected. Transit market share for trips between low-income community areas such as Washington Park and Oakland and the key attraction centers in the Kenwood/Hyde Park area appears particularly low. These markets present an opportunity for transit.

While work and nonwork travel to the CBD and surrounding districts shows a high transit market share, travel to other districts such as the Illinois Medical District has an extremely low transit market share despite a high overall demand. In fact, connecting such extended central urban areas with the South Lakefront study area either through direct transit services, or through frequent connections from the CBD, represents a travel market of interest.

Travel between the South Lakefront study area and the Midway Airport area is fairly large. Yet, the transit share is only about 10 percent for work and nonwork trips combined. The transit market share falls to five percent for work trips only. This market appears to be another potential opportunity for transit.

Although not a major employment hub currently, the South Chicago community has the highest anticipated job growth in the study area by virtue of the planned Lakeside development at the former U.S. Steel site. Connecting this area to the low-income neighborhoods in Washington Park and Oakland will be important.

4.0 Existing Land Use and Development

Good transportation service and infrastructure enhance the market value of land and encourage development patterns of higher value uses and density. In turn, such land development patterns provide a strong user market ensuring successful transportation investments. When transportation planning and land use policy are considered together as a matter of public policy, infrastructure investments can be targeted to serve the largest user base most efficiently and to the maximum benefit in terms of land development potential.

4.1 Existing Land Uses

The study area contains the full range of land uses in diverse patterns of density and mixture, as illustrated in Figure 4 Study Area Land Use, on the following page. The more dominant land uses found throughout the study area include:

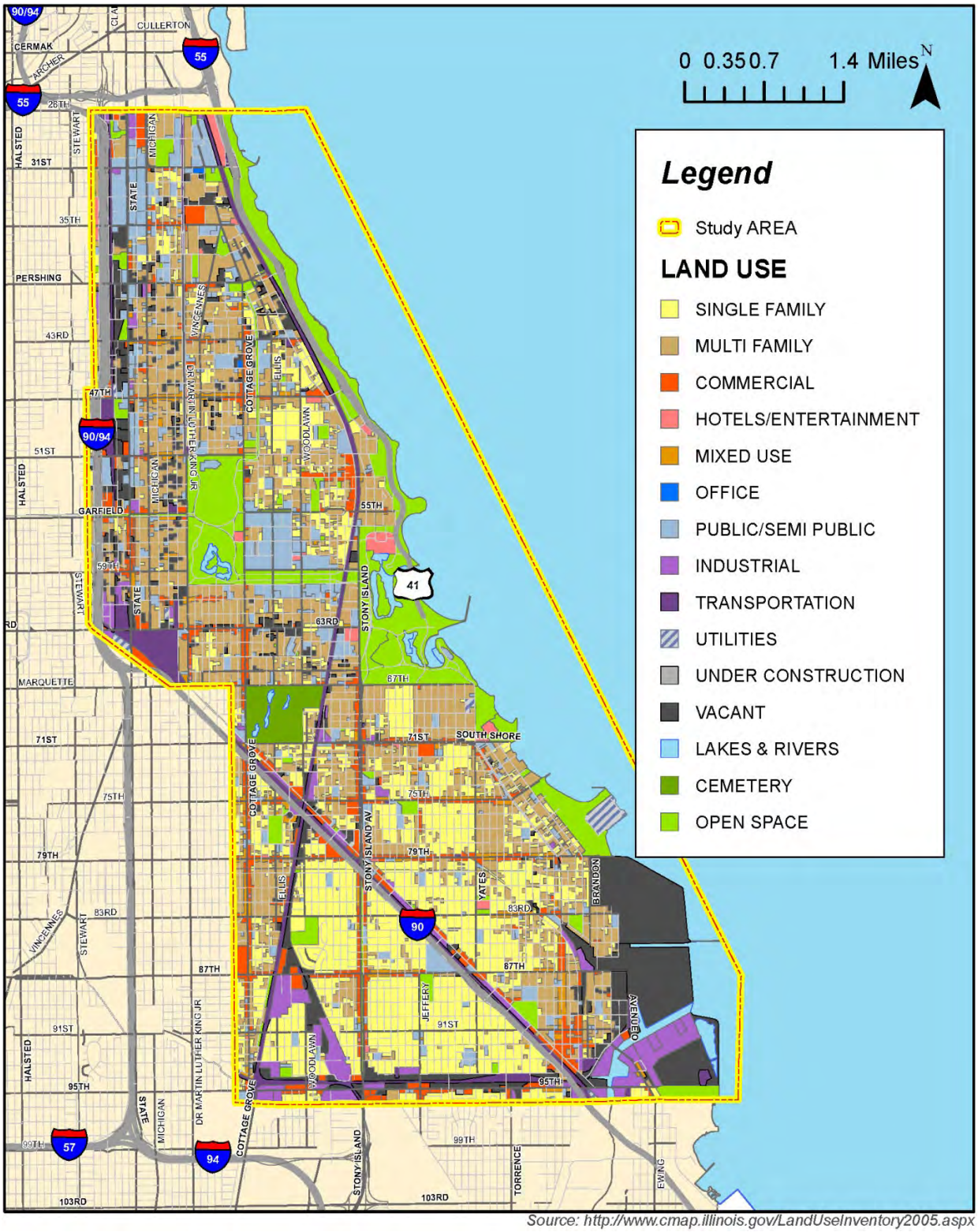
- Multifamily residential is located throughout the corridor, and ranges in density, massing, and architectural style; from late 19th century row-homes to middle 20th century mid-rise flats to contemporary high rises;

- Single-family residential is found in its largest concentration in the Avalon Park, Calumet Heights, Burnside, South Shore, South Chicago, Kenwood, and Hyde Park community areas;

- Open space and parkland includes the lakefront, Jackson Park, Washington Park, South Shore Cultural Center/Country Club, the private Oakwoods Cemetery, as well as many smaller neighborhood parks;

- Institutional uses are present as large concentrations around the Illinois Institute of Technology, Mercy Hospital, University of Chicago, Mt. Carmel High School, and Chicago Vocational High School, among numerous other smaller schools.

Figure 4. Study Area Land Use



Source: http://www.cmap.illinois.gov/LandUseInventory2005.aspx

Other land uses found in the corridor include: business district/commercial, industrial, government, and vacant land. As illustrated in Figure 4, there are areas where single land uses have agglomerated to cover moderately large territory, primarily the single-family residential and multifamily residential in the interior blocks served by the half-mile collector streets, and institutional campuses. However, in much of the study area and along many of the main corridors of arterials and collector streets, the land uses are quite mixed.

4.2 Development Projects

The study area contains numerous Tax Increment Finance (TIF) Districts whose incremental property tax revenues can be used for a variety of projects to assist in community and economic redevelopment. The Districts have contributed to numerous development projects in the study area.

A variety of development and redevelopment projects have been initiated or completed in the study area since 2000. The Lake Meadows Redevelopment, build-out of Oakwood Shores, and development of Lakeside, (formerly USX Southworks and U.S. Steel), are likely to be the projects with the greatest impact in terms of new residential and employment opportunities. The Lakeside development encompasses approximately 500 acres between 79th and 87th Streets on the lakefront. The master plan envisions over 13,000 residential units, 17.5 million square feet of retail, approximately 125 acres of open space/park land with bike paths, a 1,500 slip marina, and a new high school. Smaller-scale and infill development and renovation projects by for-profit and not-for-profit developers, community agencies, and private property owners also are occurring throughout the corridor and are important community investments.

Institutional and government entities with facilities in the study area are important anchors for the stability and vitality of surrounding neighborhoods. Not only do these provide employment opportunities, they bring customers and visitors into the study area. Policy decisions to expand or relocate facilities in the study area reflect conscious decisions to invest in the long-term prospects of the study area and serve as catalysts or risk-reducing factors for other development opportunities.

As a large attraction and employment center in the study area, plans for the University of Chicago are relevant to this study. The University's Master Plan is a 20-year plan that has yielded 17 new buildings within the University of Chicago Campus boundary adding up to over 1,000,000 square feet of instructional space; 1,200,000 square feet of medical space; 330,000 square feet of dormitory space; and 315,000 square feet of nursery/early childhood development space. The South Campus project will bring major improvements to university-owned land south of the Midway Plaisance and north of 61st Street. Projects in this area include new student residences and dining hall, a mixed-use building that will include retail stores, expansion of the Harris School of Public Policy building, expansion of the Chicago Booth school of Business building, and new streetscapes, landscaping, and parking structures.

In addition to improvements on the immediate campus, the University is committed to encouraging redevelopment in the surrounding areas to ensure the best experience for

students, employees, visitors, and neighbors alike. They contributed funds toward the renovation of the 53rd and 55th-56th-57th Street MED Main line stations. They are encouraging and participating in redevelopment along 53rd Street between Lake Park Avenue and Drexel, with particular focus on the blocks closest to the Metra station to improve the quality and selection of retail and entertainment options. They also recognize 47th and Cottage Grove as an important retail redevelopment node at the northwest corner of their campus area, and the CTA Green Line Garfield station area at 55th and King Drive as a long-term redevelopment focus to improve safe connections for campus stakeholders.

4.3 Corridor and Node Analysis

This study assessed the character of the study area against the concept of Transit-Oriented Development (TOD) or Transit-Friendly Development (TFD). The definition presented in the *Transit Friendly Development Guide* (2009) is:

> *[TOD is a pattern of] development which is oriented towards and integrated with adjacent transit. The development incorporates accessibility and connectivity and is a multiuse mix of dense development that generates significant levels of transit riders.*

Due to the large geographic scope of the project study area, this assessment analyzed the area in the context of corridors and nodes. Corridors are transportation-oriented districts centered along main streets. Nodes are quarter- to half-mile walk zones centered around commuter rail or heavy rail stations.

The major north-south and east-west corridors in the study area were reviewed along with the half-mile zones around rail stations, and were characterized for their potential for development or redevelopment.

The corridor analysis revealed the following:

- **31st Street –** The empty lot at the northwest corner of Cottage Grove and 31st, and the properties on the block between Cottage Grove and Lake Park Avenue present redevelopment opportunities. 31st Street has access from I-94 and on-off access to Lake Shore Drive. It is serviced by CTA bus, but has no on-street CTA rail or Metra rail stations. Development/ redevelopment potential includes long-term redevelopment plans for Prairie Shores and Lake Meadows, and the potential spin-off it may encourage in the area.

- **35th Street –** Development/redevelopment potential includes the approved long-term redevelopment plans for Park Boulevard and Lake Meadows on either end of the corridor, and the potential spin-off it may encourage in the area.

- **Pershing Road –** There are active redevelopment plans for Park Boulevard and Oakwood Shores on either end of the corridor, and completed redevelopments at Jazz on the Boulevard and Lake Park Crescent. These projects may generate spin-off development in the adjacent areas, although this may be somewhat tempered by the presence of intermediate pockets of blight.

- **47th Street –** Development/redevelopment activity includes the pockets of vibrant redevelopment activity such as construction of the Harold Washington Cultural Center, the Marketplace, Blu 47 restaurant, the Streetlife Art Gallery, Lake Park Point Shopping Center, and the Little Black Pearl Community Center. However, multi-block stretches of blight also are present in the corridor.

- **Garfield Boulevard –** Factors in the development/redevelopment potential along the corridor include an abundance of vacant land, and good transportation service consisting of vehicular access to I-94, CTA Red and Green Line stations, and a MED station. There are proposed redevelopment projects at Grand Boulevard Plaza and the former Shulze Bakery building that could create spin-off projects, and much development activity in the Hyde Park community area on and around the University of Chicago campus. While Washington Park is generally revered as a great community asset, past redevelopment efforts have been tempered by the presence of intermediate pockets of blight and disinvestment around the park. The park also functions as a physical barrier between the Hyde Park and Washington Park communities.

- **63rd Street –** Development/redevelopment activity includes the pockets of vibrant redevelopment activity around the Green Line stations and in Hyde Park. There are multi-block stretches of vacant land but these are adjacent to current redevelopments and may experience spin-off benefits.

- **71st Street –** The character of the corridor is fairly built-out. Redevelopment options would likely require property assembly and demolition of current outdated commercial/mixed-use buildings.

- **79th Street –** Development/redevelopment potential is constrained by the current built-out nature of the corridor. Other than the Lakeside site, there is an absence of any major catalyst projects along or adjacent to the corridor.

- **87th Street –** Development/redevelopment potential is a balance between the stable nature of land uses along most of the corridor with the emergence of community retail centers at the west end of the study area and around I-94. Redevelopment triggered by the Lakeside project may include commercial or residential uses.

- **95th Street –** Development/redevelopment along this corridor is possible given the availability of vacant properties near anchoring institutions, retail centers, and transit stations.

- **Dr. Martin Luther King Jr. Drive –** Development/redevelopment activity includes the approved long-term redevelopment plans for Lake Meadows and completed commercial/entertainment redevelopments at 47th Street. Dense residential neighborhoods along the corridor may limit redevelopment except as renovation and rehabilitation.

- **Cottage Grove Avenue –** Development/redevelopment activity along the corridor includes current and recent projects at Oakwood Shores, in Hyde Park, and at 87th Street.

- **Stony Island Avenue –** The corridor has a position as a solid commercial zone, but without significant recent anchor projects or upcoming plans. The corridor is predominantly an auto-oriented corridor through the study area.

- **Jeffery Boulevard –** Development/redevelopment potential is probably limited based on the already built-out nature of the corridor, with the exception of renovation projects or the occasional infill sites.

Examination of the station nodes revealed the following development or redevelopment opportunities, which are grouped by rail line.

The elevated CTA Green Line traverses the Douglas, Grand Boulevard, Washington Park, Greater Grand Crossing, and Woodlawn community areas. Dominant land uses adjacent to the station areas include residential and institutional uses with some commercial concentrations. Many study area neighborhoods surrounding Green Line stations have experienced disinvestment over recent decades and vacant lots and underutilized/abandoned structures are prevalent. These lots were the sites of many former Chicago Housing Authority high rise buildings. There are, however, some stations where development plans are in place or are in development, such as 35th-Bronzeville-IIT, 43rd, Garfield, and Cottage Grove.

The CTA Red Line runs down the median of I-94, with pedestrian access and CTA bus connections on the vehicular overpasses crossing the expressway. The expressway and adjacent parallel side streets (Wentworth Avenue, La Salle Street, or Federal Street on the east) present a physical barrier to development close to the stations, and the auto-oriented nature of the expressway influences the development character of neighboring blocks. The Red Line station areas are primarily industrial or commercial in nature, which could limit their development potential. However, the Sox-35th station will eventually benefit from redevelopment of Park Boulevard, and the Legends South redevelopment will impact the remaining Red Line stations in the study area. These redevelopment efforts coupled with infill redevelopment plans and high transit connectivity may catalyze additional redevelopment in the station areas.

The MED South Chicago Branch service runs through long established, nearly fully built-out neighborhoods in the South Chicago and South Shore community areas. Generally speaking, land use patterns are fairly firmly established, with new development mainly possible on infill sites or through redevelopment of aging or obsolete structures. Commuter rail is viewed as an asset in this study area, but because of the current service levels, it may induce comparatively less development than the heavy rail infrastructure elsewhere in the study area. Additionally, the current infrastructure design of raised platforms, overhead catenary, and large trains make a more imposing street-running presence than alternative streetcar or light rail transit systems. Development/redevelopment may be limited to renovation, based on the current built-out nature of the station areas. The exceptions are South Shore, 87th and 93rd Street stations. The area surrounding South Shore station has some vacant property, which presents infill development opportunities. The 87th station area could benefit from the Lakeside development, which may generate spin-off development of the light industrial uses near the station into developments that are more compatible with residential. Lastly, the vacant lots, underutilized commercial uses, and plentiful parking lots surrounding the 93rd station provides redevelopment opportunities.

4.4 Key Land Use and Development Findings

The study area contains the full range of land uses at all levels of density and types of urban design, and numerous development projects, institutional anchors, and shopping destinations. A variety of development projects and enhancements to the institutional anchors in the study area have recently been completed, with more large-scale projects under construction and in planning. The conclusions are described by subarea below.

The *northern third of the study area* (the Douglas, Grand Boulevard, Oakland, and Kenwood community areas, north of 47th Street) contains the most redevelopment projects, particularly residential redevelopments. Many of the former CHA housing projects located in this area have been, or are in the process of being rehabilitated or replaced with different formats under the *Plan for Transformation*[6] and will reintroduce large population numbers back into the study area. Jazz on the Boulevard and Lake Park Crescent are two notable examples of completed phases or projects, and Oakwood Shores, Park Boulevard, and Legends South are well under way. The Lake Meadows residential and commercial rehabilitation/renovation also will add significant commercial space and upgraded residential units. Independent infill construction projects and renovations have begun to rejuvenate or gentrify many formerly upscale neighborhoods in Kenwood, Oakland, and Bronzeville that had experienced disinvestment and population flight during the later decades of the 20th century. Portions of Douglas and Grand Boulevard are still suffering from the blighting presence of unsuccessful public housing projects and will need significant market intervention to jump-start redevelopment. The *Plan for Transformation* redevelopments planned for this area should have a catalytic (or at least stabilizing) effect once real estate markets recover. Illinois Institute of Technology (IIT) is a solid institutional anchor in this part of the study area, and it serves as a local advocate for new residential and commercial development in the surrounding neighborhoods that will benefit its students and faculty as well as contribute to more stable neighborhoods.

In the *middle sector of the study area* between 47th Street and 71st Street (the Washington Park, Hyde Park, Woodlawn, and portions of the South Shore and Greater Grand Crossing community areas), land use and development conditions are quite polarized. Many areas west of King Drive, and south and west of Washington Park demonstrate significant disinvestment, while neighborhoods in the eastern half of this section are more notably stable, built-out and prosperous. The major institutional anchors in the area, particularly the University of Chicago, continue to expand their facilities, and consequently employment and visitor volumes, providing a stabilizing source of energy to the area. Various community organizations are active in this portion of the study area, and in many cases joined in advocacy by the University, with redevelopment projects proposed along Cottage Grove, 53rd Street, and 63rd Street.

The *southern sector of study area* located south of 71st Street features a central core of stable residential neighborhoods, both single-family and multifamily structures. The southernmost areas of the study area border on what have been historically some of the heaviest industrial areas of

[6] Chicago Housing Authority, Amended FY 2012 Moving to Work Annual Plan HUD Approved – March 27, 2012.

the city, and swaths of industrial uses are found particularly along rail lines here in the study area. One of the most significant development projects in the study area and in the city is the Lakeside redevelopment of the former USX Southworks site. A long-term project currently in planning, this will introduce significant new population and service employment numbers to the study area.

5.0 Public Involvement in Selection of Projects

The public involvement plan encouraged participation of community leaders, business stakeholders, and the general public in framing the set of projects that this study analyzed. Stakeholders identified goals and objectives, participated in selecting the universe of projects, and provided feedback on the project evaluations.

5.1 Stakeholder Identification of Goals and Objectives

Stakeholders provided input on what they felt were the major issues that needed to be addressed in the study. The detailing of major issues led to a set of objectives for the study to address. The major issues and the related study objectives are listed in Table 5.

Table 5. Stakeholder Issues and Resulting Study Objectives

Issue	Objective
Safety – Stations located in areas perceived to be unsafe deter people from using transit for social purposes or at night.	1. Improve safety and security features.
Travel Times – Trips with long travel times discourage people from using transit. Many residents are beyond walking distance of Metra and CTA transit stations, thus requiring them to take the bus to the train, adding travel time to their trips. Long bus travel times also result when buses pick up riders at every stop and/or require transfers.	2. Provide better coverage with high-capacity, high-speed modes, targeting areas where walking distances to stations are above 0.5 miles. 3. Enhance travel time and reliability.
Key Linkages – Transit travel to and from destinations outside of the Loop can be very challenging. East-west travel has been identified as particularly time-consuming, sometimes requiring travel into the Loop to make connections.	4. Identify and strengthen connections and travel options within major east-west corridors to serve work and discretionary trips.
Customer Comfort – Travel can be challenging for specific groups, such as seniors and mothers with children. In addition, waiting for buses and trains can be unpleasant.	5. Improve station and bus environment for users who are waiting.
Frequency of Service – High-traffic bus stops and rail stations sometimes do not adequately accommodate the volume of riders.	6. Improve frequency of service to match demand, especially bus service, in key areas.

Issue	Objective
Seamless Travel – Some neighborhoods are served by commuter rail while others are served by CTA rapid transit. CTA bus service connects to both Metra and CTA rail, but fare transfers are allowed only to CTA rail. In addition, there is limited ability to transfer from cars to CTA (i.e., parking/park-and-ride options).	7. Integrate the network of transit service so users can easily go from one mode or one transit provider to another. 8. Offer more integrated, seamless transfer and fare policies. (Take into account prior and ongoing work on fare integration and recognize service board discretion in setting fares.)
Knowledge of Services – Methods for getting real-time information on bus/rail schedules, travel options, and tracking information are not well known by some riders and nonriders. Additionally, some transit riders do not have access to smart phones or Internet service (i.e., seniors, low-income individuals).	9. Increase creative marketing efforts to ensure that those who have Internet access are aware of these features. 10. Increase information options for those without Internet access.
Economically Viable Neighborhoods – Study area residents must sometimes travel great distances and make complicated trips on transit for work, shopping, entertainment, and other trips due to a lack of options in their neighborhoods. In addition, some station areas are not integrated with pedestrian and bike networks and limit walking and biking access to the transit system.	11. Highlight opportunities to cluster development around existing transportation hubs, particularly rail stations. 12. Complement the transit system improvements with pedestrian, bicycle, and other enhancements to station access.

A complete list of candidate projects was developed utilizing these goals and objectives as a guide, and considering input from stakeholders, the TAC and the PAC.

5.2 Universe of Candidate Improvements

The *Preliminary Alternatives* report listed transportation improvement options developed for the study area ranging from small bus service improvements to major capital improvements. The list of improvement options included projects suggested in; past studies, *Technical Memorandum 1*, meetings with the Technical and Public Advisory Committees, and interviews with stakeholders.

The resulting list of transportation alternatives included 37 projects and represented the full universe of options to be considered. The alternatives were grouped according to similar characteristics resulting in 10 categories of improvements. The 10 categories and the alternatives within each are listed below:

1. Improve frequency of existing services:
    a. Off-peak and peak at Metra Main Line stations;
    b. Off-peak on Metra South Chicago Branch;
    c. Bus routes that are overcrowded;
    d. East-west bus routes; and
    e. Express bus routes.
2. Longer service hours (including more nighttime and weekend service to address non-traditional work hours and nonwork travel needs).
3. Fare policy and fare media improvements:
    a. Special Metra-CTA arrangement for transfers in study area.
4. Marketing and user information improvements:
    a. Promote Bus Tracker, Train Tracker, and GoRoo;
    b. Create local Metra route map and schedule;
    c. Promote any route and fare changes; and
    d. Bus shelters with real-time information displays.
5. Rail station enhancements (including associated pedestrian/bike/auto access, wayfinding and lighting, security improvements):
    a. MED stations at 59th, 63rd, 75th, 79th, 83rd, 87th, 91st, and 95th Streets;
    b. Add new 60th Street entrance at MED Main Line 59th station; and
    c. Indiana, 43rd Street, 47th Street, Cottage Grove, and Garfield Green Line stations and all Red Line stations.
6. New rail stations on existing rail lines:
    a. MED 35th – 37th Streets; and
    b. Green Line at 26th Street, 18th Street, or 22nd-23rd Streets.
7. Local bus circulators, shuttles, and other bus routes:
    a. Hyde Park/Washington Park/Oakland;
    b. Extend existing bus routes to Lakeside;
    c. Establish a bus route on 83rd Street; and
    d. Establish/restore bus route on 31st Street.

8. Express or limited-stop bus routes to other destination areas:
    a. Stony Island/Cottage Grove/39th Street;
    b. To Midway (old #X55); and
    c. To west Loop (old #X28).
9. New Bus Rapid Transit (BRT) service and enhanced bus corridors:
    a. Cottage Grove Avenue;
    b. Stony Island Avenue;
    c. Garfield Boulevard; and
    d. 79th Street.
10. New or restructured rail service:
    a. Cottage Grove Avenue or Drexel Avenue to Loop;
    b. King Drive to Loop;
    c. Extension of 10.a or 10.b above along Stony Island Avenue south of 63rd;
    d. 35th Street;
    e. E.5th Street/Garfield;
    f. Extension of Green Line to Stony Island Avenue and MED;
    g. Gray Line (all MED service);
    h. Gold Line (South Chicago Branch);
    i. Conversion of South Chicago Branch to LRT; and
    j. Conversion of South Chicago Branch to CTA rapid transit via MED or Green Line.

These 37 projects were presented and discussed in meetings with the TAC and PAC members, and were evaluated using the screening criteria listed in Table 6.

Table 6. Evaluation Screening Criteria

Screening Criteria
Maintain or Enhance Service for Existing Riders
Improve Mobility
Address Project Objectives: • Safety/Security; • Coverage; • Key Linkages; • Seamless Travel; • Travel Time/Reliability; • Frequency/Span; • Comfort; an • Information/Understanding.
Support Economic Development
Support Development Plans
Overall Cost to Implement
Capital Costs
Operating Costs
Efficiency and Productivity
Consistent with Service Boards' Objectives and Standards
Ability to Obtain Grant Funding
Factors Affecting Implementation
Physical and Institutional Feasibility
Public Support
Environmental
Equity
Environmental Justice
Timeframe to Implement

The result of this screening process reduced the number of project categories to 5 and the number of alternatives, or example improvements, to 20. These projects are discussed in greater detail in Section 7.0.

5.3 Public Input on Projects

The public meetings provided an opportunity for local residents, community leaders, and business owners to hear updates on the transit study, offer their opinions, share their concerns, hear other view points, and provide the project team with a snapshot of community concerns and reactions to particular proposals. Three public meetings were held to encourage dialogue between the project team and the general public. Formal meetings with the PAC members prior to the public meetings helped to frame the public discussion.

Early in the study a public meeting was conducted to identify issues important to the community at large and stakeholders were interviewed to determine what they felt were the major issues that needed to be addressed.

The first public meeting was held on April 13, 2011 at the Illinois Institute of Technology's University Tech Park on 31st Street within the study area. This first meeting included two presentations – one in the early afternoon and one in the early evening with an Open House preceding each presentation. The first meeting received coverage in the Chicago Tribune as well as local television coverage. Over 100 people attended the first public meeting. It was an opportunity to introduce the study to community members and to learn their initial thoughts and concerns regarding transit issues in the study area.

A second public meeting was held on September 12, 2011 in the Banquet Hall of Apostolic Church of God, 6320 S. Dorchester Avenue, Chicago. The format of the meeting consisted of an Open House portion and a formal PowerPoint presentation. The Open House featured six stations for attendees to meet with the study team representatives and view display boards which provided information about the potential projects that could be implemented within the study area. The consultant team members and members from the Technical Advisory Committee were on hand at each board to answer questions and receive comments on the project alternatives. The open house was held one hour before the formal presentation and for one hour after the presentation. The presentation outlined each service alternative and described the process that was utilized to develop the improvements presented. There were several opportunities for members of the community to comment on the potential projects selected for additional study; during the question and comment period after the presentation, during the open house, and by filling out comment forms given at the beginning of the meeting. All the comments were summarized and reviewed by team members for possible incorporation into the final example project evaluation. Forty-four people attended the meeting in addition to the 19 members from the study team and the sponsoring agencies.

A third public meeting was conducted on June 28, 2012 at Apostolic Church of God and followed the same format as the previous public meeting. More detailed information on the alternative projects was provided at this meeting, including estimates of capital and operating costs, ridership projections, probable impact on TOD, and sources of funding. An overall assessment of each project also was provided along with a list of potential next steps. 32 people attended the meeting and 18 attendees turned in evaluation forms. The evaluation forms asked attendees how well they thought the improvements addressed community needs, and asked them to rate the meeting on its location, time slot, organization, presentation materials, and overall satisfaction.

A review of the evaluation forms submitted by the community attendees showed that in answer to the question, "How well do you think improvements in this Example Project will address community needs?," two projects tied for the highest rating – Rail Station Enhancements and the Cottage Grove BRT or Streetcar. (Note that the Cottage Grove BRT and Streetcar were not separated on the evaluation form.) The next highest rated project was Transit-Oriented Development. The 79th Street Bus Enhancement and Gold Line projects tied for the number three top spot, while the Garfield BRT and King Drive Enhanced Bus tied for the number four slot. Coming in last, although still receiving positive and enthusiastic comments, was the New Bus Route on 83rd Street.

Attendees agreed that the meeting was held in a safe, easily accessible facility, and was held at a convenient time. Most attendees agreed that the meeting was well organized, that the displays and maps were helpful, and that they were satisfied with the meeting overall. Attendees were mostly neutral about whether they thought their input would be considered and that their questions were answered.

5.4 Potential Projects and Example Improvements

A total of 37 initial projects were identified and subsequently screened to produce a set of 20 potential projects. The potential projects were grouped into categories with similar characteristics for ease of discussion. Based on feedback from the TAC and PAC, one or two example improvements from each category were identified for further evaluation. Table 7 illustrates the resulting categories of projects and the candidate improvements included in each category. The example improvements are identified with an asterisk (*) in the table.

These project categories and example improvements were presented at the second public meeting for comments and feedback. The example improvements are described in greater detail in Section 8.0.

Table 7. Candidate Projects by Category

Project Category	Candidate Projects
Improvements to CTA Bus Network	1. New Bus Route on 83rd Street* 2. King Drive Express Bus Service* 3. Bus Priority on South Lake Shore Drive 4. Shelters and Real-Time Bus Arrival Information 5. Restore Bus Route on 31st Street
Improvements to CTA Rail Network	1. CTA Rail Station Enhancements* 2. Track/Structure Repairs (to eliminate Slow Zones) 3. Extend Green Line to Dorchester Avenue 4. New CTA Station at 26th/27th Street

Project Category	Candidate Projects
North-South Corridor BRT and Streetcar	1. Cottage Grove BRT* 2. Cottage Grove Streetcar* 3. Cottage Grove Express Bus Route
East-West Corridor BRT and Enhanced Bus Service	1. 55th Street/Garfield Boulevard Corridor BRT* 2. 79th Street Corridor Enhanced Bus* 3. 35th Street Enhanced Bus
Changes to Metra Electric District Rail	1. Gold Line* 2. CTA – Metra Fare Integration 3. Gray Line 4. Conversion of South Chicago Branch to LRT
Transit-Oriented Development	Evaluate TOD Potential at Stations*

* Example improvements further developed and evaluated in the next phase.

6.0 Projects Underway or In Planning

As part of their ongoing planning efforts, the transit agencies have been conducting reviews of service and facilities, and have plans to implement various improvements that address some of the issues raised by the stakeholders. This section summarizes these ongoing projects.

Metra was granted $140.9 million through American Recovery and Reinvestment Act of 2009 (ARRA)[7] which supported a number of capital projects, including the construction of a new station at 35th Street on the Rock Island District Line. This station, which opened in April 2011, is at the western edge of the study area near both the Green and Red Lines and provides South Lakefront residents with an additional access point into the Metra system.

Metra is slated to receive $1.1 billion from the State of Illinois' 2009 $2.7 billion capital bond program through 2014 for public transit. The first capital obligation of this funding is the purchase of a fleet of new vehicles for use on the Metra Electric District; the Highliners currently in use date from 1971 and can no longer by rebuilt or refurbished.[8] In addition, two Electric District stations within the study are scheduled for improvements through the state bond funding: 59th Street and 63rd Street.

The CTA and Chicago Department of Transportation (CDOT) were awarded $11 million by the FTA to develop a BRT corridor along Jeffery Boulevard.[9] The project was developed as part of the CTA's BRT Pilot Program.[10] Planning and design work got underway in early 2011 and the project is scheduled to be in service by fall of 2012. The Jeffery Boulevard BRT ("Jeffery Jump") alignment was designed as one of four pilot BRT corridors that would be subsequently expanded to a 20-corridor BRT network. Plans show the BRT service operating in dedicated lanes between 67th and 83rd Street on Jeffery Boulevard during the peak hours, as shown in Figure 5. The route will operate in mixed-traffic on the northern end of the alignment between 67th (where it enters Lake Shore Drive) and the intersection of Washington Boulevard and Jefferson Street in the near West Loop, as well as on the southern end of the alignment between 83rd Street and the intersection of Stony Island and 103rd Street on the south.[11] Between 73rd

[7] Metra, "Proposed 2011 Program & Budget Book", page 8.

[8] Ibid., page 10.

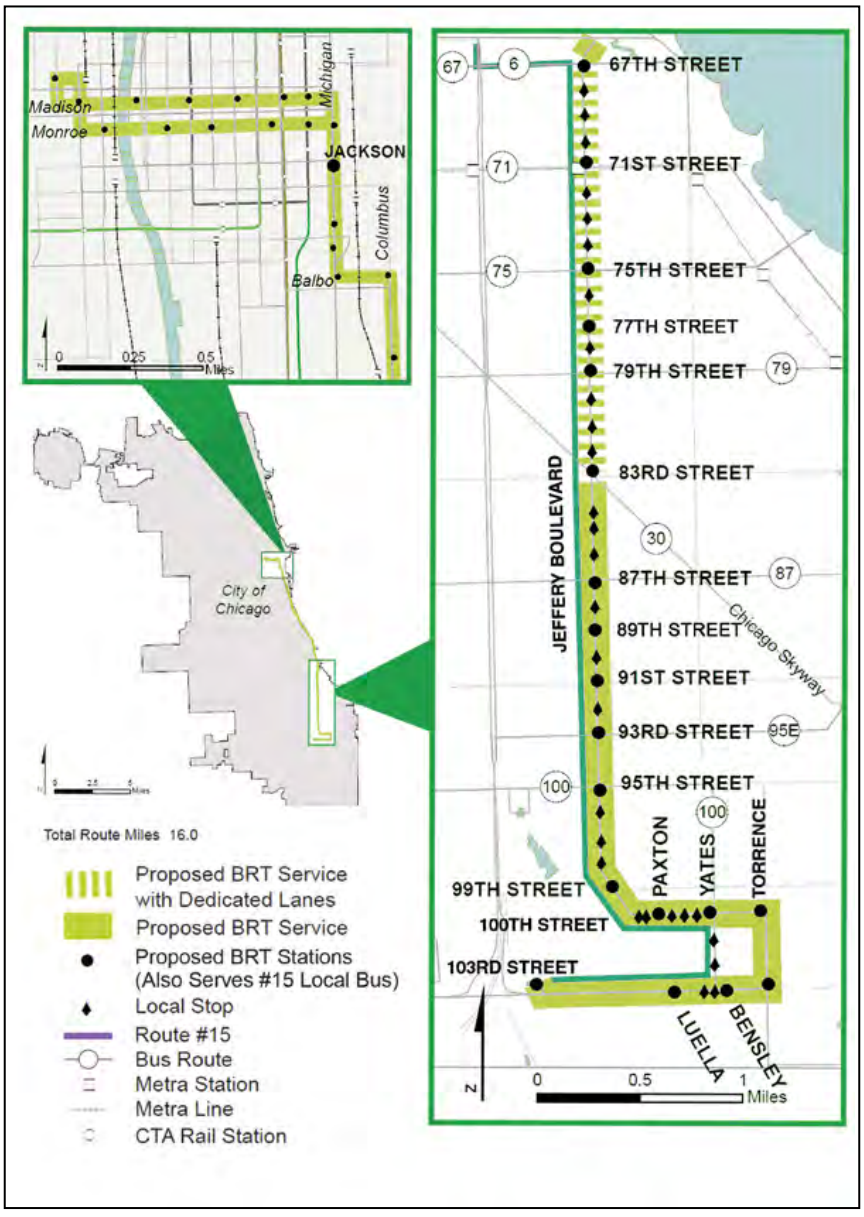
[9] Chicago Transit Authority, "Meeting the Challenge of a Struggling Economy: President's 2011 Budget Recommendations," page 62.

[10] AECOM, "Traffic Study: Jeffrey Boulevard from 67th Street to 93rd Street," Draft December 9, 2008.

[11] CTA and CDOT, "BRT Pilot Program – Jeffrey Boulevard Corridor," http://www.transitchicago.com/assets/1/brt/105349BRTPilotJeffery.pdf.

Street and 84th Street buses will receive priority treatment at stop lights. Additionally, a bus bypass lane and dedicated traffic signal will be added northbound on Jeffery Boulevard at Anthony Avenue to allow buses to jump past traffic at that intersection.[12]

Figure 5. Alignment of Jeffery Boulevard BRT



[12]Chicago Sun-Times, "CTA to begin bus rapid transit on South Side in November," August 8, 2012.

In September 2011, CTA began installation of 400 Light Emitting Diode (LED) Bus Tracker displays at select JCDecaux bus shelters throughout Chicago. All 400 LED units were scheduled to be installed over a one year period. Funds for the purchase and maintenance of the signs were made available through $1.4 million of CTA funds, a $1.8 million Innovation, Coordination and Enhancement Grant from Regional Transportation Authority (RTA) and a $640,000 Federal Transit Administration, Congestion Mitigation and Air Quality (CMAQ) grant. CDOT, which oversees the JCDecaux contract and maintains the public rights-of-way, will be CTA's partner in the operations and maintenance of the LED screens. The locations for the LED signs were selected based on ridership, stops serving multiple bus routes, bus-to-bus transfers, and locations providing transfers to Metra and Pace.

CTA is proposing to extend the Red Line from the 95th Street Station to the vicinity of 130th Street, subject to the availability of funding. The proposed 5.3-mile extension would include three new intermediate stops near 103rd, 111th, and 115th Streets, as well as a new terminal station in the vicinity of 130th Street. Each new stop would include bus and parking facilities. The next step is to prepare an Environmental Impact Statement (EIS) to evaluate environmental, social, and economic impacts of the construction and operation of the proposed project. This project was recommended as a priority project in the region's Go to 2040 Long-Range Transportation Plan.

Stakeholders have identified the lack of seamless and free or low-cost transfers between Metra and CTA services as a detriment to efficient transportation in the corridor. Metra and CTA currently use incompatible fare media and have different fare structures. The Illinois legislature passed legislation (HB3597, effective July 7, 2011) requiring that the Regional Transportation Authority (RTA) develop a policy regarding transfer fares on all fixed-route services provided by the three service boards; Chicago Transit Authority (CTA), Metra, and Pace. Under this policy, RTA is required to set forth the fare sharing agreements between the service boards that apply to interagency passes and tickets. The policy must be developed by January 1, 2013 in consultation with the general public and the service boards. In addition, the RTA is to develop and implement a regional fare payment system by January 1, 2015.

Starting in 2013, a new payment system will allow customers to use a single fare card for CTA and Pace. Customers will be able to pay for CTA and Pace bus and train rides with the following contactless payment methods:

- Ventra Card, a transit and prepaid debit card that can be used for transit and everyday purchases;
- Ventra Tickets, for single-ride and 1-Day passes; and
- Personal bank-issued credit or debit cards.

Customers will be able to "tap" their payment card at 'L' stations or to board any CTA or Pace bus. Special fares and multi-day passes will still be offered, including 30-Day and 7-Day Passes, and cash will still be accepted on buses. Eventually, it will be possible to use compatible mobile phones to pay for rides on CTA and Pace. Ventra will be available to all CTA riders and on Pace's fixed route buses in the summer of 2013. Ventra will replace CTA and Pace's existing fare systems in 2014. Full details are available at www.transitchicago.org/ventra.

In September 2011, the CTA announced implementation of a new station renewal program that applies a "SWAT team" approach to station maintenance. Under this new approach, "Renew Crews," composed of representatives from all maintenance sectors, (plumbers, painters,

carpenters), will converge on a station and work together in a coordinated, comprehensive, and efficient way to make improvements. The project is estimated to cost $25 million, which is partially funded by $18 million saved from CTA job cuts. Restoration done at each station will be based on each station's condition and specific needs. Renew Crews will be addressing about 100 CTA rail stations on every rail line. As of this writing (November 2012), the following study area stations are currently undergoing improvements: Indiana, 47th, and 51st stations on the Green Line. Improvements were recently completed at the following study area stations: King Drive, Garfield, 35th-Bronzeville-IIT, 43rd, and Cottage Grove stations on the Green Line and 47th, Cermak-Chinatown, and 95th/Dan Ryan stations on the Red Line.

Starting in spring 2013, the CTA will rebuild the tracks along the south Red Line, from Cermak-Chinatown station to 95th Street station. This project will provide faster, more comfortable, and more reliable service for Red Line riders. Due to current track conditions, Red Line riders experience longer travel times, more-crowded trains, and less-reliable service. The project is made possible by $1 billion in state and local funding announced in late 2011 by Mayor Rahm Emanuel and Governor Pat Quinn for the Red and Purple Lines. http://www.cityofchicago.org/content/city/en/depts/mayor/press_room/press_releases/2012/march_2012/mayor_emanuel_announces7billionbuildinganewchicagoprogram.html All components in the track bed will be replaced; ties, rail, third rail, ballast (the stone material that holds the ties in place) and drainage systems. Some stations also will receive improvements ranging from new canopies, paint, and lighting upgrades to new benches and bike racks. Additionally, the stations at Garfield, 63rd, and 87th will get new elevators, making all stations on the South Side Red Line accessible.

7.0 Summary of Evaluation Findings for Example Improvements

Stakeholder and public input was instrumental in identifying potential project categories and example improvements. One or two example improvements were selected from each category for further evaluation as part of this study, and the nine example improvements are summarized in this section. While limited study resources precluded further evaluation of the other project ideas at this time, these projects can be examined in future studies that may be undertaken as follow up to this study. The nine example projects serve many parts of the study area as shown in Figure 6 below:

Figure 6. Location of the Nine Example Improvement Projects

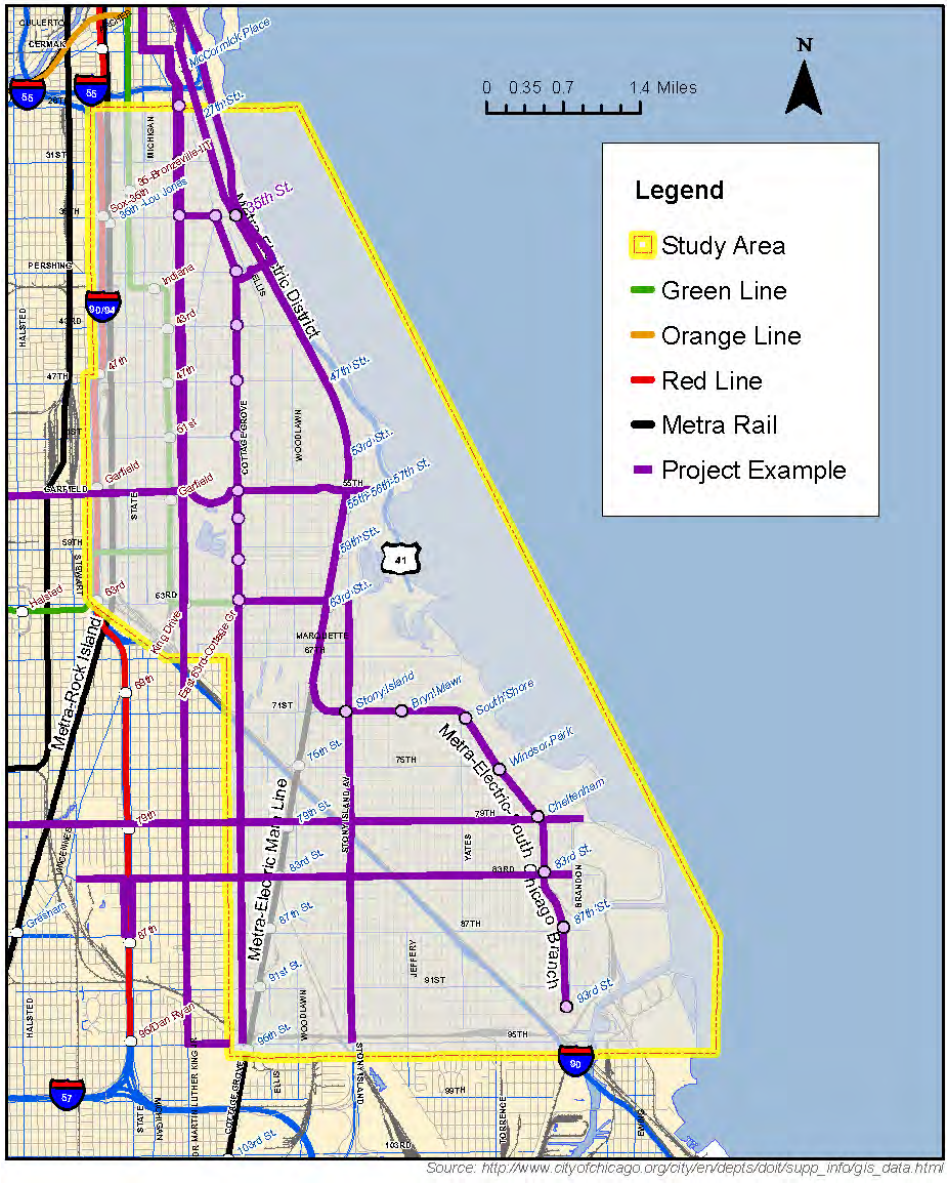


Table 8 compares the example project improvements in terms of ridership, operating cost per rider, capital cost, and annual operating cost.

Table 8. Comparison of Example Project Improvements

Example Project Improvement[a]	Weekday Ridership	Operating Cost/Rider	Capital Cost (Millions)	Annual Operating Cost (Millions)
New Bus Route on 83rd Street	5,300	$1.56	$3.7	$2.9
King Drive Express Bus Service	1,000	$3.74	–	$1

Cottage Grove BRT (Curb)	6,500-8,000	$1.45-$1.64	$39-$72	$3.3-$4.6
Cottage Grove BRT (Median)	6,600-8,100	$1.23-$1.34	$65-$148	$2.8-$3.8
Cottage Grove Streetcar Phase 1	8,100	$1.95	$240	$5.5
Cottage Grove Streetcar Phase 1 and 2	11,500	$2.26	$370	$9
55th St/Garfield Blvd BRT (Curb)	4,800	$2.80	$71	$4.7
55th St/Garfield Blvd BRT (Median)	4,900	$2.43	$136	$4.1
79th Street Corridor Enhanced Bus	11,000	$1.96	$18-$27	$7.4
Gold Line	13,400	$12.90	$350[b]	$56-60

[a] Costs and Ridership not projected for Rail Station Enhancements or TOD Potential.

[b] Excluding any costs associated with adding capacity at Millennium Station that may be required.

The following summaries of the example improvements include the findings of the evaluation conducted during this study. Full descriptions of each project are provided in the *Definition and Evaluation of Potential Projects* dated August 31, 2012.

7.1 New Bus Route on 83rd Street

This project adds a new local bus route on an arterial street with no current bus service and would address some gaps in transit coverage identified early in this study. The proposed route would extend from the new Lakeside development on the east to Stewart on the west, making a connection at the 87th or 79th Street station on the Red Line. Although Figure 6 shows the route serving 87th Street, the final route will be determined in consultation with CTA. The 83rd Street bus route is one of the lowest-cost improvements from a capital cost perspective ($3.7 million), and also has a fairly low operating cost ($2.9 million per year). The new route is projected to achieve a moderate level of ridership of 5,300 riders per weekday and potentially more as a result of the opening of a Walmart at the west end of the route. The proposed service could be extended to serve the proposed Lakeside development, as well. The route is expected to be quite productive with about 75 passengers per revenue vehicle hour and the weekday operating cost per rider is expected to be low ($1.56). While some riders attracted to the route may be new riders, others may be diverted from other bus routes. A Federal Jobs Access Reverse Commute (JARC) grant already has been obtained that will provide for some of the operating cost for a limited time period, but a local funding match of 50 percent for operating funds and 20 percent for capital funds is required and has not been obtained.

7.2 Enhanced Bus Service on King Drive

Enhanced bus service on King Drive would restore a peak-period express bus service that was discontinued in 2010 in response to operating budget constraints. From a capital cost perspective, the project has no cost at all as it would use buses that already are in the CTA fleet; the proposed service plan is expected to require fewer buses as a result of the higher speeds

associated with limited-stop express service and a shift in resources from local to express service. The additional operating cost (about $1 million) is the lowest of all the projects involving additional service, since the limited-stop express service is proposed to operate only during peak hours in the peak direction. Based on prior operation of express service in this corridor (Route #X3), it is expected that a net ridership gain of about 1,000 riders per day would result. The incremental operating cost per additional rider is expected to be fairly low (about $3.74 per passenger). The riders may include some new riders as well as existing bus and rail riders. There was considerable public support for this proposal, however, this improvement will be competing with proposals to restore other services cut in 2010 made in response to budget constraints.

