Nicollet-Central Transit Alternatives

Technical Memorandum #3 Relevant Issues

September 21, 2012

Minneapolis
City of Lakes

Prepared for:

City of Minneapolis

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1. Introduction

1.1. Purpose of the Project

The purpose of the proposed Nicollet-Central Transit Alternatives study is to determine in detail the benefits, costs and impacts of implementing enhanced transit service along a portion of Nicollet and Central Avenues, two of the city's Primary Transit Network corridors, which run through the core of downtown Minneapolis and serve several existing and emerging high-density, urban neighborhoods. Funded by a Federal Transit Administration (FTA) Section 5339 grant, the study will help the City, Metro Transit, Metropolitan Council, and other public agencies understand how enhanced transit service can be integrated within a dense urban core with strong existing bus service to improve transit service reliability and efficiency and increase transit ridership while also encouraging local sustainable development.

The primary goal of this Alternatives Analysis (AA) is to develop a locally preferred alternative (LPA) for a transit enhancement in the corridor that could serve as a first phase of a longer range vision for the corridor. The study will consider a variety of transit modes and service types including enhanced bus and streetcar options to identify the best transit solution to develop an LPA for inclusion in the Metropolitan Council's 2030 Transportation Policy Plan (TPP).

1.2. Purpose of Document

This technical memorandum documents the relevant issues in the corridor based on previous and ongoing work in the corridor. This document will serve as the basis for the Purpose and Need for transit enhancements in the Nicollet-Central corridor. The Purpose and Need for the study will state the problems that the Nicollet-Central Transit Alternatives project aims to address, and is required as part of the current FTA project development process and environmental review for projects seeking federal funding.

1.3. Structure of Document

This memorandum will describe the following opportunities and issues associated with the Nicollet-Central corridor:

- Community character – population, employment, land use and economic development, historic features, Section 4(f) properties, underrepresented communities, and neighborhood groups.
- Transit,
- Roadway,
- Freight Railroad,
- Non-motorized transportation, and
- Funding and governance.

1.3.1. List of Relevant Plans and Studies

As previously stated, this document summarizes previous and ongoing work in the corridor. Specifically, this memorandum uses the following documents as references:

- *Minneapolis Streetcar Feasibility Study*, December 2007
- *Minneapolis Streetcar Funding Study*, March 2010
- *Urban Circulator Peer City Review*, October 2011
- *Analysis of Existing Route 10 and 18 Usage*, October 2011

- *Access Minneapolis Downtown Transportation Action Plan*, adopted June 2007
- *Access Minneapolis Citywide Transportation Action Plan*, adopted July 2009
- *The Minneapolis Plan for Sustainable Growth, City of Minneapolis*, adopted October 2009
- *Nicollet Avenue: The Revitalization of Minneapolis' Main Street*, City of Minneapolis, adopted May 2000
- *Central Avenue Small Area Plan,* adopted June 2008
- *Midtown Minneapolis Land Use and Development Plan*, City of Minneapolis, adopted December 2005
- *Midtown Greenway Land Use and Development Plan*, City of Minneapolis, adopted February 2007
- *Downtown East-North Loop Plan, City of Minneapolis, adopted October 2003*
- *Arterial Transitway Corridors Study*, Metro Transit, April 2012
- *Southwest Transitway Locally Preferred Alternative Evaluation Documents*, September 2009
- *2030 Transportation Policy Plan*, Metropolitan Council, adopted November 2010
- *Regional Transitway Guidelines,* Metropolitan Council, February 2012
- *Corridors of Opportunity Initiative,* Metropolitan Council, (ongoing)
- *DOT-HUD-EPA Partnership for Sustainable Communities,* June 2012
- *Nicollet Avenue (Lake Street to 40th Street) Reconstruction Project* (ongoing)
- *I-35W Lake Street Transit/Access Project* (ongoing)
- *Central Avenue Bicycle Study*, March 2010
- *Hennepin Avenue Bicycle Plan*, September 2009
- *Minneapolis Bicycle Master Plan*, June 2011
- *Minneapolis Pedestrian Master Plan, 2009*
- *2030 Transit Master Study,* Metropolitan Council, 2008
- *Downtown 2025 Plan*, Downtown Council, 2011