7.3 Rail Station Enhancements

Enhancements to existing CTA rail stations were identified as a priority project by stakeholders. Community participants expressed the viewpoint that stations exhibit poor conditions and that the environment surrounding stations is inhospitable or intimidating. Particular concerns of stakeholders included the Green Line stations and the 87th Street Red Line Station. Field review of these stations was conducted to assess any deficiencies and identify specific improvements. The findings were reviewed with CTA and ongoing programs for rehabilitation were identified. The study determined that complete reconstruction of stations is not required due to recent rebuilds or renovations of the stations during their useful lifespan. However, recommendations include: 1) implement ongoing maintenance and upgrade program; 2) conduct periodic assessments of station conditions to identify refurbishment needs; 3) identify targeted public infrastructure improvements immediately around stations; and 4) ensure representation of study area stations in pilots of programs, such as the CTA Station Renewal Program and installation of real-time information monitors. The capital costs associated with repairs of CTA stations range from $0.25 million to $1 million. As a result of repairs at the CTA stations, a small positive impact can be expected on ridership and the adjacent development environment, as well as a positive impact on quality of life.

7.4 Cottage Grove Bus Rapid Transit (BRT)

The Cottage Grove BRT is intended to improve travel time and reliability as well as service coverage in the entire Cottage Grove corridor. By creating a limited-stop overlay service with BRT features designed to reduce travel delay at signals and bus stops, riders would achieve reduced travel times. Those making longer trips, including travelers from the southern part of the route, would achieve the largest time savings. Because BRT features are a flexible menu of options, there remains a wide range of design options. A “gold standard” BRT, including barrier-separated, dedicated right-of-way, off-board payment at high-quality stations, and identifiable branding would involve a more costly design but would be likely to have the greatest impact in attracting riders and influencing development in the corridor. A simpler approach (e.g., a painted curbside bus lane and less significant stations) would be much less costly but would likely not provide the same impact. Two alignment options were identified. Though both begin at 95th Street, one continues into the Loop from 35th Street via arterial streets (King Drive and Michigan Avenue) while the other utilizes Lake Shore Drive as an express ser-

vice. The Lake Shore Drive option is somewhat less costly to build and operate but serves a somewhat smaller market and achieves a somewhat lower ridership given that no boardings can occur on Lake Shore Drive between 35th Street and the Loop. There are traffic impacts associated with provision of dedicated lanes, as conversion of an existing travel lane and/or an existing parking lane would be necessary. Dedicated bus lanes also impact the level of service (LOS) at high-volume intersections south of 58th Street, where some intersections are expected to perform at LOS F with a bus lane in place. LOS F represents the worst operating condition. The capital costs range from $39 million to $148 million depending upon alignment and level of BRT treatment. Operating costs range from $2.8 million to $4.6 million annually. This includes savings associated with a 20 percent reduction in route #4 Cottage Grove local bus service. This example improvement and the Cottage Grove Streetcar described below are mutually exclusive projects, in that either a BRT or a streetcar would operate on Cottage Grove Avenue, but not both.

7.5 Cottage Grove Streetcar

The Cottage Grove Streetcar project is envisioned in two possible phases, with Phase 1 operating between the Loop and 63rd Street, and Phase 2 extending south from 63rd Street to 95th Street via Cottage Grove or Stony Island Avenues. The shorter length (8 miles) of Phase 1 is appropriate for streetcar technology and Phase 1 would serve the northern part of the corridor which is undergoing redevelopment. In the Cottage Grove corridor, a streetcar could be provided with limited-stop spacing, exclusive right-of-way and signal priority and therefore could provide travel time advantages like BRT. As a result of these features, the streetcar project is envisioned as one that will provide both development and transportation benefits to the 8-mile corridor and could be extended south of 63rd Street in a second phase (another 4.4 miles). Similar to the BRT project, a Cottage Grove streetcar will have unfavorable impacts on traffic and parking. Impacts on intersection LOS vary depending upon the level of traffic volume. Operating in the median of the roadway has greater impacts due to requirements for protected left turn signals or left turn prohibitions. The Phase 1 streetcar project was estimated to cost nearly $240 million, which may be eligible for an FTA Small Start project. With the Phase 2 extension, the total project order of magnitude cost would increase to nearly $370 million exceeding the Small Starts limit but still eligible for New Starts grants. Both Small Starts and New Starts grants are selected nationally from a set of highly competitive projects and they require local match. The operating cost of the Phase 1 streetcar would be approximately $5.5 million annually. Operating costs for the complete corridor are estimated at $9 million annually. These operating costs include savings associated with a 20 percent reduction in route #4 Cottage Grove local bus service. The number of daily weekday riders on the Phase 1 streetcar is about 8,100. This example improvement and the Cottage Grove BRT described above are mutually exclusive projects, in that either a BRT or a streetcar would operate on Cottage Grove Avenue, but not both.

7.6 55th Street/Garfield Boulevard Bus Rapid Transit (BRT)

BRT on 55th Street/Garfield Boulevard could provide higher-speed service in an important corridor extending from Hyde Park to Midway Airport. This project achieves a large relative

increase (21 percent) in overall corridor ridership, assuming BRT overlaid on existing local service, but attracts moderate ridership on the limited-stop BRT service (4,800 weekday riders). More detailed engineering would be needed to determine the feasibility of adding or retaining bicycle lanes with BRT treatments. The order of magnitude capital cost could range from $71 million to $136 million depending on whether full gold standard BRT is implemented or a lower-cost BRT concept using painted curb lanes and less significant stations. The operating costs would be moderate at $4.1 to $4.7 million per year. The weekday operating cost per rider is estimated to be between $2.43 and $2.80 per rider. Substantial parking impacts would need to be considered. Overall, this project appears less cost-effective than the 79th Street Enhanced Bus project, which also is an east-west corridor project. However, community input should be considered in determining relative priorities between this and the 79th Street corridor.

7.7 79th Street Enhanced Bus

Enhanced bus service on 79th Street was proposed to address stakeholder concerns that service is slow and overcrowded on this important east-west corridor, which has the highest ridership of all CTA bus routes. The proposed service also could be extended to serve the proposed Lakeside development when it opens. Enhanced bus service rather than BRT is proposed given the existing right-of-way limitations of the arterial – there currently is one travel lane and one parking lane. Nevertheless, a limited-stop bus service with several BRT features is expected to offer travel times that are about 12 percent shorter than on the local bus route. The limited-stop bus route is expected to attract 11,000 weekday riders and increase the corridor bus ridership by about 5 percent. This is the third highest ridership among the projects examined. The limited-stop service is proposed as an overlay on the existing local service and will entail both capital and operating costs. Capital costs are fairly low, ranging from $18 million to $27 million depending on several design factors (e.g., need for additional lanes at queue jumpers, need for CTA provided shelters rather than advertising contract shelters, and optional implementation of automated fare payment). Operating cost is moderate at $7.4 million per year. Weekday operating costs per rider would be quite low ($1.96). This project is cost-effective, achieving a high ridership but having low capital costs and moderate operating costs.

7.8 Gold Line

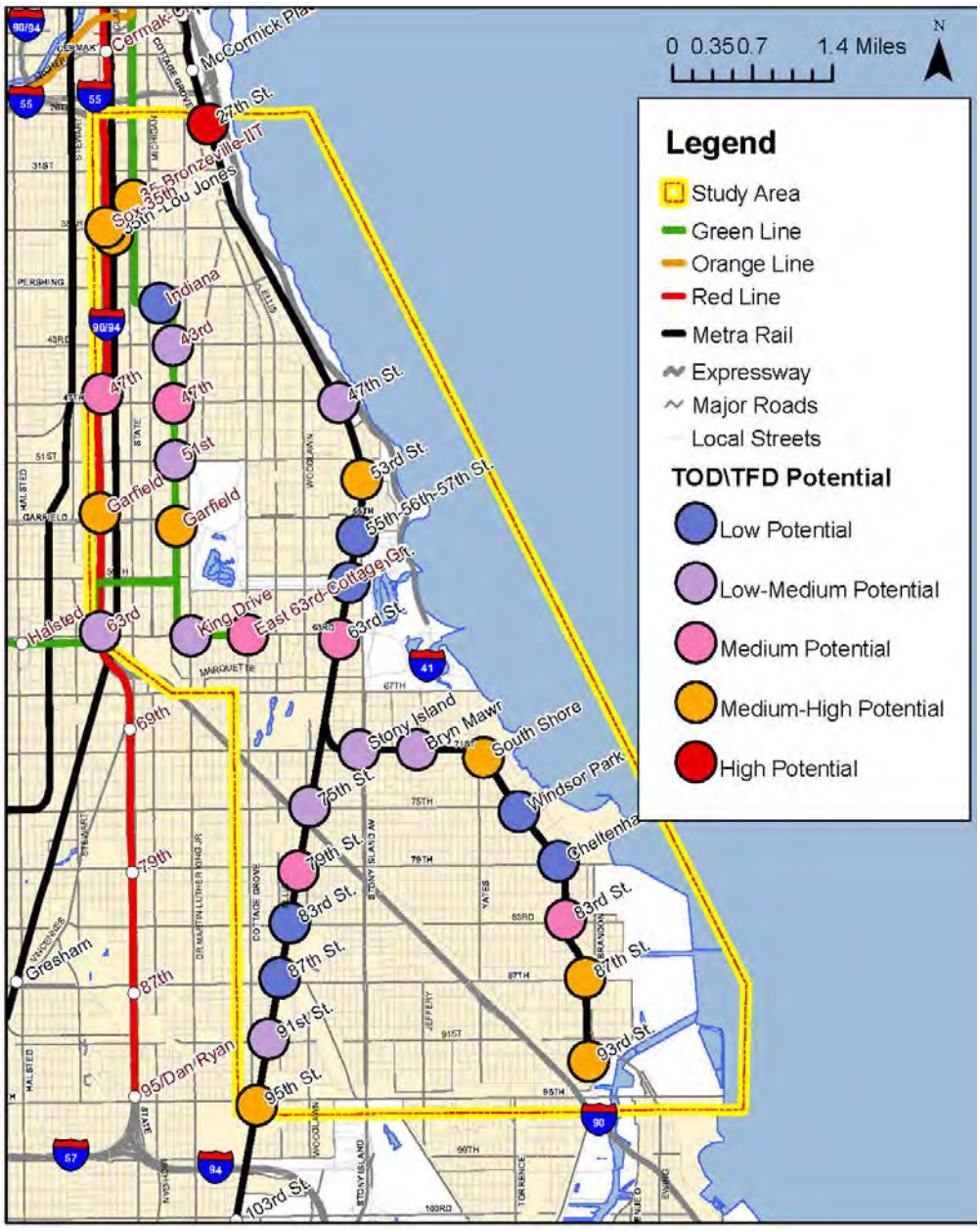
The Gold Line would change the service on the Metra Electric District South Chicago Branch to a CTA-like urban transit corridor. The concept is to transfer the line to CTA management, increase frequency of service, enhance and add stations, apply a CTA fare structure, and have CTA contract with Metra for the line's operation in order to utilize existing equipment and infrastructure. Two sketch-planning methods were used to estimate ridership potential and both methods suggest fewer than 14,000 daily weekday riders would use the service compared to just over 8,000 today. The capital cost of the Gold Line is substantially impacted by whether or not additional capacity on the Metra Electric District, particularly at Millennium Station, is required. A separate study to perform a simulation of operations is needed to definitively determine the need for expanded capacity. If it were assumed that capacity expansion at Millennium Station and along the main line was not needed, the capital cost per new rider

would be over $13 and the overall cost per new rider (including operating costs) would be over $35. If costly capacity expansion is required at Millennium station, the cost per rider could be much higher. The operating cost of the Gold Line service plan would be substantial at approximately $60 million annually. The average operating cost per rider would be $12.90. Current operating costs per rider are about $8 per rider. Since this proposal suggests CTA contract with Metra to provide the service, CTA would be taking the risk of revenue shortfalls and increasing subsidy. Given the current financial condition of CTA, this seems highly unlikely. In addition, it is expected that a share of the ridership would come from existing CTA services that might not be able to be substantially reduced or terminated. Furthermore, given the relatively low cost-effectiveness of the project, obtaining the necessary Federal New Starts funding would be very difficult. TOD impacts are not expected to be large since there already is existing rail service in the corridor. Without a large development impact and given the relatively poor prospective cost-effectiveness and funding opportunities, the project is not recommended to advance. Ridership on the Metra Electric District should be monitored closely before and after the regional fare payment system implementation to determine if additional demand is observed that would merit further detailed studies of this proposal (or other proposals for the MED).

7.9 Transit-Oriented Development

Transit-Oriented Development (TOD) is a development pattern characterized by higher-density and mixes of land uses designed to maximize multimodal access and to facilitate walking and use of transit. In Chicago, the preferred term for TOD is "Transit-Friendly Development" or TFD, because the city already is highly transit-oriented by virtue of the existing CTA and Metra fixed transit infrastructure. To maximize investment in the City's infrastructure and to make most efficient use of developable urban land, new development, or redevelopment projects should be concentrated around the transit infrastructure to the greatest extent possible and appropriate to the neighborhood typology. Figure 7 is a map showing these TOD assessments by rail station nodes: these already have been adopted for the CTA rail stations, and are recommended to be similarly formalized for the Metra commuter rail stations in the area. To further support TOD in the study area, the City can ensure that public policies are supportive by formalizing TFD typologies for all station areas; reviewing zoning classifications so that "by right" uses are consistent with TOD plans and overall economic health; supporting neighborhood infrastructure planning; and implementing pedestrian and bicycle access and safety initiatives. For station areas that have a longer-term time horizon for redevelopment or more challenging development conditions, a high degree of collaboration between public agencies and private or nonprofit community groups will be required to encourage concept planning, coordinate infill and new private sector developments, and market TOD candidate neighborhoods to the development community.

Figure 7. Stations with TOD Potential



8.0 Next Steps

This study evaluated a number of potential transit improvements in the South Lakefront area. Many of these improvements are relatively low cost that will improve mobility for these communities. The higher-cost improvements, such as the gold standard BRT or streetcar alternatives, are worthy of consideration when local financing is available. The following list of next steps provides a general outline of actions to improve transit service in the study area. More detailed next steps for each individual project are included in the *Definition and Evaluation of Potential Projects*.

- Identify potential funding:
  - Identify local funding to match any existing or potential Federal grants for new services;
  - Identify sources of ongoing operating funding; and
  - Be ready to pursue new Federal grants under a new transportation bill for the highest priority projects.
- Establish clear priorities:
  - Continue to monitor station conditions and identify those most in need of attention;
  - Evaluate priorities for BRT and other new corridor services in Chicago DOT BRT Plan;
  - Monitor ridership and need for more service on express bus routes and on Metra once fare integration is implemented; and
  - Evaluate demand for Gold Line.
- Advance Implementation:
  - Ensure representation of study area stations in CTA's maintenance and capital programs;
  - Work with communities to implement enhancements around stations;
  - Recommend that Metra implements programmed station improvements once the state bonding funds are released;
  - Recommend that the Gold Line is considered in Metra's current and future strategic planning processes;
  - Consider incremental improvements;
  - Conduct more detailed evaluation of traffic and parking impacts of corridor improvement proposals and discuss options with the community; and
  - Pursue TOD and market the candidate neighborhoods.

South Lakefront Corridor Transit Study

Definition and Evaluation of Potential Projects

South Lakefront Corridor Transit Study

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South Lakefront Corridor Transit Study

Definition and Evaluation of Potential Projects

prepared for

Chicago Department of Transportation

prepared by

Cambridge Systematics, Inc.

with

URS
O-H Community Partners
EJM Engineering
MKC Associates

November 2012

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1.0 Improvements to Existing CTA Bus Network

1.1 Example Improvements

New Crosstown Bus Route on 83rd Street

Purpose

Stakeholders identified need for a new 83rd Street bus route providing east-west connections. This corridor has commercial activity that is not served directly by bus transit. Although stakeholders did not identify the 460-acre proposed Lakeside development (former U.S. Steel South Works) site located at the lakefront between 79th and 87th Streets[1] as a key part of this route, it would be a logical eastern endpoint once the Lakeside development occurs, depending on roadway access to the site. This bus route would fill in a gap in service and provide east-west local travel and connections to rail service on the CTA Red Line, MED South Chicago Branch, and MED Main Line as well as connections to intersecting local and express CTA bus routes. The proposal addresses the study objective to improve travel time and enhance service coverage. This proposal was rated as a top priority among improvements in this category by some of the stakeholders participating in the Public Advisory Committee.

Project Description

Location/Alignment

The route would begin on the east at Lakeside (once developed) and then serve the South Chicago 83rd Street Station. It would operate on 83rd Street to the Red Line, making a deviation at Jeffrey Boulevard to use the underpass and proceed on Anthony Street until it would return to 83rd Street and continue west to serve the Avalon Park (83rd Street) MED Main Line Station. It would serve the Red Line 87th Street Station or the

[1] The redevelopment is planned to ultimately contain 13,575 new homes, 17,500,000 square feet of retail and other commercial space, a new high school, 1,500-slip marina, 125 acres of public land, lakefront access, new bike paths, and would house 150,000 people. The first phase beginning in 2012 will be built on a 76-acre plot of land in the development's northwest corner.

79th Street Station.[2] While the alignment serving 87th Street Station is shown in Figure 1.1, the final determination will be made in consultation with CTA. Although the 79th Street Red Line Station is more in line with the predominant direction of travel, the 87th Street Station is closer to the shopping areas located both north and south of 87th Street and west of Lafayette Street (Chatham Ridge, 87th Street Center, Best Buy, Marshalls, etc.), and this routing would allow 83rd Street buses to face the same direction as the route #87 87th Street bus when serving the Red Line station. The route would return to 83rd Street and continue to Stewart to serve the new Wal-Mart Supercenter.

The bus stops would be located at major intersections with one-eighth to one-quarter-mile spacing between bus stops.

Service Characteristics

The service would operate from approximately 6am to 10pm, much like Route #75. The service is envisioned to operate at approximately 15-minute headways during peak hours and 20 minutes in the off-peak; this is roughly similar to Route #75 which operates at 13-minute peak headways, 15 minutes midday, and 20 minutes in the evening. Both span and headway would be adjusted as warranted by demand.

Benefits/Target Market

The project would serve work trips and personal business as well as other nonwork trips. The route would facilitate feeder/distributor trips to/from the rest of the transit network particularly the Red Line, MED South Chicago Branch and MED Main Line rail stations, as well as north-south bus routes.

An 83rd Street route was identified as an important addition for riders who are traveling to and from the current shopping destinations along 83rd Street and South Commercial Avenue, as well as along 87th Street, and will be important for riders who will be shopping or working at the new Wal-Mart location. In the future this route can be extended to serve the new Lakeside development location.

Communities in the study area that would benefit include South Chicago and Avalon Park, as well as Lakeside and Chatham.

[2] Providing service to both the shopping areas and the 79th Street Station would likely lengthen the route and increase the cost compared to serving the 87th Street Station.

Figure 1.1 83rd Street Bus Alignment

Estimated Cost

Capital

Capital costs for the buses are estimated at $3.7 million (2011 dollars). This is based on the purchase of eight 40-foot buses at $462,500 each.

Operating

Operating and maintenance costs are estimated at $2.9 million per year (2011 dollars) using $115.65 per vehicle-hour of service. (2009 National Transit Database cost of $112.28 inflated to 2011.).

Estimated Ridership

Ridership for the new route is estimated at 5,300 weekday riders based on a sketch planning approach. This estimate was prepared using a peer route method, using Route #75 as the peer route. The planned Route #83 is located parallel to and between well utilized routes on 79th and 87th Streets and its market area competes with these routes. Route #75 was selected as the peer route since it also shares its market with nearby well utilized routes on 71st and 79th Streets, as well as Route #67. Both the proposed Route #83 and Route #75 serve Red Line Stations that are four blocks off one of the parallel arterials served by the high-ridership routes.

Census journey-to-work data was used for estimating the magnitude of the travel market covered by the Routes #75 and #83. The data is available at subzone level of detail, and using a linear buffer of one-half-mile, market sizes were computed. Ridership for Route #75 was used to derive ridership rates per capita, household, and worker. The rates were multiplied by Route #83 coverage to obtain sketch ridership estimates.

In addition, the Route #83 alignment is planned to serve major shopping centers including the Wal-Mart located on 83rd Street. These may lead to slightly higher ridership levels than predicted using the above methods.

It should be noted that a significant share of riders on the new route may be existing CTA riders who shift from other bus routes. This share could not be estimated using the sketch ridership methodology employed for this project.

Productivity

The estimated productivity of the service is 75 passengers per vehicle-hour on weekdays. The operating cost per rider on weekdays is $1.56. The capital cost per weekday rider to initiate the service is estimated to be $700.

Transit-Oriented Development Opportunities

Historically in North America, traditional bus service has not had significant impacts catalyzing transit-oriented development. New bus service along 83rd Street is not likely have a large impact in bringing new development to this predominantly residential corridor, but may have some positive impact at key retail nodes along the route, such as at Cottage Grove and Commercial, by bringing employees and shoppers to these areas.

Key Issues/Challenges

A key challenge to implementing the proposal is funding the added operating cost. It will be difficult to implement a new service with available operating funding given that CTA was forced to cut service in 2010 to address operating funding shortfalls. There may be considerable pressure to restore services that were cut before introducing new services. The service will also require additional peak buses, which represent additional capital costs.

Timeframe to Implement

If funding were identified for this improvement, implementation could occur in the short term, possibly within one year if buses were available. If buses need to be purchased, then implementation could be delayed by up to five years. The project is therefore identified as short to medium timeframe depending on funding and fleet needs.

Potential for Funding

Funding for additional buses needed could come from Federal formula grants for Bus and Bus Facilities. Funding to cover additional annual operating costs is particularly hard to obtain. Potential funding sources for the operating costs associated with this improvement include Congestion Mitigation and Air Quality (CMAQ) and Job Access Reverse Commute (JARC) grants. However, this funding may not be available for multiple years.

In fact, JARC funding has been secured to partially support the bus operating costs for an 83rd Street bus route and CTA is seeking local match funding so that implementation may proceed. With partial funding in place, the major challenges to implementing this service include identification of local match funding, as well as funds to cover the ongoing operating cost once JARC funds are exhausted, and the capital cost to install bus stop signs and acquire additional peak buses.

There are two primary sources of operating revenue for the CTA: System-generated revenue through fares and other sources, and public funding through the Regional Transportation Authority (RTA). Sales taxes constitute the primary source of operating revenue for the RTA and the three Service Boards. In recent years, especially given the economic downturn and lower sales tax revenue, CTA has faced significant financial challenges. Since 2008, the CTA has borrowed more than $554 million to cover the cost of day-to-day operations.[3] While the loans kept

[3] CTA President's Budget Recommendations, 2012.

trains and buses running in the short term, they did not solve the root causes of the agency's financial challenges. As a result, the agency undertook fare hikes in 2009 and deep service cuts in 2010 (18 percent of bus service and 9 percent of rail service was eliminated), which temporarily eased financial pressures. However, CTA faces significant fixed costs and steep declines in anticipated public funding. CTA is continuously working to optimize its system to provide the greatest benefits to riders at the most economical cost, which can result in adjusting service levels throughout the system. However, given the financial state of the agency, identifying the operating resources for significant new services will be very challenging.

Overall Assessment

This project adds a new local bus route on an arterial street with no current bus service and would address some gaps in transit coverage identified early in this study. The 83rd Street bus is one of the lowest cost improvements from a capital cost perspective ($3.7 million), and also has a fairly low operating cost ($2.9 million per year). The new route is projected to achieve a moderate level of ridership of 5,300 riders per weekday and potentially more as a result of the opening of a Wal-Mart along the route. The proposed service could be extended to serve the proposed Lakeside development, as well. The route is expected to be quite productive with about 75 passengers per revenue vehicle-hour and the weekday operating cost per rider is expected to be low ($1.56). While some riders attracted to the route may be new riders, others may be diverted from other bus routes. A JARC grant has already been obtained that will provide for some of the operating cost for a limited time period, but local funding match is required and has not been identified (50 percent for operating and 20 percent for capital grants). Local operating funding is particularly constrained at this time and available operating funds will be in high demand to restore some services that were cut in 2010 to address operating budget constraints. It is recommended that this project be considered by CTA for implementation as local match funding is identified. Note that there are currently several JARC projects queued up for which CTA has grants that cannot be implemented due to operating funding shortfalls.

Next Steps

1. Identify source of local funding to match JARC grant.

2. Actively participate in the planning for development along the potential route, especially at the Lakeside project.

3. Advocate for amenities for waiting bus customers and for physical enhancements to improve operations.

4. Determine possible bus terminal locations and work with property owners, developers or community leaders to ensure that adequate facilities to turn buses around are provided.

Restore King Drive Express Bus Service on CTA Route #3

Purpose

The CTA initiated limited stop bus service on King Drive, a high-ridership bus corridor, in 1993 with the #3L King Drive Limited bus route. In 2003 the route was rebranded #X3 King Drive Express to conform to CTA's new express bus numbering scheme. Service was provided weekdays in the peak direction during peak hours, and express bus stops were located one-quarter to one-half-mile apart at primarily the same stop locations as the previous Route #3L. Route #X3, along with several other bus routes, was eliminated in February 2010 due to CTA's operating budget constraints.

The intent of this project is to improve peak-period transit travel time and reliability along this corridor in response to stakeholder identified concerns. The study objectives addressed by this project include Travel Time, Frequency and Customer Comfort. This proposal was rated as a top priority in this category of improvements by some of the stakeholders participating in the Public Advisory Committee.

Project Description

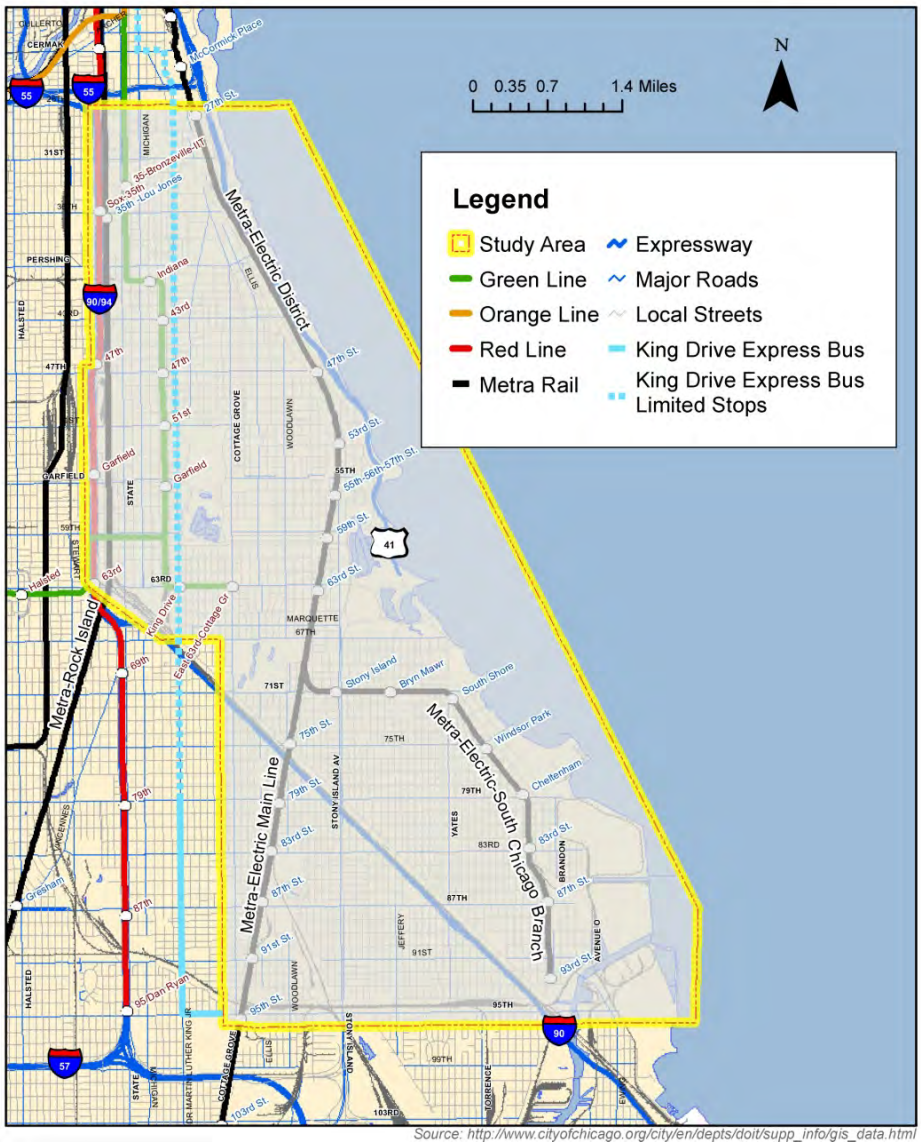
Location/Alignment

The reinstated Route #X3 King Drive Express would operate over the current alignment of Route #3 King Drive. The current Route #3 operates locally between Chicago State University at 95th Street and St. Lawrence, and the city's near north side at Fairbanks/Ontario. The route operates via 95th Street, King Drive, Cermak Road, Michigan Avenue, Chicago Avenue, and Fairbanks Court as shown in Figure 1.2. Express bus stops would be located one-quarter-mile apart north of 35th Street, and one-half-mile apart between 35th and 79th Streets. The express route would make all local stops south of 79th.

An alternative to reinstating the Route #X3 King Drive Express would be to restructure service in the corridor and operate a peak period zoned express service consisting of a longer route with an express segment and a shorter route operating local service within the express zone. The alternative route alignment would also follow the existing Route #3 King Drive bus route. The proposed express zone would be between Garfield Boulevard and Roosevelt Road. All buses leaving 95th Street in the morning rush period and all buses destined for 95th Street in the afternoon

rush would operate express between Garfield and Roosevelt, stopping only at bus stops serving intersecting transit services and at major traffic generators. Return trips in the nonpeak direction would serve all stops. Local customers in the express zone would be served by a new short Route #3 King Drive operating between 63rd Street and Fairbanks/ Ontario. The local trips would operate in the peak direction only. This is an alternate proposal which is not reflected in the following descriptions of costs, benefits, and ridership but could be considered in the implementation planning phase.

Figure 1.2 King Drive Express Alignment



Source: http://www.cityofchicago.org/city/en/depts/doit/supp_info/gis_data.html

Service Characteristics

The express service is proposed to operate on weekdays during peak periods only, and only in the peak direction, using standard 40-foot vehicles. The #X3 express trips to/from 95th Street would operate with 8-minute frequencies in the peak periods. Service on the current local #3 service would also be provided every eight minutes, offering a combined frequency of four minutes in the corridor at the express bus stops. The current local service (serving all bus stops) provided by Route #3 King Drive operates on a 4-minute frequency. The proposed service hours for the #X3 express service are between 6 a.m. and 9 a.m. in the northbound direction from 95th, and between 4 p.m. and 6 p.m. in the southbound direction from Fairbanks/Ontario.

An optional operational improvement would be to provide Transit Signal Priority (TSP) at selected intersections along the route to further improve travel time.

Benefits/Target Market

This service improvement will benefit commute trips during the peak hours to the Loop and North Michigan Avenue. Residents in the communities of Greater Grand Crossing, east Woodlawn, Washington Park, Grand Boulevard and Douglas will benefit from reduced travel time to downtown. The express bus route will operate approximately 14 percent faster than the local bus route. Residents in Greater Grand Crossing and east Woodlawn communities destined for the Green Line will also have the benefit of reduced travel times. Travelers closer to a local bus stop may choose to walk somewhat farther to an express bus stop to obtain a faster trip. For those who continue to utilize a local stop in the peak period in the peak direction, the interval between buses will increase from four minutes to eight minutes.

King Drive is one of few bus routes from the South Side that operate beyond the Chicago River to the near north. While this offers a one-seat ride to many travelers, it is currently a very time intensive trip. During stakeholder interviews, PAC meetings, and public meetings, restoring Route #X3 King Drive Express was identified as a priority project. There was also discussion of providing additional trips on the express service that operate only to 35th or 43rd Streets. Such additional service (not specifically included in this proposal) would serve several high-density developments, relieve overcrowding and better accommodate those who are traveling from the Loop to the near South Side.

Estimated Cost

Capital

There is no capital cost associated with this proposal since the peak vehicle requirement does not increase. In fact, it is estimated that the number of buses required to provide service in the corridor could be reduced by three buses due to the reduced running time associated with the express bus service.

Operating

Operating costs to implement the #X3 express bus service are minimal if vehicle hours from the current local service are reallocated to the express service, and off-peak service levels remain at current levels. The additional operating cost is estimated at approximately $1 million annually using $115.65 per vehicle-hour of service. (2009 National Transit Database cost of $112.28 inflated to 2011.)

Estimated Ridership

CTA experience with the previous limited stop "X" route services has shown that small improvements in travel time can attract additional riders. The October average weekday ridership levels increased by 4 percent, or slightly over 1,000 riders per weekday, between 2002 (the year before the #X3 was implemented) and 2009 (the year before the #X3 was eliminated). Based on these previous ridership results, the estimated increase in annual ridership associated with this improvement is expected to be approximately 258,000. The historical ridership on King Drive was not separated out by express versus local riders; thus, the ridership estimate represents an incremental increase for all riders in the corridor with the addition of the express service.

Productivity

The incremental productivity of the additional service hours is estimated at 30 passengers per vehicle-hour based on 1,000 additional weekday riders and an increase of 33.3 vehicle hours per day.

The additional weekday operating cost per additional rider is estimated to be $3.74.

Transit-Oriented Development Opportunities

Historically in North America, traditional bus service has not had significant impacts catalyzing transit-oriented development. Because service currently exists along the corridor, any changes to service patterns or schedules along King Drive would likely have only marginal

impact on development patterns along this corridor, but could serve as an additional success factor for development prospects currently in planning or in the works. The most positive impacts likely to be seen would occur at intersections or transfer points with other high-ridership routes where a base of commercial or mixed use activity is present or supported through policy and planning, for example, at 47th Street, Garfield Boulevard, or 79th Street.

Key Issues/Challenges

In February 2010 CTA eliminated express bus service on nine "X" express bus routes. It will be difficult to reinstate express bus service in one community without giving full consideration to restoring other express services.

Further, while overall ridership levels in the King Drive corridor are very strong with over 23,000 per weekday, demand in the corridor for longer distance/higher speed travel is unclear. The area along King Drive from 39th to 55th Streets is within walking distance of Green Line stations, which provides higher speed service for trips to/from the Loop, although not to North Michigan Avenue without making a transfer. Existing and future residential developments, including Prairie Shores and Lake Meadows north of 33rd, may present a market for Loop-oriented travel that this express route would serve.

Timeframe to Implement

If funding were identified for this improvement, implementation could occur in the short term, possibly within one year. Therefore this project is identified as a short-timeframe project depending on funding.

Potential for Funding

Funding to cover additional annual operating costs is particularly hard to obtain. Potential funding sources for the operating costs associated with this improvement include CMAQ and JARC grants. However, this funding may not be available for multiple years.

There are two primary sources of operating revenue for the CTA: System-generated revenue through fares and other sources, and public funding through the Regional Transportation Authority (RTA). RTA sales tax is the primary source of operating revenue for the RTA and the three Service Boards. In recent years, especially given the economic downturn and lower sales tax revenue, CTA has faced significant financial challenges. Since 2008, the CTA has borrowed more than $554 million to cover the cost of day-to-day operations. While the loans kept trains and buses running in the short term, they did not solve the root causes of the agency's financial challenges. As a result, the agency

undertook fare hikes in 2009 and deep service cuts in 2010 (18 percent of bus service and 9 percent of rail service was eliminated), which temporarily eased financial pressures. However, CTA faces significant fixed costs and steep declines in anticipated public funding. CTA is continuously working to optimize its system to provide the greatest benefits to riders at the most economical cost, which can result in the adjustment of service levels throughout the system. However, given the financial state of the agency, identifying the operating resources for significant new services will be very challenging.

Overall Assessment

This project would restore a peak period express bus service that was discontinued in 2010 in response to operating budget constraints. From a capital cost perspective, the project has no cost at all; the proposed service plan is expected to require no additional (or fewer) buses as a result of the higher speeds associated with limited stop express service and a shift in resources from local to express service. The additional operating cost (about $1 million) is the lowest of all the projects involving additional service, since the limited stop express service is proposed to operate only during peak hours in the peak direction. Based on prior operation of express service in this corridor (Route #X3), it is expected that a net ridership gain of about 1,000 riders per day would result. The incremental operating cost per additional rider is expected to be fairly low (about $3.74 per passenger). The riders may include some new riders as well as existing bus and rail riders. While the proposed improvement appears cost-effective, operating funds are very constrained at the present time. This proposed improvement will be competing with proposals to restore other services cut in 2010 to respond to the budget constraints. It is recommended this project be considered by CTA for implementation as funding is identified. Note that there are currently several JARC projects queued up for which CTA has grants that cannot be implemented due to operating funding shortfalls.

Next Steps

1. Determine the relative need to reinstate King Drive express service compared to other corridors.

   – Continue to monitor ridership, crowding and travel time on all local routes that operate in corridors in which express routes were eliminated in 2010.

2. Identify funds required to operate the service.

1.2 Other Improvement Ideas

South Lake Shore Drive Bus Priority

Seven express bus routes currently operate between the study area and downtown Chicago: #2, #6, #10, #14, #26, #X28 and #192. In 2010, more riders boarded these seven routes on an average weekday (19,500) than the four Red Line study area stations combined (18,500). These express buses play a critical role in linking transit riders from the eastern half of the study corridor with Loop destinations. The express buses experience delays primarily in the McCormick Place/Museum Campus areas and on local streets used to access the Loop. Stakeholders have expressed interest in strategies to provide priority for these express buses. This proposal was rated as a top priority among improvements in this category by some of the stakeholders participating in the Public Advisory Committee.

One strategy would be to provide physical priority to the express buses through the provision of an exclusive peak period/peak-direction bus only lane on Lake Shore Drive, queue jumps at key intersections and other improvements at bus access/egress points. Physical limitations including lack of a shoulder, adjacent sensitive parkland, and previous Chicago experience with reversible lanes on the Drive suggest that existing lane conversion would be required to do this. Public acceptance of lane conversions would be a challenge. The congested areas adjacent to Soldier Field at Columbus/Roosevelt Road and at Balbo make provision of transit priority treatments very difficult. Alternative improvements to Loop access from south Lake Shore Drive may be considered in the CDOT Central Lakefront Transit Study or the upcoming CTA Lakefront Alternatives Analysis.

Transit signal priority (TSP) is another strategy that can be used to alleviate the effects of congestion delays on bus transit service without requiring conversion of an existing lane. TSP can actuate an early or extended green signal as a bus approaches a signalized intersection; this allows the bus to pass through the intersection more quickly. The intended effects of a TSP system and signal reoptimization are to reduce the number of stops made and/or shorten the duration of the wait at signalized intersections by introducing minor adjustments to the traffic signal timing at each signalized intersection. The expected benefits of a TSP system to the transit system, its customers and the general public include faster bus travel, enhanced travel time reliability, lower operating

costs, improved transit customer satisfaction, and a safer movement of buses and automobiles along Lake Shore Drive.[4]

TSP could be deployed at key points between 31st Street and Roosevelt Road; these points would be identified following additional traffic analysis. A wireless network that allows transit vehicles to communicate with signalized intersections would be required; this network could be connected to the Internet and accessible by CDOT, so they would have the capability to monitor and configure the TSP system and wireless network remotely.

There would be no changes from the basic operating plan (span of service, frequency of service) of the express routes. Operating speeds within the South Lakeshore Drive corridor segment would increase because of signal prioritization, while operating speeds at the northern and southern ends of the express bus routes would remain consistent with existing operations.

CTA has just obtained $2 million in funding to conduct a study along the Chicago Lakefront Corridor to determine the feasibility and appropriate level of investment for high-capacity transit connections in the 24-mile corridor from Howard Street to 103rd Street. This funding will enable CTA to consider how best to address congestion in the corridor affecting Lake Shore Drive express buses.

Shelters and Real-Time Bus Information

The project involves improving bus shelter facilities and making use of technology to provide improved customer information at bus shelters. With Bus Tracker in place, CTA knows the location of vehicles and currently conveys information over the Internet to users to let them know the expected arrival of the next bus or train. According to CTA usage data, use of Bus Tracker is less common in the study area, perhaps related to the lower income population that may not have smart phones or text messaging cell phone service. With a large reliance on bus in the study area, the use of dynamic message signs (DMS) to convey such information at key bus stops would be especially valuable to study area transit users. Implementation of this technology would address the Knowledge of Service study objective, making waiting for transit less onerous and allowing riders to use their time most effectively.

Stakeholders have also indicated a desire for more bus shelters. Bus shelters are placed in high-traffic locations as a result of the City's contract

[4] Audible pedestrian signals may be used to alert visually disabled people that the signal timing is adjusted.

with JCDecaux. The provision of more shelters in the area particularly at key bus stops would also address Customer Comfort.

Dynamic Message Sign (DMS) displays would be located at key bus shelters showing time until the next arrival. The DMS displays could also be implemented by retail/commercial/activity center third parties, e.g., retail businesses, lobbies of high-rises, etc. The focus would be on locations with high number of boardings and transfer opportunities. The high-volume bus stop locations would be identified using existing automated passenger count (APC) data, and patrons in the immediate vicinity of these stops will receive the primary benefit.

This improvement is applicable to all community areas and to especially heavily traveled locations. All type of trips could benefit, but the greatest benefit would be among off-peak trips when buses operate less frequently and among trips involving transfer between or to buses.

Although the improvement has a low capital cost and a low operating cost, there are still costs involved including costs of equipment and the cost of providing power and information to DMSs. An agreement is required with the City of Chicago and JCDecaux for use of bus shelters. The improvement could be implemented in a medium timeframe.

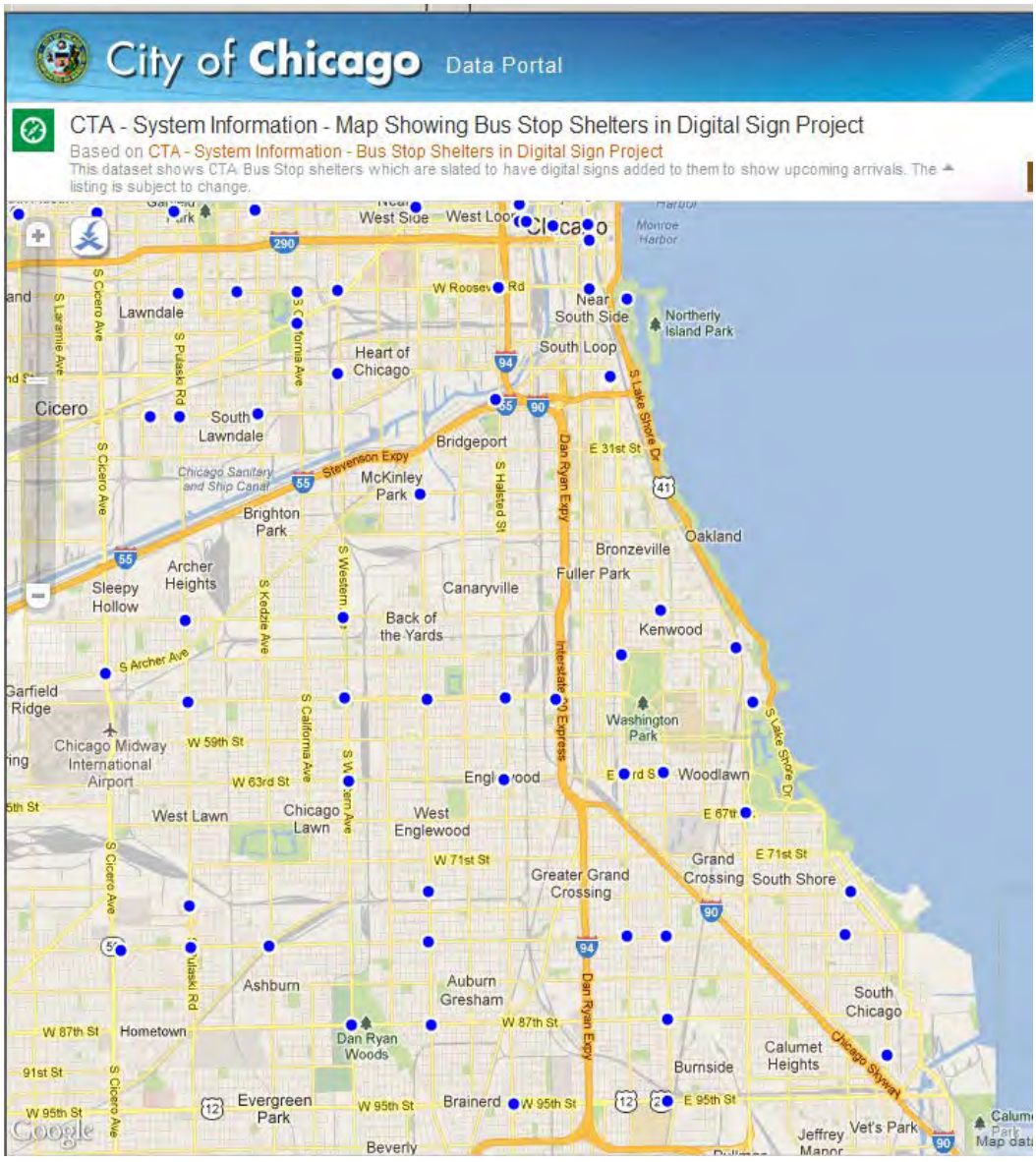
CTA has recently announced that with funding from RTA and FTA grants, it plans to install 160 LED signs at bus stops in its service area with a focus on high-transfer locations. An image of a new shelter sign is shown in Figure 1.3.

Figure 1.3 Bus Shelter Digital Sign

Source: CTA website.

This current project includes a number of locations in the study area, shown in Figure 1.4.

Figure 1.4 Locations of Bus Stop Shelters to Receive Digital Signs



Source: https://data.cityofchicago.org/Transportation/CTA-System-Information-Map-Showing-Bus-Stop-Shelte/mw4h-s8xu, accessed November 29, 2012.

Restore Crosstown Bus Route on 31st

Stakeholders have requested a bus route on 31st Street from Lake Shore Drive to Cicero Avenue. Bus service on 31st Street between the Ashland Orange Line Station and Mercy Hospital at 26th/King Drive was

discontinued in 1998 as a cost cutting measure by CTA. As a result, a gap in east-west bus service exists between Cermak Road and 35th Street. Currently Route #35 does serve 31st Street from Kedzie to Cicero, and Cicero to 24th Place. A new 31st Street bus route would serve the Douglas community by filling that gap and create links to the lakefront, Illinois Institute of Technology, Orange Line, and big box retailers on Cicero Avenue. The bus route would serve work trips as well as school, shopping, and other personal business trips. Network connectivity would be improved as the 31st Street bus route would distribute trips to and from the Orange Line. The study objectives addressed by this proposal include Travel Time, Coverage, Key Linkages, Seamless Travel, and Economically Viable Neighborhoods.

The proposed route would operate between 5 a.m. and 8 p.m. with frequencies of 12 minutes in the rush periods and 20 to 30 minutes in the nonrush periods. The service would require approximately eight additional buses plus one spare bus.

The potential alignment is from 31st/Lake Shore Drive west to Lock Street, north on Lock Street to Archer and west on Archer to the Orange Line station at Ashland. The alignment could then continue west to Cicero Avenue via Archer, 35th Street, Western Avenue, and 31st Street. A bus terminal exists at 24th Place/Cicero Avenue which would allow the bus to turn around. At Lake Shore Drive buses could terminate at the curb just north of 31st Street and use the circular access road at approximately 30th Street to turn around for the westbound trip. Alternatively, it could be extended to serve McCormick Place, as suggested by a stakeholder.

JARC funding has been secured to partially support the bus operating costs for a 31st Street bus route and CTA is seeking local match funding so that implementation may proceed. With partial funding in place, the major challenges to implementing this service include identification of local match funding, the ongoing operating cost once JARC funds are exhausted, and the capital cost to install bus stop signs and acquire additional peak buses.

One additional challenge may be securing sufficient riders to support the service. Prior to 1998 the CTA operated two bus routes along the 31st corridor: Route #31 31st Street and Route #32 West 31st Street. Weekday ridership on each route averaged 200 passengers or less. Although these ridership levels are too low to support a route in today's economic climate, it is hoped that population growth and new development in the area combined with changing the configuration of the previous service will provide sufficient ridership to sustain the route.

2.0 Improvements to Existing CTA Rail Network

2.1 Example Improvement

Rail Station Enhancements

Purpose

Community participants in the South Lakefront Transit Corridor Study have expressed the viewpoint that stations along CTA rail lines within the study area often exhibit poor conditions. Field work by the consultant team identified several instances of maintenance needs that when addressed would provide a more pleasant environment for customers, and that amenities at some stations could be upgraded. Observations were mainly of wear-and-tear on facilities from ordinary use; some lack of cleanliness; and isolated instances of vandalism and graffiti. The current process for maintenance is regular surface cleaning, periodic deep cleaning, and special work orders for damage or breakdown incidents. As new or upgraded amenities are rolled out across the CTA rail system, CTA often employs a "pilot" roll-out program wherein a subset of stations, usually representing all areas of the system, receive a first wave of installations, followed by a phased roll-out to complete the program according to need, ridership, or other criteria.

In addition to the stations themselves, the community identified the equally important issue of an inhospitable or intimidating environment immediately surrounding the stations. Field work confirmed the presence of conditions external to the station (loitering, panhandling, vacant/abandoned buildings) that negatively affect perception of the station itself. Given the high proportion of walk access to transit in the corridor, the character and amenities around the stations and along major pedestrian routes to the stations can have an effect on utilization of the services.

Close proximity to rail service and station conditions are viewed as important community economic drivers by many of the individuals who participated in the public involvement process. Cosmetic station improvements, such as brighter lighting and painting, as well as major enhancements, including ADA compliance upgrades, have been cited by

participants as methods for improving the economic vitality of neighborhoods. Improvements to the Green Line station conditions and making Red Line stations ADA-compliant have been identified as priorities by public involvement participants. There was also great concern about improving the pedestrian environment around stations.

This proposal was rated as a top or second priority among improvements in this category by many of the stakeholders participating in the Public Advisory Committee.

Project Description

This project involves targeted improvements to stations and station areas to enhance the rider experience and potentially improve ridership and prospects for transit-oriented development.

Improvements include maintenance and repair of current station features (basics) and amenities (extras) at CTA Rail Stations (Green and Red Lines) in the study area, as well as the introduction of additional amenities to enhance customer information and comfort. Categories of features and amenities are summarized in Table 2.1.

This improvement initiative also includes planning, investments and policy incentives for improved station environments in the areas surrounding individual station sites. Activities could include:

- Station area TOD planning;
- Streetscaping/landscaping planning;
- Elevated attention to street sanitation and maintenance;
- Code enforcement of adjacent or nearby vacant/foreclosed properties, with consideration given to demolition of unsafe abandoned properties;
- Maintenance of adjacent or nearby vacant lots, with consideration given to interim neighborhood use as community gardens, playgrounds, etc.;

Support for establishment of community policing groups (such as through the Chicago Police Department's CAPS program) and neighborhood block/merchant associations.

Table 2.1 Station Feature and Amenity Inventory

General Features	Accessibility Features	Signage/ Wayfinding Features	Life Safety Features	Amenities
Doors	Elevator	Station ID	Exit Signs	Seating
Floors	Escalator	Route Map	Alarms	Warming Stations
Windows	Railings	System Map	Strobes	Shelter/Refuge
Stairs	Tactile Pavers	Connection/ Transfer Info	Call Box/ Emergency Contact	Refuse Bins
Ceiling/Roof	Braille Signage	Variable Message Signs	First Aid Box	Recycling Bins
Platform	Wheelchair Access	Loudspeaker Announcement	Extinguishers	Vending Machines
Daily Maintenance		Customer Service Personnel	Camera	Bicycle Racks/ Storage
Lighting		Points of Interest		Bus Transfer Station
Exterior Surroundings				

Benefits/Target Market

There is a logical, if unquantified, relationship between station conditions and usage of a transit service. The conditions of a station are one of many factors that a traveler must consider when making a choice about mode of travel or route, and different people will make different choices depending upon how they value time, cleanliness, or other factors.

Previous research has indicated that improved passenger amenities, such as station enhancements, can provide a boost to ridership by infrequent customers. But there is a limit to the amount that customers are willing to pay for enhancements, and it is rare that customers will indicate their willingness to pay additional fares for "high-end" improvements. From *TCRP Report 46: The Role of Transit Amenities and Vehicle Characteristics in Building Transit Ridership (1999*):

> *The research shows that amenities promote transit ridership. In addition to foregoing a fare reduction, a high percentage of riders surveyed indicated that they would increase transit use if amenities were provided. Moreover, more expensive features are more likely to encourage transit riders to take more trips. For example, in Rochester, riders were least likely to trade fare reductions for*

> *amenities, but they were the most likely to express a willingness to ride more often if the amenities were added. This suggests that the people who would be willing to pay for amenities are not necessarily the same people who would increase their trip frequency. Based on our research, we estimate that spending at the [highest level][5] would increase ridership in the case study cities by about 1.5 to 3 percent.*

The *Chicago CMAQ Station Improvements Study (July, 2000)* used survey responses from CTA customers to determine the relative value of 14 transit station features or potential enhancements. According to the study, the station features that are the most highly valued items include:

- Weather protection on station platforms
- Vertical circulation features such as elevators and escalators
- Security features (Interior and exterior lighting, police presence, security cameras)

The results of the surveys indicate that these items may be seen as basic requirements for transit service in the City of Chicago. Additional features such as real-time travel information, maps and attraction information, cleanliness, and an active neighborhood were also rated as having moderate value.

The value of these features, converted into monetary equivalents, was then translated into an estimate of the potential ridership increase associated with a systemwide station improvements project. The resulting estimate suggested a six to 10 percent potential ridership increase on the rapid transit system from a program to provide amenities and modernize stations in the system.

Finally, research results also suggest that while station environment and amenities are important factors affecting the rider experience, the neighborhood surrounding the stations can be just as important. For CTA rail stations, where the largest proportion of passengers arrives by foot or by bus, this may be an even more important consideration. Therefore, investing significant resources in station upgrades may provide little benefit if the surrounding urban area is perceived as unsafe or uninviting.

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[5] In the study participants were asked to identify levels of spending on amenities. The level of spending on amenities correlating to the ridership increase was about $1,500 annually per bus in the transit system in 1999 dollars.

Estimated Cost

The CTA Station Renewal Program (discussed in more detail below) is a one-year program estimated to cost $25 million that will include renewal of approximately 100 rail stations systemwide, excluding the Brown Line stations, which were recently all rebuilt. While the extent and nature of repairs and maintenance at each station will vary based on the type of station, state of current conditions, and need, the per-station budget is on average $250,000 per station.

Estimated Ridership

Developing enhanced stations and station areas will serve the needs of existing customers by improving customer comfort for current riders and should attract more rides from occasional users.

Another major goal is to increase ridership by attracting more choice riders from the study area (those who have alternatives available) as well as creating an environment for additional growth and development near transit stations (thus increasing likely patrons).

It is very difficult to determine the increases in ridership among existing riders and new riders that would result from the improvements recommended. Academic research shows a minor statistical correlation or small impact from station improvements on ridership. A recent CDOT study did show that systemwide, a six to 10 percent increase in overall ridership could occur if stations throughout the entire CTA rail network were upgraded to include preferred customer amenities (see additional discussion above under "Benefits").

Productivity

Productivity and unit costs per rider were not calculated for this project base since a ridership estimate could not be calculated.

Transit-Oriented Development Opportunities

Improving conditions at CTA rail stations may have a positive effect on development conditions in a station area but will not be the only factor needed to attract transit-oriented development. Investment by the City, CTA or civic/neighborhood groups in capital station amenities and features or increased maintenance will send a positive signal to the community that stations are valued infrastructure and may have some effect in reducing development risk. However, the fact that relatively new stations exist on the CTA Red Line and Green Line in the study area that still have a lack of TOD activity despite available land for development suggests that investment in station amenities or conditions

strictly for the purpose of triggering TOD may have only a small impact without investment or development support from other sources.

Key Issues/Challenges

- Chicago experiences wide-ranging weather conditions that affect the state of repair of open-air stations;
- High ridership means high station utilization and faster wear-and-tear;
- Not all stations currently provide universal access (are "ADA-compliant") to passengers with special needs; significant upgrades to some of these stations may potentially necessitate (by law) more complex and costly redesign to accommodate elevator(s), platform dimensions or other circulation considerations;
- Implementing a program of increased maintenance or process changes must be conducted equitably systemwide – not just in this study area – which has broad operating cost implications;
- Rolling out new amenities must be conducted equitably systemwide – not just in this study area – which has broad capital cost implications.

Timeframe to Implement

Overall station reconstruction is not needed for the CTA stations in the study area in the short term. The average useful life of a station is approximately 40 to 60 years, and most of the stations in the study area have been reconstructed within that timeframe; in particular the Green Line stations that were all reconstructed during the 1990s as part of a major reconstruction of the entire line. Three of the four Red Line stations are more than 40 years old, but all have received recent upgrades in the past 10 years. Table 2.2 summarizes the status of each station.

Table 2.2 Station Inventory

Station	Line	Station Type	Year in Service	Last Reconstructed	Recent Upgrades
35th – IIT	Green	Elevated	1892	1996	-
Indiana	Green	Elevated	1892	1983	2001
43rd	Green	Elevated	1892	1996	-
47th	Green	Elevated	1892	1996	-
51st	Green	Elevated	1892	1996	-
Garfield	Green	Elevated	1892	2001	-
King	Green	Elevated	1893	1991	1996
Cottage Grove	Green	Elevated	1893	1991	1996
Sox – 35th	Red	Median	1969	-	2005
47th	Red	Median	1969	-	2005
Garfield	Red	Median	1969	-	2005
63rd	Red	Median	1969	-	2005

In September 2011, Mayor Rahm Emanuel and CTA President Forrest Claypool announced a new program for station maintenance, using a SWAT-team approach that focuses on whole stations rather than specific elements within individual stations. The first phase of implementation will provide a facelift to 100 CTA rail stations systemwide. As of this writing (November 2012), the following study area stations are currently undergoing improvements: Indiana, 47th, and 51st stations on the Green Line. Improvements were recently completed at the following study area stations: King Drive, Garfield, 35th-Bronzeville-IIT, 43rd, and Cottage Grove stations on the Green Line, and 47th, Cermak-Chinatown, and 95th/Dan Ryan stations on the Red Line.

According to a City press release:

> *The initiative, performed by work crews comprised of different trade workers called the 'Renew Crew,' focuses on providing repairs in a more efficient way, creating a cleaner, brighter and more appealing station that improves the customer travel experience.*
>
> *"By consolidating disparate trades that used to operate independently, on different schedules and at different locations, the station renewal program will integrate supplemental specialized private trade contractors," said Claypool. "This is sort of a SWAT team approach to comprehensively address all the outstanding issues at a station at once – cleaning, repairing*

> *and improving – rather than the piecemeal approach used previously."*
>
> *Work done at each station will be determined by the station's specific needs and configurations, but can include such work as painting, new lighting, repairs, power washing walls and ceilings, replacing signs and landscaping.*

A partial schedule is available to the public on the CTA website at http://www.transitchicago.com/stationrenewal/.

The project is estimated to cost $25 million – which is partially funded by $18 million saved from CTA job cuts. Restoration done at each station will be based on each station's condition and specific needs. The program does not include Brown Line stations, which were recently all rebuilt.

The Green Line 43rd Street Station in the study area was among the first stations to receive attention under this new program. Major repairs at that station included:

- Inspect and repair brick and metal in stairwell areas;
- Replace "Danger – High Voltage" signs, as needed;
- Inspect and clean drains;
- Touch up paint work on columns, station house, trash bins, sandboxes;
- Repaint platform railings, staircases and stair risers;
- Clean roofs, gutters and areas around station;
- Inspect, clean and relamp lighting fixtures throughout station, as needed;
- Repainted surfaces throughout the station, including the elevated structure and columns; the platform canopy, columns, and railings; and all exterior metal surfaces; and
- Replaced west auxiliary exit staircase.

Spot maintenance improvements to station features and amenities should still be made as incidents occur, with higher priority allotted to fixes related to passenger safety and accessibility.

As CTA introduces new amenities to its service network (such as the recent roll-out of monitors providing real-time Bus Tracker or Train

Tracker information), high ridership and transfer stations in the study area should be included in every pilot roll-out program, with equitable participation in subsequent phases.

Potential for Funding

Potential sources of funding include:

- CMAQ grants (for station upgrades/amenities)
- Special Service Area (SSA)/Business Improvement District (BID) funding (for station amenities and maintenance/upgrade of station exterior and surroundings)
- Tax Increment Financing (TIF) (for redevelopment incentives, station improvements, and neighborhood infrastructure)
- CMAP and RTA planning grants for TOD planning

Overall Assessment

Enhancements to existing CTA rail stations were identified as a priority project by stakeholders. Particular concerns of stakeholders included the Green Line stations and the 87th Street Red Line Station. During this study, field review of these stations was conducted to assess any deficiencies and identify specific improvements. The findings were reviewed with CTA and ongoing programs for rehabilitation were identified. The study determined that complete reconstruction of stations is not required due to recent rebuilds or renovations of the stations during their useful lifespan. However, recommendations include: 1) Implement ongoing maintenance and upgrade program, 2) Conduct periodic assessments of station conditions to identify refurbishment needs, 3) Identify targeted public infrastructure improvements immediately around stations, and 4) Ensure representation of study area stations in pilots of programs, such as the CTA Station Renewal Program, and installation of security cameras and real-time information monitors. The CTA Station Renewal program already includes significant repairs at the 35th-Bronzeville-IIT, Indiana, 43rd Street, 51st Street, King Drive, and Cottage Grove Green Line Stations , and deep cleaning of the 47th Street Red Line station.

The capital costs associated with repairs of CTA stations range from $0.25 million to $1 million. Of course there are also ongoing operating and maintenance costs at each station associated with 1) Routine maintenance and upkeep, 2) Surface cleaning and periodic deep-cleaning/power washing, 3) Utility costs at stations, and 4) Staffing of customer service, maintenance and security personnel.

As a result of repairs at the CTA stations a small positive impact can be expected on ridership and adjacent development environment, as well as a positive impact on quality of life.

Next Steps

1. Identify a source of funds for enhancements surrounding CTA stations. Work with the community to implement enhancements which may include new lighting and sidewalks, landscaping, and removal of abandoned buildings.

2. Promote CTA's Adopt-A-Station program with community leaders.

3. Ensure representation of study area stations in CTA's maintenance and capital programs including special pilot programs.

4. Continue to monitor station conditions and identify those most in need of maintenance attention and repairs.

2.2 Other Improvement Ideas

Track and Structure Improvements to Eliminate Slow Zones

Starting in Spring 2013, the CTA will rebuild the tracks along the south Red Line, from Cermak-Chinatown to 95th/Dan Ryan, which will provide faster, more comfortable and more reliable service for Red Line riders. From just north of the Cermak-Chinatown station to the 95th Street station, crews will replace everything in the track bed: ties, rail, third rail, ballast (the stone material that holds the ties in place) and drainage systems. Some stations will also receive improvements ranging from new canopies, paint and lighting upgrades to new benches and bike racks. Additionally, the stations at Garfield, 63rd and 87th will get new elevators, making all stations on the South Side Red Line accessible[6].

Currently, 40 percent of the Dan Ryan Branch requires slow zones for safe operation, which means longer commutes and less reliability for Red Line riders. Without these improvements, the percentage of slow zones would rise —further increasing commute times.

The project is made possible by $1 billion in state and local funding announced in late 2011 by Mayor Rahm Emanuel and Governor Pat Quinn for the Red and Purple Lines.

[6] http://www.transitchicago.com/redsouth/

Green Line Extension to Dorchester

This improvement, stemming from a suggestion made by a stakeholder, would connect the Green Line East 63rd Branch to the Metra Electric District (MED) line at Dorchester. Extension of the Green Line would provide increased options for accessing the South Side via a connection to MED at the new Green Line terminus. The objectives addressed by this improvement include Travel Time and Seamless Travel.

Prior to 1982, the East 63rd Branch of the Green Line terminated at Jackson Park east of the MED. Due to structural defects in the bridge over the MED railroad tracks, the branch was closed east of University Avenue. In 1994 the entire Green Line was closed for reconstruction. The line reopened in 1996 with the East 63rd Branch terminating at Cottage Grove Station. Strong local sentiment against an elevated structure over 63rd Street in the intervening years led to removal of the structure east of Cottage Grove in 1997. Local stakeholders believed the L was inhibiting redevelopment of the area.

This proposal is to extend the Green Line from Cottage Grove to Dorchester Avenue and provide a direct connection to the MED Main Line Station at 63rd Street. The alignment for this extension could continue along 63rd Street, or it could veer slightly north or south to travel along an alley alignment. Opportunities for an alternative alignment exist because much of the land in this corridor is presently vacant. New Green Line stops would be built at University and Dorchester Avenues. The original stakeholder suggestion proposed extending the line east to Jackson Park at Stony Island Avenue however, this would have required construction of a costly bridge over the MED tracks. This proposal assumes that a transfer connection to the MED can be made at Dorchester Avenue, west of the tracks, and the cost of a bridge crossing the MED can be avoided.

This route extension is located in the Woodlawn community, but it would benefit most South Side communities in the study area with improved access to downtown and the University of Chicago. Detailed ridership forecasts are required to determine if there would be sufficient demand for the service. Construction of new elevated tracks will require buy-in by adjacent neighborhoods and key stakeholders such as University of Chicago. The short extension would be costly to construct but would add a relatively short running time resulting in a modest increase in operating cost. If an alternative alley alignment is chosen, the right-of-way must be negotiated and possibly additional land purchased.

New CTA Station at 26th/27th

Previous studies have looked at the large station spacing on the Green Line between 35th and Roosevelt Stations and determined that a new station would be feasible. In 2002, City consultants examined several locations along this segment of the Green Line including 18th Street, Cermak, 26th and 31st. The study concluded that the Cermak location, just north of the study area boundary, would have the highest ridership among these locations and design studies continued. In October 2011, CDOT announced that it will build a new station at Cermak for the CTA, in part with money from a new tax on downtown parking lots proposed by Mayor Rahm Emanuel. The station is estimated to cost about $50 million. The station would be a long platform that stretches from Cermak to 23rd Street. It would tentatively have entrances on the north and south sides of Cermak, as well as one just north of 23rd.

With the certainty of a station at Cermak, the need for another Green Line station between Cermak and 35th Street is reduced. The overlap in market between a potential station at Cermak and 26th Street is somewhat minimized due to the barrier created by the Stevenson Expressway. A new Green Line station at 26th/27th Streets could serve new developments in the immediate area. The study objectives addressed by this improvement include Travel Time, Key Linkages, and Economically Viable Neighborhoods.

A new station at this location would be approximately centered between the existing Roosevelt and 35th Stations and would be just north of the midpoint between Cermak and 35th Street. The new station is proposed as a center platform, ADA-compliant, with an auxiliary entrance/exit at one end and the main entrance at the other end. There is presently sufficient vacant land in the vicinity to build a station with good pedestrian and bus access. A bus turnaround should be included in the site to accommodate Route #21 Cermak buses that currently terminate on-street at 25th/Michigan.

The proposed station location is in the north portion of the Douglas community. In the vicinity of this new station are several traffic generators including Mercy Hospital, McCormick Place and the Dearborn Homes residential complex. The MED 27th Station is located approximately three-quarters of a mile to the east. The 26th/27th station could serve all types of trips, including work, recreation and personal business, and could spur additional development. There are currently no physical constraints that would prevent building a station at this location, although new developments and building rehabilitations were occurring in the area prior to the economic slowdown. An upturn in the economy could once again spur development on land ideal for the station. Construction and operating costs are a key challenge to this

project. Detailed ridership forecasts are required to determine if there would be sufficient demand for the station particularly in light of the introduction of a Cermak station.

3.0 North-South Bus Rapid Transit and Streetcar

3.1 Example Improvements

Cottage Grove Bus Rapid Transit

Purpose

The Existing Conditions report prepared during this study identified relatively slow transit travel speeds for trips between Pershing/Cottage and both Hyde Park and the Loop. A bus rapid transit service (BRT) along Cottage Grove would improve transit travel time and reliability along this corridor. Study objectives addressed are Travel Time, Frequency, and Customer Comfort.

Cottage Grove Avenue on the northern end of the study area has undergone significant changes over the last several years due to implementation of the Chicago Housing Authority's Plan for Transformation. There are now mixed income, low-rise developments replacing the high-rises that lined Cottage Grove from 35th Street to just south of Pershing Road. Because study area residents who live near Cottage Grove Avenue are beyond comfortable walking distance of the Green Line or express bus services that run through lakefront communities, options for traveling outside of the study area are time consuming.

This proposal was rated as a top priority among improvements in this category by many of the stakeholders participating in the Public Advisory Committee.

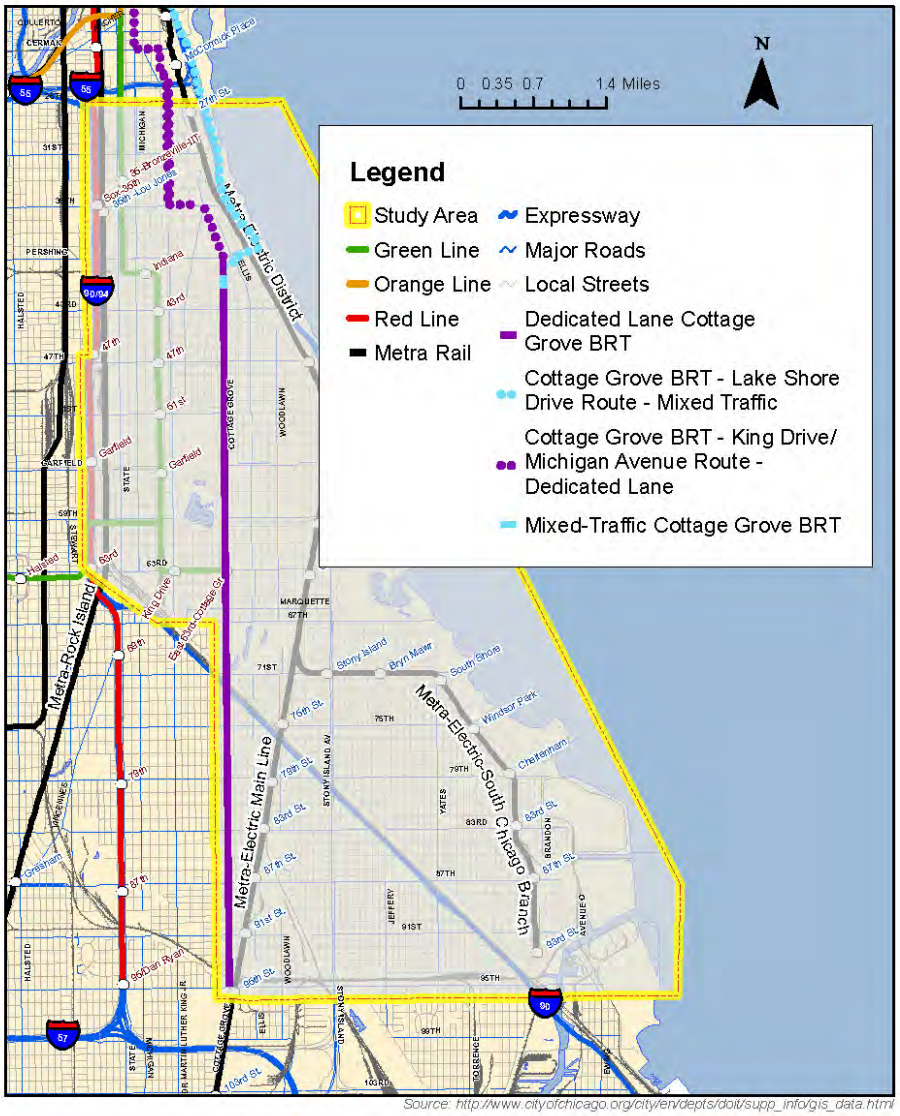
Project Description

Location/Alignment

The proposed BRT route would extend from 95th Street to Pershing Road. North of Pershing there are two routing alternatives as shown in Figure 3.1:

- Enter Lake Shore Drive and travel north into the Loop, with exact routing into the Loop as yet undefined; or
- Turn west on 35th, proceed north on King Drive, west on Cermak and north on Michigan.

Figure 3.1 Cottage Grove BRT Alignment



Dedicated lanes for the BRT could be provided along the curb or in the center of the street (as a transit median). In either case nonmetered parking would need to be removed or existing travel lanes converted to bus lanes. Street treatments and alignment details of the King Drive/ Michigan Avenue routing north of Cermak Road are being investigated in the Central Lakefront Transitway Study. The Lake Shore Drive

alignment would not employ dedicated lanes north of Pershing. No removal of landscaped medians was assumed.

Significant stations would be constructed for the BRT either as part of a transit median or on the sidewalks in the case of curb-side lanes.

Service Characteristics

The BRT service would operate with 10-minute headways or better during the peak periods and 15-minute headways during the off-peak periods. Service would be provided for 14-16 hours per day. Using articulated, low-floor buses, the BRT service would have off-board fare collection and real-time bus arrival information at the stations which would be spaced at approximately half-mile intervals. With dedicated lanes and traffic signal priority, the route would operate at higher average speeds than the existing local bus route in this corridor. On the Lake Shore Drive alignment, BRT buses would operate in mixed traffic on Pershing Road and Lake Shore Drive. The portion of the route on Lake Shore Drive would operate express to the Loop.

Benefits/Target Market

The Existing Conditions report identified the north central part of the study area as having comparatively higher population density beyond walk access to the rail system. This service would provide enhanced access for commute and other trips to the Loop and North Michigan Avenue from this area.

While overall ridership levels in the Cottage Grove corridor are very strong with over 25,000 per weekday, previous experience with the now discontinued X4 service suggests that market potential may be limited in the near term. Demand in the corridor for longer distance/higher speed service needs to be established.

The route on local roads north of Pershing for the King Drive/Michigan Avenue alignment would serve a growing residential population. However, travel times would be longer than for the alignment on Lake Shore Drive. However, buses operating in mixed traffic on Lake Shore Drive would face congestion at peak periods. No boardings occur on Lake Shore Drive, and a smaller market of riders would be served. However the faster travel time in the northern portion of the route might make the route with the Lake Shore Drive alignment more attractive to riders boarding at origins further south on the route.

Estimated Cost

Capital

BRT capital costs can vary significantly depending on the level of infrastructure investment. The flexibility of BRT systems enables communities to scale this level of infrastructure investment to meet operational needs and financial constraints.

Several options for the BRT were examined including alternative alignments and alternative levels of investment. The following table summarizes the capital costs associated with each. The high level of investment envisions an exclusive median operation much like light rail or streetcar. This gold standard BRT concept typically costs approximately $15 to $20 million per mile. The low level of investment envisions dedicating curb-side lanes for buses and constructing stations on the sidewalks. The Lake Shore Drive alignment has a lower cost since it would operate on Lake Shore Drive without dedicated lanes or stations north of Pershing Road.

Table 3.1 Capital Costs for BRT Options on Cottage Grove Avenue

Alignment Option	**Low** (Millions)	**High** (Millions)
Cottage Grove BRT via King and Michigan*	$72	$148
Cottage Grove BRT via Lake Shore Drive[a]	$39	$65

[a] Note: A 20 percent reduction in fleet size for Route #4 is incorporated as a capital cost savings in the above.

Operating

Operating costs for BRT on Cottage Grove Avenue vary depending on alignment, (King Drive/Michigan Avenue versus Lake Shore Drive), and whether the BRT operates curb-side or in a median. An alignment along Lake Shore Drive has lower operating costs due to higher operating speeds, and is estimated at $2.8 million for the median operation and $3.3 million if operating curb-side. Operating costs for an alignment along King Drive and Michigan Avenue is estimated at $3.8 million for median operation and $4.6 million for curb-side. This estimate takes into account the $1.8 million savings associated with a 20 percent reduction in service on CTA Route #4 during BRT operating hours.

Estimated Ridership

Ridership for BRT was estimated using a sketch planning method to take into account the travel time and wait time improvements as well as a

Transit Cooperative Research Program (TCRP) methodology to estimate impacts of amenities and other BRT features that have ridership impacts unrelated to time benefits.[7]

The reduction in travel time on the BRT (versus the local service) is estimated to range from 20 to 35 percent depending on the alignment and median versus curb operation, while the reduction in overall headway in the corridor is estimated at nearly 28 percent. The influence of amenities is expected to increase ridership by approximately 20 percent for those riders on the BRT.

BRT is estimated to increase ridership in the Cottage Grove corridor by 16 percent in the case of the King Drive and Michigan Avenue alignment. The number of riders on the BRT route is expected to be 8,100 on weekdays, or about 30 percent of the anticipated corridor weekday ridership of 27,000.

The BRT is estimated to increase ridership in the Cottage Grove corridor by 13 percent in the case of the Lake Shore Drive alignment. The number of riders on the BRT route is expected to be 6,600 on weekdays.

Productivity

The productivity of the BRT on the King Drive and Michigan Avenue alignment is estimated to be 57 passengers per vehicle-hour on weekdays. The operating cost per rider is estimated to be $1.42. The capital cost per weekday rider ranges from $9,000 for the low capital cost estimate to $37,500 for the high capital cost estimate.

The productivity of the BRT on the Lake Shore Drive alignment is estimated to be 56 passengers per vehicle-hour on weekdays. The operating cost per rider is estimated to be $1.27. The capital cost per weekday rider ranges from $6,000 for the low capital cost estimate to $18,200 for the high capital cost estimate.

Transit-Oriented Development Opportunities

Historically in North America, traditional bus service has not had significant impacts catalyzing transit-oriented development, but enhanced bus service in the form of Bus Rapid Transit has had some demonstrated success in supporting or encouraging development in the limited North American markets where it has been introduced in the last decade (including Cleveland and Boston). The Cottage Grove corridor has been experiencing positive development changes at key nodes along

[7] The methodology used is described in Appendix A.

the corridor, such as 35th/39th Street at Oakwood Shores, 47th Street, Washington Park/University of Chicago, 63rd Street (Green Line station and Grove Parc redevelopment), 79th Street, 85th/87th Street and 95th Street (Chicago State University, Metra Electric District Main Line station). BRT, with more permanent station infrastructure than traditional bus service, may have a positive impact on adjacent development patterns, although it should be noted that bus service currently does exist along the corridor, so any impacts are likely to be smaller than if there were no current service. Gold standard BRT would be likely to have greater TOD impacts than the lower cost curb-side concept.

Key Issues/Challenges

Existing Roadway Conditions

Cottage Grove Avenue currently serves as one of the primary north/ south arterials for the South Lakefront study area. From 35th Street to 43rd Street, Cottage Grove Avenue typically has one travel lane and one parking lane in each direction. Average Daily Traffic (ADT) volumes in this segment are in the range of 5,000-6,000 in each direction. Between 43rd and 60th Streets lane configurations vary with some segments having one travel lane and one parking lane, and others having two through lanes plus parking, or two through lanes without parking. From 60th Street to 95th Street, there are typically two travel lanes and one parking lane in each direction. ADT volumes are between 9,000-13,000 in each direction. South of 58th Street (University of Chicago) traffic volumes are consistently higher. South of 79th Street, northbound and southbound traffic is separated by a 12-foot-wide painted median. (See Figures 3.2 and 3.3.)

Between Martin Luther King Drive and Cottage Grove Avenue, 35th Street consists of two travel lanes in each direction with a 13-foot-wide grassy median separating eastbound and westbound traffic. Traffic volumes in this section of 35th Street are between 4,000-5,600 ADT in each direction.

Martin Luther King Drive is a boulevard style roadway with three to four lanes of traffic in each direction, a bike lane, and curb-side parking in some sections. Northbound and southbound traffic lanes are separated by a 42-foot-wide tree-lined, landscaped median. ADT volumes along this segment are approximately 10,000 in each direction.

Oakwood Boulevard (Pershing Road/39th Street) is also a boulevard style roadway with two travel lanes in each direction. Eastbound and westbound traffic lanes are separated by a 14-foot-wide tree-lined, landscaped median.

Figure 3.2 Typical Block on Cottage Grove Avenue between 95th Street and 79th Street

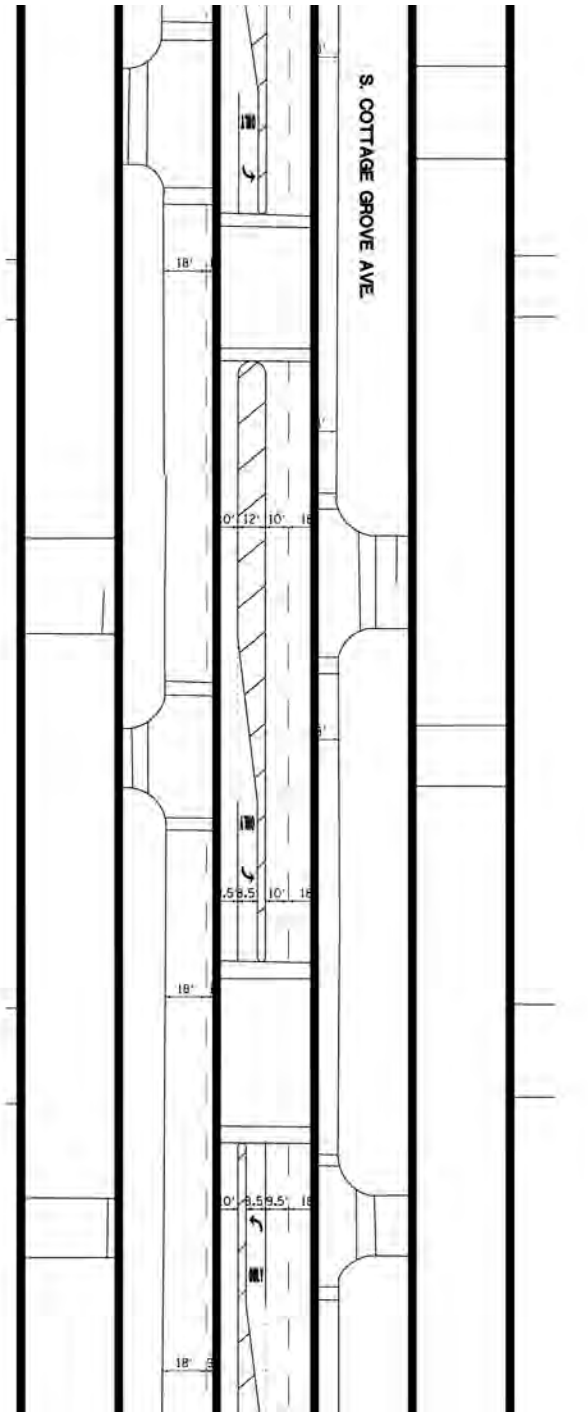
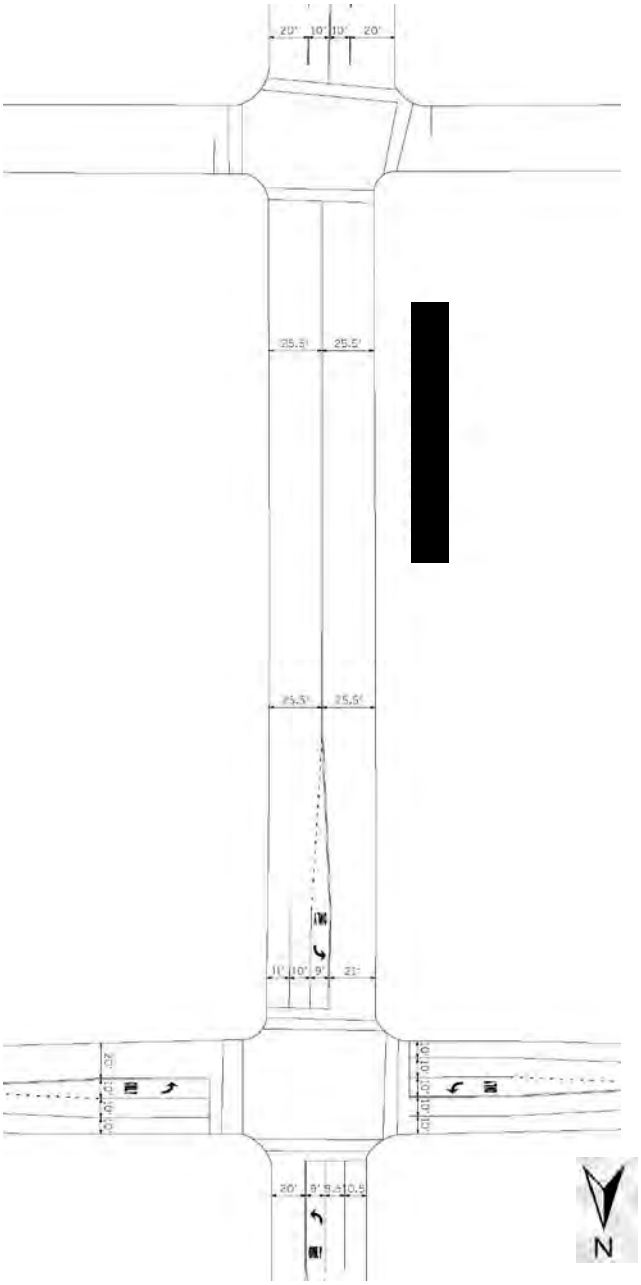


Figure 3.3 Typical Block on Cottage Grove Avenue between 79th Street and 43rd Street



Geometrics of BRT Running Way

It is desirable to maintain comfortable lane widths for both buses and passenger cars. Minimum proposed widths of 11 feet for bus lanes, 10 feet for general traffic travel lanes, 9 feet for left-turn lanes, and 7 feet for parking were assumed. Under these conditions, it is possible to accommodate curb or median running exclusive bus lanes in both directions throughout most of the study area by converting either an existing travel lane or an existing parking lane. (See Figures 3.4 and 3.5.) There are a limited number of locations where exclusive bus lanes could not be provided given the existing infrastructure. Buses would be required to operate in mixed-traffic for approximately three blocks between 40th Street and Bowen Avenue and approximately two blocks on Oakwood Boulevard between Cottage Grove Avenue and Lake Shore Drive. There are also four intersections where an existing left-turn lane would have to be removed due to roadway width constraints.

A table showing the configuration of travel lanes along the corridor is included in Appendix B.

Parking Conditions and Impacts

Of the 71 blocks along this corridor in the study area, 65 currently have nonmetered, on-street, curb-side parking. To install exclusive bus lanes, parking would have to be permanently removed from approximately 20 of these blocks. The parking to be removed includes:

- 41st Street to 44th Street – both sides for 4 blocks
- 51st Street to 59th Street – one side for 8 blocks
- 75th Street to 79th Street – both sides for 7 blocks.

This number could increase or decrease based on local conditions, because in some sections either a travel lane or parking lane could be removed to install the bus lane. Maintaining parking on the outside of a curb running exclusive bus lane does create conflicts for bus operations, but may be necessary to address local concerns about parking.

The detailed parking impacts are shown in Appendix C.

Figure 3.4 Proposed Intersection with Exclusive Curb-Running Bus

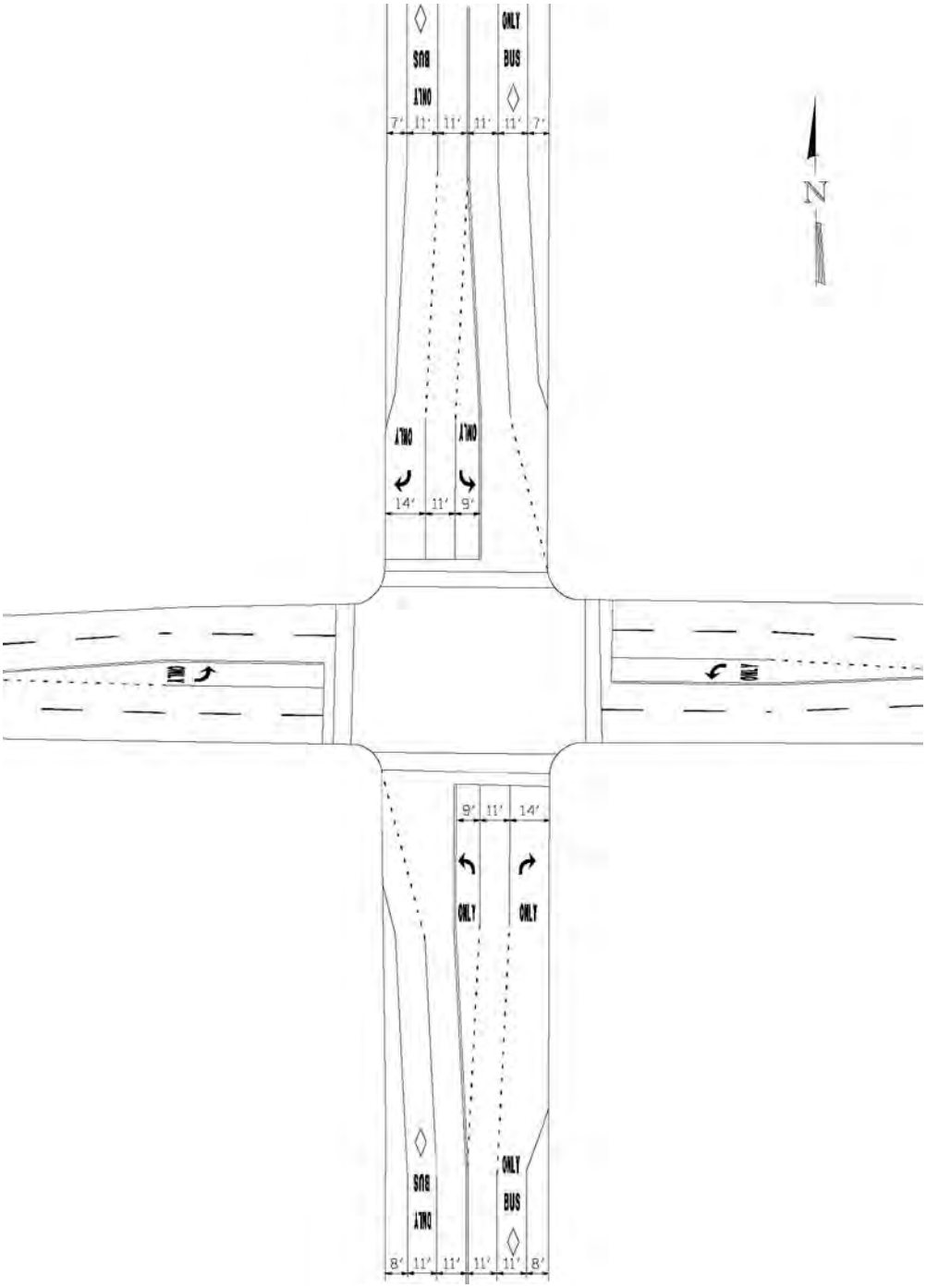
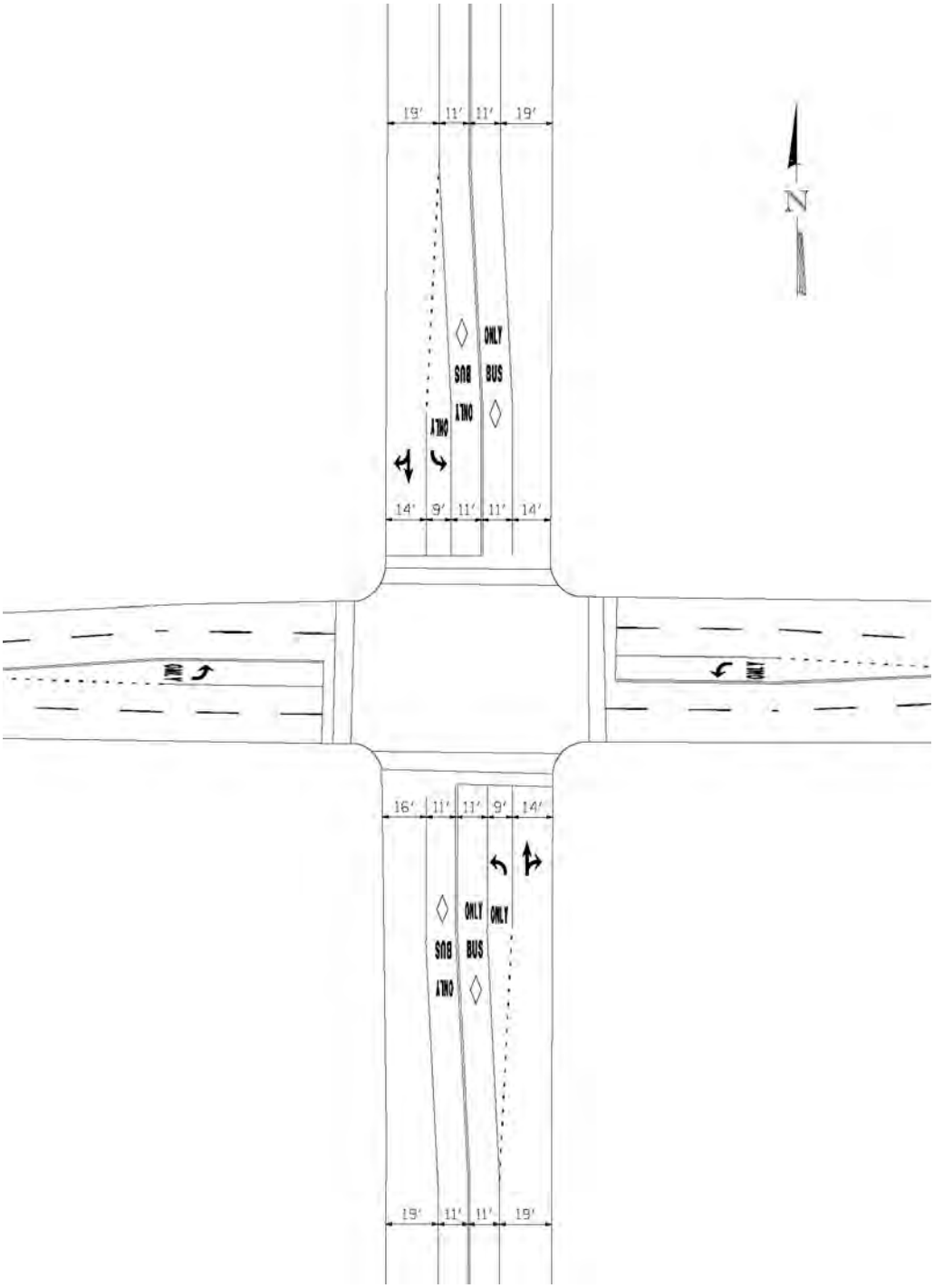


Figure 3.5 Proposed Example Intersection with Exclusive Median Running Bus



Traffic Operations and Impacts

To evaluate the effects of a curb and median running BRT, a preliminary analysis of two intersections within this corridor was performed using Synchro modeling software.[8] This analysis does not take into account signal progression with other intersections or Transit Signal Priority (TSP) and is intended to show the effects of installing an exclusive bus lane in this corridor.

The intersections at 47th Street and Cottage Grove Avenue, and at 87th Street and Cottage Grove Avenue were chosen because they represent typical intersections, they would require the removal of a travel lane for the installation of a bus lane, and existing traffic data for these locations could be easily obtained.

With Curb Running BRT

To simulate the curb running bus lane, an existing through/right-turn lane on Cottage Grove was changed to a proposed bus/right-turn lane. This eliminates a lane for through traffic capacity.

The existing delay at the intersection and the delay with the proposed bus lane are shown in Tables 3.2 and 3.3 with the corresponding level of service for each intersection. Level of service (LOS) is a term used to qualitatively describe the operating conditions of a roadway based on factors such as speed, travel time, maneuverability, delay, and safety. The level of service of a facility is designated with a letter, A to F, with A representing the best operating conditions and F the worst. A LOS of D or better (on the scale of A through F) is typically considered acceptable for an urban arterial like Cottage Grove.

Table 3.2 47th Street and Cottage Grove Avenue

Existing Total Intersection Delay (LOS)	Total Intersection Delay with Curb-Side Exclusive Bus Lane (LOS)
17 s (B)	18 s (B)

As the results in Table 3.2 show, installation of an exclusive bus lane at 47th Street does cause some additional delay, but not to a significant degree. An LOS of B indicates the intersection operates very well, and an increase in delay of less than one second is negligible. Similar results can be anticipated for intersections that do not have extremely high volumes of traffic.

[8] Synchro tabulations are provided in Appendix D.

Table 3.3 87th Street and Cottage Grove Avenue

Existing Total Intersection Delay (LOS)	Total Intersection Delay with Curb-Side Exclusive Bus Lane (LOS)
54 s (D)	88 s (F)

When the existing traffic volumes are higher, as they are at 87th Street, the impacts of installing a curb running exclusive bus lane are much greater, as shown in Table 3.3. Without the bus lane, the intersection performs with an LOS of D. The installation of the bus lane exacerbates the problems, increasing the delay by over 30 seconds, resulting in breakdown of the intersection (LOS F). Similar results can be expected for intersections with extremely high volumes of traffic.

With Median Running BRT

To simulate the median running curb lane, left turns are made protected only, meaning vehicles turning left must have a green left arrow signal to proceed. This reduces green time for other travel through the intersection. An existing through lane is also eliminated, leaving only a shared through/right-turn lane. The impacts on delay are shown in Tables 3.4 and 3.5 for the two intersections.

Table 3.4 47th Street and Cottage Grove Avenue

Existing Total Intersection Delay (LOS)	Total Intersection Delay with Median Exclusive Bus Lane (LOS)
17 s (B)	31 s (C)

As shown in Table 3.4, the median running bus lanes cause an increase in delay at 47th Street and Cottage Grove Avenue of 14 seconds, which is considerably more than the curb running alignment. However, the intersection still functions at an acceptable level.

Table 3.5 87th Street and Cottage Grove Avenue

Existing Total Intersection Delay (LOS)	Total Intersection Delay with Median Exclusive Bus Lane (LOS)
54 s (D)	129 s (F)

When the traffic volumes are higher, a median running bus lane causes the intersection to completely break down as the volumes at the northbound and southbound approaches are too much for the capacity provided. This is the case at 87th Street and Cottage Grove Avenue as shown in Table 3.5.

The impacts of a median running BRT are greater because through vehicles and right turning vehicles would have to share a lane and left turns would have to be protected, taking away green time from other approaches. Also, there can be safety concerns about cars making left turns in front of the buses, even if the bus has a red light and is stopped at the intersection. Left turns at all unsignalized intersections would most likely be forbidden if a median-running BRT is implemented. (This might increase the number of left turns at signalized intersections.)

There is one stop sign controlled intersection in this corridor at 69th Street. A traffic signal would have to be installed here, (cost not included), or it would have to become an unsignalized intersection.

One impact on traffic that cannot be measured is driver comfort. This impact may result from drivers not being familiar with exclusive bus lanes and other features of BRT. This can be minimized by maintaining comfortable lane widths and using proper signage.

Another feature of BRT that would be used for this corridor is Transit Signal Priority (TSP). TSP systems detect when a bus is approaching and lengthen the green time or shorten the red time of the affected cycle to reduce the amount of signal delay the bus experiences. As a result, bus travel times are improved and buses are able to adhere more closely to their schedule, reducing variability. However, this can have negative impacts, because it reduces the amount of green time for the cross street traffic (possibly including buses on east-west routes) and pedestrians. The magnitude of these negative impacts depends on many factors such as side street traffic volumes, bus delay, and the frequency of TSP activation.

TSP can be actuated for all BRT buses (unconditional TSP) or just to those that are running behind schedule (conditional TSP). Logic can be built into the system in real time to reduce impacts by granting priority only when intersection delays warrant it.[9] TSP impacts were not evaluated since more detailed analysis and design would be needed.

Traffic Impact Conclusions

Depending on the stresses on the existing system, an exclusive bus lane can have varying magnitudes of impact on traffic operations. These impacts should be minor for most intersections in this corridor that have relatively low traffic volumes, like intersections north of 58th Street. However, at locations where traffic volumes are high, such as

[9] Audible pedestrian signals may be used to alert visually disabled people that the signal timing is adjusted.

intersections between 58th Street and 95th Street, these impacts can be the difference between the intersection operating poorly and it failing altogether. The effects of BRT should be investigated further in a next phase of study on an intersection by intersection basis to more fully understand the potential impacts of BRT along this corridor and determine where the benefits outweigh any negative impacts it can cause.

Timeframe to Implement

BRT could be implemented in a short to medium (1-5 years) timeframe, assuming funding were available. Gold standard BRT would involve more extensive street modifications in station areas and may require more time to implement than the lower cost curb-side concept.

Potential for Funding

The assumption for BRT is – as is typically the case at early stages of project development anywhere in the country – that a major transit investment (more than $100 million) will advance into implementation only with substantial Federal capital support. At this point, "substantial" is often defined as at least 50 percent. With that assumption, therefore, it is important to assess the likelihood of obtaining sufficient Federal funding early in project planning, especially since the Federal funding process is very competitive, a situation that is not expected to change soon.

Although the precise details of future Federal New Starts/Small Starts evaluation criteria are difficult to predict with great accuracy, they will continue to include measures of cost-effectiveness (as measured in terms of transit trips rather than user benefits), transit-supportive land use and development impacts and the reasonableness of the local financial plan (i.e., local sponsors have identified realistic and ongoing sources of non-Federal financing for both capital and operating needs) among a handful of new measures yet to be detailed, but likely to include environmental benefits and congestion relief. Besides the local match for capital costs, funding is required for the operating costs every year, and this is a local responsibility.

Federal New Starts or Small Starts funding would be very applicable to this project. The estimated cost of the project is close to the limit of Small Starts ($250 million). The large ridership in the corridor, the potential for travel time savings and the transit-oriented nature and development activity in this corridor suggest it would be a good candidate for this program. The project impact on development is likely to be positive, in part due to the existing and anticipated development activity in the corridor and the lack of an existing high-capacity transit line in the corridor. In addition, given the corridor's location in a dense residential

market located between the study area's most important employment markets (Hyde Park and downtown Chicago), the project has a good chance of performing well in terms of cost-effectiveness. BRT should be viewed in the context of the Federal government's continued desire to maximize available funding levels by supporting relatively less expensive projects.

More problematic is the likelihood of winning local financial support, especially in the near term and in the context of transit agencies' higher priorities, such as the CTA's Red Line extension south of 95th Street.

Despite the frequent talk about "innovative" or "nontraditional" local financing, most projects still rely on traditional funding such as sales taxes, with other sources being supplemental. However, it is possible that other types of funding could contribute, such as funding by developers. "Value capture" funding is capturing the incremental tax increase associated with additional value of properties adjacent to transit that results from the transit project. This type of financing is more often achieved with rail systems than with BRT in the U.S. However, in Latin America, value capture has been utilized to help fund BRT in cities such as Bogota, Columbia and Sao Paulo, Brazil. Along BRT corridors property values have increased dramatically as a result of the improved transit, and the local government has been able to recover public funds used to finance the system through the increased value of government-owned properties along the line.[10]

There are two primary sources of operating revenue for the CTA: System-generated revenue through fares and other sources, and public funding through the Regional Transportation Authority (RTA). RTA sales tax is the primary source of operating revenue for the RTA and the three Service Boards. In recent years, especially given the economic downturn and lower sales tax revenue, CTA has faced significant financial challenges. Since 2008, the CTA has borrowed more than $554 million to cover the cost of day-to-day operations. While the loans kept trains and buses running in the short term, they did not solve the root causes of the agency's financial challenges. As a result, the agency undertook fare hikes in 2009 and deep service cuts in 2010 (18 percent of bus service and 9 percent of rail service was eliminated), which temporarily eased financial pressures. However, CTA faces significant fixed costs and steep declines in anticipated public funding. CTA is continuously working to optimize its system to provide the greatest benefits to riders at the most economical cost, which can result in adjusting service levels throughout the system. However, given the

[10]Smart Growth America, http://www.smartgrowthamerica.org/2011/06/30/value-capture-an-innovative-strategy-to-fund-public-transportation-projects/.

financial state of the agency, identifying the operating resources for significant new services will be very challenging.

Cottage Grove Streetcar

Purpose

Modern streetcar service along Cottage Grove Avenue between 63rd Street and the Loop would provide north-south transportation options for portions of the study area that include high-residential density and are more than a half-mile from existing rail stations. The lack of rail service or high-capacity coverage in the area has been a focus of stakeholder concern. The Reconnecting Neighborhoods Study identified streetcar as a possible transit service improvement for this corridor. Besides serving transportation needs, the line would specifically be intended to be an additional boost to development and redevelopment.

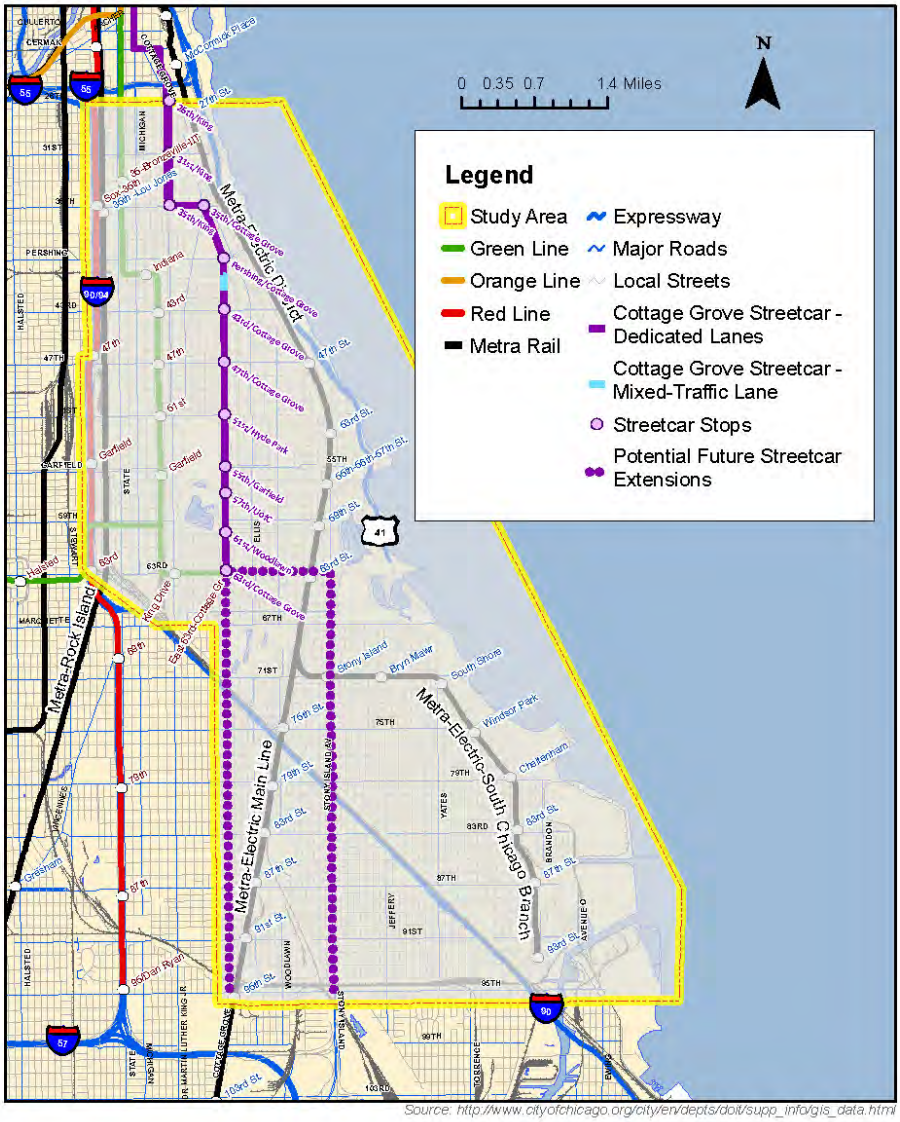
Over the past 10 years modern streetcar lines have been implemented in Portland, Seattle, Tacoma, and a fourth is in final design in Tucson. These projects use new streetcars, which are about two-thirds the size of light rail vehicles. They are also much smaller than Metra Electric District commuter rail cars, making them more suitable for running on streets in residential or commercial neighborhoods. Like light rail and the Metra Electric District line, they are powered by overhead wires. While streetcars provide transportation service for multiple trip purposes, they are always also intended to help spur economic development, especially in environments that already show signs of such activity.

Project Description

Location/Alignment

The initial phase of a Cottage Grove streetcar would operate along a double-track alignment from a southern terminus at 63rd Street and Cottage Grove, north along Cottage Grove to 35th Street, west on 35th to King Drive, north on King Drive to Cermak Road, west on Cermak Road to Michigan Avenue, and north on Michigan Avenue into the Loop, as shown in Figure 3.6. Alignments north of McCormick Place are being investigated as part of the Central Lakefront Transitway Study. A second phase of streetcar implementation could extend it southward from 63rd Street; ideas for such expansion have included extending down Cottage Grove Avenue to 95th Street and Chicago State University or down Stony Island Avenue to 95th Street and Olive Harvey College. It should be noted that most streetcar systems are fairly short in length (under seven miles) and that an extension to the south would depend on providing competitive travel times employing a high degree of transit priority. The remainder of this discussion focuses largely on the initial phase.

Figure 3.6 Cottage Grove Streetcar Alignment



Service Characteristics

New infrastructure would be needed to implement a modern streetcar on Cottage Grove Avenue, including a fixed guideway, stations and platforms, traction power and other system operational elements. Stations would be located approximately every half-mile along the entire alignment.

Cottage Grove streetcar service would use modern streetcars (like those in Portland or Seattle) that would operate down the center of the alignment in an exclusive transit lane. Exclusive lane operations will help to reduce travel time, a factor that will help attract ridership. However, exclusive lanes are not possible between 40th Street and Bowen Avenue,

and in much of the corridor the roadway would need to be rebuilt and widened. Conversion of existing travel lanes, parking lanes, and/or use of parkway, (the space between the curb and the building face), would provide the necessary roadway space.

The streetcar would operate seven days a week at 10-minute headways in the peak hours and 15-minute headways in the off-peak. Span of service would complement the underlying CTA Cottage Grove Route #4 local bus service between the hours of 4 a.m. to 1 a.m., the frequency of which would likely be slightly reduced once streetcar service began operations. The Route #4 bus would still be required to serve trips beyond the 63rd Street southern terminus and possibly to serve local trips on the streetcar portion that cannot be served with the proposed streetcar station spacing. Detailed concept planning would address tradeoffs between the coverage of closely spaced stations and the faster travel time that could be provided with more widely spaced stations.

Benefits/Target Market

Community areas served would include Hyde Park, Kenwood, Douglas, Oakland, Grand Boulevard, and Washington Park. Target markets would include work trips to the Loop and Hyde Park, the two largest employment destinations for trips originating in the study area. A streetcar line would also be used for all other trip purposes, as they are in other U.S. cities. The line would provide strong connectivity to multiple other transit services within and north of the study corridor. Importantly, the line would specifically be intended to be an additional boost to development and redevelopment, again, in line with experience in other cities. This impact is especially likely as the corridor is already experiencing strong growth.

Estimated Cost

Capital

Capital costs for Phase 1 are estimated at approximately $240 million for the eight-mile alignment (approximately $27 million per mile) between 63rd Street and the South Side of the Chicago River. A reduction in CTA Route #4 service of approximately 20 percent would reduce peak bus requirements saving a capital cost of $6.3 million. This would reduce the net capital cost to approximately $234 million. For the Phase 2 extension, the capital cost would further increase by $130 million.

Operating

Operating costs for the Cottage Grove streetcar are estimated to be approximately $7.4 million annually for Phase 1 and $10.9 million for Phases 1 and 2.

A reduction in CTA Route #4 service of approximately 20 percent is assumed. This would save $1.9 million per year, reducing the net operating cost of the streetcar to $5.5 million and 9 million for Phases 1 and 2, respectively.

Estimated Ridership

The approach used to estimate the ridership mirrors that used to estimate BRT ridership. Ridership for the streetcar was estimated using a sketch planning model to take into account the travel and wait time improvements as well as a TCRP methodology developed to estimate impacts of amenities and other BRT features that have impacts unrelated to time benefits.[11] It may be argued, however, that the streetcar may have different or greater impacts than a BRT due to amenities.

The reduction in travel time on the streetcar (versus the local service) is estimated to be 35 percent while the reduction in overall headway in the corridor is estimated at nearly 28 percent. The influence of amenities is expected to increase ridership by 25 percent for those customers taking advantage of the streetcar.

Phase 1 of the Cottage Grove streetcar is estimated to attract 8,100 weekday riders. This is estimated to be 30 percent of the corridor ridership. The project would increase weekday total corridor ridership by 16 percent to 27,000.

Phase 2 is estimated to attract a total of 11,500 weekday riders (including Phase 1 riders). This is estimated to be 40 percent of the corridor ridership. The streetcar project with the Phase 2 extension would increase weekday total corridor ridership by 23 percent to 28,500.

It should also be noted that streetcars have been known to encourage development and that the ridership methodology does not take into account development that might occur in the future. Since the streetcar could serve as a catalyst for such development, this could be a significant additional factor.

Productivity

The Phase 1 streetcar would generate 67 passengers per vehicle-hour based on weekday ridership of 8,100. The operating cost (net after savings due to reduced Route #4 operation) per weekday rider is estimated to be $1.95. The capital cost (net after savings due to reduced Route #4 operation) per weekday rider is estimated to be $26,400.

[11] The methodology used is described in Appendix A.

Phase 2 of streetcar would generate 95 passengers per vehicle-hour based on total (Phase 1 and Phase 2) weekday ridership of 11,400. The operating cost (net after savings due to reduced Route #4 operation) per weekday rider is estimated to be $2.26. The capital cost (net after savings due to reduced Route #4 operation) per weekday rider is estimated to be $29,200.

Transit-Oriented Development Opportunities

Streetcar systems are perceived as having a positive impact on economic development in the neighborhoods served based on recent experience with North American implementations. The Cottage Grove corridor has been experiencing positive development changes at key nodes along the corridor, such as 35th/39th Street at Oakwood Shores, 47th Street, Washington Park/University of Chicago, and 63rd Street (Green Line station and Grove Parc redevelopment). The frequent stop pattern of a typical streetcar together with an infrastructure profile that is compatible with urban design patterns of the adjacent neighborhoods mean that this mode is viewed as a neighborhood asset that may increase the value of nearby property and energize redevelopment opportunities.

Key Issues/Challenges

- Cost – While modern streetcar lines are less expensive than light-rail investments (roughly $40 million per mile versus $60 million), any rail investments being considered in this study are significantly more expensive than other less capital-intensive (bus-based) strategies. This is especially important in the context of the current financial difficulties faced by most transit agencies including those in the Chicago region which limits their ability to implement other high-priority rail projects.

- Operator/champion – If a streetcar investment moves into further planning, the CTA would be the likely agency to lead an effort to operate the line and to secure funding for it, especially as it would probably require Federal funds. It is important to note that CTA already has several Federally-funded projects in the New Starts pipeline, including the Red Line extension.

- Environmental justice – While experience in the U.S. demonstrates the success of implementing streetcars in areas that are experiencing healthy development trends, there could be questions about making such an investment in the study corridor in an already vibrant development environment rather than in neighborhoods with comparatively less development activity. However, investment in the South Side overall may be viewed positively in contrast to investing in other more rapidly developing parts of the city, and the line has potential to be expanded southward into lower income areas.

- Siting of rail yard/shops – Locations for storage and maintenance of railcars would need to be identified. Potential future phases of streetcar development would need to be anticipated so facilities (e.g., rail yards and shops) can be located to benefit both initial and subsequent phases of service.

- Traffic – Street-running streetcars could have significant impact on vehicular traffic flows, especially in locations with higher traffic volumes. There would be loss of traffic flow capacity whether the streetcars run in separate rights-of-way or in mixed traffic. (See the section on traffic operations below.)

Traffic Impacts and Considerations

Existing Roadway Conditions

Cottage Grove Avenue currently serves as one of the primary north/ south arterials for the South Lakefront study area. From 35th Street to 43rd Street, Cottage Grove Avenue is typically composed of one travel lane and one parking lane in each direction. ADT volumes in this segment are in the range of 5,000 to 6,000 in each direction. From 43rd Street to 63rd Street, there are typically two travel lanes and one parking lane, with ADT volumes between 7,000 and 10,000 in each direction. South of 58th Street traffic volumes are consistently higher. South of 79th Street, northbound and southbound traffic is separated by a 12-foot-wide painted median. (See Figures 3.2 and 3.3 in the previously BRT section.)

Geometrics of Streetcar Running Ways

Two alternative configurations were identified for a proposed Cottage Grove streetcar, one requiring 80 feet of total right-of-way (ROW) and the other requiring 100 feet of total ROW. The 100-foot configuration is shown in Figures 3.7 and 3.8. Note that northbound and southbound boarding platforms are separated to allow for the location of far side stops for each direction. This will complement the use of transit signal priority and reduce right-of-way requirements.

At least one of these configurations allows the streetcar to operate in exclusive lanes for most of the corridor. Streetcars would be required to operate in mixed-traffic for approximately three blocks between 40th Street and Bowen Avenue, where adequate roadway width for exclusive lanes does not exist. Acquisition of additional ROW in this segment would be needed in order to provide exclusive lanes; the feasibility of such ROW acquisition and its costs relative to the benefits would need to be explored in detail.

Figure 3.7 Streetcar Configuration with 100-Foot Right-of-Way (Cross-Section Elevation View)

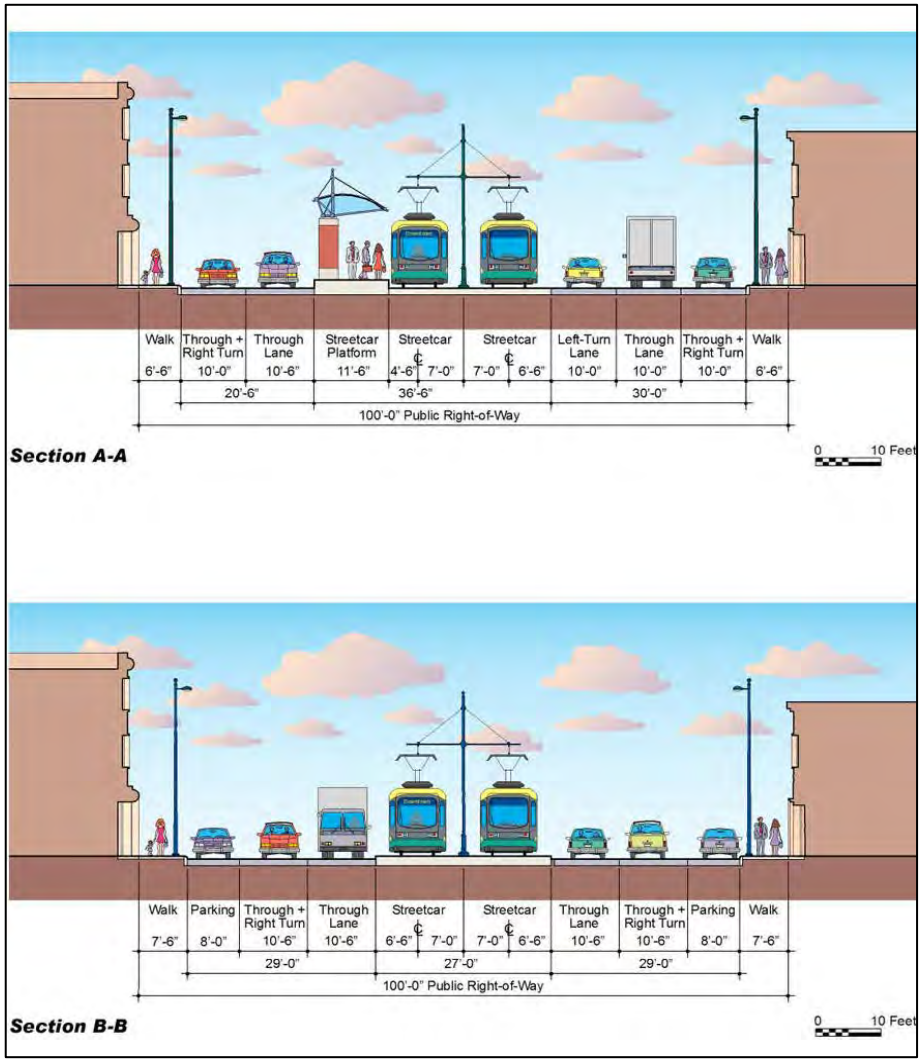
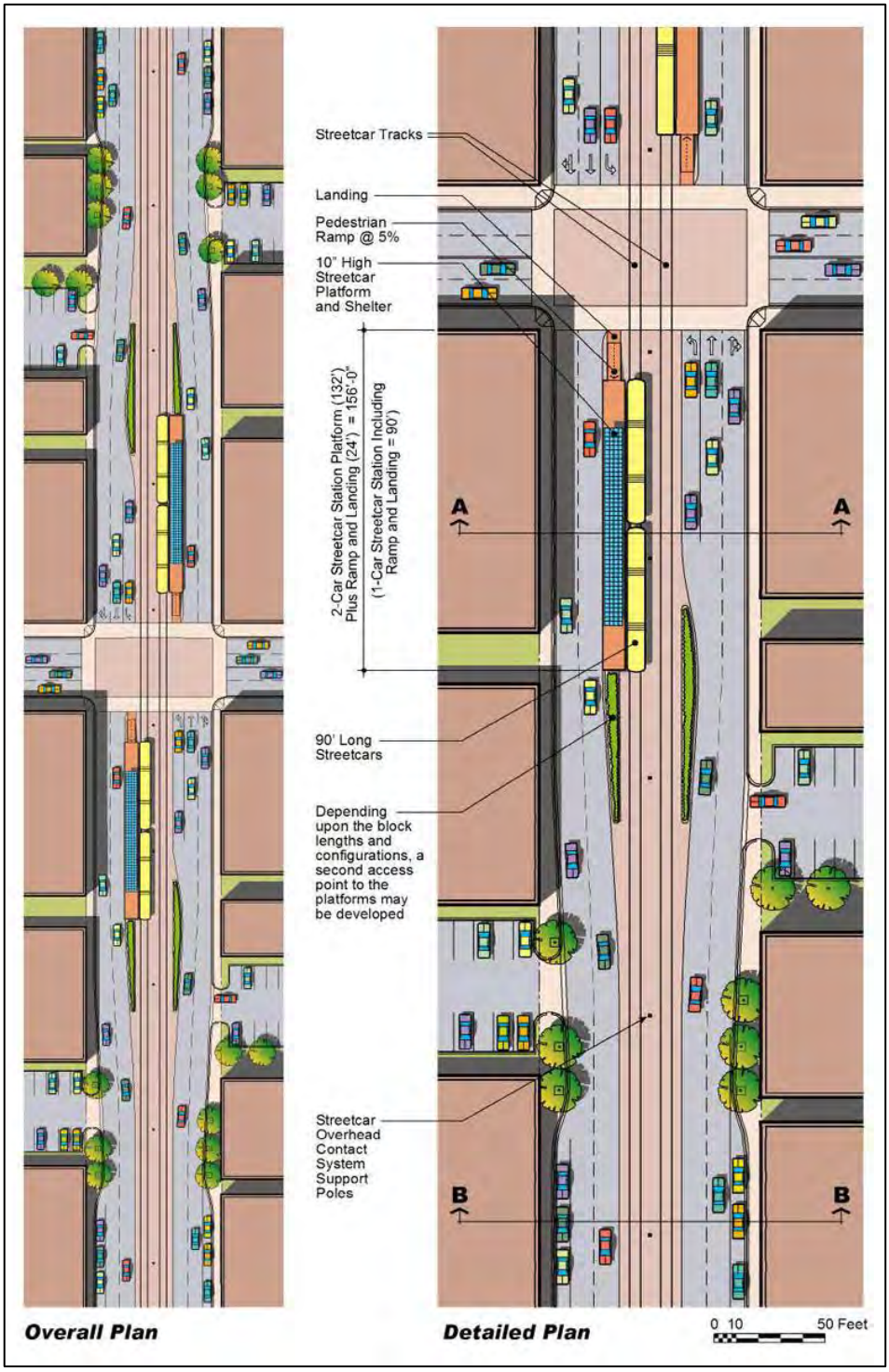


Figure 3.8 Streetcar Configuration with 100-Foot Right-of-Way (Plan View)



Utilizing 80 feet of ROW, vehicular traffic would operate in one through lane and one parking lane in each direction. At intersections there would be one left-turn lane and one through/right-turn lane. By increasing the ROW to 100 feet, two extra lanes can be added, giving vehicular traffic two through lanes and one parking lane in each direction on segments. At intersections there would be one left-turn lane, one through lane, and one through/right-turn lane in this configuration.

Parking Condition and Impacts

Under both of these configurations, parking would be maintained as much as possible throughout the corridor. However, parking would have to be removed for up to two full blocks at all station locations.

Traffic Operations

A preliminary analysis of an intersection within this corridor was performed using Synchro modeling software.[12] This analysis does not take into account signal progression with other intersections or Transit Signal Priority (TSP) and is intended to show the effects of installing an exclusive streetcar lane in each direction in this corridor. The most critical impact of installing a median running streetcar is that it forces all left turns to be protected, meaning vehicles turning left must have a green left arrow signal to proceed. In addition to this, under the 80-foot ROW configuration, through vehicles must share a lane with right turning vehicles, reducing overall capacity.

The intersection at 47th Street and Cottage Grove Avenue was chosen for the analysis because it represents a typical intersection, it has an existing left turn bay, and existing traffic data for this location could be easily obtained. Both the 80-foot ROW and 100-foot ROW configurations were analyzed.

The existing delay and the delay with each configuration are shown in Table 3.6:

Table 3.6 47th Street and Cottage Grove Avenue

Existing Delay (LOS)	Delay with 100-Foot ROW (LOS)	Delay with 80-Foot ROW (LOS)
17 s (B)	26 s (C)	31 s (C)

[12]Synchro tabulations are provided in Appendix D.

As the results in Table 3.6 show, the installation of a dedicated lane at 47th Street for streetcar does cause some additional delay. An existing Level of Service (LOS) of B indicates the intersection currently operates very well. A LOS of D or better (on the scale of A through F) is typically considered acceptable for an urban arterial like Cottage Grove.

The installation of the streetcar with 100 feet of ROW maintains the capacity for through and right turning vehicles, but forces left turns to be protected. As a result, this takes green signal time away from all approaches, increases the delay by nine seconds, and decreases the LOS to C. This can be expected for intersections with this configuration that do not have extremely high volumes of traffic, especially left turning vehicles. However, delays at intersections with higher traffic volumes, such as those south of 58th Street, will likely be longer.

For intersections where a 100-foot ROW cannot be obtained, the 80-foot ROW configuration must be used. This forces all left turns to be protected and through vehicles to share a lane with right-turning vehicles. In the 47th Street example case, this causes the delay to increase by 14 seconds and the LOS decreases to C. This can be expected for intersections with this configuration that do not have extremely high volumes of traffic, especially left-turning vehicles. Again, delays at intersections with higher traffic volumes will likely be longer.

While both the 80-foot and 100-foot ROW configurations are designed to allow cars to make left turns, implementation of these configurations may face challenges. If full right-of-way cannot be obtained, the left turn is typically eliminated. If the full right-of-way can be obtained and the intersection is signalized, there can still be safety concerns about cars making left turns in front of a streetcar. Left turns at unsignalized intersections would most likely be eliminated.

One impact on traffic that cannot be measured is driver comfort. This impact may result from drivers not being familiar with driving alongside a streetcar. This can be minimized by maintaining comfortable lane widths and using proper signage.

Another feature that would be used for this corridor is TSP, which detects when a streetcar is approaching and lengthens a green signal or shortens a red signal to reduce the amount of signal delay the streetcar experiences. As a result, transit travel times are improved and streetcars are able to adhere more closely to their schedule, reducing variability. However, this can have negative impacts, because it reduces the amount of green time for the cross street traffic (possibly including transit on east-west routes) and pedestrians. The magnitude of these negative impacts depends on many factors such as side street traffic volumes, streetcar delay, and the frequency of TSP activation.

TSP can be actuated for all streetcars (unconditional TSP) or just to those that are running behind schedule (conditional TSP). Logic can be built into the system in real time to reduce impacts by granting priority only when intersection delays warrant it.[13] TSP impacts were not evaluated since more detailed analysis and design would be needed.

Traffic Impact Conclusions

At locations where a configuration using 100 feet of ROW can be implemented, the streetcar system will cause some additional delay and cause the LOS to decrease. An 80-foot ROW would likely result in a further decrease in LOS. Existing left turn locations may also have to be modified or eliminated, dependent on the ROW width and presence of intersection signalization. Parking will have to be removed at certain locations as well.

Further investigation on an intersection-by-intersection basis should be done (in a subsequent phase of analysis) to determine if the benefits of an exclusive lane streetcar merit modifications to the existing traffic configuration. While exclusive lane operation is likely to result in a decrease in LOS and modifications to left-turn movements, it is also likely to have only a moderate impact on traffic operations north of 58th Street. Further south, where traffic volumes are higher, significant traffic impacts are likely.

Timeframe to Implement

This project is expected to require a medium (5-10 year) timeframe for implementation, assuming funding is available.

Potential for Funding

It is assumed that a major transit investment (more than $100 million) will advance into implementation only with substantial Federal capital support (as at least 50 percent). Therefore, it is important to assess the likelihood of obtaining sufficient Federal funding early in project planning, especially since the Federal funding process is very competitive.

Although the precise details of future Federal New Starts/Small Starts evaluation criteria are difficult to predict with great accuracy, they will continue to include measures of cost-effectiveness (as measured in terms of transit trips rather than user benefits), transit-supportive land use and

[13] Audible pedestrian signals may be used to alert visually disabled people that the signal timing is adjusted.

development impacts and the reasonableness of the local financial plan (i.e., local sponsors have identified realistic and ongoing sources of non-Federal financing for both capital and operating needs) among a handful of new measures yet to be detailed, but likely to include environmental benefits and congestion relief. Besides the local match for capital costs, funding is required for the operating costs every year, and this is a local responsibility.

For the Cottage Grove streetcar project, development impact is likely to be positive, both because of existing and anticipated development activity in the corridor and the demonstrated ability of modern streetcars in the U.S. to stimulate both residential and commercial development – indeed a major reason for their popularity in recent years. In addition, given the corridor's location in a dense residential market located between the study area's most important employment markets (Hyde Park and downtown Chicago), the project has a good chance of performing well in terms of cost-effectiveness. Beyond those criteria, however, should be viewed in the context of the Federal government's continued desire to maximize available funding levels by supporting relatively less expensive projects, which would work in the streetcar's favor. (See, for example, the Federal support for the development of streetcar projects in Milwaukee and St. Louis.)

In sum, based on what is known now about corridor conditions and project details, and on what factors are likely to guide Federal decisions on such projects, it is probable that this streetcar project would be competitive in the Federal funding arena.

More problematic is its chances of winning local financial support, especially in the near term and in the context of transit agencies' higher priorities, for example, the CTA's Red Line extension south of 95th Street. (Despite the frequent talk about "innovative" or "nontraditional" local financing, most projects still rely on such traditional funding as sales taxes, with other sources being supplemental.)

There are two primary sources of operating revenue for the CTA: System-generated revenue through fares and other sources, and public funding through the Regional Transportation Authority (RTA). RTA sales tax is the primary source of operating revenue for the RTA and the three Service Boards. In recent years, especially given the economic downturn and lower sales tax revenue, CTA has faced significant financial challenges. Since 2008, the CTA has borrowed more than $554 million to cover the cost of day-to-day operations. While the loans kept trains and buses running in the short term, they did not solve the root causes of the agency's financial challenges. As a result, the agency undertook fare hikes in 2009 and deep service cuts in 2010 (18 percent of bus service and 9 percent of rail service was eliminated), which

temporarily eased financial pressures. However, CTA faces significant fixed costs and steep declines in anticipated public funding. CTA is continuously working to optimize its system to provide the greatest benefits to riders at the most economical cost, which can result adjusting service levels throughout the system. However, given the financial state of the agency, identifying the operating resources for significant new services will be very challenging.

Overall Assessment of Cottage Grove BRT and Streetcar

This study has examined two modes that could create a new high-capacity, high-quality transit in a north-south corridor located between the existing CTA and Metra rail corridors. Both alternatives have merit in attracting riders and providing improved service levels as shown in Table 3.7. However, there are some differences between the two modes and the service concepts. Further study is needed to compare the options in detail and make the final selection of mode and alignment. This more detailed study would be conducted in a manner consistent with FTA guidelines to enable the project to submit an application for funding under the Section 5309 Fixed Guideway Program. If successful, a 50 percent Federal share of capital costs could be envisioned (subject to the grant limit of $75 million for a Small Starts project).

Table 3.7 Comparison of Cottage Grove BRT and Streetcar

Feature	BRT	Streetcar (Phase 1)	Streetcar (Phase 2)
Capital Cost	$39 million low cost curb $148 million Gold Std Median	$240 million	$370 million
Operating Cost	$2.8 – $4.6 million	$5.5 million	$9.0 million
Weekday Riders	6,500 – 8,100	8,100	11,500
Corridor Ridership Impact	12 – 17% increase	16% increase	23% increase
Operating Cost per Rider	$1.23 – $1.64	$1.95	$2.26
Development Potential	Positive Modest Impact; Varies with Investment	Higher	Higher
Beneficiaries	Entire corridor, especially south	North of 63rd Street	Entire corridor, especially south
Traffic Impacts	Greatest impacts at high-volume intersections south of 58th Street	Decrease in LOS, and modifications to left turn movements	Decrease in LOS, and modifications to left turn movements
Parking Impacts	30% of parking removed for curb lane BRT; impacts at stations for median BRT	Parking removed for two full blocks at station locations	Parking removed for two full blocks at station locations
Funding Potential	Small Start or New Start	Small Start	New Start

The BRT project as originally conceived was a relatively low-cost project designed to improve travel time and reliability as well as service coverage in the entire Cottage Grove corridor. By creating a limited-stop overlay service with BRT features designed to reduce travel delay at signals and bus stops, riders would achieve reduced travel times. Those making longer trips, including travelers from the southern part of the route, would achieve the largest time savings. Because BRT features are a flexible menu of options, there remains a wide range of design options. A gold standard BRT including barrier-separated, dedicated right-of-way, off-board payment at high-quality stations, and identifiable branding would involve a more costly design but would be likely to have the greatest impact in attracting riders and influencing development in the corridor. A simpler approach (e.g., a painted curb-side bus lane and less significant stations) would be much less costly but would likely not provide the same impact. Two BRT alignment options were identified. Though both begin at 95th Street, one continues into the Loop from 35th Street via arterial streets (King Drive and Michigan Avenue) while the other utilizes Lake Shore Drive as an express service. The Lake Shore Drive option is somewhat less costly to build and operate but serves a somewhat smaller market given that no boardings can occur between 35th Street and the Loop while the bus runs express on Lake Shore Drive and achieves a somewhat lower ridership. Order of magnitude cost estimates indicate that the gold standard option via arterial streets would exceed the upper threshold cost for a FTA Small Start ($250 million), although the cost estimate is subject to refinement. The other options (low-cost BRT or gold standard BRT via Lake Shore Drive) appear to fall within the Small Start limit.

The Streetcar project as originally conceived was a shorter length (eight-mile) corridor that would be most conducive to streetcar technology. The initial concept was focused on the northern part of the study area (north of 63rd Street), an area that is undergoing redevelopment. Streetcars can operate in mixed traffic or in exclusive ROW; when operating in mixed traffic they do not operate at speeds faster than conventional bus and are implemented to spur development rather than to offer faster transportation. When applied in dense urban and downtown settings, station spacing can be quite short, like local bus. In the Cottage Grove corridor, a streetcar could be provided with limited stop spacing, exclusive right-of-way and signal priority and could provide travel time advantages like BRT. As a result, the streetcar project is envisioned as one that will provide both development and transportation benefits and could conceivably be extended south of 63rd Street in a second phase (another 4.4 miles).

The shorter Phase 1 streetcar project was estimated to cost nearly $240 million (an order of magnitude estimate, excluding any fleet savings on CTA Bus Route #4), which would be below the current limit for an FTA

Small Start project. With the extension, the total project order of magnitude cost would increase to nearly $370 million exceeding the Small Starts limit but still eligible for New Starts grants.

The operating cost of the shorter (Phase 1) streetcar would be nearly twice that of the longer BRT on the Lake Shore Drive alignment. The longer BRT would serve about the same number of riders and increase the ridership in the corridor by about the same percentage as the shorter streetcar. The number of daily weekday riders on the Phase 1 streetcar or the full length arterial BRT is about 8,100, which if annualized assuming 300 equivalent weekdays of operation is 2.43 million riders. The 8,100 riders would represent an increase of 16 percent over current corridor ridership. Weekday operating costs per rider range from $1.95 per rider for the streetcar to $1.64 for the BRT (using the arterial alignment), assuming a 20 percent savings in Route 4 local bus costs in each case.

Other tradeoffs must be considered between the streetcar and BRT concepts. The BRT concept would provide benefits to the entire corridor while the Phase 1 streetcar would provide benefits only north of 63rd Street. The streetcar would likely have greater impact on development than the BRT. BRT has more flexibility in developing a low-cost design, although the cost savings may result in reduced ridership. The implementation of either BRT or streetcar in exclusive lanes would have some impact on traffic level of service and on on-street parking availability in the corridor.

All three concepts will impact traffic on Cottage Grove. North of 58th Street, where traffic volumes are lower, the impacts are minor for curb-running BRT and moderate for median-running BRT and Streetcar. At high-volume intersections south of 58th Street traffic impacts are more significant, with the median-running options having larger impacts. Left turns would be restricted for median-running BRT and Streetcar. Curb parking would be reduced for all options. More detailed engineering would be needed to determine the feasibility of adding or retaining bicycle lanes with BRT or Streetcar treatments.

Next Steps

1. Investigate the removal of parking at suggested locations and discuss options with the community.

2. Analyze intersections south of 58th Street for possible modifications to existing traffic configurations.

3. Evaluate the sources of delay on the existing local bus route and refine the expected potential time savings.

4. Analyze the passenger travel patterns of passengers on the existing #4 bus route to determine if a streetcar to 63rd Street is practical.

5. As funding becomes available, consider reinstatement of X4 express bus service as a first step towards BRT or streetcar.

6. Evaluate project priority in the upcoming Chicago DOT BRT plan

7. Identify a source of local funding.

3.2 Other Improvement Idea

Express Bus Routes on Cottage Grove and Stony Island

The Cottage Grove and Stony Island corridors contain heavily traveled bus routes. The average weekday ridership in October 2010 was over 23,000 on Cottage Grove and over 10,000 for Stony Island, (CTA Routes #28 and #X28 combined). Stakeholders and the Existing Conditions report identified the need for improved transit travel speeds in these two corridors. The intent of this candidate improvement proposal is to improve peak period transit travel time and reliability in both corridors. The study objectives addressed are Travel Time, Frequency, and Customer Comfort. This proposal was rated as a top priority among improvements in this category by some of the stakeholders participating in the Public Advisory Committee.

The Existing Conditions report identified areas in the study area with population densities greater than 15,000 per square mile that were not served by rail service. These areas included portions of the Oakland, Grand Boulevard, Kenwood, Hyde Park, South Shore and South Chicago communities. A previous study, Reconnecting Neighborhoods published in 2008, recommended express bus service operating from Hyde Park along Stony Island, 47th, Cottage Grove, Pershing, and Lake Shore Drive to the Loop. The bus route suggested in the Reconnecting Neighborhoods report would address the lack of express bus service for the communities north of 55th Street, but it would not address the service needs for communities further south. Express bus service with fewer stops and potentially with bus priority treatments has been identified as a candidate improvement to address this lack of rail service in relatively high-density communities.

To serve communities south of 55th, the existing #X28 Stony Island Express would improve travel time by stopping approximately every quarter- to half-mile between 79th and 47th Streets instead of the current spacing of every block or eighth of a mile. For communities north of 55th, a new #X4 Cottage Grove Express bus route would operate on Cottage

Grove from 63rd Street to Pershing Road, entering Lake Shore Drive at Pershing and continuing to the current north terminal at Columbus/ South Water. Local service on the existing Route #4 Cottage Grove bus route could remain unchanged or be reduced slightly to decrease operating costs. The new #X4 route would make stops approximately every one-half-mile on Cottage Grove north of 63rd, and would operate nonstop on Lake Shore Drive to 11th/Columbus. This route would operate bi-directionally in the peak periods similar to the current operation of Route #X28. As an alternative, the X4 could extend to the south terminal at 95th but this would further increase operating costs.

Addition of bus priority treatments such as signal priority and peak period bus lanes would provide additional travel time improvements in both the X28 and X4 corridors. Peak-period lane reservation is physically possible, although parking removal could be contentious in some locations. The Cottage Grove express route would serve the Oakland, Grand Boulevard, Kenwood, Hyde Park, and Woodlawn community areas, (extension to 95th would add Greater Grand Crossing, Chatham, and Burnside). Improved travel time to the Loop on X28 Stony Island would benefit longer distance trips in the Calumet Heights, Avalon Park, South Shore, Woodlawn, and Hyde Park communities. Speed of travel to Olive-Harvey College would also be improved.

Challenges to implementing this proposal include the lack of capital and operating funds. Although express bus services have been successful in the past, demand for the new service and any resulting revenue increases should be established. Existing roadway widths and traffic levels in Hyde Park may limit implementation of priority treatments and removal of parking spaces to provide a peak period bus lane will be controversial.

4.0 East-West Bus Rapid Transit or Enhanced Bus

4.1 Example Improvements

55th Street Bus Rapid Transit

Purpose

The 55th Street BRT would restore and improve a limited-stop express service in the 55th/Garfield corridor. Due to budget constraints, the CTA eliminated the #X55 Garfield Express a few years ago. Study objectives that this service would address include improved transit Travel Time and Reliability.

The need for better east-west service was identified during the very first Public Advisory Committee (PAC) meeting and was reiterated as a service improvement priority during stakeholder interviews and the first public meeting. This service was highly valued by study area residents. The proposed 55th Street BRT is seen as a worthy replacement and upgrade to the #X55 and current services, respectively. BRT is particularly attractive for riders who are going to Midway Airport. However, there are concerns about parking on the east end of the route as well as the accommodation of bike lanes.

Transit mode share was found to be low between the study area and the Midway Airport area while the number of trips is high. Faster service might be able to capture more riders in this potential market.

This proposal was rated as a top or second priority among improvements in this category by many of the stakeholders participating in the Public Advisory Committee.

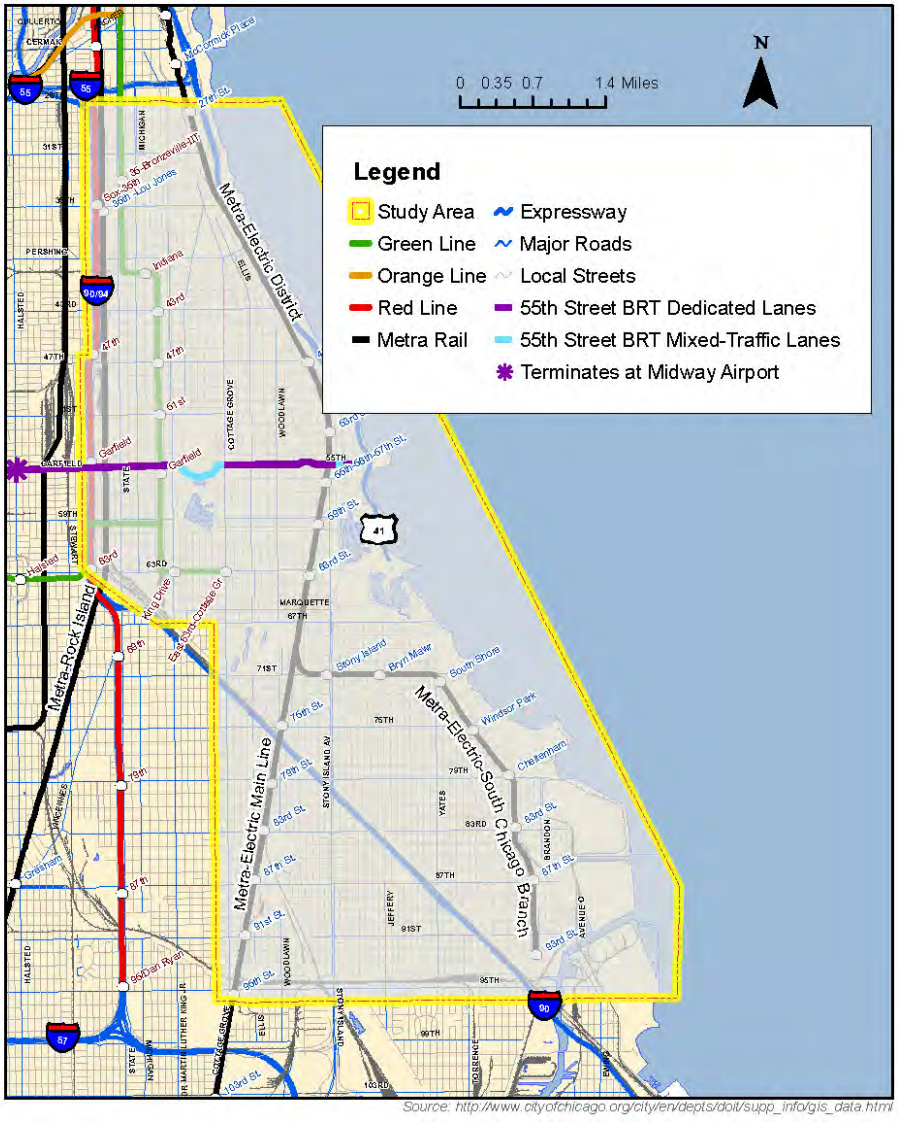
Project Description

Location/Alignment

The 55th Street BRT would travel along 55th/Garfield from the Museum of Science and Industry at 57th and Lake Shore Drive to Midway Airport, as shown in Figure 4.1. Dedicated lanes for the BRT could be provided along the curb or in the center of the street as a transit median. The existing landscaped median on Garfield Boulevard would remain untouched. For either curb-side or median concepts, parking would

need to be removed. Significant stations would be constructed either as part of a transit median or on the sidewalks in the case of curb-side lanes.

Figure 4.1 55th Street BRT Alignment



Service Characteristics

The service would run with 10-minute headways or better during the peak periods and 15-minute headways during the off-peak periods. While the previous #X55 service operated only during weekday peak periods, this service would be provided for 14-16 hours per day. Using articulated, low-floor buses, the BRT service would have off-board fare collection at stations which would be spaced at half-mile intervals. With dedicated lanes and traffic signal priority, the route would get higher average speeds than the existing local bus route in this corridor;

25 percent for curb-side operation and 35 percent for median operation. Real-time bus arrival information signage would also be provided at the stations. A new BRT service could be implemented in stages to build demand.

Benefits/Target Market

The 55th Street BRT would provide improved access to the Midway area from much of the study area. The BRT would primarily serve commuter trips. Current transit share for nonwork trips in this market is higher than for work trips; there may be potential for further growth in the transit share. Overall network connectivity would be enhanced with higher speed crosstown connections between Hyde Park, MED Main Line, Green, Red, and Orange Lines.

Estimated Cost

Capital

BRT capital costs can vary significantly depending on the level of infrastructure investment. The flexibility of BRT systems enables communities to scale this level of infrastructure investment to meet operational needs and financial constraints. It is anticipated that a full featured, or gold standard, BRT along 55th Street (high level of investment) would cost approximately $15 to $20 million per mile. This figure reflects the average cost per mile of recently implemented BRT systems across the country and the capital elements that would be included along 55th Street.

The estimated capital cost would be $71 million for a lower level of investment and $136 million for a high level of investment. The high level of investment envisions a median operation much like a light rail or streetcar. The low level of investment envisions dedicating curb-side lanes for buses and constructing stations on the sidewalks.

Operating

The annual operating cost for the 55th Street BRT service is estimated at $4.1 to $4.7 million depending upon median or curb operation, respectively. No reduction in existing local bus service is assumed or incorporated into this estimate.

Estimated Ridership

Ridership for the BRT was estimated using a sketch planning model to take into account the travel and wait time improvements as well as a

TCRP methodology to estimate impacts of amenities and other BRT features that have impacts unrelated to time benefits.[14]

The reduction in travel time on the BRT (versus the local service) is estimated to be 25 percent for curb-side operation and 35 percent for median operation, while the reduction in overall headway in the corridor is estimated at 39 percent. The influence of amenities is expected to increase ridership by approximately 20 percent for customers taking advantage of the BRT service.

The BRT is estimated to increase ridership in the 55th Street corridor by 21 percent to 16,000 on weekdays. The number of riders on the curb-side BRT route is expected to be 4,800 on weekdays, or about 30 percent of the corridor total. The number of riders on the median operating BRT is expected to be 4,900 on weekdays.

Productivity

The productivity of the BRT on 55th Street is estimated to be 48 to 56 passengers per vehicle-hour on weekdays, (curb and median operation respectively). The operating cost per rider is estimated to be $2.43 to $2.80 for median and curb-side operations respectively. The capital cost per weekday rider ranges from $14,700 for the low capital cost estimate to $54,400 for the high capital cost estimate.

Transit-Oriented Development Opportunities

Historically in North America, traditional bus service has not been a significant catalyst for transit-oriented development, but enhanced bus service in the form of Bus Rapid Transit has had some demonstrated success in supporting or encouraging development in the limited North American markets where it has been introduced in the last decade (including Cleveland and Boston). The 55th Street/Garfield Boulevard corridor has been relatively stable with traces of positive development at in key nodes along the corridor. It links several employment centers (University of Chicago, shopping centers at the Dan Ryan, and Midway Airport) and current transit stations (Metra Electric District Main Line 55th-56th-57th, CTA Green Line at Garfield Boulevard, CTA Red Line at Garfield Boulevard, and CTA Orange Line at Midway Airport). BRT, with more permanent station infrastructure than traditional bus service, may have a positive increase on adjacent development patterns, although it should be noted that bus service currently does exist along the corridor, so any transit-related impacts are likely to be moderate.

[14]The methodology used is described in Appendix A.

Key Issues/Challenges

Existing Roadway Conditions

Garfield Boulevard/55th Street is an important east-west link in the South Lakefront study area connecting the lakefront, Museum of Science and Industry, Washington Park, University of Chicago, Interstate 90/94, and Midway Airport. From Hyde Park Boulevard to Lake Park Avenue, 55th Street consists of one travel lane and one parking lane in each direction. From Lake Park Avenue to Washington Park, the configuration of 55th Street varies between two and one travel lane and between two parking lanes, one parking lane, and no parking. The configuration of travel lanes is shown in Appendix E. Average Daily Traffic (ADT) volumes in this section are approximately 6,000-9,000 in each direction. West of Washington Park to Western Avenue, 55th Street turns into Garfield Boulevard consisting of three travel lanes and one parking lane, with eastbound and westbound separated by a large tree-lined, landscaped median. ADT volumes in this section are as high as 17,000 vehicles near Martin Luther King Dr. and 20,000 near I-90/94. Outside the study area, from Western Avenue to Midway Airport, Garfield Boulevard turns back into 55th Street, where it narrows to one travel lane and one parking lane. Accommodating a bike lane within the proposed configuration does not look possible throughout most of the corridor. If parking is removed throughout, a bike lane could be installed. Figures 4.2 and 4.3 illustrate existing typical blocks.

Figure 4.2 Existing Typical Block on 55th Street/Garfield Boulevard between Lake Park Avenue and Hyde Park Boulevard

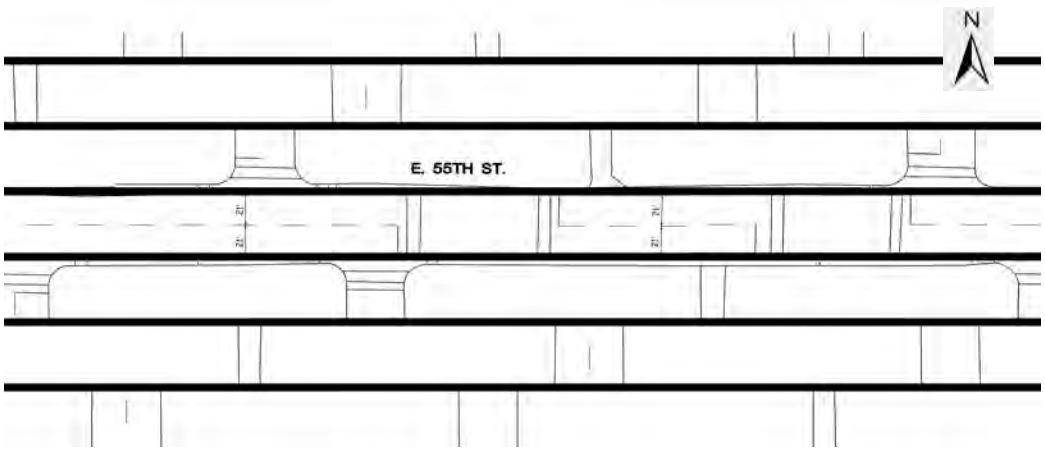
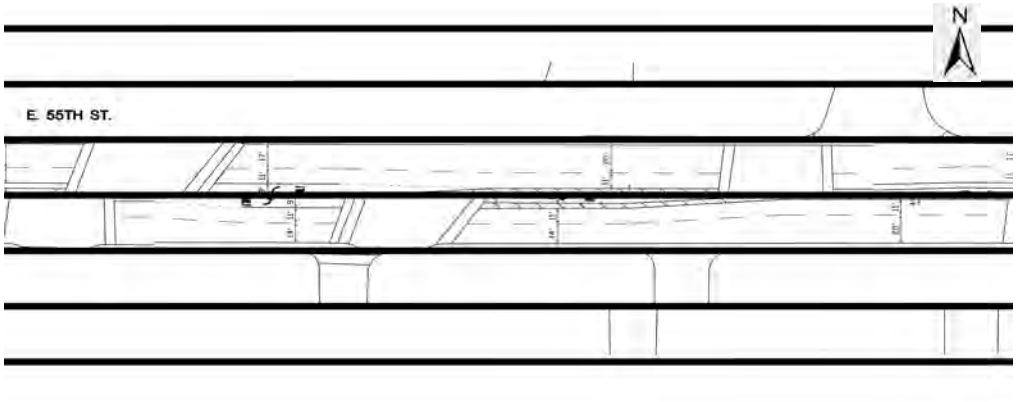


Figure 4.3 Existing Typical Block on 55th Street/Garfield Boulevard between Cottage Grove Avenue and Kimbark Avenue



Geometrics of BRT Running Ways

It is desirable to maintain comfortable lane widths for both buses and passenger cars. Minimum proposed widths of 11 feet for bus lanes, 10 feet for travel lanes, 9 feet for left-turn lanes, and 7 feet for parking were assumed. (See Figures 4.4 and 4.5.) Under these conditions, it is possible to accommodate curb or median running exclusive bus lanes in both directions throughout most of the study area by converting either an existing travel lane or an existing parking lane. However, there are a number of locations where exclusive bus lanes could not be provided because there is not sufficient roadway width. Buses would be required to operate in mixed-traffic for approximately three blocks between Hyde Park Boulevard and Lake Park Avenue. Also, in Washington Park between Payne Drive and Elsworth Drive buses would operate in mixed traffic.

Figure 4.4 Proposed Example Intersection with Exclusive Curb-Running Bus Lane

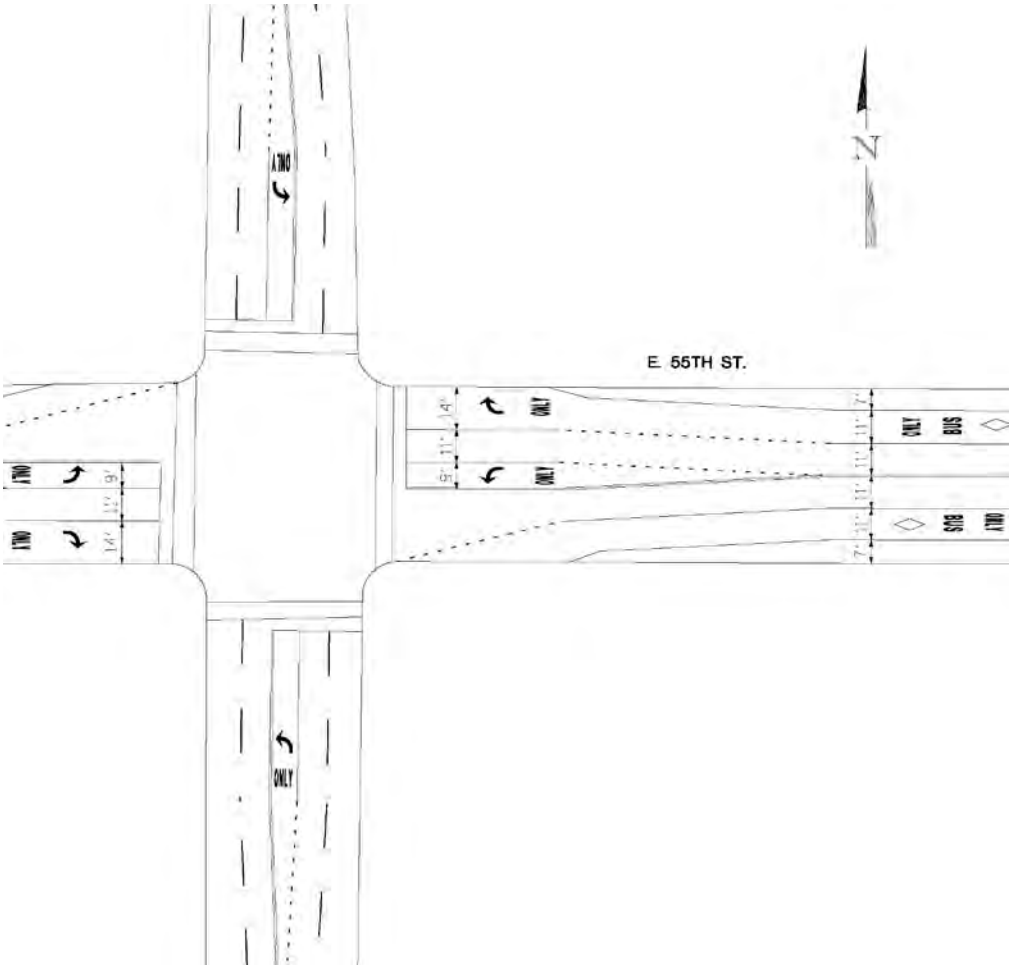
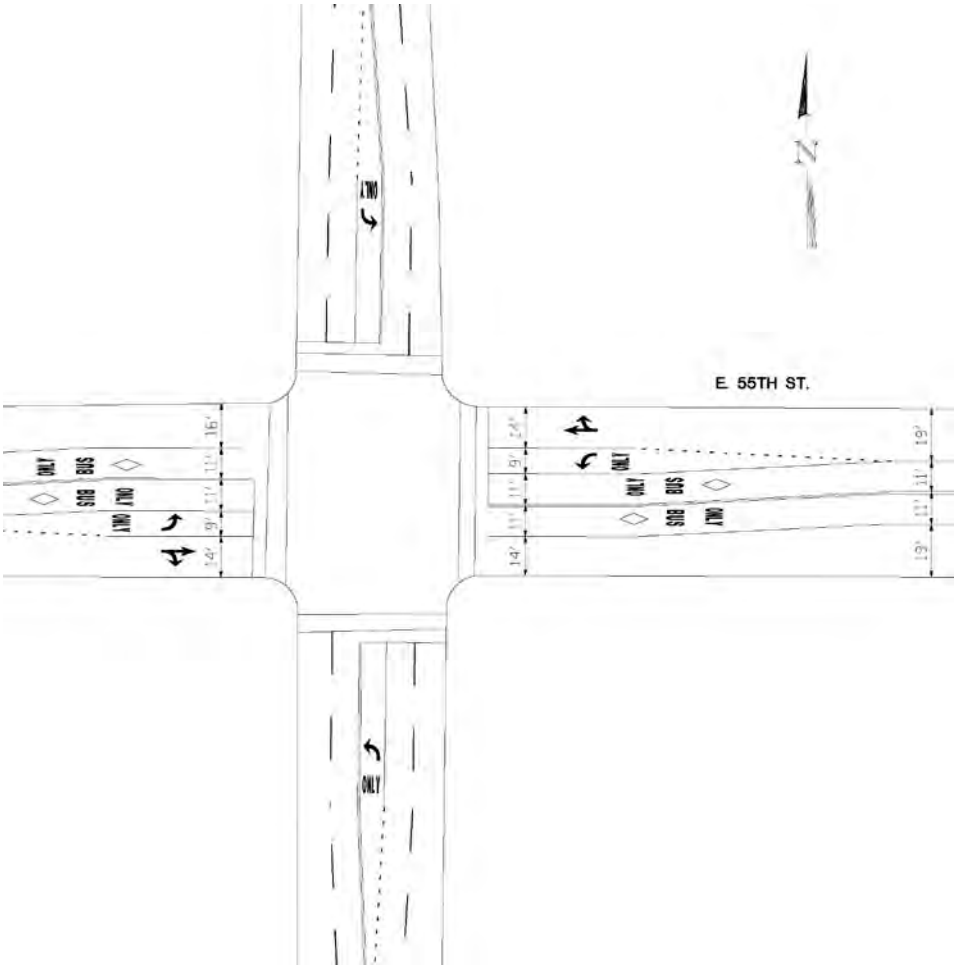


Figure 4.5 Proposed Example Intersection with Exclusive Median Running Bus Lane



Parking Conditions and Impacts

Of the 27 blocks along this corridor in the study area (which extends from the lakefront to I-90/94), 19 currently have on-street, curb-side parking on at least one side. Parking is not metered along this corridor.

In order to install exclusive bus lanes, parking would have to be permanently removed in at least one direction from approximately six of these blocks. Specifically, parking would need to be removed at the following locations:

- Lake Park Avenue to Harper Avenue – one side for 1 block
- Harper Avenue to Blackstone Avenue – both sides for 1 block
- Dorchester to Kenwood Avenue – both sides for 3 blocks
- Greenwood Avenue to Ellis Avenue – one side for 1 block

This number could be increased or decreased based on local conditions, because in some sections either a travel lane or parking lane could be removed to install the bus lane. Maintaining parking on the outside of an exclusive bus lane creates conflicts for bus operations, but may be necessary to address local concerns about parking. Parking impacts are shown in Appendix F.

Traffic Operations

A preliminary analysis of an intersection within this corridor was performed using Synchro modeling software.[15] This analysis does not take into account signal progression with other intersections or Transit Signal Priority (TSP) and is intended to show only the effects of installing an exclusive bus lane in this corridor.

The intersection at Woodlawn Avenue and 55th Street was chosen because it represents a typical intersection between Lake Park Avenue and Washington Park, it would require the removal of a travel lane for the installation of a bus lane, and existing traffic data for this location could be easily obtained.

With Curb Running BRT

To simulate a curb running exclusive bus lane, an existing through/right-turn lane on 55th Street was changed to a proposed bus/right-turn lane. This eliminates a lane for through traffic capacity. The existing delay and the delay with the proposed bus lane are shown in Table 4.1 with the corresponding level of service for each intersection:

Table 4.1 Woodlawn Avenue and 55th Street-Curb

Existing Delay (LOS)	Total Intersection Delay with Exclusive Bus Lane (LOS)
15 s (B)	18 s (B)

As the results show in Table 4.1, the installation of an exclusive bus lane at Woodlawn Avenue does cause some additional delay, but not to a significant degree. An LOS of B indicates the intersection operates very well, and an increase in delay of three seconds would not be very noticeable. Similar results can be anticipated for intersections within this section between Lake Park Avenue and Washington Park.

[15]Synchro tabulations are provided in Appendix D.

With Median Running BRT

To simulate a median running exclusive bus lane, left turns were made protected only, meaning vehicles turning left must have a green left arrow to proceed, and an existing through lane was removed leaving only a left-turn lane and a shared through/right-turn lane.

Table 4.2 Woodlawn Avenue and 55th Street-Median

Existing Delay (LOS)	Total Intersection Delay with Exclusive Bus Lane (LOS)
15 s (B)	34 s (C)

As shown in Table 4.2, the median running bus lane causes 19 seconds of additional delay and drops the LOS to C. This is because the protected left turn takes time away from other movements, and the shared through/right-turn lane does not have as much capacity. Despite these impacts, the intersection still functions at an acceptable level.

The sections where the bus operates in mixed traffic should not perform much differently than they currently do, so they were not analyzed. Also, the study team believes the section between Washington Park and Western Avenue has more than enough capacity to accommodate an exclusive bus lane by conversion of a travel lane either along the curb or the median.

One impact on traffic that cannot be measured is driver comfort. This may result from drivers not being familiar with exclusive bus lanes and other features of BRT. This can be minimized by maintaining comfortable lane widths and using proper signage.

TSP would be used in this corridor to detect when a bus is approaching and add a little more green time or take away a little red time to reduce the amount of signal delay the bus experiences. As a result, bus travel times are improved and buses are able to adhere more closely to their schedule, reducing variability. However, this can have negative impacts, because it reduces the amount of green time for the cross street traffic (possibly including buses on north-south routes) and pedestrians. The magnitude of these negative impacts depends on many factors such as side street traffic volumes, bus delay, and the frequency of TSP activation.

TSP can be actuated for all BRT buses (unconditional TSP) or just to those that are running behind schedule (conditional TSP). Logic can be built into the system in real time to reduce impacts by granting priority only

when intersection delays warrant it.[16] TSP impacts were not evaluated since more detailed analysis and design would be needed.

Traffic Impact Conclusions

There are some sections in this corridor that cannot accommodate an exclusive bus lane, but the sections that can accommodate it appear to have only minor to moderate impacts. Further study should be performed on an intersection by intersection basis to determine where the benefits of BRT outweigh any negative impacts.

Timeframe to Implement

BRT could be implemented in a short to medium (1-5 years) timeframe, assuming funding were available. Gold standard BRT would involve more extensive street modifications in station areas and may require more time to implement than the lower cost curb-side concept.

Potential for Funding

It is assumed that a major transit investment (more than $100 million) would advance into implementation only with substantial Federal capital support (at least 50 percent). Therefore, it is important to assess the likelihood of obtaining sufficient Federal funding early in project planning, especially since the Federal funding process is very competitive.

Small Starts funding would very applicable to this project. Small Starts are projects of up to $250 million seeking less than $75 million in Federal funding. MAP-21 retains the Small Starts designation; although new guidance implementing MAP-21 has not yet been released, the previous guidance provided that the project must have a fixed guideway along at least 50 percent of the project length in the peak period or be a corridor bus project. The latter is defined as a corridor with a minimum of 3,000 benefiting riders, which would include substantial transit stations, traffic signal priority or preemption, low-floor buses or level-boarding, branding of the proposed service, and headways of no more than 10 minutes in the peak and 15 minutes in the off-peak while operating at least 14 hours a day. The project must then meet project justification and financial requirements which are somewhat expanded under MAP-21. Measures are likely to include cost-effectiveness (costs per rider), land use and economic development impacts, environmental benefits, congestion relief and a reasonable plan of finance, i.e., have local

[16] Audible pedestrian signals may be used to alert visually disabled people that the signal timing is adjusted.

sponsors identified realistic and ongoing sources of non-Federal financing for both capital and operating needs. The funding potential for this project should be viewed in the context of the Federal government's desire to support relatively less expensive. The potential for qualifying for Small Start funding is improved by the that the project connects two large employment concentrations (the University of Chicago and Midway Airport).

Perhaps, more problematic than winning a Federal grant is the likelihood of winning local financial support, especially in the near term and in the context of transit agencies' higher priorities, for example, the CTA's Red Line extension south of 95th Street. Besides the local match for capital costs, funding is required for the operating costs every year, and this is a local responsibility.

Despite the frequent talk about "innovative" or "nontraditional" local financing, most projects still rely on traditional funding such as sales taxes, with other sources being supplemental. However, it is possible that other types of funding could contribute, such as funding by developers. "Value capture" funding captures the incremental tax revenue associated with the additional value of properties adjacent to transit (resulting from the transit investment). This type of financing is more often achieved with rail systems than with BRT in the U.S. However, in Latin America, value capture has been utilized to help fund BRT in cities such as Bogota, Columbia and Sao Paulo, Brazil. Along these BRT corridors property values have increased dramatically as a result of the improved transit, and the local government has been able to recover public funds used to finance the system through the increased value of government-owned properties along the line.[17]

There are two primary sources of operating revenue for the CTA: System-generated revenue through fares and other sources, and public funding through the Regional Transportation Authority (RTA). RTA sales tax is the primary source of operating revenue for the RTA and the three Service Boards. In recent years, especially given the economic downturn and lower sales tax revenue, CTA has faced significant financial challenges. Since 2008, the CTA has borrowed more than $554 million to cover the cost of day-to-day operations. While the loans kept trains and buses running in the short term, they did not solve the root causes of the agency's financial challenges. As a result, the agency undertook fare hikes in 2009 and deep service cuts in 2010 (18 percent of bus service and 9 percent of rail service was eliminated), which

[17]Smart Growth America, http://www.smartgrowthamerica.org/2011/06/30/value-capture-an-innovative-strategy-to-fund-public-transportation-projects/.

temporarily eased financial pressures. However, CTA faces significant fixed costs and steep declines in anticipated public funding. CTA is continuously working to optimize its system to provide the greatest benefits to riders at the most economical cost, which can result in adjusting service levels throughout the system. However, given the financial state of the agency, identifying the operating resources for significant new services will be very challenging. Nevertheless, given that this is along an express route that was recently discontinued, restoration/expansion of this route may have a better chance than development of new express routes.

Overall Assessment

BRT on 55th Street/Garfield Boulevard was identified as a way to provide a higher speed service in an important corridor extending from Hyde Park to Midway Airport. This project achieves a large relative increase (21 percent) in overall corridor ridership, assuming BRT overlaid on existing local service, but attracts moderate ridership on the limited-stop BRT service (4,800 weekday riders). The order of magnitude capital cost could range from $71 million to $136 million depending on whether full "gold-standard" BRT is implemented or a lower cost BRT concept using painted curb lanes and less significant stations. The operating costs would be moderate at $4.1 to $4.7 million per year. The weekday operating cost per rider is estimated to be moderately low at $2.43 per rider for median operation. Parking impacts would need to be considered. The gold standard project would be eligible for a Small Starts grant; however with a maximum Federal share of $75 million under the Small Starts Program, substantial local funding would be required. A low-cost concept would also be eligible for a Small Starts grant and would result in a smaller local share. Under MAP-21, Very Small Starts (i.e., projects costing less than $50 million) would now likely be funded under Section 5339, Bus and Bus Facilities.

Overall this project appears less cost-effective than the 79th Street Enhanced Bus project, which is also an east-west corridor project. However, community input should be considered in determining relative priorities between this and the 79th Street corridor.

Next Steps

1. Investigate parking impacts and discuss with the community.
2. Evaluate the sources of delay on the existing local bus route and refine the expected potential time savings.

3. Evaluate project priority in the context of the upcoming Chicago DOT BRT plan, including comparison with the 79th Street corridor.
   - Examine tradeoffs in parking removal, intersection conflicts, cost, ridership and community support.
4. Identify source of local funding.

79th Street Enhanced Bus

Purpose

79th Street is one of the major commercial corridors in the study area. PAC members and public meeting attendees report that this corridor experiences high traffic and ridership volumes during rush hours and weekends and stakeholders have identified a need to address delays and overcrowding on the heavily used Route #79, many noting that 79th Street is a major east/west street in the study area and in great need for enhanced services. There are a number of major institutions and schools inside the study area and just west of the western border that are major destinations including Ford City Shopping Center, St. Leo High School, and St. Sabina Church. CTA has already identified 79th Street as a candidate for BRT treatments in its assessment of BRT opportunities used to select a pilot corridor; as noted earlier, the Jeffery Boulevard corridor was selected for a pilot project that was successful in obtaining a FTA grant and is progressing to implementation.

The 79th Street Enhanced Bus would improve transit travel times and reliability in the corridor. This proposal was rated as a top priority among improvements in this category by many of the stakeholders participating in the Public Advisory Committee.

Project Description

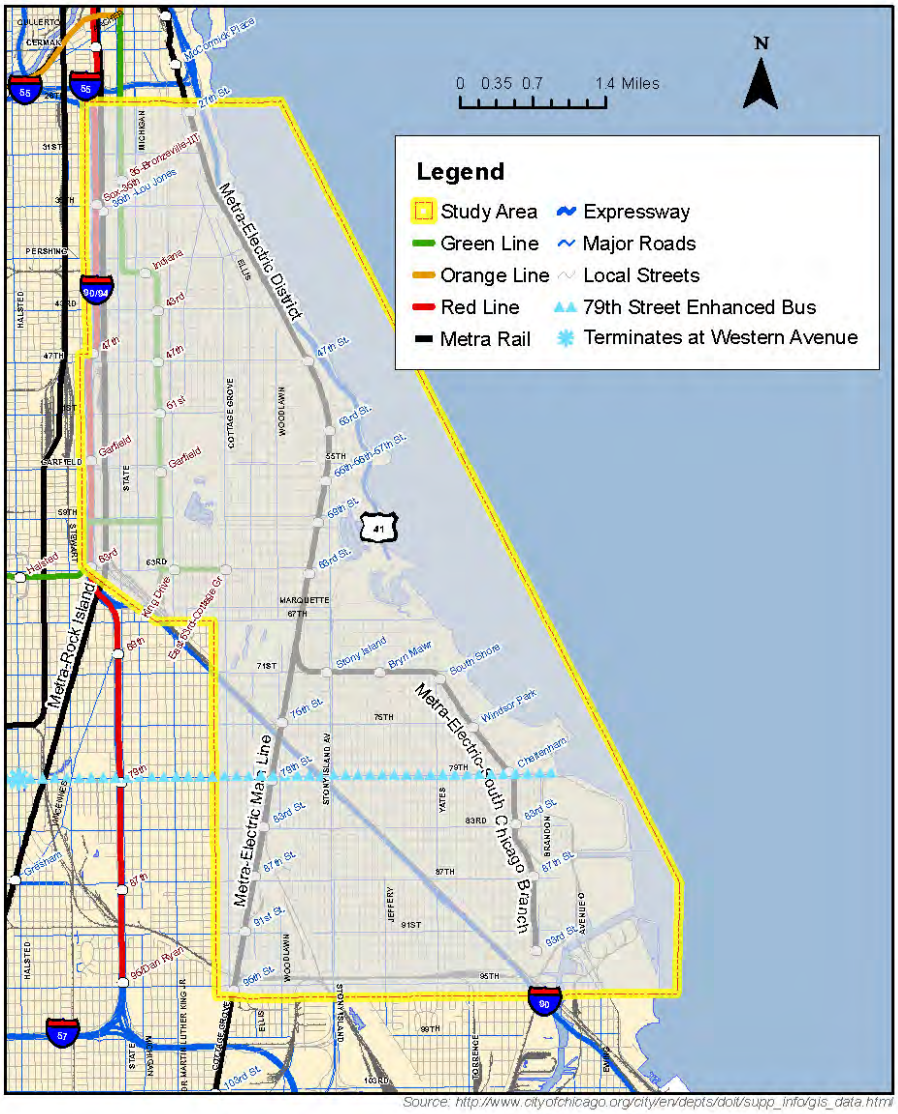
Location/Alignment

The 79th Street Enhanced Bus would run along 79th Street (in addition to the current local route #79) with limited stops from South Shore Drive to Western Avenue, as shown in Figure 4.6. The route could be extended to Lakeside once some of that proposed development is completed, but this is not incorporated in the current concept. As is currently the case, local service would continue west to Ford City Mall.

Due to the narrow right-of-way on 79th Street and the commercial nature of the arterial, (including parking for access to local businesses), dedicated bus lanes are not proposed as part of the improvement and therefore it is not considered BRT but "Enhanced Bus." The proposed project incorporates transit signal priority and queue jumps at selected

intersections, likely making use of existing pavement area (e.g., right turning lanes and parking lanes). Elaborate stations are not proposed but enhanced or conventional bus shelters with some extra amenities are envisioned.

Figure 4.6 79th Street Enhanced Bus Corridor Alignment



Service Characteristics

The Enhanced Bus service would run with 10-minute headways or better during the peak periods and 15-minute headways during the off-peak periods. Service would be provided for 14-16 hours per day. Using articulated, low-floor buses, the Enhanced Bus service would serve bus stops spaced at half-mile intervals, bypassing local bus stops spaced at shorter intervals. With traffic signal priority and with queue-jump lanes

provided at selected intersections, the route would get higher average speeds (approximately 10 percent) than the existing local bus route in this corridor. Off-board fare collection could be provided at all limited stops or just at selected major stops (such as at the Red Line station) to further reduce dwell times; this is an optional improvement. Real-time bus arrival information signs at the bus stops served by the Enhanced Bus are envisioned as well.

Benefits/Target Market

Community areas within the study area served by this corridor include South Chicago, South Shore, Avalon Park, and Greater Grand Crossing.

The 79th Street Enhanced Bus would provide improved access to the Red Line from east and west from the study area. It would serve both commuter trips and nonwork trips. Overall network connectivity would be enhanced with higher speed crosstown connections between Metra commuter rail service (including MED South Chicago Branch, MED Main Line, and potentially Metra Southwest), Red and Orange Lines and Jeffery Boulevard BRT as well other express and local bus routes.

Estimated Cost

Capital

The estimated capital cost would be $18 million for a low level of investment and $27 million for a high level of investment. The low level of investment envisions TSP, queue jumps at three locations using existing right-turn lanes, real time bus arrival information, low-floor articulated hybrid diesel electric buses and shelters provided by the JCDecaux bus shelter contract (at no cost to the project). The high level of investment envisions all of the above plus shelters provided as part of the project cost, construction of additional lanes at the three queue jump locations and off board fare payment (ticket vending) at all limited stops.

Operating

The annual operating cost for the 79th Street Enhanced Bus service is estimated at $7.4 million, which includes the cost of fare inspectors required for off board fare payment. No reduction in existing local bus service is assumed or incorporated into this estimate.

Estimated Ridership

Ridership for the 79th Enhanced Bus service was estimated using a sketch planning model to take into account the travel and wait time improvements as well as a TCRP methodology to estimate impacts of

amenities and other BRT features that have impacts unrelated to time benefits.[18]

The reduction in travel time on the limited stop Enhanced Bus service (versus the local service) is estimated to be 12 percent while the reduction in overall headway in the corridor is estimated at 29 percent. The influence of amenities is expected to increase ridership by about 8 percent for customers taking advantage of the Enhanced Bus service.

The 79th Street Enhanced Bus service is estimated to increase ridership in the 79th Street corridor by 6 percent to 36,500 on weekdays. The number of riders on the limited stop Enhanced Bus route is expected to be 11,000 on weekdays, or 30 percent of the corridor ridership.

Productivity

The productivity of the Enhanced Bus route on 79th Street is estimated to be 76 passengers per vehicle-hour on weekdays. The operating cost per rider is estimated to be $1.96. The capital cost per weekday rider ranges from $1,700 for the low capital cost estimate to $2,400 for the high capital cost estimate.

Transit-Oriented Development Opportunities

Historically in North America, traditional bus service has not had significant impacts catalyzing transit-oriented development, but Enhanced Bus service in the form of Bus Rapid Transit has had some demonstrated success in supporting or encouraging development in the limited North American markets where it has been introduced in the last decade. The 79th Street corridor has been a relatively stable commercial corridor, but with few newer redevelopment projects or streetscaping/ urban design investments, although the first phase of the Lakeside development at the former U.S. Steel South Works will be at the 79th Street end of the property, which could alter the redevelopment climate of the surrounding neighborhoods positively. BRT, with more permanent station infrastructure than traditional bus service, may have a positive effect on corridor redevelopment or rejuvenation, although it should be noted that bus service currently does exist along the corridor, so any transit-related impacts are likely to be moderate.

[18]The methodology used is described in Appendix A.

Key Issues/Challenges

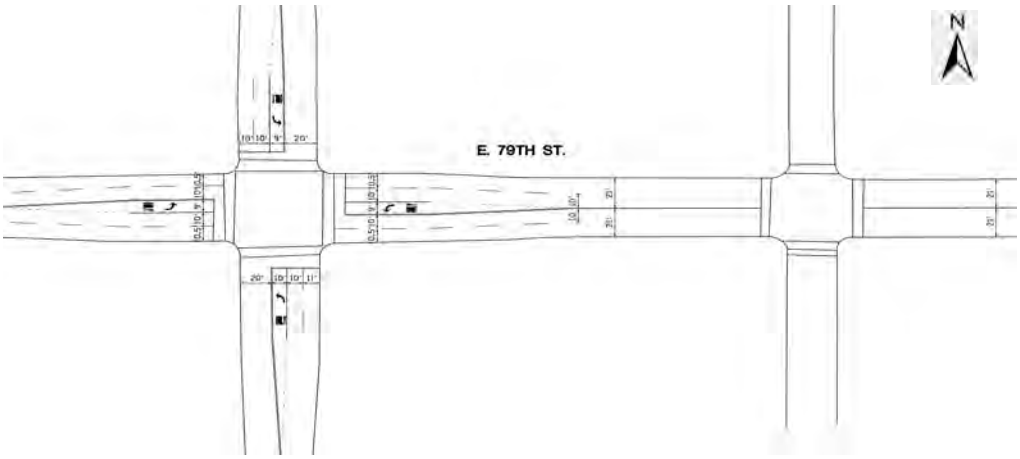
Signal Conditions

Some parts of this corridor have signals that are more than 40 years old, which would need to be fully replaced in order to add transit signal priority. The cost associated with replacing these signals is not included in this study's capital cost estimate.

Existing Roadway Conditions

79th Street is an important east/west commercial corridor in the South Lakefront study area. It is primarily composed of one travel lane and one parking lane in each direction. Average Daily Traffic (ADT) volumes are approximately 4,500 to 5,500 in each direction near the lakefront, and up to as much as 10,400 in one direction at Interstate 94. At major intersections, the roadway widens and parking is prohibited to accommodate a left-turn lane, a through lane, and a right-turn lane in each direction.

Figure 4.7 Existing Typical Block on 79th Street between I-90 and South Shore Drive



Geometrics of Priority for Buses

Roadway widths on 79th Street are not sufficient for dedicated bus lanes unless all parking were removed (which was deemed to have unacceptable impacts in this commercial corridor), so queue jump (i.e., short sections of bus lanes at key intersections) and Transit Signal Priority (TSP) concepts are being considered to improve bus service. Because there is an existing parking lane throughout the corridor, 79th Street is a good candidate for queue jumps, from a geometric standpoint.

Parking Conditions and Impacts

Parking would only have to be removed at intersections where queue jumps would be implemented. The amount of parking that would have to be removed depends on the average or maximum length of queues, with some blocks possibly maintaining all existing parking even with the installation of a queue jump. In this corridor, most parking is metered, so removing it might create issues and increase costs due to the City's parking lease.

Traffic Operations

Intersections that benefit the most from queue jumps have long queue lengths for through vehicles, but very few right turning vehicles. A queue length study should be performed as part of a subsequent study to determine which intersections in this corridor satisfy these criteria.

Installing queue jumps takes away green signal time for other approaches. If a queue jump is being considered for an intersection, it should be evaluated to determine how the other approaches are affected.

Another concern of queue jumps is that they can cause driver confusion. Proper signals must be used to ensure that passenger cars do not mistake the transit queue jump signal for their own signal. Typically this involves the installation of a special signal or strobe light beacon.

TSP without queue jumps is also being considered for this corridor. TSP systems detect when a bus is approaching and add a little more green time or take away a little red time to reduce the amount of signal delay the bus experiences. As a result, bus travel times are improved and buses are able to adhere more closely to their schedule, reducing variability. However, this can have negative impacts, because it reduces the amount of green time for the cross street traffic (possibly including buses on east-west routes) and pedestrians. The magnitude of these negative impacts depends on many factors such as side street traffic volumes, bus delay, and the frequency of TSP activation.

TSP can be actuated for all BRT buses (unconditional TSP) or just to those that are running behind schedule (conditional TSP). Logic can be built into the system in real time to reduce impacts by granting priority only when intersection delays warrant it. TSP systems typically work best when buses are running in dedicated lanes, but they can still improve bus travel times and reliability in mixed traffic routes.[19] Evaluation of

[19] Audible pedestrian signals may be used to alert visually disabled people that the signal timing is adjusted.

TSP and queue jump impacts was not conducted since it would require more detailed analysis and design.

Traffic Impact Conclusions

Queue jumps can improve bus service times and reliability. However, they do have some negative impacts to overall intersection performance. This corridor should be evaluated in a subsequent study to determine where the benefits of queue jumps outweigh these negative impacts. This requires a queue length study to determine which intersections would benefit the most, then an analysis to ensure that the intersections chosen would still function at an acceptable level. TSP without queue jumps should also be investigated to determine locations where bus times can benefit without severely affecting general traffic.

Some stakeholders have expressed concerns about impacts on traffic while others express strong interest in making improvements in bus travel time.

Timeframe to Implement

This project is envisioned to require a medium- or longer-term period for implementation due to the need to further study impacts associated with TSP and queue jump lanes, and the need to evaluate the feasibility of off board fare collection in this corridor.

Potential for Funding

Federal capital grants may be achievable. Under MAP-21, Very Small Starts (i.e., projects costing less than $50 million) would now likely be funded under Section 5339, Bus and Bus Facilities.

The large existing transit ridership in the corridor, the potential for travel time savings and the livability benefits in this corridor suggest it would be a good candidate for this program. The funding potential for this project should be viewed in the context of the Federal government's desire to support relatively less expensive projects and to support projects to maximize use of limited funds.

A local share of capital funding must still be obtained. This is typically a challenge but the project is fairly small in total cost, so it may be less challenging than for some other projects with larger total capital costs. Funding for operations of a limited stop Enhanced Bus service will also be needed. This could be challenging given the CTA's current funding challenges, which recently necessitated a reduction in service levels and elimination of some bus routes.

There are two primary sources of operating revenue for the CTA: System-generated revenue through fares and other sources, and public funding through the Regional Transportation Authority (RTA). RTA sales tax is the primary source of operating revenue for the RTA and the three Service Boards. In recent years, especially given the economic downturn and lower sales tax revenue, CTA has faced significant financial challenges. Since 2008, the CTA has borrowed more than $554 million to cover the cost of day-to-day operations. While the loans kept trains and buses running in the short term, they did not solve the root causes of the agency's financial challenges. As a result, the agency undertook fare hikes in 2009 and deep service cuts in 2010 (18 percent of bus service and 9 percent of rail service was eliminated), which temporarily eased financial pressures. However, CTA faces significant fixed costs and steep declines in anticipated public funding. CTA is continuously working to optimize its system to provide the greatest benefits to riders at the most economical cost, which can result in adjusting service levels throughout the system. However, given the financial state of the agency, identifying the operating resources for significant new services will be very challenging.

Overall Assessment

Enhanced Bus service on 79th Street was proposed to address stakeholder concerns that service is slow and overcrowded on this important east-west corridor that hosts commercial land uses and very high ridership bus service (CTA Route #79). This is one of two east-west corridor example projects. The proposed service could be extended to serve the proposed Lakeside development, as well. Enhanced Bus service rather than BRT is proposed given the existing right-of-way limitations of the arterial – there is currently one travel lane and one parking lane. Nevertheless, a limited stop bus service with several BRT features is expected to offer travel times that are about 12 percent shorter than on the local bus route. The limited stop bus route is expected to attract 11,000 weekday riders and increase the corridor bus ridership by about 6 percent. This is the third highest ridership among the projects examined. The limited stop service is proposed as an overlay over the existing local service and will entail both capital and operating costs. Capital costs are fairly low, ranging from $18 million to $27 million depending on several design factors (e.g., need for additional lanes at queue jumpers, need for CTA provided shelters rather than advertising contract shelters, and optional implementation of automated fare payment). Operating cost is moderate at $6 million per year. Weekday operating costs per rider would be quite low ($1.56). With high existing ridership and low capital costs, the project would have been a good candidate for Very Small Starts funding under SAFETEA-LU. Under MAP-21, Very Small Starts (i.e., projects costing less than $50 million) would now likely be funded under Section 5339, Bus and Bus Facilities.

Based on the fact that the project is cost effective, achieving a high ridership but having low capital costs and moderate operating costs, it is recommended that this project be advanced to the next stage of study so that it can take advantage of opportunities for funding as they arise. Community input should also be obtained to acquire a sense of relative priority between this and other projects, including the 55th Street/ Garfield BRT proposal.

Next Steps

1. Evaluate project priority in the context of the upcoming Chicago DOT BRT plan, including comparison with the Garfield Boulevard/55th Street corridor.

    a. Examine tradeoffs in parking removal, intersection conflicts, cost, ridership and community support.

2. Evaluate the sources of delay on the existing local bus route and refine the expected potential time savings that could be achieved with an enhanced bus project.

3. Identify intersections that benefit from capital investments such as queue jump lanes, and estimate associated capital costs.

4. Consider introduction of a limited stop express bus overlay service if funding allows as a test of concept.

5. Identify source of local funding share.

4.2 Other Improvement Idea

35th Street Limited Stop Enhanced Bus

There has been strong interest from stakeholders in improving east-west crosstown bus service in the area between Cermak and Pershing Roads. The current Route #35 operates local service from Cottage Grove to Kedzie along 35th Street and serves stations on the Green, Red and Orange Lines. There has also been strong interest in better connections to centers of employment and human services. The market analysis conducted in this study identified a need for service to the Illinois Medical District on the west side, which has many trips from the study area but no direct service. A limited stop Enhanced Bus service could be created based on extending Route #35 to serve this area. The route could begin on the east at either Cottage Grove or the Lakefront and make stops at major intersections about one-half-mile apart including rail stations. The primary objectives addressed are Key Linkages and Travel Time/High Speed Connections.

This proposal was rated as a top priority among improvements in this category by some of the stakeholders participating in the Public Advisory Committee.

5.0 Changes to Metra Electric District Rail

5.1 Example Improvement

Gold Line

Purpose

The Gold Line is based on a proposal by a local stakeholder organization, SOUL (Southsiders Organized for Unity and Liberation), and is related to an earlier and broader community-based proposal known as the Gray Line (the latter is described separately later in this chapter). The proposal is intended to provide enhanced transportation options for the high-density neighborhoods along the lakefront by improving service frequency on the existing Metra Electric District (MED) South Chicago Branch (and the northernmost segment of the MED Main Line) and enhancing transit network connectivity through a unified fare structure.

The MED Main Line originates at Millennium Station downtown, running south through the study corridor to University Park. The South Chicago Branch diverges from the Main Line at 71st Street, heading east and then south to its terminus at 93rd Street. Peak period service on both lines serving the study area operates at 10- to 20-minute headways. However, off-peak and Saturday headways are one hour on the South Chicago Branch and up to two hours at some main line stations. Two-hour frequencies are provided on Sundays, which is consistent with Metra's policy.

Service improvements and modifications would be made to the MED South Chicago Branch so that frequency of service would be comparable to CTA rail service. Fare policies would be modified to be consistent with CTA fares, and transfers to and from CTA buses and trains would be permitted per the CTA policy. The Gold Line would utilize the existing MED equipment (and some additional rolling stock), track and infrastructure and include some upgrades, but primarily make changes to the service and fare structure.

There is a great deal of community support for the proposed changes to the MED due to the organizing and awareness campaigns carried out by proponents of the Gold Line during the Olympic Bid period. Changes to

the MED could create a very viable alternative to nearby bus services, the only other services conveniently available for the high-density communities along the lakefront.

Project Description

Location/Alignment

Gold Line service would follow the Metra Electric District South Chicago Branch and the portion of the Main Line north of 71st Street including Hyde Park, Kenwood, Oakland and Douglas, as shown in Figure 5.1. A new station would be constructed at 35th Street, which would improve access by local residents. Service would operate to the downtown terminal at Millennium Station and would share the four-track right-of-way with the MED Main Line, the Blue Island Branch, and NICTD's South Shore Line.

Service Characteristics

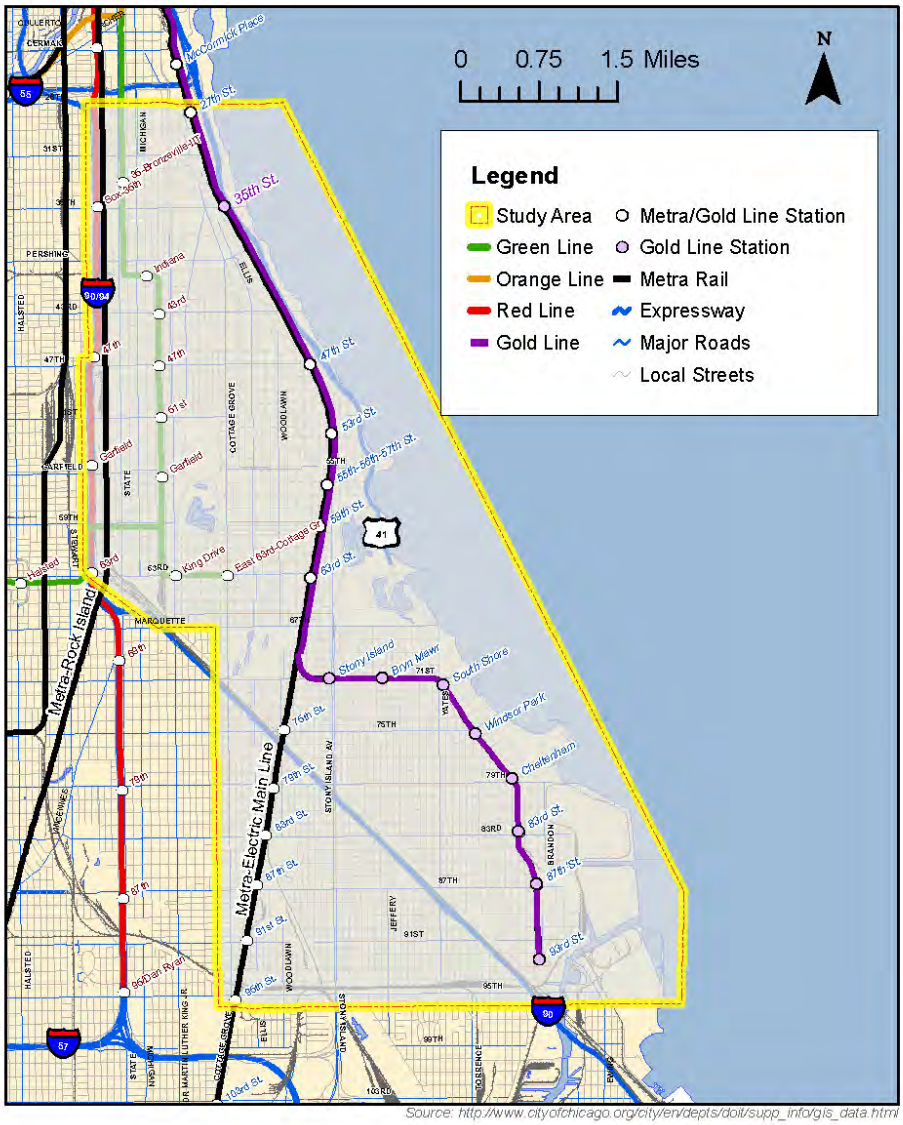
The Gold Line proposal would improve service levels of existing MED service between Millennium Station and 93rd/South Chicago to 10-minute headways in the peak. The Gold Line would operate between 6:00 a.m. and midnight seven days a week. Headways of 15 to 20 minutes would be in effect during the off-peak.

The Gold Line would operate using MED equipment on existing tracks, most likely the center tracks. The Gold Line would accept CTA fares and allow transfers with CTA buses and trains. Stations at 59th Street and 63rd Street would be upgraded, and a new station would be built at 35th Street. The suburban service would operate on the outside tracks.

One issue to be addressed is which tracks would be used by Blue Island trains, which would continue to serve local stations on the Main Line south of 63rd Street but would retain Metra fare collection rather than CTA fare collection. A related question is how off-peak service would be operated with some suburban trains making stops at these stations.

While some capacity is available in the off-peak, Metra has indicated that it needs all four tracks north of Kensington to operate both express and local service during peak periods and to accommodate NICTD service, which is expecting some increase in its operations.

Figure 5.1 Gold Line Alignment



The Gold Line proposal increases transit frequency during the nonpeak time periods by four-fold. To evaluate whether this demand is warranted based on current CTA policies and ridership demand, CTA Service Standards were examined. CTA's Service Standards provide a basis for the number of buses/trains that are provided during certain time periods. The Service Standards set service frequencies based on the number of riders on individual routes during a given time period. The use of these Service Standards combined with current Metra ridership counts provides an indication of the level of midday service that CTA would be likely to provide on the proposed Gold Line if it were responsible for the service.

The Metra 2006 Boarding and Alighting Counts show that over the six-hour midday time period, approximately 265 passengers boarded the South Chicago branch trains. This averages 44 passengers per hour for the branch. CTA's service guidelines for rail frequency indicate that when fewer than 60 passengers per hour ride in the midday, service is scheduled every 60 minutes; the same frequency as current Metra service. Given current ridership levels on the South Chicago branch, CTA's Service Standards dictate that hourly service would be provided on the Gold Line. In addition, Metra's utilization rate (2010, peak period, peak direction) for the South Chicago Branch was 33 percent, versus a systemwide rate of 72 percent.

Benefits/Target Market

The Gold Line would serve large parts of the study area including every community area in the study area except Grand Boulevard and Washington Park. The Gray Line concept obtained considerable support from stakeholders.

Target markets would include the current primary market – work trips, especially to and from downtown Chicago and Hyde Park. However, with improved off-peak frequency, the service would be more attractive for nonwork trips, which have been harder to serve with the existing headways and fare policies.

The CTA fare structure would enable lower cost transfers among lines, enhancing network connectivity. This would encourage riders to use CTA buses to access Gold Line stations in the study area as well as to use CTA buses and trains upon arrival in the Loop. It would also facilitate transfers for reverse trips.

It is important to note that the Regional Transportation Authority (RTA) has been mandated to implement a regional fare payment system by 2015. Thus it will be possible to determine to what degree community concerns are addressed by that required change alone, and how a regional fare payment system will impact ridership. It is possible that the revised fare structure would increase demand to the point that additional service would be justified.

Estimated Cost

A detailed operational simulation will be necessary to determine the extent of capital and operating costs associated with the Gold Line proposal. Since such a simulation analysis is outside the scope of this study, order-of-magnitude costs were developed based on certain assumptions developed in cooperation with Metra. The reader is cautioned to keep this in mind when interpreting the implications of the cost estimates described below.

Capital

The capital cost associated with this project is estimated at $350 million. This figure includes:

- Track, signal and catenary improvements ($38 million);
- Station upgrades at 18th, 49th, 59th and 63rd Streets ($18 million each); (Enhancements to 59th and 63rd Street stations are already in Metra's state bond program and are slated for implementation as soon as the state funds are released.)
- A new station at 35th Street ($24 million);
- CTA fare collection equipment and customer assistant facilities ($800,000 per station); and
- Purchase of Metra Electric District vehicles ($91 million for 26 cars).

This cost estimate does not include any capacity expansion at Millennium Station or on the Main Line that may be required to accommodate the increased level of service. It is important to emphasize that the costs for possible capacity improvements at Millennium Station could be significant given the physically constrained nature of the station site, both vertically and horizontally.

Operating assumptions and resulting infrastructure requirements used to calculate overall capital costs for the Gold Line are consistent with recent commuter rail expansion and new construction costs in the U.S. in recent years.

Operating

Annual operating and maintenance costs are estimated to be approximately $56 to $60 million depending on the type of fare collection employed (lower cost with integrated fare payment and higher cost with barrier fare collection); because this service would replace existing Metra Electric District South Chicago branch service (which is estimated to cost approximately $24 million to operate annually), the incremental operating cost increase is estimated at $32 to $36 million annually.

Estimated Ridership

Ridership on the Gold Line was estimated using two methods. One sketch estimate method was to identify potential diversions from other modes using a combination of ridership, survey data and professional judgment; this approach was initially developed by CDOT and updated to use the most current ridership information available and to

incorporate information on current origin-destination patterns of express bus riders.

The second method uses the Aggregate Rail Ridership Forecasting (ARRF) model developed by FTA as a quick sketch planning tool to roughly estimate the ridership potential of new rail services. Current ridership on the MED South Branch and Mainline was used to adjust the estimate generated by ARRF. Both methods are described in more detail in Appendix A.

The two sketch estimate methods provided similar ridership estimates. The ARRF method provided the higher estimate of 13,800 weekday riders. The diversion method provided a slightly lower estimate of 12,800 weekday riders. The average of the two methods was used, 13,300 weekday riders. This is an increase of 5,000 daily riders over the existing condition. However, it is likely that much of the projected ridership increase would not be new riders to the transit system, but would be riders diverted from existing services.

Because this area is currently well-served by CTA express bus service and connectivity between Metra and CTA service is likely to be improved following fare integration in 2015, refined ridership projections will be necessary to determine incremental ridership increases.

Productivity

The productivity of the revised service is estimated at about 40 passengers per car-hour. The operating cost per weekday rider is $13.00 on the revised service, and the capital cost per weekday rider is over $26,000. Of the proposals reviewed in this study, the productivity results for the Gold Line reflect a comparatively higher level of cost for comparatively fewer riders.

Transit-Oriented Development Opportunities

The station areas around the Metra Electric District Main Line and South Chicago Branch vary considerably in development patterns, urban design and land use characteristics. Characteristics that indicate a general potential for redevelopment include; positive real estate development conditions and nearby successful new projects, sufficient available land for development/redevelopment, nearby community amenities and assets, a compatible mix of land uses, and supportive zoning and policies. With the introduction of more frequent service, the following stations areas may see redevelopment sooner rather than later in a fashion compatible with TOD; 27th Street and 95th Street/Chicago State on the Main Line, and South Shore, 87th Street and 93rd Street on the South Chicago Branch.

Key Issues/Challenges

- Demand and Need for Increased Service – In addition to the important issues discussed below there is the fundamental question of the need for the additional service. As previously discussed, the Gold Line neighborhoods are now well-served by a combination of bus and rail transit. In addition, neither Metra's performance measures nor CTA's service guidelines indicate a need for additional service. In evaluating service improvements on any of its lines, Metra needs to consider equity across its geographic service area. Metra indicated that service levels on the Metra Electric District are deemed to be as good as on other lines. Metra's focus in its 2012 Strategic Plan is expected to be on maintaining a State of Good Repair.

- Equipment and Capacity at Millennium Station – Although there is some disagreement between Metra and the Gold Line's proponents about the level of new investment required, there is agreement that new investments would be necessary for additional rolling stock and upgrades to track and signals. The need for capacity improvements at Millennium Station must be determined, as do the associated costs. In addition, it is possible that required capacity improvements could impact Millennium Park, with potential cost and feasibility implications.

- MED Operations – MED operations on the South Chicago Branch do not operate independently of the other MED services. All are combined via the Main Line and the services are scheduled together to optimize crewing, vehicle utilization, servicing, etc. It would likely require a significant amount of additional operating expense and rolling stock to separate the MED operations within the City of Chicago from the rest of the MED.

- Interagency Coordination – Implementation would require agreement between Metra and the CTA regarding fare structure, funding, and operations, although, as noted above, the RTA must implement a regional fare payment system by 2015.

- Cost-Effectiveness and Potential for Federal Funding – FTA will likely continue to use measures of cost-effectiveness (among other measures) to determine eligibility for projects receiving Federal New Starts funding. As modified by MAP-21, these measures compare the incremental ridership increases to the projected capital and operating costs. In the case of the Gold Line, the relatively low ridership increase combined with the comparatively high cost projections, is not likely to produce satisfactory measures for capital funding applications. On a per rider basis, the operating cost alone is rather high at $12.48 per weekday rider.

- Development Potential – The Gold Line's development impact is likely to be relatively modest, because of existing and anticipated development activity, as well as the existing densities along the South Chicago branch. Simply improving service levels on existing infrastructure is unlikely to be sufficient incentive for new commercial or residential projects. In addition, MED vehicles are larger and may be considered less neighborhood-friendly than streetcars or light-rail vehicles typically used in urban settings, and the high-level platforms have negative visual impacts on the streetscape within neighborhood settings. Both factors make it unclear if the service would be a catalyst to extensive new development or redevelopment. Lastly, this alternative includes only one new station and all the South Chicago branch stations were reconstructed within the last ten years.

- Traffic – The South Chicago Branch has several dozen at-grade crossings between 70th and 95th Streets. These crossings are currently controlled by traffic signals at major crossings and stop signs at lightly used crossings. Increasing service along this line would impact cross-street traffic. If additional trains operate in this corridor, closing the crossings which are currently controlled by stop sign may need to be considered. At intersections controlled by traffic signals, signal preemption is used to interrupt the traffic cycle and allow the train to pass. After the train passes, the signal returns to its normal cycle. Increased service should not impact these intersections much more than the existing service does, provided there is enough time between trains for the queues to clear and the signal to return to its normal cycle. The intersection of Exchange Avenue, South Shore Dr., 71st Street, and Yates Boulevard could be highlighted as a potential problem location due to the number of movements that require green cycle time. A more detailed analysis would be needed to determine if the queues would be able to clear and the signal could return to its normal cycle between trains with increased frequency.

Timeframe to Implement

This project is expected to require a long-term (more than 10 years) timeframe for implementation, assuming funding were available.

Potential for Funding

The Gold Line would provide significantly higher service levels on Metra Electric lines in large sections of the study area. This would facilitate both work trips and nonwork trips, which are especially challenging in off-peak periods. The service would also enhance rail service to two very large employment concentrations: the central business district and Hyde Park. However, while the Gold Line would offer these important

benefits, the project faces substantial challenges in meeting Federal funding criteria which will likely include measures of development impact, cost-effectiveness, and the reasonableness of the local financing plan.

Development impact is likely to be relatively modest, because of existing and anticipated development activity. Simply improving service levels on existing infrastructure is unlikely to be sufficient incentive for new commercial or residential projects. (See more detailed discussion in Section 6.0.) In addition, given the high service levels of other transit (bus as well as rail) in the area, analyzed in detail in the Existing Conditions report (under separate cover), the Gold Line would be unlikely to rate highly for cost-effectiveness, which reflects overall transit market coverage.

This proposal envisioned that CTA would pay Metra to operate the service at CTA's lower fare and that CTA would collect the revenue. Therefore, this proposal creates a CTA subsidy by increasing service and reducing fares on a service that is currently provided by Metra.

There are two primary sources of operating revenue for the CTA: System-generated revenue through fares and other sources, and public funding through the Regional Transportation Authority (RTA). RTA sales tax is the primary nonfare source of operating revenue for the RTA and the three Service Boards. In recent years, especially given the economic downturn and lower sales tax revenue, CTA has faced significant financial challenges. In this environment identifying the operating resources for significant new services will be very challenging.

Finally, given existing financial conditions, and the capital and operating funding needs of local transit agencies and governments, it is also unlikely that a reasonable local financial plan could be produced. This will be especially difficult since the plan must include revenue estimates that utilize the CTA fare structure.

Overall Assessment

This study has examined the ridership demand, capital and operating costs, funding potential and institutional issues associated with the proposed Gold Line proposal. TOD potential was also examined, and while one of the key reasons for the Gold Line (and Gray Line) proposal is economic development associated with urban rail transit service, the analysis of TOD conducted in this study does not indicate that the project would have a large impact.

Two sketch planning methods were used to estimate ridership potential for this project. Both methods suggest fewer than 14,000 daily weekday riders would use the service compared to just over 8,000 today, an

estimated increase of just over 5,000 daily riders (or about 60 percent). The annual increase in ridership is approximately 1.5 million. It is expected that many of the Gold Line riders would not be new riders but would simply shift from using other CTA services, including express buses. While some adjustment to the frequency of express buses might be made in response to a shift in ridership, the express bus service would need to continue for the many riders who would continue to use the service, so substantial cost savings is unlikely. To obtain a more definitive ridership estimate (including an assessment of new riders and diversions from existing services) for a large-scale transportation investment such as this, the regional travel demand model is typically used. However, use of the regional model was beyond the scope of this study.

A regional fare payment system for CTA, Metra and Pace is to be implemented by 2015. Once fare integration is put in place, it will provide an opportunity to observe the actual impact of fare integration on demand for service on the Metra Electric District.

The capital cost of the Gold Line is substantially impacted by the need for additional capacity on the Metra Electric District. Assuming no major capacity improvements are required at Millennium Station, the estimated order of magnitude capital cost for the Gold Line is $350 million.

Using the order of magnitude cost and ridership estimates, the capital cost per new rider can be calculated. First, capital costs must be converted to an annual cost. An annual inflation rate of 4 percent was assumed to recover capital costs over 30 years. Thus, the capital costs per additional rider would be over $13 and the overall cost per additional rider, (including operating costs) would be over $35.

The operating cost of the Gold Line service plan would be substantial. The net additional annual operating cost would be about $34 million or over $19 per new rider (with a net average operating cost per new rider of $19.21). Current operating costs are about $8 per rider assuming the same annualization factor.

Given the relatively low cost-effectiveness and the current budgetary realities, funding for the project would be very uncertain. The Gold Line proposal envisioned CTA contracting with Metra to provide the service. The CTA would be taking on the risk of revenue shortfalls and increasing subsidy. Given the current financial condition of CTA, this seems highly unlikely. Furthermore, the relatively low cost-effectiveness of the project would make obtaining the necessary Federal New Starts funding very difficult.

From a cost-effectiveness and funding opportunity standpoint, the project is not recommended to advance given the above analysis. It is

likely the project would not appear cost-effective unless the capital cost estimate was reduced and the ridership estimate was increased. A detailed capacity analysis would be needed to determine if Millennium Station could operate the proposed increased service without a costly expansion. Detailed modeling of ridership would also be needed. It is recommended that the ridership on the Metra Electric District be monitored closely before and after the fare integration implementation to determine if demand is observed that would merit such detailed studies of this proposal.

Metra is conducting a systemwide Strategic Planning process. Metra's focus in its Strategic Plan is expected to be on maintaining a State of Good Repair. In evaluating service improvements on any of its lines, Metra needs to consider equity across its geographic service area. Although the Gold Line should be considered during the planning process, Metra has indicated that off-peak service levels on the South Chicago Branch are similar to levels provided on Metra's other lines. An improvement in frequency on this branch while retaining service levels on the other lines raises equity concerns, especially when current ridership levels do not support an increase in service.

Next Steps

1. Recommend that the Gold Line is considered in Metra's ongoing strategic planning process.

2. Recommend that Metra implements programmed improvements such as station improvements at 59th and 63rd Street stations once the state bonding funds are released.

3. Monitor the ridership response to fare integration.

   – Determine if there is demand for more frequent service and better coordinated service schedules.

4. If demand warrants, consider incremental service improvements.

5. Utilize the regional travel demand model to estimate ridership for the Gold Line.

6. If demand estimate warrants, conduct a simulation of operations to determine if additional capacity is required and the cost.

7. If the cost is reasonable, consider taking initial steps to advance the project.

5.2 Other Improvement Ideas

Fare Integration between CTA and Metra Electric District

Stakeholders have identified the lack of seamless and free or low-cost transfers between Metra and CTA services as a detriment to efficient transportation in the corridor. Metra and CTA currently use incompatible fare media and have different fare structures. Fare integration would allow transfers between Metra and CTA services, preferably at a lower cost than the current practice of paying separate fares for each service. For customers the benefits of fare integration include convenience and cost savings. The primary operational benefit of fare integration in the corridor is more efficient utilization of existing transportation facilities, particularly encouraging greater utilization of the Metra rail service provided in the South Lakefront study area. Currently Metra's market in the corridor is limited largely to walk or drive access and walk egress. In comparison, CTA rail service has a large bus access and egress market. Fare integration could reduce the need for some express bus services operated by CTA. In addition, the provision of relatively low cost transfers between CTA and Metra may increase ridership on CTA local bus routes serving the South Chicago stations.

The region has taken steps in the past to implement integrated fares. CTA and Pace have agreements in place that allows transfers between the two systems when using any of the following fare media: CTA Chicago Card, CTA Chicago Card Plus, CTA/Pace 7-Day Pass, CTA 30-Day Pass, or CTA Transit Card. Transfers are not available to customers paying with cash on the bus. Transfers between Metra and CTA or Pace are allowed through the provision of Link-Up and Pace PlusBus passes, however, these passes are only available to Metra monthly ticket holders, and CTA limits use of the Link-Up on their system to rush hours only. Metra customers who do not purchase a monthly pass must pay a full fare on CTA or Pace when transferring to those services.

Starting in 2013, a new payment system will allow customers to use a single fare card for CTA and Pace. Customers will be able to pay for CTA and Pace bus and CTA train rides with the following contactless payment methods:

- Ventra Card, a transit and prepaid debit card that can be used for transit and everyday purchases;
- Ventra Tickets, for single-ride and 1-Day passes; and
- Personal bank-issued credit or debit cards.

Customers will be able to "tap" their payment card at 'L' stations or to board any CTA or Pace bus. Special fares and multi-day passes will still be offered, including 30-Day and 7-Day Passes, and cash will still be

accepted on buses. Eventually, it will be possible to use compatible mobile phones to pay for rides on CTA and Pace. Ventra will be available to all CTA riders and on Pace's fixed route buses in the summer of 2013. Ventra will replace CTA and Pace's existing fare systems in 2014. Full details are available at www.transitchicago.org/ventra.

The transit service boards have indicated that the fare policies and fare collection methods are regional rather than corridor-specific issues. Current fare policy on the MED for example mirrors policies in other Metra corridors. Equity throughout the Metra service area must be preserved, and the issue of fare integration requires a regional solution. The concept of fare integration obtained considerable support from stakeholders.

During the course of this project, the Illinois legislature passed legislation (HB3597, effective July 7, 2011) requiring that the Regional Transportation Authority (RTA) take two actions regarding regional fare policy. The first action requires the RTA to develop a policy regarding transfer fares on all fixed-route services provided by the three service boards: Chicago Transit Authority (CTA), Metra, and Pace. Under this policy RTA is required to set forth the fare sharing agreements between the service boards that apply to interagency passes and tickets. The policy must be developed by January 1, 2013 in consultation with the general public and the service boards.

The second requirement is for the RTA to develop and implement a regional fare payment system by January 1, 2015. The regional fare payment system is to conform to established information security industry standards and requirements of the financial industry. The system must allow the use of contactless credit cards, debit cards, and prepaid cards to pay for all fixed-route services.

RTA has initiated the development of a regional fare model to advance interagency fare coordination in the region. This fare model will be utilized as a predictive tool to investigate the revenue and ridership impacts of a range of potential fare products. Results from the fare modeling effort will form the basis for decisions regarding the most cost-effective fare products to offer and those that provide the most value for transit riders and the service boards.

Gray Line

The Gray Line proposal was developed in 1990s by Michael Payne, former resident of the South Lakefront community. It is a more comprehensive proposal than the Gold Line, affecting all MED service within the city limits. While the later Gold Line plan involves service improvements on the South Chicago Branch and on the northern segment of the Main Line into Millennium Station, the Gray Line proposal also

improves service levels on the Blue Island Branch and on the Main Line south of 71st Street to the junction with the Blue Island Branch south of 119th Street. As is the case with the Gold Line, existing track and Metra electrified rolling stock would be used. The plan envisioned devoting two tracks on the Main Line to the Gray Line. The plan also would make the South Chicago and Blue Island Branches operate as CTA service using the CTA fare structure, facilitating easier transfers among transit lines.

The plan is intended to provide enhanced transportation options for residential and commercial neighborhoods, making them more attractive places in which to live and own a business. Target markets would include work trips, especially in downtown Chicago and Hyde Park, and with improved off-peak service make the service more attractive for nonwork trips, which can be difficult given existing headways in off-peak periods.

Like the Gold Line, major potential issues include possible capacity constraints at Millennium Station, the need to purchase new rolling stock, relatively limited development potential in adjacent neighborhoods as discussed in Section 6.0 of this report, the high level of existing transit service in the market, and possibly low probability of obtaining Federal capital funding.

Strong stakeholder support for the Gray Line has included that of the Chicagoland Transportation and Air Quality Commission, affiliated with the Center for Neighborhood Technology, which in 2003 ranked the Gray Line as the most sensible and worthy transit idea out of all transportation projects being proposed for Chicagoland.[20,21]

Conversion of South Chicago Branch to Light Rail

The most extensive alteration to service on the South Chicago Branch would be conversion from commuter rail technology to light rail transit (LRT), a transit technology which is not currently used in metropolitan Chicago, but which has been successfully implemented in such U.S. cities as Portland, Sacramento, San Diego, Minneapolis and St. Louis. Light rail vehicles are somewhat smaller than commuter rail cars, usually use low platforms and are used on systems specifically designed to spur residential and commercial development, which is one of the reasons some systems operate on existing streets. On private right-of-way LRT

[20] Center for Neighborhood Technology, *Project List by Rank*, 18 April 2003, available from www.cnt.org/tsp/pdf/Criteria%20Project%20Scoring%20-%202003.pdf.

[21] Illinois PIRG Education Fund, Getting on Track: Key Public Transportation Projects and Their Benefits for Illinois, may 2009, page 19-21.

trains can operate at speeds as fast as commuter rail trains and with similar overall capacity.

Because of the high cost expected to be associated with conversion and the stakeholder interest in the Gold Line (which was largely planned to use existing infrastructure and equipment), this option was not subjected to detailed investigation by the study team. However, given Metra's concerns about capacity at and approaching Millennium Station and the ongoing Chicago DOT Central Area Transitway study of LRT between McCormick Place and downtown Chicago, it may be appropriate to reexamine this concept in the future.

In this concept, LRT vehicles would be operated on the South Chicago branch and a CTA fare policy would be in place, whether operation was directly by CTA or in some contract arrangement. New LRT cars would be needed to replace the existing commuter rail cars operated on the South Chicago branch. Some existing infrastructure could be used. For example, the existing tracks, and possibly the existing catenary, on the South Chicago branch could be used. However, the conversion to LRT would require new platforms on the South Chicago branch, conforming to the door height of low-floor LRT cars needed for operation on surface streets downtown. If CN and Amtrak abandon use of the Lakefront and St. Charles Airline tracks, as is planned, the LRT service could use the existing CN tracks north of 71st Street to a point north of McCormick Place. New stations and catenary would be required along this segment. The Central Area Transitway Study is examining feasibility of alternative designs for LRT from McCormick Place that would branch with some service going west across the Loop to the west side commuter rail stations and the rest continuing north of the Chicago River to Streeterville. Thus the same trains and infrastructure would serve double-duty, providing both distribution from the South Lakefront area and internal circulation within the downtown area. Various alignment alternatives are under study.

Another option would be for the LRT to leave the MED tracks at Stony Island Avenue and operate north on Stony Island to 60th or 63rd Streets. Turning west on one of those streets, the LRT could then travel to downtown via Cottage Grove Avenue, 35th Street, King Drive, Cermak Road and Michigan Avenue. This alignment would not obtain the higher speeds which would be possible on the lakefront rail right-of-way, but it would provide access to more neighborhoods.

If the South Chicago branch were converted to LRT, a second branch could be created on Stony Island Avenue from 71st Street to 93rd Street (and possibly farther south to 103rd Street and Olive Harvey College), taking advantage of the existing wide median on Stony Island Avenue, which was originally constructed as a private ROW for streetcars. This would add riders and divert more existing bus users and allow for

reduction in bus service or elimination of express routes such as Route #X28. It would allow for higher frequency service north of 71st and Stony Island.

The LRT concept would face similar funding barriers to that of the Gold and Gray Lines. The cost of the LRT has not been estimated however, similar to the Gold Line, it would have substantial infrastructure and rolling stock costs. It would also require separate fleet storage and repair facilities. The LRT could serve and encourage economic development along its route. It would also have the advantage of improved distribution downtown which could boost ridership compared to the Gold Line.

While this option has not been subjected to detailed investigation, it could be studied further in relation to the results of the ongoing Central Lakefront study as well as another alternative to address future transit ridership demand on the South Lakefront overall.

6.0 Transit-Oriented Development

6.1 Introduction and Definition

This section of the report describes and assesses the character of the study area relative to the concept of Transit-Oriented Development (TOD). First the report discusses TOD in general terms and then it examines specific locations. The general discussion presented in the first five subsections address the definition of TOD, the ingredients needed for TOD, its benefits, challenges and implementation assistance. This report utilizes the definition of Transit-Friendly Development (TFD) presented in the *Transit-Friendly Development Guide* (2009) as its definition of Transit-Oriented Development (TOD):

[TOD is a pattern of] development which is oriented towards and integrated with adjacent transit. The development incorporates accessibility and connectivity and is a multiuse mix of dense development that generates significant levels of transit riders.

Given the large study area, the location-specific analysis of potential in Section 6.6 is presented in the context of station-area nodes. Nodes are quarter- to half-mile easy walk-shed districts centered around fixed-guideway (e.g., commuter rail, heavy rail, light rail, streetcar, busway) stations.

6.2 Ingredients

A variety of factors influence the potential for TOD. Research conducted by the Federal Transit Administration (FTA) has identified five primary factors that can be assessed to help estimate the potential for economic development related in areas adjacent to transit.

Primary Factors

1. *The developability of land in station areas:* The extent to which additional development is physically located within a station area, usually due to the presence of vacant or underutilized opportunity sites. Consideration is given to property physical/environmental conditions and dimensions (topography/grade, environmental

condition, presence of natural features, parcel size and configuration, presence of structures, etc.) to describe the complexity of site assembly, cleanup and redevelopment;

2. *Land use plans and policies encouraging transit-supportive development:* The extent to which high-density, mixed-use land uses are permitted or encouraged near transit. Having complementary land use policies in place will also make infrastructure projects much more competitive when it comes to obtaining funding from the Federal government for maintenance, operations and new construction.

3. *The economic climate for development:* The health of the local regional economy and its ability to support new growth adjacent to transit. That is, transit may complement or focus existing development demand in a region, but is not likely to generate new development demand in a poor economic environment or in a market where the real estate fundamentals are weak.

4. *The accessibility characteristics of the area:* The extent to which the transit service is a valuable transportation resource that provides accessibility and mobility to the corridor. This suggests that a transit project must first serve a viable transportation need before it can be considered to offer economic development benefits. It also speaks to the importance of pedestrian accessibility in and around the transit asset.

5. *The permanence and scale of the transit investment:* Case study research demonstrates a stronger correlation between fixed-guideway projects and positive land use impacts. (More on this topic follows in the subsection titled, Potential Impact by Transit Mode).

Underlying Economic and Real Estate Fundamentals

As noted above, existing economic trends as well as local planning and policy initiatives will have a major impact on whether transit-oriented development may occur. While transit provides an excellent user amenity and adds value to nearby property, it is not sufficient by itself to spur, or even maintain, increased development patterns, without strong underlying economic conditions. A strong underlying real estate market can be characterized by several factors:

- A stable or growing population base of moderate to high-density, including residential and employment populations;

- Demand or opportunity for the mix of real estate products typically found in a TOD, such as residential units of varying price points, commercial space for retail goods and services, commercial space for office and employment uses, and entertainment and open space uses;

- The competitive landscape across broader geographies (or "market sheds") than just the TOD zone. Regions can only sustain so much of a given type of development based on population, incomes, visitor and through traffic, etc. before additional stores/developments start to "cannibalize" market share and potentially weaken each one's potential;

- Successful performance of existing similar developments nearby – success begets other success; strong real estate performance is expressed through low vacancy rates, timely absorption or rent-up rates, strong sales or business revenues, and stable or growing rental or sale price points;

- Market rate property prices that enable development of products purchasable or rentable to the target market (i.e., do not create a prohibitively expensive end product because high land costs are passed-through to buyers/renters);

- Perception that the neighborhood or project site as a desirable, safe, livable, exciting area that will attract buyers/renters.

Potential Impact by Transit Mode

The level of impact may also vary depending on the mode of transit. Rapid transit service along a fixed guideway provides a permanent asset to a corridor that sends a positive signal to the development community. By contrast, development of additional local and/or express bus service along the corridor may help meet the transportation needs of existing corridor residents and employees, but is unlikely to provide the impetus for a significant change in land use or economic development patterns or trends. In addition, higher-density, mixed-use development types are less likely to gain development approval or generate buyer demand required for financial feasibility without the presence of fixed guideway service. Table 6.1 provides a summary of potential land use impacts of various transit modes.

Table 6.1 Summary of Potential Land Use Impacts by Mode

Mode	Potential Land Use Impacts
Typically High	
Streetcar	Documented land use and business impacts, particularly when serving mixed-use downtown districts (Portland, Seattle, Charlotte). Streetcar projects are often built with economic development as a major goal, and when operating in mixed traffic are most suitable for short (less than three miles) high-density urban corridors to facilitate continuous development patterns.
Heavy Rail/ Rapid Transit	Documented positive land use and business impacts, particularly when serving mixed-use downtown districts (Chicago, New York). Most areas are already transit-friendly, although even higher concentrations may exist around station areas, served by high-frequency service and targeting all trip types. Specific development types may depend on existing surrounding land use types.
Light Rail Transit	Documented land use impacts in major urban regions (Dallas, Denver, Minneapolis). TOD areas may be somewhat distributed due to station spacing, although highly concentrated around station areas, particularly around high-frequency service stations. Specific development types may depend on existing surrounding land use types.
Commuter Rail	Documented land use impacts in major urban regions (suburban Dallas and Chicago). TOD areas may be distributed due to longer-distance station spacing and work trip-oriented service schedules, although more highly concentrated around station areas. Specific development types may depend on existing surrounding land use types and policy.
Typically Medium	
Bus Rapid Transit	Impacts are likely to be dependent upon factors such as the level of investment in stations and running way infrastructure and service and coordination with local planning and development incentives. Over time, as service is perceived as differentiated from local bus service, presence of TOD impacts may increase. Positive examples from Cleveland; Eugene, OR.
Typically Low	
Bus	Impacts likely to be minimal. Little evidence to show that local bus service in a corridor has a significant impact on surrounding land uses.

6.3 Benefits

Design/Quality of Life Spin-off Improvements

TODs are often defined by the three "D"s of design, diversity, and density of development.

- TODs are designed to create an environment that is attractive and comfortable to pedestrians: streetscaping, pedestrian-scale development, and walkability ameliorate the impacts of higher-density development around transit stations.

- Diversity of use encourages transit ridership by making the station area interesting to pedestrians and allowing riders to accomplish multiple errands and trips while walking to and from transit.

- Density is the most important factor when creating a transit-oriented development: high-density development creates a pool of residents, workers and visitors from which transit systems can draw riders and which, by the design and diversity of uses, makes transit usage more attractive than driving a car.

Lower density patterns of development have become increasingly unsustainable from an economic, environmental, and social perspective. The cost of infrastructure investment, the negative impact of greenfield development on the environment, and the demographic shift toward smaller households that desire an urban style of living have combined to create a greater market demand for TOD. In other words, this is a pattern of development that is more cost-effective for cities, friendly to the environment, and market-responsive to the preferences of a growing segment of consumers.

Local Economic Development Impacts and Fiscal Benefits

TOD (and related transit investments) have the potential to positively change the local and regional economy. *The following economic growth effects* may be achieved:

- *Urban efficiency and individual economy:* Residents and employees based in a TOD can save a significant amount of money by utilizing transit for daily trips, while businesses can reduce the need to provide parking for customers and employees. In some markets, home-buyers can take advantage of location-efficient mortgages which factor lower transportation costs by virtue of proximity to transit in income eligibility evaluation during mortgage loan underwriting and offers.

- *Retail sales:* Retail outlets located adjacent to rail stations have been shown to have a significant, positive increase in sales from riders using the transit service.

- *Tourism and visitation:* By locating major cultural and tourism destinations in a transit-oriented environment, public transportation can improve the accessibility of and visitation to major institutions (e.g., museums, sporting venues, hotels).

- *Business development and attraction:* Many corporations and businesses place value on the availability of transit in a region and will specifically locate their offices in transit districts. A survey found that

77 percent of New Economy companies said access to mass transit was "extremely important" for selecting corporate locations.[22]

TOD development patterns and leveraging transit investments have the potential to impact *land uses and economic development* in two interrelated ways:

- *Property value:* Like other transportation investments, transit improves the accessibility and thus the attractiveness of property. This translates into higher property values. Numerous studies have shown an increase in property values near to rail stations, including a study in Chicago that showed a price premium of more than 25 percent within 500 feet of a station.[23]

- *Adapted/intensified land uses:* Transit allows for the development of dense urban districts and corridors, that could not otherwise be created, and that are increasingly attractive to demographic groups (e.g., young professionals) who are a key to regional economic growth. More intense development of land provides more attractive returns to investors, which further encourages additional growth and enhancement of a TOD district. A study of the light-rail system in Dallas found that the system has generated $800 million in development since it opened in the late 1990s.[24]

It is important to note that while the above impacts are potential results, the relationship between transit and development is complex and interdependent, with numerous other intervening factors contributing to end results, including land use policies, local market conditions, geography, environmental issues, development types, etc.

Transit Market

High-density transit-oriented development creates a ready pool of residents, workers and visitors from which transit systems can draw riders and which, complemented by the design and diversity of uses, makes transit usage more attractive than driving a car. Encouraging more intense development around existing transit service can enhance ridership, strengthening utilization and support for the transit system

[22] *The Lasting Legacy of New Economy Companies*, Property Futures, Jones Lang LaSalle, Volume 1, 2001, 7-10.

[23] *The Effect of Rail Transit on Property Values: A Summary of Studies*, Parsons Brinckerhoff, February 2001.

[24] *The Estimated Value of New Investment Adjacent to DART LRT Station: 1999-2005*, University of North Texas, 2005.

and improving financial performance for the operator. (It is important to note that transit service quality, frequency, mode, speed, reliability and price also impact ridership as factors that potential riders consider in addition to convenience of access when making their transportation choices.)

6.4 Challenges

Despite Chicago's overall nature as a generally TOD-friendly environment given the extensive existing transit infrastructure, there are several challenges to the goal of further concentrating new development around transit stations to realize the benefits described above.

- *Short- and medium-term real estate recession and finance conditions:* Signals are still mixed as to when the Chicago real estate market will recover from the tight credit conditions restricting the real estate and investment market. The time may be right for conducting planning and programming exercises, with the understanding that it may be some years before construction can begin on meritorious projects.

- *Absorption of current new product:* In the boom conditions preceding the burst of the real estate bubble in the late 2000s, a significant supply of residential and retail product was built in Chicago. The resulting market contraction and recessionary conditions indicates an oversupply of product, which may take several years to absorb. The ability of new developments in the study area to compete with already-built unused or little-used product that is likely to be heavily discounted will be a challenge.

- *Skilled developers:* Traditionally, developers specialized in single-use product types and development projects. The nature of TOD projects, whether urban or suburban, includes a mix of uses and often a mix of product price points. Locally and nationally, there are developers and firms who do have a successful track record designing, obtaining financing, building and filling mixed-use developments, but this niche is generally still perceived by lending institutions, as well as the real estate community itself, as a specialized skill that is still emerging.

- *Political influence:* Elected officials, including the mayor and aldermen, exercise significant influence over the location and character of development projects within their jurisdiction. They may advocate for and support implementation of projects that provide a direct, localized benefit to their constituents but support may not be consistent with a wider view of development patterns, and support for projects may

change during the design and permitting process if there is a turnover as a result of elections.

6.5 Implementation Assistance

There are various resources that can encourage TOD around station areas in the study area, including policy guidance and financial/investment support.

Policy Guidance

Public policy can focus or guide development patterns by stipulating form and location of new development or redevelopment projects.

Zoning/Districting

Transit-Friendly Code

The City's zoning ordinances currently offer provisions that can encourage transit-oriented development, in terms of enabling mixed-use, transit-friendly densities, mass and scale, and parking requirements.

In all parts of the study area where the City wishes to encourage greater TOD, the following considerations may be made in the application of relevant zoning ordinances:

- Requiring minimum levels of development (e.g., 1 Floor-to-Area Ratio (FAR)) and awarding FAR bonuses;
- Allowing greater height and density;
- Reducing minimum land areas; and
- Reducing parking requirements

Ordinance *17-10-0102-B Transit-Served Locations* stipulates that "in B, C or D districts, minimum off- street parking ratios are reduced by 50 percent from the otherwise applicable standards for rehabilitation or reuse of existing structures located within 600 feet of a CTA or Metra rail station entrance. For new construction in such locations, the Zoning Administrator is authorized to approve off-street parking ratio reductions of up to 25 percent if the Commissioner determines, based on information provided by the applicant, that transit use and alternatives to private automobile use will be actively promoted and/or that other factors are likely to result in automobile ownership rates that are lower than indicated by applicable off-street parking ratios."

Classification Review

The recent recession and accompanying real estate slump has resulted in retail vacancies stemming from poor performance of individual stores and from closure of entire chains. This trend– both nationally and locally – has suggested that there is a surplus of retail and commercial space in many areas. The City is contemplating changes to zoning mapping that would reevaluate location of business and commercial districts, for example, potentially down-zoning more intense business and commercial zones (*B1 Neighborhood Shopping District* or *B3 community Shopping District*) to *B2 Neighborhood Mixed-Use* to allow for more mixed-use flexibility at key nodes or blocks, or to *R residential* in select locations mid-block or along long stretches of corridors where business or mixed-use has developed/redeveloped infrequently. The premise for this exercise is that too much retail and commercial space spread or scattered over wide areas has a diluting effect on the ability to develop thriving commercial centers; concentrating business and commercial into fewer areas would help such nodes develop or expand collective synergies from customer draw and cross-marketing and avoid "cannibalization" within market sheds. If the City proceeds with this rezoning exercise, it should consider maintaining these business districts around transit infrastructure and reasonable spacing to ensure residents still have convenient access to the goods and services they need.

P-Streets

Pedestrian Streets, or "P-Streets," are an official street classification introduced in the 2003 zoning update to "preserve and enhance the character of streets and intersections that are widely recognized as Chicago's best examples of pedestrian-oriented shopping districts. The regulations are intended to promote transit, economic vitality, and pedestrian safety and comfort." These regulations are codified in 17-3-0500 of the City of Chicago Zoning Ordinance.

Standards of location, character, mass and use apply to all lots that abut a pedestrian street. Buildings must abut the sidewalk or be located within five feet of the sidewalk. Exterior design (e.g., window style, doors, entrances) is specified to be welcoming to the pedestrian, and parking must be provided at the rear by alley access if required by off-street parking ratios. Encouraged uses include sidewalk cafes and outdoor displays of produce, plants and flowers. Retail strip centers, drive-through facilities, vehicle sales and service, car washes, gas stations, and residential storage warehouses are prohibited uses on pedestrian streets; banking facilities (in some circumstances) and nonaccessory parking are considered special uses requiring special approval.

In the study area, as of August 2011, only 53rd Street between Kenwood Street and Lake Park Avenue and Commercial Avenue between 88th and 92nd Street are designated as pedestrian streets. As underlying economic conditions improve, classification of additional pedestrian streets in TOD areas in the study area will set the stage for the character desired in and around TOD zones.

Transit-Friendly Development Typology

CTA and the City of Chicago (Departments of Housing and Economic Development, formerly Zoning and Planning, and Transportation) conducted a study to develop a Transit-Friendly Development (TFD) typology as a means to: encourage such development in the vicinity of CTA rail stations and other CTA transit nodes; provide a tool for elected officials and private developers to attract appropriate, desired development to station areas; and identify opportunities for development of CTA- and City-owned properties. The project identified seven typologies of transit-friendly development patterns in Chicago, and classified 144 CTA rail station areas and 10 representative bus stops according to these typologies, reflecting current land use patterns as well as aspirational plans. Table 6.3 at the end of this section relates these typologies to the station area nodes in the study area. The typologies are:

- (DC) Downtown Core;
- (MC) Major Activity Center;
- (LC) Local Activity Center;
- (DN) Dense Urban Neighborhood;
- (UN) Urban Neighborhood;
- (SD) Service Employment District; and
- (MD) Manufacturing Employment District.

The intent of creating typologies is to acknowledge the rich diversity of context for the transit system and establish relevant and appropriate development guidelines that enable consistent and informed decisions about the types of development that should and should not be allowed or encouraged in the station areas.

Potential for Incentives/Assistance

The following potential sources of incentives and assistance are available:

- City of Chicago DHED operating funds for planning, land acquisition/assembly, and development incentives;
- Joint development via partnerships with major study area institutional anchors, such as IIT, Mercy Hospital, University of Chicago and anchors on the edge of study area boundaries such as McCormick Place and Chicago State University;
- City of Chicago DHED continued administrative support for viable community-organization-driven development projects;
- Special Service Area (SSA)/Business Improvement District (BID) funds for planning studies, project management, streetscaping and neighborhood association maintenance activities;
- Tax increment financing (TIF) for planning, land acquisition, redevelopment incentives, and neighborhood infrastructure;
- Grants for TOD planning from agencies such as CMAP or RTA, or civic/pro-bono organizations such as MPC, LISC, foundations, etc.

Timeframe for Implementation

For development opportunities around current transit infrastructure, the critical path timeline is really dependent upon real estate market conditions, and the availability of funding sources for developers and contributing parties (as described above) to undertake concept planning, design and permitting, and implementation activities.

For development around the transit improvement opportunity projects identified in the South Lakefront Corridor Transit Study, and particularly around the example improvement projects, planning for related or supportive TOD projects may be undertaken concurrently with the engineering and design activities for the transit system. For transit projects seeking Federal funding, every effort should be made by the City agencies to demonstrate that transit-supportive development policies are in place and the service area is currently transit-friendly or is developing in a transit-friendly manner. This can be demonstrated through the execution of planning studies and policy changes as previously noted. The TOD developer will likely wait to progress his/her concept idea until the new transit project is perceived to be "real" (i.e., funded and moving towards implementation); once the transit system implementation is viewed as "certain," construction of the TOD may proceed, even preceding the opening of the transit system in anticipation of the transportation service and value provided.

6.6 Assessment of Study Area Potential

Survey Approach

The project team considered the degree of development and redevelopment potential in a subset of rail station areas over the long term (20 years) – especially with the opportunity to be compatible with and oriented to the transit network – based on local real estate market trends, availability of development sites, existence of plans or active community development oversight, and character of the neighborhood.

It is important that areas with positive development prospects continue to be served by a transit network that maintains and enhances neighborhood value and marketability. From a policy perspective, in making choices on allocation of scarce investment resources (directing development by policy, providing financial incentives, etc.) public agencies may wish to focus on TOD areas that have greater potential to realize substantial growth. For areas estimated to have lower potential, one may consider if more or different transit services could have a positive impact when coupled with other structured policy and financial intervention.

If new transit service is implemented in the study area in the future that has some potential to impact local development patterns, such as streetcar, light rail, and bus rapid transit, the areas around stations and stops may be able to develop into TODs, provided the "fundamental ingredients" as described earlier are present.

Characterization of Rail TOD Nodes

The following analysis presents a description of each rail node area, and an estimation of the degree of development and redevelopment potential over the long term (20 years) – especially with the opportunity to be compatible with and oriented to the transit network. This analysis is based on local real estate market trends, availability of development sites, existence of plans or active community development oversight, and character of the neighborhood, as discussed above. Figure 6.1 is a map showing all existing rail station nodes.

Figure 6.1 Rail Station Nodes

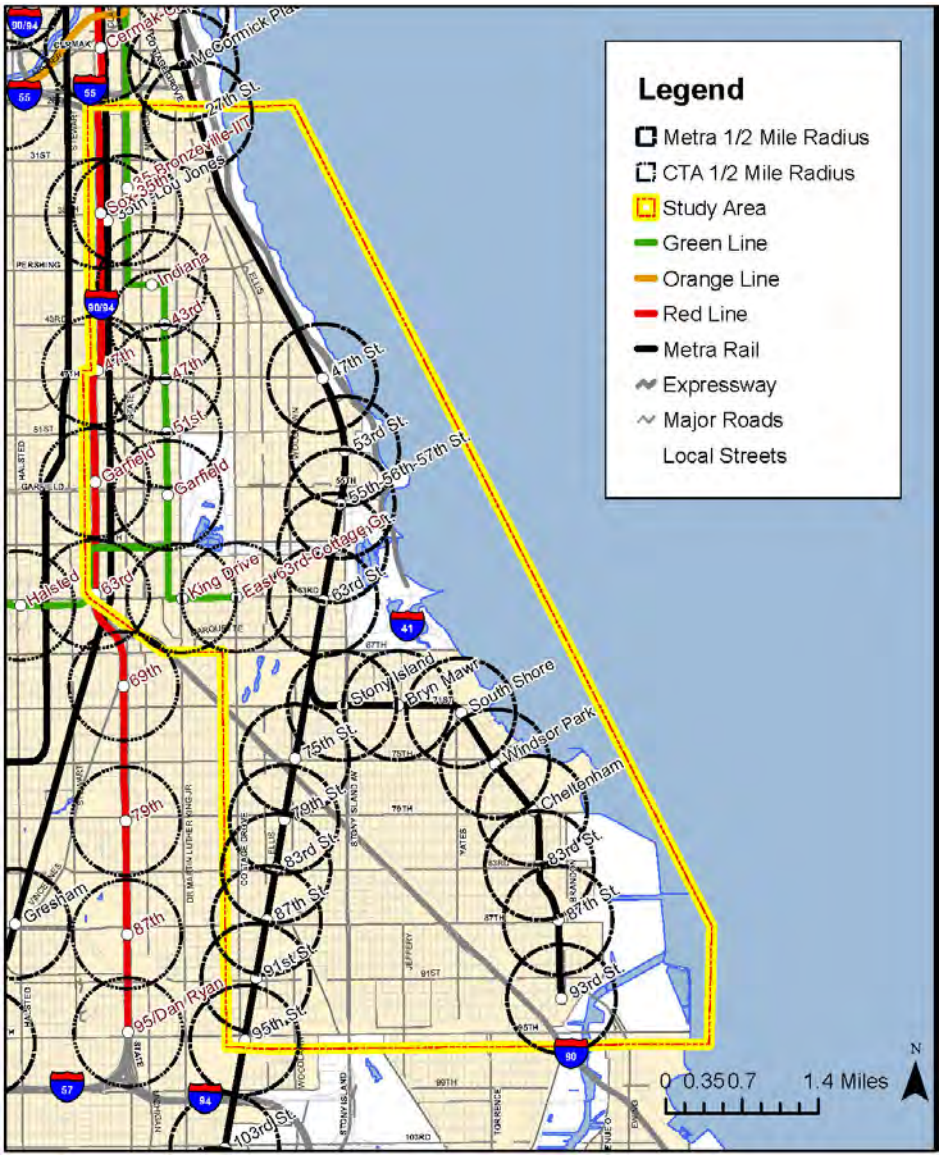


Table 6.2 at the end of this section summarizes the study's assessment of potential for transit-oriented development success, based on these factors, at each station area in the study area. Individual factors were evaluated as Low, Medium, or High presence (L/M/H), with a synthesis provided in an overall assessment. In situations where factors did not roll neatly up into an overall Low, Medium, or High rating, mid-point ratings of Low-Medium or Medium-High (MH/LM) were provided based on professional judgment. Figure 6.2 is a map showing these TOD assessments by rail station nodes.

Station areas that appear most likely to experience new TOD activity,[25] relative to other station nodes in the study area, were identified as:

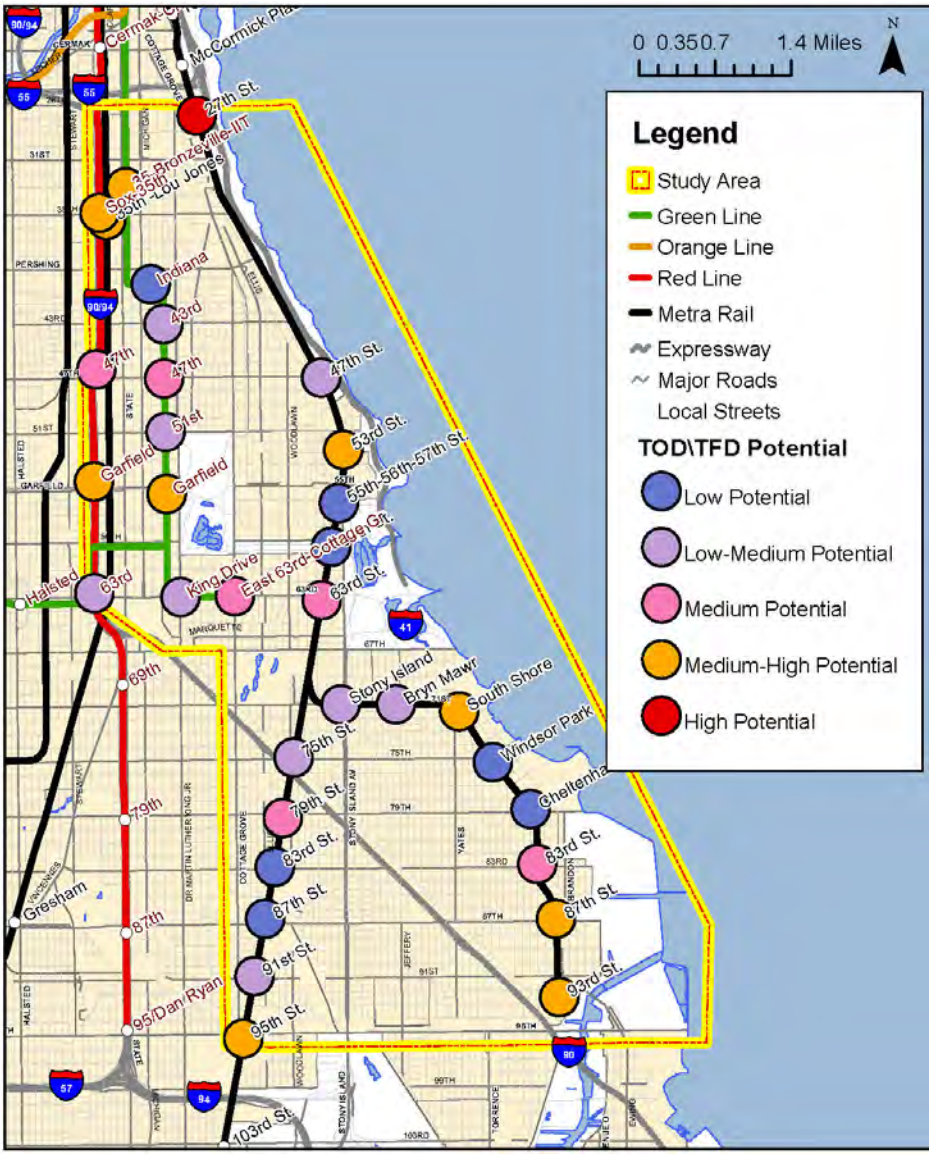
- Green Line: IIT/35th/Bronzeville + Red Line: 35th/Sox Park + Metra RID: 35th Street/Lou Jones
- Green Line: Garfield
- Green Line: 47th Street
- Green Line: East 63rd – Cottage Grove
- Red Line: 47th/Dan Ryan
- Red Line: Garfield/Dan Ryan
- Metra Electric District Main Line: 27th Street
- Metra Electric District Main Line: 51st – 53rd Street
- Metra Electric District Main Line: 63rd Street
- Metra Electric District Main Line: 79th Street
- Metra Electric District Main Line: 95th Street/CSU
- Metra Electric District South Chicago Branch: South Shore
- Metra Electric District South Chicago Branch: 83rd Street
- Metra Electric District South Chicago Branch: 87th Street
- Metra Electric District South Chicago Branch: 93rd Street

Note that while this estimation is based on a robust combination of fieldwork, survey of available plans, data and interviews and discussion, it is qualitative rather than quantitative, and is provided for the purpose of contribution to the prioritization of potential focus area and transportation alternatives for further evaluation.

It should also be noted that this assessment was undertaken in the context of the existing transit network, and is not meant to imply that these are the only likely redevelopment candidates in the whole of the study area or that neighborhoods outside a half-mile radius of a transit station will not experience positive development activity.

[25]Scoring a "Medium," "Medium-High," or "High,"

Figure 6.2 Station Area TOD/TFD Potential



Characterization of Bus TOD Nodes

Although nationally there are fewer case studies of typical TOD around bus transfer points or transfer facilities than around stations for other fixed-guideway modes, this is a growing concept particularly due to the implementation of Enhanced Bus services such as bus rapid transit (BRT). Additionally, the high ridership of bus routes in the study area, and plans for introduction of BRT along Jeffery Boulevard in the short term, suggests the possibility of bus-oriented TOD (BTOD) at certain locations. The *Transit-Friendly Development Guide* (2009) report notes the following conditions that should be present to encourage BTOD, in

addition to the factors defined previously as necessary preconditions to TOD:

- The bus facility is part of a transit corridor and connects to the transit network for travel throughout the region;
- Current bus trips to this location are destinations more than transfers, and land uses in the area are activity generators in and of themselves;
- The bus facility – whether at-curb on-street, or bus turnaround off-street – is sufficient to handle the volume of buses and does not interfere with the flow of traffic or business viability in the area;
- The bus service acts as a feeder to other transit modes, that is, provides synergy between and among different transit modes.

That study identified two transfer points in the South Lakefront study area as BTOD candidates, at 79th Street and Jeffery Boulevard and at 55th Street and Lake Park Avenue. Given the conditions suggested above, BTOD areas may have a smaller standard market shed of approximately 600 feet around a site as compared to one-quarter-mile to one-half-mile around rail station sites. Additional future BTOD opportunities around proposed example projects identified in this study are discussed separately in those sections describing each project.

TOD Potential of Example Project Improvements

Table 6.2 summarizes the TOD potential for each of the example projects described in this report.

Table 6.2 Summary of Example Projects' TOD Potential

Example Project Improvement	TOD Potential
New Bus Route on 83rd Street	Low – some positive impact at key retail nodes
King Drive Express Bus Service	Low
Improvements to CTA Rail Stations	Low – unless supported by nearby investment or development
Cottage Grove BRT	Low to Medium
Cottage Grove Streetcar Phase 1	High
Cottage Grove Streetcar Phase 2	Medium
55th Street/Garfield Boulevard BRT	Low to Medium
79th Street Corridor Enhanced Bus	Low – some positive impact at key retail nodes
Gold Line	Low – some positive impact at certain stations

6.7 Implementation Recommendations

To maximize investment in the City's infrastructure and to make most efficient use of developable urban land, new development or redevelopment projects should be concentrated around the transit infrastructure to the greatest extent possible and appropriate to the neighborhood typology. Figure 6.3 is a map showing these TOD assessments by rail station nodes: these have been already been adopted for the CTA rail stations, and are recommended to be similarly formalized for the Metra commuter rail stations in the area.

Recommendations for achieving TOD in the nodes analyzed, given the conditions summarized above, are presented in context of the station typology, each of which has defined aspirational goals and defining characteristics.

Figure 6.3 Station Area TFD Typologies

MC – Major Activity Center

These station areas are intended to be developed at a significant density that supports and provides services for the region and nearby neighborhoods; they provide high levels of employment, especially retail, and can include special uses like university campuses and mixed – use centers. This typology represents the densest level and mix of uses of all the TFD typologies found in the study area. Large residential, retail, commercial and mixed-use projects should be concentrated in these station areas, to the extent possible given available development areas.

Nodes in the study area that are defined as MC-Major Activity Centers are:

- Green Line: IIT/35th/Bronzeville + Red Line: 35th/Sox Park + Metra RID: 35th Street": Continue support for long-term build-out of Park Boulevard sites. Infill vacant or underutilized interior blocks with moderate to high-density residential and encourage location of supporting commercial and retail on corridor segments of State and 35th Street.

- Green Line: Garfield: Implement planning recommendations from Garfield/55th Street Corridor Study. Position moderate to high-density residential and mixed use with supporting commercial and retail along Garfield Boulevard and King Drive, capitalizing on the green space assets of the landscaped boulevard median and Washington Park, and on Michigan Avenue, with infill residential development on interior blocks at compatible scale.

LC – Local Activity Center

This typology contains a dense and vibrant level of mixed uses. Moderately large residential, retail, commercial and mixed-use projects should be concentrated in these areas, to the extent possible given available development areas. Public investment may focus shaping neighborhood character, reinforcing multimodal connections, and ensuring that station infrastructure is maintained and accessible.

Nodes in the study area that are defined as LC-Local Activity Centers are:

- Green Line: 47th: Active planning to support the "Blues District" along 47th Street, and infill renovation and redevelopment within the station area around the King Drive, Prairie Avenue, and Michigan Avenue intersections should continue to receive support, as these projects maintain confidence in the local development and business environment and encourage further grassroots projects.

- MED-SCB: Bryn Mawr and MED-SCB: Stony Island: Station areas currently are largely built out with a full mix of land uses. Interior blocks of station area are mainly residential, and can benefit from infill development and renovation/rehabilitation of multifamily structures. Moderate commercial and mixed use redevelopment projects with a pedestrian-friendly orientation are appropriate along 71st Street and Jeffrey Boulevard. Urban design priorities should also include ensuring pedestrian and bicycle-friendly access to Stony Island station.

DN – Dense Urban Neighborhood

This typology describes station areas that are primarily residential in character with some limited neighborhood supporting retail and employment, particularly near the station. Higher density residential projects, typically multifamily buildings of 3+ stories, should be concentrated in these areas, to the extent possible given available development areas. Public investment may focus on multimodal connections to the station, ensuring that station infrastructure is maintained and accessible, and defining neighborhood character and "place."

Nodes in the study area that are defined as DN-Dense Urban are:

- MED-SCB: South Shore
- MED-ML: 55th-56th-57th

UN –Urban Neighborhood

This typology describes primarily residential station areas of moderate density with some limited neighborhood retail adjacent to the station. Infill residential projects should be at the same scale as surrounding areas, with potential for some higher density multifamily residential near the stations. Public investment may focus on improved multimodal connections to the station, and ensuring that station infrastructure is maintained and accessible.

Over half of the station nodes in the study area are defined as UN-Dense Urban. Many of these represent neighborhoods that are mostly-built out or very stable; many are predominantly lower-density residential. Development opportunities may be limited to rehabilitation/renovation of current structures, or compatible, appropriate uses on infill parcels that may become available for redevelopment in the future:

- Green Line: King Drive
- MED-ML: 47th Street
- MED-ML: 79th Street/Chatham
- MED-ML: 75th Street/Grand Crossing
- MED-ML: 83rd Street/Avalon Park
- MED-ML: 87th Street/Woodruff
- MED-ML: 91st Street/Chesterfield
- MED-SCB: South Shore

- MED-SCB: Windsor Park
- MED-SCB: Cheltenham/79th Street

Other Urban Neighborhood station areas may have larger tracts of redevelopment opportunity, although some may experience redevelopment over the longer term due to challenging real estate conditions. For these nodes, more proactive concept planning and marketing may help to support or encourage small- to medium-scale site redevelopment plans that incorporate the TFD vision for Urban Neighborhood.

- Red Line: 47th/Dan Ryan
- Red Line: Garfield/Dan Ryan
- Green Line: Indiana
- Green Line: 43rd
- Green Line: 51st
- Green Line: Cottage Grove
- MED-ML: 27th Street
- MED-ML: 63rd Street
- MED-SCB: 83rd Street
- MED-SCB: 87th Street
- MED-SCB: 93rd Street

SD – Service Employment District

This typology describes station areas that are primarily employment centers in the service industries. Higher density office buildings, hospitals and university facilities should be concentrated in these areas. Areas near – but outside the immediate station areas – may be candidates for mixed use redevelopment to support the commercial activities in these station areas, subject to applicable zoning and local planning. Public investment may focus on multimodal connections between these employment centers and the station, and ensuring that station infrastructure is maintained and accessible.

Nodes in the study area that are defined as SD-Service Employment District are:

- MED-ML: 59th/University of Chicago
- MED-ML: 95th Street/CSU

MD – Manufacturing Employment District

This typology describes station areas that are primarily employment centers in the manufacturing, construction and wholesale industries. Public investment may focus on multimodal connections between these employment centers and the station, and ensuring that station infrastructure is maintained and accessible.

Nodes in the study area that are defined as MD-Manufacturing Employment District are:

- Red Line: 63rd Street

6.8 Overall Assessment

Transit-Oriented Development (TOD) is a development pattern characterized by higher-density and mixes of land uses designed to maximize multimodal access and to facilitate walking and use of transit. In Chicago, the preferred term for TOD is "Transit-Friendly Development" or TFD, because the City is already highly transit-oriented by virtue of the existing CTA and Metra fixed transit infrastructure.

The City of Chicago and CTA defined a set of Transit-Friendly Development (TFD) typologies in 2009 as a means to encourage such development in the vicinity of transit stations and nodes; provide a tool for elected officials and private developers to attract appropriate, desired development to station areas; and identify opportunities for development of publicly-owned properties. The project identified seven typologies of transit-friendly development patterns in Chicago, reflecting current land use patterns as well as aspirational plans.

To maximize return on investment in the City's infrastructure and to make most efficient use of developable urban land, new development or redevelopment projects should be concentrated around the transit infrastructure to the greatest extent possible and should be appropriate to the neighborhood typology. Recommendations for achieving TOD in the study area are presented in context of the station typologies, each of which has defined aspirational goals and defining characteristics.

To further support TOD in the study area, the City can ensure that public policies are supportive, such as formalizing TFD typologies for all station areas as guidelines for development scale, character, and use; reviewing zoning classifications so that "by right" uses are consistent with TOD plans and overall economic health; supporting neighborhood infrastructure planning, and implementing pedestrian and bicycle access and safety initiatives. Over the longer term, particularly for station areas

that have a longer term time horizon for redevelopment or more challenging development conditions, a higher degree of collaboration between public agencies and private or nonprofit community groups will be required to encourage concept planning, coordinate infill and new private sector developments, and market TOD candidate neighborhoods to the development community.

To understand the likelihood of free-market activity or extent of concerted public intervention required to achieve TOD in the study area, the study team assessed development conditions in each station area in the study area, considering the amount of available land, the neighborhood real estate climate and "fundamentals," the existence of supportive land use plans and public policies, the presence of transit-friendly design features (such as pedestrian amenities, community assets, etc.), and the type of transit infrastructure (i.e., bus, rapid transit, or commuter rail). For station areas with positive TOD prospects, public guidance is recommended to ensure development character is consistent with the station area typology; for station areas with more challenged market conditions, public guidance may be needed to steer development proposals to station areas with available land and to collaborate on development projects via financial incentives or coordinated infrastructure investments.

Next Steps

1. Formalize TFD typologies for all station areas to be used as guidelines for development in the neighborhood surrounding each station.

2. Review zoning classifications to ensure consistency with TOD plans.

3. Support neighborhood planning initiatives especially those that improve safety and the pedestrian environment.

4. Collaborate with TOD-supportive communities to prepare concept plans for neighborhood development and market those communities to developers.

Table 6.3 Qualitative Assessment of Rail TOD Potential

Node Name	TOD/TFD Typology	Prevalent Land Use	Overall Assessment	Developability of Land in TOD Area	Land Use Plans and Policies Encouraging TOD	Economic Climate for Development/Real Estate Fundamentals	Multimodal Accessibility and Neighborhood Amenities	Transit Mode Impact	Comments
Green Line: IIT/ 35th/Bronzeville Red Line: 35th/ Sox Park Metra RID: 35th Street-Lou Jones	MC-Major Activity Center	Institutional Residential	**MH**	M	H	H	H	H	Recently completed and planned private and public redevelopment along 35th Street; strong institutional support from IIT; much of station area is mature and built out, but long-term growth at Park Boulevard. TIF district.
Green Line: Indiana	UN-Urban Neighborhood	Residential	**L**	H	M	L	L	H	Little market redevelopment activity in area; prevalence of underutilized and vacant properties in station area. Streetscape/ lighting concepts in station area in Reconnecting Neighborhoods study. TIF districts.
Green Line: 43rd	UN-Urban Neighborhood	Commercial Residential	**LM**	H	H	L	L	H	Little market redevelopment activity in area; prevalence of underutilized, poorly maintained and vacant properties in station area. DHED plan for redevelopment and eventual RFP. 2011 station renewal by CTA. TIF districts.
Green Line: 47th	LC-Local Activity Center	Commercial Residential	**M**	H	H	M	M	H	Proximity to "Blues District" redevelopment, but presence of lesser quality commercial structures and high presence of loitering. TIF districts.
Green Line: 51st	UN-Urban Neighborhood	Residential Vacant	**LM**	H	M	L	L	H	Little market redevelopment activity in area; prevalence of underutilized, poorly maintained and vacant properties in station area. TIF district.

Node Name	TOD/TFD Typology	Prevalent Land Use	Overall Assessment	Developability of Land in TOD Area	Land Use Plans and Policies Encouraging TOD	Economic Climate for Development/Real Estate Fundamentals	Multimodal Accessibility and Neighborhood Amenities	Transit Mode Impact	Comments
Green Line: Garfield	MC-Major Activity Center	Residential Vacant	**MH**	M	H	L	H	H	Little current market redevelopment activity in area but buoyed by proximity to University of Chicago; prevalence of underutilized and vacant properties in station area. DHED and UC redevelopment plans for station area and 55th Street Corridor. TIF district.
Green Line: King Drive	UN-Urban Neighborhood	Residential Commercial Industrial	**LM**	L	M	M	M	H	Much of station area is mature and built out with industrial or institutional uses; high-density residential in other portions of study area in varying states of maintenance, may be candidate for rehab/renovation rather than large-scale redevelopment as base is already TOD-scale. TIF district.
Green Line: Cottage Grove	UN-Urban Neighborhood	Commercial Residential	**M**	M	M	MH	MH	H	Grove Parc housing redevelopment north of station but prevalence of underutilized, poorly maintained and vacant properties along 63rd. There are design and streetscaping plans to mitigate presence of overhead El structure. Proximity to University of Chicago. TIF districts.
Red Line: 47th/ Dan Ryan	UN-Urban Neighborhood	Industrial Institutional	**MH**	M	H	MH	M	H	Legends South redevelopment begun, but much of station area is built out with industrial and institutional anchors. Proximity to "Blues District" although much of 47th Street frontage is deteriorated with little other market activity. TIF district.
Red Line: Garfield/Dan Ryan	UN-Urban Neighborhood	Commercial	**MH**	M	H	MH	M	H	Legends South redevelopment in long-term, commercial/retail anchors in center of station area, with infill and redevelopment plans.

Node Name	TOD/TFD Typology	Prevalent Land Use	Overall Assessment	Developability of Land in TOD Area	Land Use Plans and Policies Encouraging TOD	Economic Climate for Development/Real Estate Fundamentals	Multimodal Accessibility and Neighborhood Amenities	Transit Mode Impact	Comments
									High transit connectivity. TIF district.
Red Line: 63rd	MD-Manufacturing Employment District	Industrial	**LM**	L	L	L	M	H	Much of station area is built out with industrial uses, with some residential at east edge of station area.
MED-SCB: Stony Island	LC-Local Activity Center	Residential Commercial Industrial	**LM**	L	L	M	M	M	Much of station area is fully built out with full mix of land uses of varying scale and density. Stony Island Avenue at the west of station area is auto-oriented in character. TIF district.
MED-SCB: Bryn Mawr	LC-Local Activity Center	Residential Commercial	**LM**	L	M	M	M	M	Much of station area is fully built out with full mix of land uses of varying scale and density. TIF district.
MED-SCB: South Shore	DN-Dense Urban Neighborhood	Commercial	**MH**	M	M	MH	H	M	Recent residential redevelopment and infill site opportunities on moderate vacant lots/underutilized sites. Local amenities and moderate to high densities. TIF district.
MED-SCB: Windsor Park	UN-Urban Neighborhood	Residential Commercial	**L**	L	L	L	M	M	Much of station area is fully built out with full mix of land uses of moderate- to low-density.
MED-SCB: Cheltenham/79th Street	UN-Urban Neighborhood	Residential Commercial	**L**	L	L	M	MH	M	Much of station area is fully built out with mostly residential land use of moderate- to low-density. Some potential to capture spin-off momentum from first phase of Lakeside project. TIF district.

Node Name	TOD/TFD Typology	Prevalent Land Use	Overall Assessment	Developability of Land in TOD Area	Land Use Plans and Policies Encouraging TOD	Economic Climate for Development/Real Estate Fundamentals	Multimodal Accessibility and Neighborhood Amenities	Transit Mode Impact	Comments
MED-SCB: 83rd Street	UN-Urban Neighborhood	Residential	**M**	LM	M	M	M	M	Much of station area is built out with single-family low-density residential land use. Some industrial and commercial properties in station area could be redevelopment candidates, but presence of angled streets could create land assembly challenges. Some potential to capture spin-off momentum from Lakeside project. TIF district.
MED-SCB: 87th Street	UN-Urban Neighborhood	Residential Commercial Industrial	**MH**	M	M	H	MH	M	Lakeside development may generate spinoff and redevelopment of scattered industrial/heavy commercial uses to more compatible with dominant pedestrian-friendly residential character. TIF district.
MED-SCB: 93rd Street	UN-Urban Neighborhood	Commercial Industrial	**MH**	H	M	MH	MH	M	Mix of uses oriented to employment/service industrial and commercial, with some residential. Some new residential development near station. Some potential to capture spin-off momentum from Lakeside project and proposed 95th Street BRT. TIF district.
MED-ML: 27th Street	UN-Urban Neighborhood	Institutional Residential Vacant	**H**	H	H	H	M	M	Available development sites, proximity to recent development at McCormick Place, Eastgate Village, 31st Street Harbor, etc. DHED plans to redevelop former Michael Reese site. TIF district.
MED-ML: 47th Street	UN-Urban Neighborhood	Residential Commercial Open Space	**LM**	L	H	M	MH	M	Much of station area is fully built out with full mix of land uses of moderate- to high-density. Medium density residential may present opportunities for rehab or redevelopment.

Node Name	TOD/TFD Typology	Prevalent Land Use	Overall Assessment	Developability of Land in TOD Area	Land Use Plans and Policies Encouraging TOD	Economic Climate for Development/Real Estate Fundamentals	Multimodal Accessibility and Neighborhood Amenities	Transit Mode Impact	Comments
MED-ML: 51st-53rd Street/Hyde Park	LC-Local Activity Center	Residential Open Space	**MH**	MH	H	H	H	M	Much of station area is fully built out with full mix of land uses of moderate- to high-density in TOD style. Active private plans underway for mixed use redevelopment and infill residential rehab. Support from DHED and UC to further redevelop 53rd Street. TIF district.
MED-ML: 55th-56th-57th	DN-Dense Urban Neighborhood	Institutional Residential Commercial	**L**	L	H	H	H	M	Much of station area is fully built out with institutional and residential land uses of moderate- to high-density in TOD style. UC actively implementing Master Plan projects, but little other available land for private redevelopment.
MED-ML: 59th Street/University of Chicago	SD-Service Employment District	Institutional Residential Open Space	**L**	L	H	H	MH	M	Much of station area is fully built out with institutional and residential land uses of moderate- to high-density in TOD style. UC actively implementing Master Plan and South Campus projects, but little other available land for private redevelopment.
MED-ML: 63rd Street	UN-Urban Neighborhood	Institutional Residential Commercial	**MH**	MH	M	M	MH	M	Parts of station area are fully built out with institutional, residential and recreational/ open space land uses of moderate density. Some pockets of recent residential and mixed use redevelopment, but prevalence of vacant lots and underutilized property offer redevelopment potential. TIF district.

Node Name	TOD/TFD Typology	Prevalent Land Use	Overall Assessment	Developability of Land in TOD Area	Land Use Plans and Policies Encouraging TOD	Economic Climate for Development/Real Estate Fundamentals	Multimodal Accessibility and Neighborhood Amenities	Transit Mode Impact	Comments
MED-ML: 75th Street/Grand Crossing	UN-Urban Neighborhood	Residential Industrial	**LM**	M	L	L	L	M	Much vacant and underutilized land, current characterization as industrial and presence of angled streets may present challenges to land assembly and pedestrian friendliness. Residential components of station area are low-density. TIF district.
MED-ML: 79th Street/Chatham	UN-Urban Neighborhood	Residential	**M**	M	M	M	L	M	Moderate amount of development sites in intact/solid residential area, tempered by pedestrian-friendliness challenges from angled current and former railroad ROWs. TIF district.
MED-ML: 83rd Street/Avalon Park	UN-Urban Neighborhood	Residential	**L**	L	L	M	M	M	Solid low- to moderate-density residential neighborhood with few opportunity sites; potential for spot residential rehab and upgrade projects.
MED-ML: 87th Street/Woodruff	UN-Urban Neighborhood	Residential Industrial	**L**	L	M	M	M	M	Much of station area is fully built out with full mix of land uses of varying scale and density.
MED-ML: 91st Street/ Chesterfield	UN-Urban Neighborhood	Residential Industrial	**LM**	LM	M	M	M	M	Much of station area is fully built out with mostly residential land uses, but available sites for redevelopment around Cottage Grove.
MED-ML: 95th Street/CSU	SD-Service Employment District	Commercial Industrial Institutional	**MH**	M	H	M	H	M	Employment and institutional anchors with multimodal transportation connections; some declining commercial and low-density residential sites present redevelopment opportunities but are tempered by physical barriers of expressways and rail ROW.

Appendix A – Ridership Methodology

This section describes the approach used to estimate ridership potential for various transit enhancement alternatives evaluated in the study. These improvements ranged from new bus route(s) to a high-capacity rail alternative. Consistent with the scope of the project, the ridership forecasts were carried out at sketch planning level of detail. Therefore, these estimates incorporate considerable uncertainty and should be interpreted as providing an indication of ridership potential rather than a true ridership forecast. At the next stage of study, promising alternatives should be evaluated using a well validated travel demand model for the corridor to produce more reliable forecasts.

To derive sketch-level ridership potential estimates we have used four approaches:

- Peer Route Method;
- Transit Service Sketch Planning Tool;
- Aggregate Rail Ridership Forecasting (ARRF) Tool Version 2.0;
- Diversion Method.

Each of these methods is described in the following sections. This is followed by a summary of inputs and results for each project and a summary of ridership results for all the projects evaluated.

Peer Route Method

This approach is most suitable for new planned bus routes that are likely to attract riders from similar travel markets that are served by the existing bus routes. Ridership estimates are based on the ridership per capita, per household and per worker rates observed in the peer route's coverage area.

This approach was used for estimating ridership potential for new route on 83rd Street. The planned Route #83 is located parallel to and between well utilized routes on 79th and 87th Streets and its market area competes with these routes. Route #75 was selected as the peer route since it also shares its market with nearby well utilized routes on 71st and 79th Streets. (Route #79 and Route #67 and partly with Route #71). Both The proposed Route #83 and Route #75 serve Red Line Stations that are 4 blocks off the arterial on one of the parallel arterials served by the high-ridership routes.

CMAP's trip generation input data is used for estimating the magnitude of the travel market covered by the Routes #75 and #83. The data is available at subzone level of detail, and using a linear buffer of one-half-mile, market sizes were computed. Ridership for Route #75 was used

to derive ridership rates per capita, household, and worker. The rates were multiplied by with Route #83 coverage. The results indicated a range of 5,800 – 6,100 riders per day.

In addition, the Route #83 alignment is planned to serve major shopping centers including the planned Wal-Mart on 83rd Street. These factors may lead to slightly higher ridership levels than estimated.

Transit Service Sketch Planning Tool (SPT)

Cambridge Systematics, Inc. (CS) developed the Transit Service Sketch Planning Tool (SPT) to analyze bus transit improvements within the six-county Chicago area for Pace Suburban Bus Service (Pace). The tool has proved quite flexible in estimating the relative potential ridership impacts from a wide range of transit improvement strategies and across a wide range of travel markets. The tool works best evaluating the relative impacts of different scenarios at the corridor level, rather than producing route-specific ridership estimates.

The SPT uses Census traffic analysis zone (TAZ) geography to capture the size of the commuter markets. Given a set of origin and destination zones, the tool produces the total worker flows by mode between the origin and destination zones from 2000 Journey to Work data. Then the built-in mode choice model estimates ridership by mode.

The SPT allows users to modify a few level of service characteristics which were derived from the CMAP's regional travel demand model and then weighted by the volume of observed trips between the selected origin – destination zone pairs. In other words, the level of service value between each zone pair used in the SPT is a weighted average of the values for all possible transit paths in the regional model. Therefore, it is not possible to single out the impact of a particular route on the average level of service, if the area under study is already served well by transit.

While the tool has been validated to existing ridership at a macro level, differences can be expected between the predicted ridership from a group of origin zones to a group of destination zones and the observed ridership on one or more bus routes in the same general area. These differences may be due to different trip purposes (the SPT reflects 2000 Census Journey to Work trips), connections between transit services (accounting for each possible transit connection when selecting zones is difficult), and walk distances (even with relatively small Census zones, some areas of each zone are closer to transit service than others). The relative differences in ridership between scenarios are considered to be more relevant to the service planning process than absolute totals.

Under these circumstances, we have used the SPT to estimate a market size in terms of worker flows for each of the planned enhanced bus, BRT and streetcar alternatives. Since all these alternatives represent improvements to a selection of existing bus lines, transit ridership per worker was computed for these existing routes using ridership and worker-flow-based market size estimates. (Note that while the method can be applied to all workers or just workers commuting by transit, the former was used consistently.)

Markets were defined as the total number of workers living in the one-half-mile buffer along the alignment and working either in the same buffer area or in the CBD (the area bounded by Roosevelt Road, Division Street, Halsted Street, and Lake Michigan).

Based on the extent of proposed improvements, the market sizes of existing services were apportioned using the worker flows. The observed ridership per worker flow obtained from the entire route's market size and ridership was applied to the market size for the fraction of the route that would experience improvements to estimate a base-level ridership.

This base-level ridership was then adjusted to reflect ridership gains due to the planned improvements in level of service (LOS). Two major types of LOS parameters were considered explicitly: in-vehicle travel time (IVTT), and headways. A number of test runs with the SPT using coverages in the corridor yielded an average IVTT sensitivity of 0.240. In other words, given 1 percent reduction in IVTT, the ridership will increase by 0.24 percent. This level is in line with the acceptable range of 0.200 – 0.300.

For headways, a sensitivity of 2 to 2.5 times the sensitivity of IVTT is generally considered. However, due to already high frequency of the existing transit service in the area, we have assumed a more conservative estimate of 0.333 for headways.

In order to account for additional benefits due to improved reliability, visibility, branding, etc. the ridership levels are adjusted further as suggested in *TCRP 118: Bus Rapid Transit Practitioner's Guide*. That methodology applies up to a 25 percent additional ridership increase depending on the BRT features that are included in the project. The components considered are shown in **Table A.1**. If all of the elements were present an additional 25 percent ridership would be added.

Table A.1 Estimated Additional Ridership of Select BRT Components

Component	Maximum Percent
Running Ways	20%
Stations	15%
Vehicles	15%
Service Patterns	15%
ITS Applications	10%
Branding	10%
Subtotal	**85%**
BRT Component Synergy (when subtotal is 60 or more	15%
Total	**100%**

Source: TCRP 118 Bus Rapid Transit Practitioner's Guide.

As the final step, if applicable, base ridership for the unchanged portion of the route was added to adjusted ridership to derive total ridership potential for the planned service.

Aggregate Rail Ridership Forecasting (ARRF II)

Overview

The ARRF model is typically employed to produce order-of-magnitude estimates of ridership for new rail lines in metropolitan areas where no existing fixed guideway transit facilities are present. This sketch ridership approach developed by the FTA was calibrated to ridership on existing New Starts systems throughout the country that have recently started operations. The calibration of the ARRF sketch tool excludes commuter rail and LRT systems in large metropolitan areas and those systems that have been in operation for many decades.

The ARRF II model introduced a few changes to its predecessor which consisted of separate modules for commuter rail (CR) and light rail transit (LRT). In ARRF II, all rail technologies are evaluated with a single model. The model is still based on the Year 2000 Census Transportation Planning Package (CTPP) Journey to Work (JTW) travel flows. The travel flows that are taken into account include all work trip movements from each of the proposed stations to all of the other proposed stations, differentiating between drive access and walk access markets as follows:

- Drive Access Market: For every station with a Park and Ride facility, travel flows that originate within a six-mile *dissolved* buffer (i.e., the union of concentric buffers of every station with a Park and Ride facility in the system) to destinations within an one-mile buffer around each proposed station; and
- Walk Access Market: For every station, the travel flows that originate from areas within a two-mile *dissolved* buffer (i.e., the union of concentric buffers of every station in the system) to destinations within an one-mile buffer around each proposed station.

Drive access and walk access flows were divided into two categories based on the employment density at the destination zone. The criterion is whether employment density was greater than or lower than 50,000 workers per square mile at the destination zone. The worker flows are segmented once more on the basis of trip purpose (work versus nonwork). These additional segmentations create eight separate market segments for which the ARFF II sketch tool produces estimates of transit market shares as shown in the two right columns in Table A.2.

Table A.2 Rail Transit Markets by Segment and Estimated Market Shares in ARRF II Model

Access to Transit	Workplace Location Type	Access Buffer Size	Egress Buffer Size	Rail Transit Market Shares for Work Trips	Rail Ridership Factors for Nonwork Trips
Walk Access	High Employment Density Area	2 miles	1 mile	0.149	0.158
Walk Access	Low Employment Density Area	2 miles	1 mile	0.109	0.205
Drive Access	High Employment Density Area	6 miles	1 mile	0.128	0.036
Drive Access	Low Employment Density Area	6 miles	1 mile	0.031	0.017

Following the application of expected modal shares to the total work trip flows, an unadjusted ridership estimate for total unlinked rail transit trips is obtained. This estimate is then further adjusted based on the level of service characteristics of the proposed rail service. During this process, the unadjusted ridership estimate is multiplied by an adjustment factor that has the following three components:

- Average operating speed (miles per hour),
- Average frequency of daily service (number of trains per day per direction), and
- Suburban-CBD connectivity.

These adjustment factors are applied to the worker flows in a spreadsheet provided along with the ARRF software. The spreadsheet includes additional constants for further adjustments and to introduce nonlinearity in the adjustments.

Adjustment to service speed affects all market segments in the same way. For services faster than approximately 27 mph, market shares are adjusted upward, while for services slower than 27 mph market shares were reduced.

The adjustment due to frequency of service affects work and nonwork purposes differently. ARRF II assumes a slightly higher level of sensitivity to frequency of service for the nonwork trips. The default frequency is approximately 41 trains per day per direction, for rail services with more than 41 trains per day per direction the shares are adjusted upward, and for services less frequent than 41 daily unidirectional trains, shares were reduced.

The adjustment due to suburban-CBD connectivity affects the walk access trips destined to locations with an employment density lower than 50,000 employees per square mile. The adjustment increases the shares in these markets if the service does not primarily serve suburb to CBD movements.

Application

The planned service "Gold Line" is expected to improve level of service on the existing Metra South Chicago Branch to a level roughly comparable to typical high-capacity CTA rail service. The new service would also allow transfers to/from other CTA modes with fare surcharges typical of intra-CTA transfers. A new station on 35th Street was another attribute of the planned Gold Line. ARRF II was applied to the South Chicago Branch service by the following steps:

- Divide the alignment between 95th Street to Millennium Park into two sections:
  - 95th to 63rd; and
  - 63rd to Millennium Park
- Obtain ridership in each section using 2006 Metra On-Off Counts.
- Adjust ridership by using recent monthly ridership data from RTAMS to 2011 levels.
- Compute average daily trains and service speed as inputs to ARRF II.
- Estimate worker flows within 2 to 1 and 6 to 1 mile buffers.
- Estimate ridership for the base conditions and calibrate the estimate using actual ridership.
- Estimate new ridership due to increase in LOS (frequency of trains) and change in worker flows due to new station at 35th Street.
- In order to represent ease of transfer from/to other CTA vehicles, the 2 to 1 mile coverage was increased by 20 percent. Calibration of ARRF II model assumed 2 to 1 mile coverage for walk, bus and KnR access. However, we do not know the exact extent of transfer activities that was incorporated in development of ARRF II. However, we know that ARRF II was estimated using data from rail systems that recently implemented using New Starts funds. Therefore, it is quite likely that the extent of transit (i.e., bus) access would be lower than in the case of a well-established transit system like that in Chicago; perhaps the transit access share could be as low as half of that on CTA rail lines. The analysis of CTA Onboard Survey showed that nearly 40 percent of the Red Line riders who boarded in the corridor used CTA buses to access their boarding stations.
- Recalculate estimates using the new coverages.

Diversion Method

As an alternative against which to compare the ARRF estimate, Cambridge Systematics updated the diversion methodology developed earlier (prior to this study) by CDOT to provide a high-level estimate of ridership. The original CDOT approach used the existing Metra ridership and then assumed that a predetermined share (40 percent) of riders using CTA buses serving the corridor would switch to Gold Line from these parallel bus routes (Hyde Park

Express #2, Jackson Park Express #6, Jeffrey Express #14, South Shore Express #26, Stony Island Express #X28).

The updated approach replaced the above predetermined share assumption with an alternative set of computations and assumptions driven by CTA on-board survey data, as described below. The remaining assumptions in CDOT's approach were not changed.

- Origin and destination patterns of the respondents surveyed on the above bus routes were analyzed with respect to concentric buffers (catchment areas) drawn around proposed Gold Line stations. Three different buffer sizes were considered; quarter-mile, half-mile and one-mile. Respondents were tabulated based on their origin-destination configurations defined by size of the buffer they fall in.

- Moreover, respondents were classified into two groups depending on whether they made a transfer for their current bus trip. A different percentage of riders was assumed to shift to the Gold Line for each combination of origin-destination configuration and transfer group. The highest level of mode shift (75 percent) is assumed for survey respondents who are traveling between locations within quarter-mile buffers of proposed Gold Line stations and currently make a transfer using the bus. A shift of 5 percent is assumed riders currently transferring with origin-destination pairs that are beyond the Gold Line station catchment areas.

- For bus riders who have a current single seat ride, lower percentages were assumed to shift to the Gold Line. Mode shift levels were also decreased as radius of the catchment areas increased (e.g., no mode shift to the Gold Line was assumed for an origin-destination pattern located one mile or more from the Gold Line stations).

- These two sets of percentages for diversion to the Gold Line were applied to expanded data to estimate the number of CTA bus riders that potentially would use Gold Line service. The result was approximately 3,300 trips.

The results presented in this memorandum should be interpreted as preliminary sketch estimates of ridership potential rather than a ridership estimate. More detailed approaches to ridership forecasting will be needed in future phases of study to establish reliable forecasts.

Inputs and Ridership Results for Each Project

The following tables show input assumptions and results for each project analyzed. Note that while the methodology was applied using all workers and transit workers as a base for the estimate, the results based on all workers was used.

Table A.3a Market Size for the Peer Route (Route 83)

	Commuter Market		
Existing (Peer) Route:	All Workers	Transit	Transit Share
75th Street	10,533	4,961	47.1%

Daily Route Ridership	8,800
Riders per Worker	0.835
Riders Per Worker by Transit	1.774

Source: Census Journey to Work.

Table A.3b Route 83 Ridership Potential Estimate (Peer)

Percent Benefits Available	100%	
Change in Headways	-21.0%	
Change in IVTT	0%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	-392	-390
Change due to IVTT	0	0
Other Benefits TCRP 118	0%	
Adjusted Ridership	**5,265**	**5,242**

Source: Cambridge Systematics.

Table A.4a Market Size for the Peer Route (for Route #79)

	Commuter Market		
Existing (Peer) Route:	All Workers	Transit	Transit Share
79th Street	15,121	6,919	45.8%
Daily Route Ridership	34,500		
Riders per Worker	2.282		
Riders Per Worker by Transit	4.986		

Source: Census Journey to Work.

Table A.4b Route #79 Ridership Potential Estimate (SPT)

Without AFC

Planned Route: 79th Enhanced Bus	All	Transit
Market Size	9,753	4,795
Base Ridership	22,252	23,909
Percent Benefits Available	40%	
Change in Headways	28.7%	
Change in IVTT	12.0%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	843	906
Change due to IVTT	256	275
Other Benefits TCRP 118	7.5%	
Adjusted Ridership	**24,102**	**25,897**

With AFC

Planned Route: 79th Enhanced Bus	All Workers	Transit
Market Size	9,753	4,795
Base Ridership	22,252	23,909
Percent Benefits Available	40%	
Change in Headways	28.7%	
Change in IVTT	12.0%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	843	906
Change due to IVTT	256	275
Other Benefits TCRP 118	8.3%	
Adjusted Ridership	**24,177**	**25,977**

Source: Cambridge Systematics.

Table A.4c Route #79 Corridor Ridership Potential Estimate

Planned Route: Route 79 Enhanced Bus No AFC	All Workers	Transit
Total Ridership	**36,350**	**36,488**
Assumed Percent on Limited	30%	30%
Limited Ridership	10,905	10,946
Local Ridership	25,445	25,541
Corridor Increase Percent	5%	6%

Planned Route: Route 79 Enhanced Bus with AFC	All Workers	Transit
Total Ridership	**36,425**	**36,568**
Assumed Percent on Limited	30%	30%
Limited Ridership	10,927	10,970
Local Ridership	25,497	25,598
Corridor Increase Percent	6%	6%

Source: Cambridge Systematics.

TableA.5a Route #55 BRT Market Size for the Reference Route

	Commuter Market		
Existing (Peer) Route:	All Workers	Transit	Transit Share
Garfield	15,800	6,221	39.4%
Daily Route Ridership	13,200		
Riders per Worker	0.835		
Riders Per Worker by Transit	2.122		

Source: Cambridge Systematics.

Table A.5b Route #55 BRT Market Size and Ridership Estimate (SPT)

Curb Running

Planned Route: Garfield BRT	All Workers	Transit
Market Size	15,800	6,221
Base Ridership	13,200	13,200
Percent Benefits Available	50%	
Change in Headways	38.8%	
Change in IVTT	25%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	844	844
Change due to IVTT	396	396
Other Benefits TCRP 118	20%	
Adjusted Ridership	**15,969**	**15,969**

Median Running (Gold Standard)

Planned Route: Garfield BRT	All Workers	Transit
Market Size	15,800	6,221
Base Ridership	13,200	13,200
Percent Benefits Available	50%	
Change in Headways	38.8%	
Change in IVTT	35%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	844	844
Change due to IVTT	554	554
Other Benefits TCRP 118	21%	
Adjusted Ridership	**16,258**	**16,258**

Source: Cambridge Systematics.

Table A.5c Route #55 BRT Ridership Estimate

Curb Running

Planned Route: Route 55 BRT	All Workers	Transit
Total Ridership	**15,969**	**15,969**
Assumed Percent on Limited	30%	30%
Limited Ridership	4,791	4,791
Local Ridership	11,178	11,178
Corridor Increase Percent	21%	21%

Median Running (Gold Standard)

Planned Route: Route 55 BRT	All Workers	Transit
Total Ridership	**16,258**	**16,258**
Assumed Percent on Limited	30%	30%
Limited Ridership	4,878	4,878
Local Ridership	11,381	11,381
Corridor Increase Percent	23%	23%

Source: Cambridge Systematics.

TableA.6a Cottage Grove BRT/Streetcar Market Size for Reference Route

	Commuter Market		
Existing (Peer) Route:	All Workers	Transit	Transit Share
Cottage Grove	22,887	9,558	41.8%
Daily Route Ridership	23,250		
Riders per Worker	1.016		
Riders Per Worker by Transit	2.433		

Source: Census Journey to Work.

TableA.6b Cottage Grove BRT Ridership from 95th to Pershing (SPT)

For Either Michigan or Lake Shore Drive Routing

Curb Running

Planned Route: Cottage Grove BRT – via Michigan	All Workers	Transit
Market Size	18,749	7,417
Base Ridership	19,046	18,042
Percent Benefits Available	40%	
Change in Headways	27.5%	
Change in IVTT	25%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	691	655
Change due to IVTT	457	433
Other Benefits TCRP 118	20%	
Adjusted Ridership	**21,904**	**20,749**

Median Running (Gold Standard):

Planned Route: Cottage Grove BRT – via Michigan	All Workers	Transit
Market Size	18,749	7,417
Base Ridership	19,046	18,042
Percent Benefits Available	40%	
Change in Headways	27.5%	
Change in IVTT	35%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	691	655
Change due to IVTT	640	606
Other Benefits TCRP 118	21%	
Adjusted Ridership	**22,235**	**21,062**

Source: Cambridge Systematics.

Table A.6c Cottage Grove Ridership from Pershing to CBD via Michigan Avenue (SPT)

Applies to Michigan Routing Only

Curb Running

Planned Route: Cottage Grove BRT – via Michigan	All Workers	Transit
Market Size	4,138	2,141
Base Ridership	4,204	5,208
Percent Benefits Available	40%	
Change in Headways	27.5%	
Change in IVTT	25%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	153	189
Change due to IVTT	101	125
Other Benefits TCRP 118	20%	
Adjusted Ridership	**4,834**	**5,990**

Median Running (Gold Standard)

Planned Route: Cottage Grove BRT – via Michigan	All Workers	Transit
Market Size	4,138	2,141
Base Ridership	4,204	5,208
Percent Benefits Available	40%	
Change in Headways	27.5%	
Change in IVTT	35%	
Headway Sensitivity	0.330	
IVTT Sensitivity	0.240	
Change due to Headways	153	189
Change due to IVTT	141	175
Other Benefits TCRP 118	21%	
Adjusted Ridership	**4,907**	**6,080**

Source: Cambridge Systematics.

TableA.6d Cottage Grove BRT via Michigan Avenue Ridership Estimate

Curb Running

Planned Route: Cottage Grove BRT – via Michigan	All Workers	Transit
Total Estimated Ridership	**26,739**	**26,739**
Assumed Percent on Limited	30%	30%
Limited Ridership	8,022	8,022
Local Ridership	18,717	18,717
Corridor Increase Percent	15%	15%

Median Running (Gold Standard)

Planned Route: Cottage Grove BRT – via Michigan	All Workers	Transit
Total Estimated Ridership	**27,142**	**27,142**
Assumed Percent on Limited	30%	30%
Limited Ridership	8,143	8,143
Local Ridership	19,000	19,000
Corridor Increase Percent	17%	17%

Source: Cambridge Systematics.

Table A.6e Cottage Grove BRT via Lake Shore Drive Ridership Estimate

Curb Running

Planned Route: Cottage Grove BRT – via LS Drive	All Workers	Transit
Total Ridership	**26,108**	**25,957**
Assumed Percent on Limited	25%	25%
Limited Ridership	6,527	6,489
Local Ridership	19,581	19,468
Corridor Increase Percent	12%	12%

Median Running (Gold Standard)

Planned Route: Cottage Grove BRT – via LS Drive	All Workers	Transit
Total Ridership	**26,438**	**26,270**
Assumed Percent on Limited	25%	25%
Limited Ridership	6,610	6,568
Local Ridership	19,829	19,703
Corridor Increase Percent	14%	13%

Source: Cambridge Systematics.

TableA.7a Cottage Grove Streetcar Market Size and Ridership Estimate (SPT)

Phase 1

Planned Route: Streetcar – 63th to CBD terminal	All Workers	Transit
Market Size	15,968	6,582
Base Ridership	16,221	16,011
Percent Benefits Available	50%	
Change in Headways Change in IVTT	27.5% 35%	
Headway Sensitivity IVTT Sensitivity	0.330 0.240	
Change due to Headways Change due to IVTT	736 681	726 672
Other Benefits TCRP 118	25.0%	
Adjusted Ridership	**20,021**	**19,761**

Phase 2 (Including Phase 1)

Planned Route: Streetcar – 95th to CBD terminal	All Workers	Transit
Market Size	22,887	9,558
Base Ridership	23,250	23,250
Percent Benefits Available	50%	
Change in Headways Change in IVTT	27.5% 35%	
Headway Sensitivity IVTT Sensitivity	0.330 0.240	
Change due to Headways Change due to IVTT	1,055 977	1,055 977
Other Benefits TCRP 118	25.0%	
Adjusted Ridership	**28,696**	**28,696**

Source: Cambridge Systematics.

TableA.7b Cottage Grove Streetcar Ridership Estimate

Phase 1

Planned Route: Cottage Grove Streetcar	All Workers	Transit
Total Ridership	**27,049**	**27,000**
Assumed Percent on Streetcar	30%	30%
Streetcar Ridership	8,115	8,100
Local Ridership	18,935	18,900
Corridor Increase Percent	16%	16%

Phase 2 (Including Phase 1)

Planned Route: Cottage Grove Streetcar	All Workers	Transit
Total Ridership	**28,696**	**28,696**
Assumed Percent on Streetcar	40%	40%
Streetcar Ridership	11,478	11,478
Local Ridership	17,217	17,217
Corridor Increase Percent	23%	23%

Source: Cambridge Systematics.

TableA.8a Gold Line Estimate (AARF)

		Base		Gold Line 20 Min Off-Peak		Gold Line 15 Min Off-Peak		Gold Line 20 Min Off-Peak – Bus Transfer		Gold Line 15 Min Off-Peak – Bus Transfer	
Gold Line Ridership Estimates ARRF-Based		ME South Chicago Branch	ME Main 63rd – Millennium Park	Gold Line – South Chicago 20 min Off-Peak	Gold Line 63rd – Millennium Park 20 min Off-Peak	Gold Line – South Chicago 15 min Off-Peak	Gold Line 63rd – Millennium Park 15 min Off-Peak	Gold Line South Chicago – Bus Access 20 min Off-Peak	Gold Line 63rd – Millennium Park – Bus Access 20 min Off-Peak	Gold Line South Chicago – Bus Access 15 min Off-Peak	Gold Line 63rd – Millennium Park – Bus Access 15 min Off-Peak
2 to 1 Mile Coverage	Emp Den. < 50,000	4,863	8,694	5,173	9,323	5,173	9,323	6,208	11,188	6,208	11,188
	Emp Den. >= 50,000	18,814	33,633	18,812	33,903	18,812	33,903	22,574	40,684	22,574	40,684
6 to 1 Mile Coverage	Emp Den. < 50,000	10,559	9,515	11,188	10,125	11,188	10,125	13,426	12,150	13,426	12,150
	Emp Den. >= 50,000	39,389	35,492	39,317	35,583	39,317	35,583	47,180	42,700	47,180	42,700
LOS	Average Speed	20	20	20	20	20	20	20	20	20	20
	Trains per day per direction	27	48	66	87	76	97	66	87	76	97
	Adjusted Ridership	**4,959**	**3,370**	**7,300**	**4,460**	**7,772**	**4,649**	**8,015**	**5,040**	**8,533**	**5,254**
	Drive Access	**3,729**		**5,183**		**5,485**		**5,163**		**5,464**	
	Walk, KnR, and Transit Access	**4,600**		**6,576**		**6,936**		**7,892**		**8,323**	
	Total Commuter Rail	**8,329**		**11,760**		**12,421**		**13,055**		**13,787**	

Source: Cambridge Systematics.

TableA.8b Updated Chicago DOT Ridership Methodology for Gold Line

Gold Line Ridership Estimates – Using Updated CDOT Approach		
	Branch	**Main**
Metra Boardings 2006 On-Off Counts	**2,320**	**2,038**
Metra Monthly Ridership Dec 2006	**75,754**	**810,219**
Adjusted Metra Boardings – April 2011	**85,223**	**705,342**
Adjusted Metra Boardings	**4,959**	**3,371**
Total Commuter Rail	**8,330**	
Ridership in Competing Bus	**33,426**	
Attractions from Competing Bus	**3,308**	
Share of Attractions from Competing Bus	**9.9%**	
Attraction Factor from Auto or Other CTA modes	**10%**	
Ridership Shift from Auto or Other CTA modes	**1,164**	
Total Ridership	**12,802**	

Table A.8c Ridership on Competing Routes

Ridership on Competing Bus Routes	**April 2011 Ridership**
Hyde Park Exp. #2	2,854
Jackson Park Exp. #6	11,113
Jeffrey Exp. #14	12,346
South Shore Express #26	2,962
Stony Island Express #X28	4,151
Total	**33,426**

Source: Cambridge Systematics.

Ridership Summary

Table A.9 summarizes the results for each project.

TableA.9 Ridership Summary

Project Name	Percent of Corridor Riders on Proposed Service	Weekday Ridership On Service	Percent Increase in Corridor Ridership
King Drive Express Bus - Incremental Ridership	N/A	1,012	4%
83rd Street Local Bus	N/A	5,265	N/A
55th Street/Garfield Boulevard BRT			
- Curb Running	30%	4,791	21%
- Median Running (Gold Standard)	30%	4,878	23%
79th Street Enhanced Bus (No AFC)	30%	10,905	5%
Cottage Grove BRT			
- via King Drive and Michigan Avenue - Curb Running	30%	8,022	15%
- via King Drive and Michigan Avenue - Median Running (Gold Standard)	30%	8,143	17%
- via Lake Shore Drive - Curb Running	25%	6,527	12%
- via Lake Shore Drive - Median Running (Gold Standard)	25%	6,610	14%
Cottage Grove Streetcar			
Cottage Grove Streetcar Phase 1	30%	8,115	16%
Cottage Grove Streetcar Phase 2	40%	11,478	23%
Gold Line			
- Total Ridership*	N/A	13,300	60%
- Incremental Ridership*		5,000	

Source: Cambridge Systematics.

*Gold Line estimates reflect an average of the two methods.

Appendix B – Configuration of Cottage Grove Travel Lanes

S. Lakefront Corridor Transit Study

Cottage Grove - Exclusive Bus Lanes

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Exclusive Bus Lane

Shared Bus/travel Lane

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

Cross Street	SB Lane Description	Width*	NB Lane Description
Pershing Rd		58	
Pershing Rd to Oakwood	Bus lane, 1 travel lane	58	Bus lane, 1 travel lane
Oakwood		56	
Oakwood to 40th St	Bus lane, 1 travel lane	40	Bus lane, 1 travel lane
40th St		40	
40th St to 41st St	Shared Bus/travel lane, 1 parking	40	Shared Bus/travel lane, 1 parking
41st St		40	
41st St to Bowen Ave	Shared Bus/travel lane, 1 parking	40	Shared Bus/travel lane, 1 parking
Bowen Ave		48	
Bowen Ave to 42nd St	Bus lane, 1 travel lane	50	Bus lane, 1 travel lane
42nd St		48	
42nd St to 42nd Pl	Bus lane, 1 travel lane	48	Bus lane, 1 travel lane
42nd Pl		48	
42nd Pl to 43rd St	Bus lane, 1 travel lane	46	Bus lane, 1 travel lane
43rd St		46	
43rd St to 44th St	Bus lane, 1 travel lane	50	Bus lane, 1 travel lane
44th St		50	
44th St to 45th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
45th St		60	
45th St to 46th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
46th St		60	
46th St to 47th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
47th St		60	
47th St to 47th Pl	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
47th Pl		60	
47th Pl to 48th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
48th St		60	
48th St to 49th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
49th St		60	
49th St to 50th St	Bus lane, 1 travel lane, 1 parking	61	Bus lane, 1 travel lane, 1 parking

Configuration of Cottage Grove Travel Lanes (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Exclusive Bus Lanes

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Exclusive Bus Lane

Shared Bus/travel Lane

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

Cross Street	SB Lane Description	Width*	NB Lane Description
50th St		61	
50th St to 50th Pl	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
50th Pl		60	
50th Pl to Hyde Park Blvd	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
Hyde Park Blvd		64	
Hyde Park Blvd to Bowen Dr	Bus lane, 1 travel lane	64	Bus lane, 1 travel lane, 1 left turn lane
Bowen Dr		64	
Bowen Dr to 52nd St	Bus lane, 1 travel lane	51	Bus lane, 1 travel lane, 1 parking
52nd St		51	
52nd St to 53rd St	Bus lane, 1 travel lane	51	Bus lane, 1 travel lane, 1 parking
53rd St		51	
53rd St to 54th St	Bus lane, 1 travel lane	51	Bus lane, 1 travel lane, 1 parking
54th St		50	
54th St to 55th St	Bus lane, 1 travel lane	50	Bus lane, 1 travel lane, 1 parking
55th St		51	
55th St to 56th St	Bus lane, 1 travel lane	51	Bus lane, 1 travel lane, 1 parking
56th St		51	
56th St to 57th St	Bus lane, 1 travel lane	50	Bus lane, 1 travel lane, 1 parking
57th St		51	
57th St to 58th St	Bus lane, 1 travel lane	50	Bus lane, 1 travel lane, 1 parking
58th St		50	
58th St to 59th St	Bus lane, 1 travel lane	50	Bus lane, 1 travel lane, 1 parking
59th St		50	
59th St to WB Midway Plaisance	Bus lane, 1 travel lane	52	Bus lane, 1 travel lane
WB Midway Plaisance		52	
WB Midway Plaisance to EB Midway Plaisance	Bus lane, 1 travel lane	53	Bus lane, 1 travel lane
EB Midway Plaisance		53	
EB Midway Plaisance to 60th St	Bus lane, 1 travel lane	52	Bus lane, 1 travel lane
60th St		52	
60th St to 61st St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking

Configuration of Cottage Grove Travel Lanes (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Exclusive Bus Lanes

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Exclusive Bus Lane

Shared Bus/travel Lane

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

Cross Street	SB Lane Description	Width*	NB Lane Description
61st St		62	
61st St to 62nd St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
62nd St		60	
62nd St to 63rd St	Bus lane, 1 travel lane, 1 parking	59	Bus lane, 1 travel lane, 1 parking
63rd St		59	
63rd St to 64th St	Bus lane, 1 travel lane, 1 parking	57	Bus lane, 1 travel lane, 1 parking
64th St		58	
64th St to 65th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
65th St		60	
65th St to Marquette Rd	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
Marquette Rd		60	
Marquette Rd to 67th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
67th St		74	
67th St to 68th St	Bus lane, 1 travel lane, 1 parking	59	Bus lane, 1 travel lane, 1 parking
68th St		59	
68th St to 69th St	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
69th St - Existing Stop Sign Controlled Intersection		60	
69th St to 69th Pl	Bus lane, 1 travel lane, 1 parking	60	Bus lane, 1 travel lane, 1 parking
69th Pl		61	
69th Pl to 71st St	Bus lane, 1 travel lane, 1 parking	61	Bus lane, 1 travel lane, 1 parking
71st St		56	
71st St to 72nd St	Bus lane, 1 travel lane	46	Bus lane, 1 travel lane
72nd St		48	
72nd St to 73rd St	Bus lane, 1 travel lane	47	Bus lane, 1 travel lane
73rd St		46	
73rd St to 74th St	Bus lane, 1 travel lane	46	Bus lane, 1 travel lane
74th St		46	
74th St to 75th St	Bus lane, 1 travel lane	46	Bus lane, 1 travel lane
75th St		47	
75th St to 76th St	Bus lane, 1 travel lane	61	Bus lane, 1 travel lane

Configuration of Cottage Grove Travel Lanes (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Exclusive Bus Lanes

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Exclusive Bus Lane

Shared Bus/travel Lane

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

Cross Street	SB Lane Description	Width*	NB Lane Description
76th St		61	
76th St to 77th St	Bus lane, 2 travel lanes	62	Bus lane, 2 travel lanes
77th St		62	
77th St to 78th St	Bus lane, 2 travel lanes	63	Bus lane, 2 travel lanes
78th St		62	
78th St to 79th St	Bus lane, 2 travel lanes	61	Bus lane, 2 travel lanes
79th St		61	
79th St to 80th St	Bus lane, 2 travel lanes	67	Bus lane, 2 travel lanes
80th St		67	
80th St to 81st St	Bus lane, 2 travel lanes	67	Bus lane, 2 travel lanes
81st St		67	
81st St to 82nd St	Bus lane, 2 travel lanes	67	Bus lane, 2 travel lanes
82nd St		67	
82nd St to 83rd St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
83rd St		68	
83rd St to 84th St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
84th St		66	
84th St to 84th Pl	Bus lane, 2 travel lanes	67	Bus lane, 2 travel lanes
84th Pl		67	
84th Pl to 85th St	Bus lane, 2 travel lanes	67	Bus lane, 2 travel lanes
85th St		67	
85th St to 86th St	Bus lane, 2 travel lanes	67	Bus lane, 2 travel lanes
86th St		67	
86th St to 87th St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
87th St		67	
87th St to 87th Pl	Bus lane, 2 travel lanes	67	Bus lane, 2 travel lanes
87th Pl		68	
87th Pl to 88th St	Bus lane, 2 travel lanes	69	Bus lane, 2 travel lanes
88th St		68	
88th St to 88th Pl	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes

Configuration of Cottage Grove Travel Lanes (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Exclusive Bus Lanes

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Exclusive Bus Lane

Shared Bus/travel Lane

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

Cross Street	SB Lane Description	Width*	NB Lane Description
88th Pl		68	
88th Pl to 89th St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
89th St		68	
89th St to 89th Pl	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
89th Pl		68	
89th Pl to 90th St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
90th St		68	
90th St to 90th Pl	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
90th Pl		68	
90th Pl to 91st St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
91st St		68	
91st St to 91st Pl	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
91st Pl		68	
91st Pl to 92nd St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
92nd St		68	
92nd St to 92nd Pl	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
92nd Pl		68	
92nd Pl to 93rd St	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
93rd St		68	
93rd St to Lyon Ave	Bus lane, 2 travel lanes	68	Bus lane, 2 travel lanes
Lyon Ave		68	
Lyon Ave to 95th St	Bus lane, 2 travel lanes	58	Bus lane, 2 travel lanes
95th St		68	

Appendix C – Cottage Grove Parking Impacts

S. Lakefront Corridor Transit Study

Cottage Grove - Parking Removal

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Parking Remains

No Existing Parking

Parking Removed

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.
** This is only a recommendation. Parking removal can change based on local conditions because in many locations either a parking lane or a travel lane can be converted to a dedicated bus lane.

Cross Street	SB Lane Description	Parking	Width*	Parking	NB Lane Description
Pershing Rd		-	58	-	
Pershing Rd to Oakwood	Bus lane, 1 travel lane	N	58	N	Bus lane, 1 travel lane
Oakwood		-	56	-	
Oakwood to 40th St	Bus lane, 1 travel lane	N	40	N	Bus lane, 1 travel lane
40th St		-	40	-	
40th St to 41st St	Shared Bus/travel lane, 1 parking	Y	40	Y	Shared Bus/travel lane, 1 parking
41st St		-	40	-	
41st St to Bowen Ave	Shared Bus/travel lane, 1 parking	Y	40	Y	Shared Bus/travel lane, 1 parking
Bowen Ave		-	48	-	
Bowen Ave to 42nd St	Bus lane, 1 travel lane	N	50	N	Bus lane, 1 travel lane
42nd St		-	48	-	
42nd St to 42nd Pl	Bus lane, 1 travel lane	N	48	N	Bus lane, 1 travel lane
42nd Pl		-	48	-	
42nd Pl to 43rd St	Bus lane, 1 travel lane	N	46	N	Bus lane, 1 travel lane
43rd St		-	46	-	
43rd St to 44th St	Bus lane, 1 travel lane	N	50	N	Bus lane, 1 travel lane
44th St		-	50	-	
44th St to 45th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
45th St		-	60	-	
45th St to 46th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
46th St		-	60	-	
46th St to 47th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
47th St		-	60	-	
47th St to 47th Pl	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
47th Pl		-	60	-	
47th Pl to 48th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
48th St		-	60	-	
48th St to 49th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
49th St		-	60	-	
49th St to 50th St	Bus lane, 1 travel lane, 1 parking	Y	61	Y	Bus lane, 1 travel lane, 1 parking
50th St		-	61	-	
50th St to 50th Pl	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking

Cottage Grove Parking Impacts (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Parking Removal

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Parking Remains

No Existing Parking

Parking Removed

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.
** This is only a recommendation. Parking removal can change based on local conditions because in many locations either a parking lane or a travel lane can be converted to a dedicated bus lane.

Cross Street	SB Lane Description	Parking	Width*	Parking	NB Lane Description
50th Pl		-	60	-	
50th Pl to Hyde Park Blvd	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
Hyde Park Blvd		-	64	-	
Hyde Park Blvd to Bowen Dr	Bus lane, 1 travel lane	N	64	N	Bus lane, 1 travel lane, 1 left turn lane
Bowen Dr		-	64	-	
Bowen Dr to 52nd St	Bus lane, 1 travel lane	N	51	Y	Bus lane, 1 travel lane, 1 parking
52nd St		-	51	-	
52nd St to 53rd St	Bus lane, 1 travel lane	N	51	Y	Bus lane, 1 travel lane, 1 parking
53rd St		-	51	-	
53rd St to 54th St	Bus lane, 1 travel lane	N	51	Y	Bus lane, 1 travel lane, 1 parking
54th St		-	50	-	
54th St to 55th St	Bus lane, 1 travel lane	N	50	Y	Bus lane, 1 travel lane, 1 parking
55th St		-	51	-	
55th St to 56th St	Bus lane, 1 travel lane	N	51	Y	Bus lane, 1 travel lane, 1 parking
56th St		-	51	-	
56th St to 57th St	Bus lane, 1 travel lane	N	50	Y	Bus lane, 1 travel lane, 1 parking
57th St		-	51	-	
57th St to 58th St	Bus lane, 1 travel lane	N	50	Y	Bus lane, 1 travel lane, 1 parking
58th St		-	50	-	
58th St to 59th St	Bus lane, 1 travel lane	N	50	Y	Bus lane, 1 travel lane, 1 parking
59th St		-	50	-	
59th St to WB Midway Plaisance	Bus lane, 1 travel lane	N	52	N	Bus lane, 1 travel lane
WB Midway Plaisance		-	52	-	
WB Midway Plaisance to EB Midway Plaisance	Bus lane, 1 travel lane	N	53	N	Bus lane, 1 travel lane
EB Midway Plaisance		-	53	-	
EB Midway Plaisance to 60th St	Bus lane, 1 travel lane	N	52	N	Bus lane, 1 travel lane
60th St		-	52	-	
60th St to 61st St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
61st St		-	62	-	
61st St to 62nd St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
62nd St		-	60	-	
62nd St to 63rd St	Bus lane, 1 travel lane, 1 parking	Y	59	Y	Bus lane, 1 travel lane, 1 parking

Cottage Grove Parking Impacts (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Parking Removal

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Parking Remains

No Existing Parking

Parking Removed

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.
** This is only a recommendation. Parking removal can change based on local conditions because in many locations either a parking lane or a travel lane can be converted to a dedicated bus lane.

Cross Street	SB Lane Description	Parking	Width*	Parking	NB Lane Description
63rd St		-	59	-	
63rd St to 64th St	Bus lane, 1 travel lane, 1 parking	Y	57	Y	Bus lane, 1 travel lane, 1 parking
64th St		-	58	-	
64th St to 65th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
65th St		-	60	-	
65th St to Marquette Rd	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
Marquette Rd		-	60	-	
Marquette Rd to 67th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
67th St		-	74	-	
67th St to 68th St	Bus lane, 1 travel lane, 1 parking	Y	59	Y	Bus lane, 1 travel lane, 1 parking
68th St		-	59	-	
68th St to 69th St	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
69th St - Existing Stop Sign Controlled Intersection		-	60	-	
69th St to 69th Pl	Bus lane, 1 travel lane, 1 parking	Y	60	Y	Bus lane, 1 travel lane, 1 parking
69th Pl		-	61	-	
69th Pl to 71st St	Bus lane, 1 travel lane, 1 parking	Y	61	Y	Bus lane, 1 travel lane, 1 parking
71st St		-	56	-	
71st St to 72nd St	Bus lane, 1 travel lane	N	46	N	Bus lane, 1 travel lane
72nd St		-	48	-	
72nd St to 73rd St	Bus lane, 1 travel lane	N	47	N	Bus lane, 1 travel lane
73rd St		-	46	-	
73rd St to 74th St	Bus lane, 1 travel lane	N	46	N	Bus lane, 1 travel lane
74th St		-	46	-	
74th St to 75th St	Bus lane, 1 travel lane	N	46	N	Bus lane, 1 travel lane
75th St		-	47	-	
75th St to 76th St	Bus lane, 1 travel lane	N	61	N	Bus lane, 1 travel lane
76th St		-	61	-	
76th St to 77th St	Bus lane, 2 travel lanes	N	62	N	Bus lane, 2 travel lanes
77th St		-	62	-	
77th St to 78th St	Bus lane, 2 travel lanes	N	63	N	Bus lane, 2 travel lanes
78th St		-	62	-	
78th St to 79th St	Bus lane, 2 travel lanes	N	61	N	Bus lane, 2 travel lanes

Cottage Grove Parking Impacts (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Parking Removal

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Parking Remains

No Existing Parking

Parking Removed

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.
** This is only a recommendation. Parking removal can change based on local conditions because in many locations either a parking lane or a travel lane can be converted to a dedicated bus lane.

Cross Street	SB Lane Description	Parking	Width*	Parking	NB Lane Description
79th St		-	61	-	
79th St to 80th St	Bus lane, 1 travel lane, 1 parking	Y	67	Y	Bus lane, 1 travel lane, 1 parking
80th St		-	67	-	
80th St to 81st St	Bus lane, 1 travel lane, 1 parking	Y	67	Y	Bus lane, 1 travel lane, 1 parking
81st St		-	67	-	
81st St to 82nd St	Bus lane, 1 travel lane, 1 parking	Y	67	Y	Bus lane, 1 travel lane, 1 parking
82nd St		-	67	-	
82nd St to 83rd St	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
83rd St		-	68	-	
83rd St to 84th St	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
84th St	Bus lane, 1 travel lane, 1 parking	-	66	-	
84th St to 84th Pl		Y	67	Y	Bus lane, 1 travel lane, 1 parking
84th Pl	Bus lane, 1 travel lane, 1 parking	-	67	-	
84th Pl to 85th St		Y	67	Y	Bus lane, 1 travel lane, 1 parking
85th St	Bus lane, 1 travel lane, 1 parking	-	67	-	
85th St to 86th St		Y	67	Y	Bus lane, 1 travel lane, 1 parking
86th St	Bus lane, 1 travel lane, 1 parking	-	67	-	
86th St to 87th St		Y	68	Y	Bus lane, 1 travel lane, 1 parking
87th St	Bus lane, 1 travel lane, 1 parking	-	67	-	
87th St to 87th Pl	Bus lane, 1 travel lane, 1 parking	Y	67	Y	Bus lane, 1 travel lane, 1 parking
87th Pl		-	68	-	
87th Pl to 88th St	Bus lane, 1 travel lane, 1 parking	Y	69	Y	Bus lane, 1 travel lane, 1 parking
88th St		-	68	-	
88th St to 88th Pl	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
88th Pl		-	68	-	
88th Pl to 89th St	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
89th St		-	68	-	
89th St to 89th Pl	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
89th Pl	Bus lane, 1 travel lane, 1 parking	-	68	-	
89th Pl to 90th St		Y	68	Y	Bus lane, 1 travel lane, 1 parking
90th St	Bus lane, 1 travel lane, 1 parking	-	68	-	
90th St to 90th Pl		Y	68	Y	Bus lane, 1 travel lane, 1 parking

Cottage Grove Parking Impacts (continued)

S. Lakefront Corridor Transit Study

Cottage Grove - Parking Removal

Bus Lane = 11'
Travel Lane = 10'
Parking = 7'

Legend

Parking Remains

No Existing Parking

Parking Removed

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.
** This is only a recommendation. Parking removal can change based on local conditions because in many locations either a parking lane or a travel lane can be converted to a dedicated bus lane.

Cross Street	SB Lane Description	Parking	Width*	Parking	NB Lane Description
90th Pl	Bus lane, 1 travel lane, 1 parking	-	68	-	
90th Pl to 91st St		Y	68	Y	Bus lane, 1 travel lane, 1 parking
91st St	Bus lane, 1 travel lane, 1 parking	-	68	-	
91st St to 91st Pl		Y	68	Y	Bus lane, 1 travel lane, 1 parking
91st Pl	Bus lane, 1 travel lane, 1 parking	-	68	-	
91st Pl to 92nd St	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
92nd St		-	68	-	
92nd St to 92nd Pl	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
92nd Pl		-	68	-	
92nd Pl to 93rd St	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
93rd St		-	68	-	
93rd St to Lyon Ave	Bus lane, 1 travel lane, 1 parking	Y	68	Y	Bus lane, 1 travel lane, 1 parking
Lyon Ave		-	68	-	
Lyon Ave to 95th St	Bus lane, 1 travel lane, 1 parking	Y	58	Y	Bus lane, 1 travel lane, 1 parking
95th St		-	68	-	

Appendix D – Synchro Modeling Software Results

This section illustrates results of the Synchro analysis conducted for selected intersections in the 55th Street Corridor and the Cottage Grove Corridor.

55th Street Corridor

55th Street and Woodlawn

Figure D.1 55th Street Existing Intersection Delay

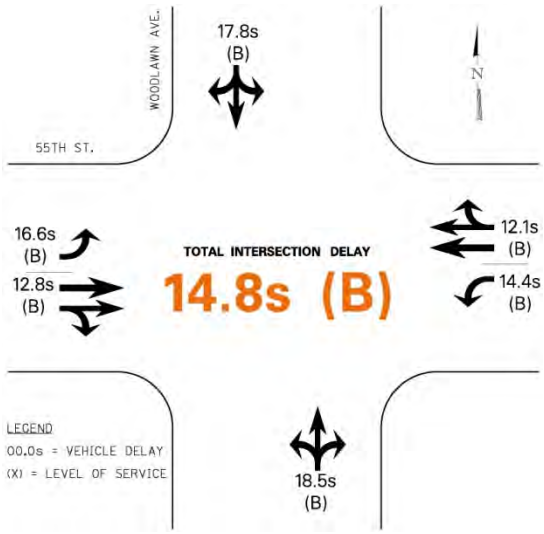


Figure D.2 55th Street Intersection Delay with Curb Running Bus Lane

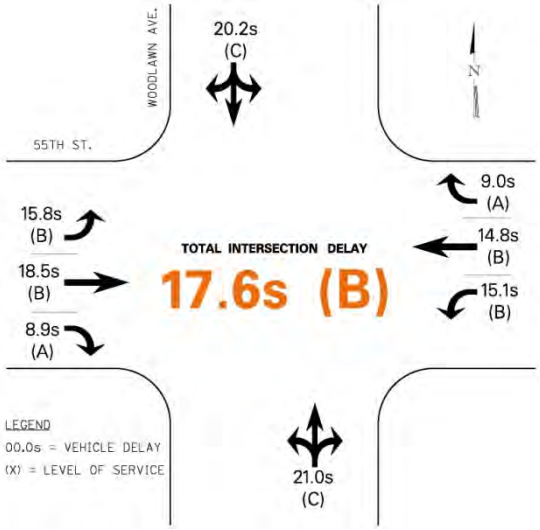
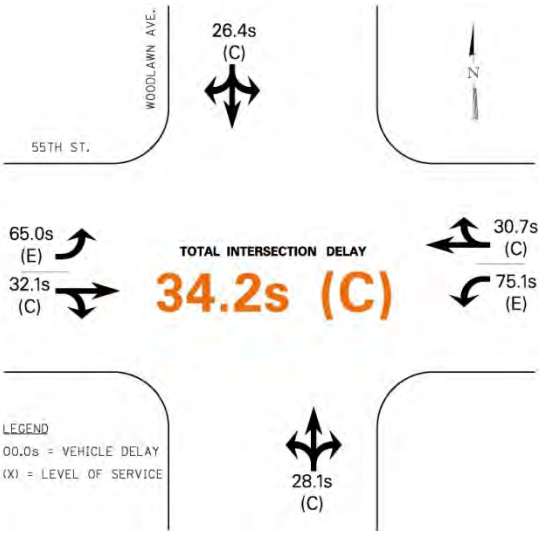


Figure D.3 55th Street Intersection Delay with Median Running Bus Lane



Cottage Grove Corridor

47th Street

Figure D.4 47th Street Existing Intersection Delay

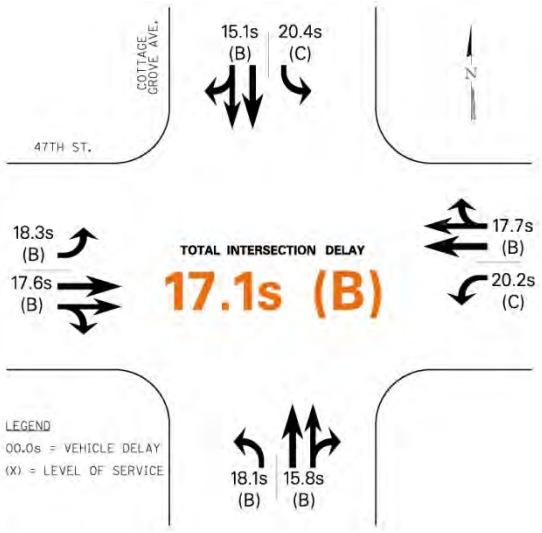


Figure D.5 47th Street Intersection Delay with Curb Running Bus Lane

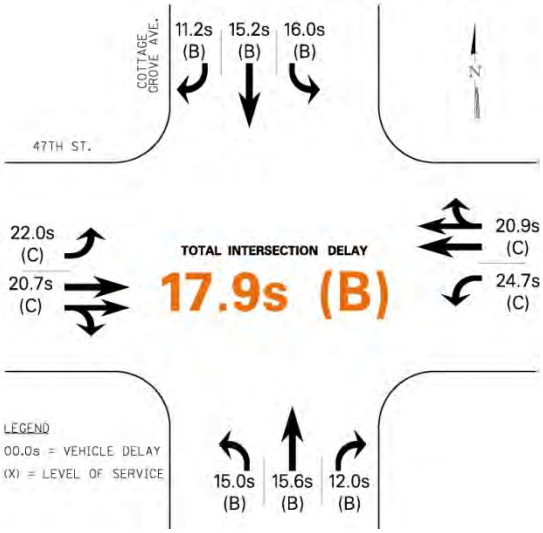


Figure D.6 47th Street Intersection Delay with Median Running Bus or Streetcar and 80-Foot Right-of-Way

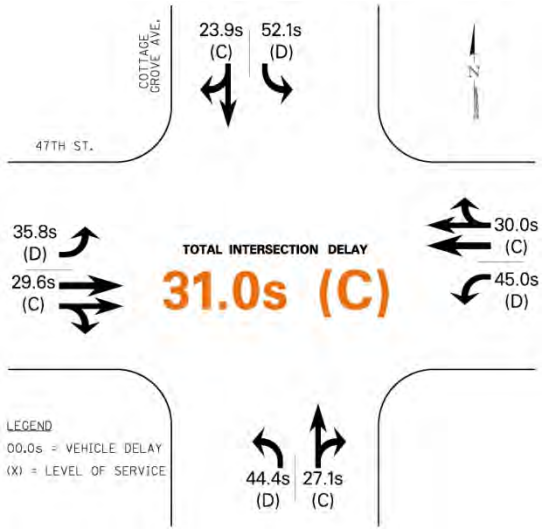
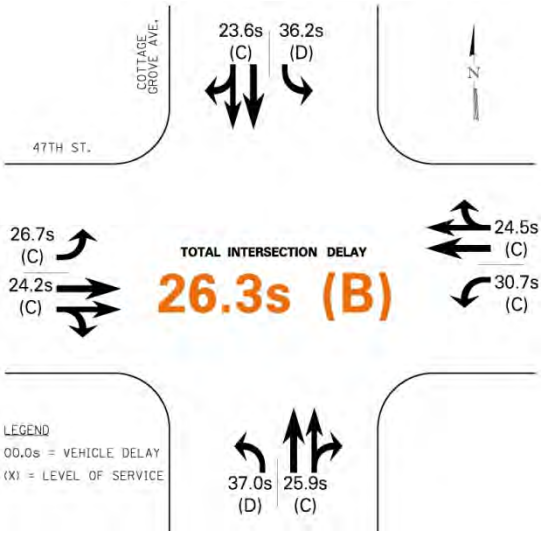


Figure D.7 47th Street Intersection Delay with Streetcar with 100-Foot Right-of-Way



87th Street

Figure D.8 87th Street Existing Intersection Delay

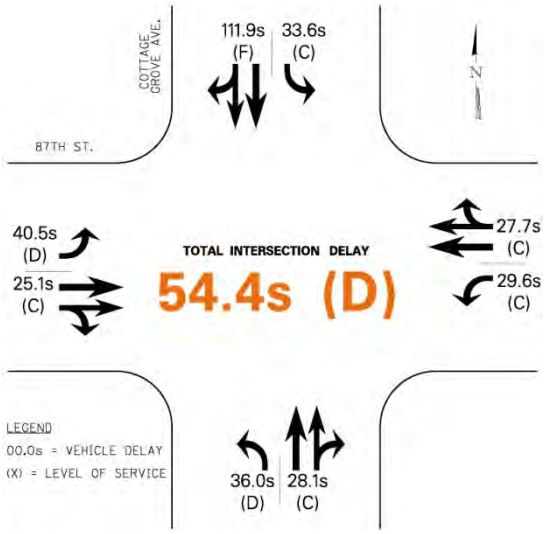


Figure D.9 87th Street Intersection Delay with Curb Running Bus Lane

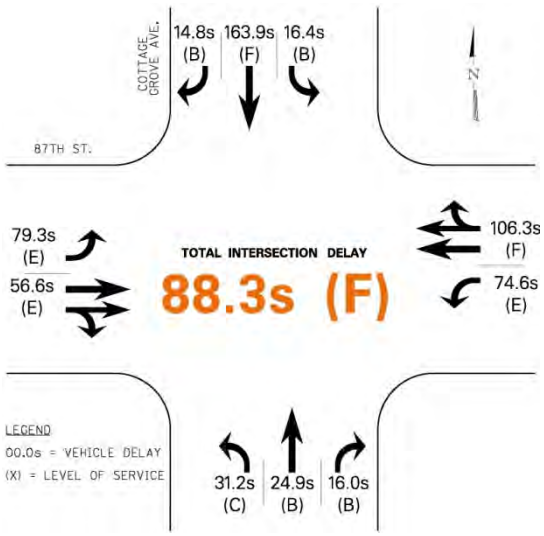
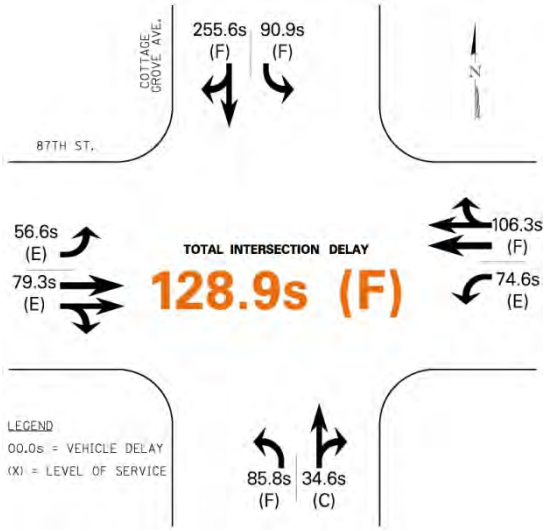


Figure D.10 Intersection Delay with Median Running Bus Lane



Appendix E – Configuration of 55th Street/Garfield Boulevard Travel Lanes

S. Lakefront Corridor Transit Study

55th St./Garfield Blvd. - Dedicated Bus Lanes

Legend

Dedicated Bus Lane

Shared Bus/Travel Lane

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

Cross Street	EB Lane Description	Width*	WB Lane Description
Hyde Park Blvd			
Hyde Park Blvd to Cornell Ave	1 parking, 1 shared bus/travel lane	40	1 parking, 1 shared bus/travel lane
Cornell Ave			
Cornell Ave to Lake Park Ave	1 parking, 1 shared bus/travel lane	42	1 parking, 1 shared bus/travel lane
Lake Park Ave			
Lake Park Ave to Harper Ave	1 bus lane, 1 travel lane	60	1 bus lane, 1 travel lane, 1 parking
Harper Ave			
Harper Ave to Blackstone Ave	1 bus lane, 1 travel lane	53	1 bus lane, 1 travel lane
Blackstone Ave			
Blackstone Ave to Dorchester	1 bus lane, 1 travel lane, 1 parking	70	1 bus lane, 1 travel lane, 1 parking
Dorchester			
Dorchester to Kenwood Ave	1 bus lane, 1 travel lane	48	1 bus lane, 1 travel lane
Kenwood Ave			
Kenwood Ave to Kimbark Ave	1 bus lane, 1 travel lane	46	1 bus lane, 1 travel lane
Kimbark Ave			
Kimbark Ave to Woodlawn Ave	1 bus lane, 1 travel lane	66	1 bus lane, 1 travel lane
Woodlawn Ave			
Woodlawn Ave to University Ave	1 bus lane, 1 travel lane, 1 parking	67	1 bus lane, 1 travel lane, 1 parking
University Ave			
University Ave to Greenwood Ave	2 parking, 1 travel lane	66	1 bus lane, 1 travel lane, 1 parking
Greenwood Ave			
Greenwood Ave to Ellis Ave	1 bus lane, 1 travel lane	65	1 bus lane, 1 travel lane, 1 parking
Ellis Ave			
Ellis Ave to Cottage Grove Ave	1 bus lane, 1 travel lane, 1 parking	66	1 bus lane, 1 travel lane, 1 parking
Cottage Grove Ave			
Cottage Grove Ave to Payne Dr	1 bus lane, 1 travel lane	40	1 bus lane, 1 travel lane
Payne Dr			
Payne Dr to Morgan Dr	1 shared bus/travel lane	41	1 shared bus/travel lane
Morgan Dr			
Morgan Dr to Russel Dr	1 shared bus/travel lane	54	1 shared bus/travel lane
Russel Dr			
Russel Dr to Elsworth Dr	1 shared bus/travel lane	71	1 shared bus/travel lane, 1 parking
Elsworth Dr			
Elsworth Dr to King Dr	1 bus lane, 1 travel lane, 1 left turn lane	100	1 bus lane, 2 travel lanes, 1 left turn lane
King Dr			
King Dr to Praire Ave	1 bus lane, 2 travel lanes,1 parking	80	1 bus lane, 2 travel lanes,1 parking
Praire Ave			
Praire Ave to Indiana Ave	1 bus lane, 2 travel lanes,1 parking	80	1 bus lane, 2 travel lanes,1 parking
Indiana Ave			
Indiana Ave to Michigan Ave	1 bus lane, 2 travel lanes,1 parking	92	1 bus lane, 2 travel lanes,1 parking
Michigan Ave			
Michigan Ave to Wabash Ave	1 bus lane, 2 travel lanes,1 parking	82	1 bus lane, 2 travel lanes,1 parking
Wabash Ave			
Wabash Ave to State St	1 bus lane, 2 travel lanes,1 parking	80	1 bus lane, 2 travel lanes,1 parking
State St			
State St to Dearborn St/Lafayette Ave	1 bus lane, 2 travel lanes,1 parking	80	1 bus lane, 2 travel lanes,1 parking
Dearborn St/Lafayette Ave			
Dearborn St/Lafayette Ave to Federal St/Perry Ave	1 bus lane, 2 travel lanes,1 parking	80	1 bus lane, 2 travel lanes,1 parking
Federal St/Perry Ave			
Federal St/Perry Ave to LaSalle St	1 bus lane, 2 travel lanes	76	1 bus lane, 2 travel lanes
LaSalle St			
LaSalle St to Wentworth Ave	1 bus lane, 2 travel lanes, 1 left turn lane	104	1 bus lane, 2 thorough lanes, 2 left turn lanes, 1 right turn lane
Wentworth Ave			
Wentworth Ave to Wells St	1 bus lane, 2 travel lanes, 2 left turn lanes	100	1 bus lane, 2 travel lanes, 2 left turn lanes
Wells St			

Appendix F – 55th Street/Garfield Boulevard Parking Impacts

S. Lakefront Corridor Transit Study

55th St./Garfield Blvd. - Parking Removal

Legend

Parking Remains

No Existing Parking

Parking Removed

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

** This is only a recommendation. Parking removal can change based on local conditions because in many locations either a parking lane or a travel lane can be converted to a dedicated bus lane.

Cross Street	EB Lane Description	Parking	Width*	Parking	WB Lane Description
Hyde Park Blvd		-		-	
Hyde Park Blvd to Cornell Ave	1 parking, 1 shared bus/travel lane	Y	40	Y	1 parking, 1 shared bus/travel lane
Cornell Ave		-		-	
Cornell Ave to Lake Park Ave	1 parking, 1 shared bus/travel lane	Y	42	Y	1 parking, 1 shared bus/travel lane
Lake Park Ave		-		-	
Lake Park Ave to Harper Ave	1 bus lane, 1 travel lane	N	60	Y	1 bus lane, 1 travel lane, 1 parking
Harper Ave		-		-	
Harper Ave to Blackstone Ave	1 bus lane, 1 travel lane	N	53	N	1 bus lane, 1 travel lane
Blackstone Ave		-		-	
Blackstone Ave to Dorchester	1 bus lane, 1 travel lane, 1 parking	Y	70	Y	1 bus lane, 1 travel lane, 1 parking
Dorchester		-		-	
Dorchester to Kenwood Ave	1 bus lane, 1 travel lane	N	48	N	1 bus lane, 1 travel lane
Kenwood Ave		-		-	
Kenwood Ave to Kimbark Ave	1 bus lane, 1 travel lane	N	46	N	1 bus lane, 1 travel lane
Kimbark Ave		-		-	
Kimbark Ave to Woodlawn Ave	1 bus lane, 1 travel lane	N	66	N	1 bus lane, 1 travel lane
Woodlawn Ave		-		-	
Woodlawn Ave to University Ave	1 bus lane, 1 travel lane, 1 parking	Y	67	Y	1 bus lane, 1 travel lane, 1 parking
University Ave		-		-	
University Ave to Greenwood Ave	2 parking, 1 travel lane	Y	66	Y	1 bus lane, 1 travel lane, 1 parking
Greenwood Ave		-		-	
Greenwood Ave to Ellis Ave	1 bus lane, 1 travel lane	N	65	Y	1 bus lane, 1 travel lane, 1 parking
Ellis Ave		-		-	
Ellis Ave to Cottage Grove Ave	1 bus lane, 1 travel lane, 1 parking	Y	66	Y	1 bus lane, 1 travel lane, 1 parking
Cottage Grove Ave		-		-	
Cottage Grove Ave to Payne Dr	1 bus lane, 1 travel lane	N	40	N	1 bus lane, 1 travel lane
Payne Dr		-		-	
Payne Dr to Morgan Dr	1 shared bus/travel lane	N	41	N	1 shared bus/travel lane
Morgan Dr		-		-	
Morgan Dr to Russel Dr	1 shared bus/travel lane	N	54	N	1 shared bus/travel lane
Russel Dr		-		-	
Russel Dr to Elsworth Dr	1 shared bus/travel lane	N	71	Y	1 shared bus/travel lane, 1 parking
Elsworth Dr		-		-	
Elsworth Dr to King Dr	1 bus lane, 1 travel lane, 1 left turn lane	N	100	N	1 bus lane, 2 travel lanes, 1 left turn lane
King Dr		-		-	
King Dr to Praire Ave	1 bus lane, 2 travel lanes,1 parking	Y	80	Y	1 bus lane, 2 travel lanes,1 parking
Praire Ave		-		-	
Praire Ave to Indiana Ave	1 bus lane, 2 travel lanes,1 parking	Y	80	Y	1 bus lane, 2 travel lanes,1 parking
Indiana Ave		-		-	
Indiana Ave to Michigan Ave	1 bus lane, 2 travel lanes,1 parking	Y	92	Y	1 bus lane, 2 travel lanes,1 parking

55th Street/Garfield Boulevard Parking Impacts (continued)

S. Lakefront Corridor Transit Study

55th St./Garfield Blvd. - Parking Removal

Legend

Parking Remains

No Existing Parking

Parking Removed

* Roadway widths are face of curb to face of curb.They are taken from the City of Chicago Pavement Marking atlas and have not been field verified.

** This is only a recommendation. Parking removal can change based on local conditions because in many locations either a parking lane or a travel lane can be converted to a dedicated bus lane.

Cross Street	EB Lane Description	Parking	Width*	Parking	WB Lane Description
Michigan Ave		-		-	
Michigan Ave to Wabash Ave	1 bus lane, 2 travel lanes,1 parking	Y	82	Y	1 bus lane, 2 travel lanes,1 parking
Wabash Ave		-		-	
Wabash Ave to State St	1 bus lane, 2 travel lanes,1 parking	Y	80	Y	1 bus lane, 2 travel lanes,1 parking
State St		-		-	
State St to Dearborn St/Lafayette Ave	1 bus lane, 2 travel lanes,1 parking	Y	80	Y	1 bus lane, 2 travel lanes,1 parking
Dearborn St/Lafayette Ave		-		-	
Dearborn St/Lafayette Ave to Federal St/Perry Ave	1 bus lane, 2 travel lanes,1 parking	Y	80	Y	1 bus lane, 2 travel lanes,1 parking
Federal St/Perry Ave		-		-	
Federal St/Perry Ave to LaSalle St	1 bus lane, 2 travel lanes	N	76	N	1 bus lane, 2 travel lanes
LaSalle St		-		-	
LaSalle St to Wentworth Ave	1 bus lane, 2 travel lanes, 1 left turn lane	N	104	N	1 bus lane, 2 thorough lanes, 2 left turn lanes, 1 right turn lane
Wentworth Ave		-		-	
Wentworth Ave to Wells St	1 bus lane, 2 travel lanes, 2 left turn lanes	N	100	N	1 bus lane, 2 travel lanes, 2 left turn lanes
Wells St		-		-	