2. Community Character

2.1. Corridor Description

The 9.2-mile corridor is located primarily in the City of Minneapolis, Hennepin County, although extent into the southern portion of Columbia Heights, Anoka County, as shown in Figure 2-1. The southern end of the alignment follows Nicollet Avenue from 46th Street at the I-35W Bus Rapid Transit (BRT) station to downtown Minneapolis, in downtown the alignment follows Nicollet Mall to 3rd Street crossing the former Nicollet Hotel Block to Hennepin Avenue. The alignment crosses the Mississippi River on the Hennepin Avenue bridge, then follows Hennepin and 1st Avenues to Central Avenue and Central Avenue to the existing Columbia Heights Transit Center. The corridor to be served by an enhanced transit alternative is within a half-mile of the alignment. These boundaries were identified in the *Minneapolis Streetcar Feasibility Study* and approved by the Minneapolis City Council.

2.2. Population

The Nicollet-Central Corridor is one of the most densely populated corridors in the Twin Cities region with over 90,000 residents and population densities ranging from 5,000 to 17,000 people per square mile, as shown in Table 1-1. The downtown and near-downtown neighborhoods in Minneapolis are the most densely-populated areas in the region (see Table 1-1 and Figure 2-2). In recent years, downtown Minneapolis has made significant strides to attract residents, with a current population of 26,000 and this is expected to grow. As this population increases, the demand for amenities such as retail, entertainment, employment and other major destinations in downtown will also increase. This growth in dense population increases the need for enhanced transit service that serves short distance trips for people who both live and work in and near downtown.

Table 1-1: Existing and Future Population

GEOGRAPHIC AREA	2010 POPULATION	2010 POPULATION DENSITY (1,000 POP/SQ MI)	2010-2030 POPULATION CHANGE	2030 POPULATION DENSITY (1,000 POP/SQ MI)
Corridor Total	*91,000*	*9*	*+ 25,000*	*12*
41st Avenue NE to Lowry Avenue	*12,000*	*5*	*+ 0*	*5*
Lowry Avenue to River	*17,000*	*7*	*+ 5,000*	*9*
Downtown (in corridor)	*17,000*	*11*	*+13,000*	*19*
1-94 to Lake Street	*20,000*	*17*	*+ 7,000*	*22*
Lake Street to 46th Street	*25,000*	*10*	*+ 0*	*10*
Downtown-wide	*26,000*	*9*	*+ 21,000*	*17*
Downtown (outside corridor)	*9,000*	*8*	*+ 8,000*	*15*
Downtown (in corridor)	*17,000*	*11*	*+13,000*	*19*

Source: 2010 Population: 2010 Transportation Analysis Zone (TAZ) System: 2010 US decennial Census
2030 Population: Transportation Analysis Zones 2000: Estimated population within TAZ in 2030 (based on city forecasts)
2010 Employment: 2010 Transportation Analysis Zone (TAZ) System: QCEW/LED data
2030 Employment: Transportation Analysis Zones 2000: Estimated employment within TAZ in 2030 (based on city forecasts)

2.3. Employment

At the center of the corridor is downtown Minneapolis, the top employment center in the region, with over 120,000 jobs that are largely concentrated within the corridor along Nicollet Mall. The corridor is forecasted to grow by 51,000 employees over the next 20 years, primarily in downtown (see Table 1-2). Other areas of employment, though not at the concentration or density of downtown, include Nicollet Avenue and the East Hennepin Activity Center. Nicollet Avenue has numerous small retail and commercial businesses and the East Hennepin Activity Center is a growing residential and employment center northeast of downtown.

Table 1-2: Existing and Future Employment

GEOGRAPHIC AREA	2010 EMPLOYMENT	2010 EMPLOYMENT DENSITY (1,000 EMP/SQ MI)	2010-2030 EMPLOYMENT CHANGE	2030 EMPLOYMENT DENSITY (1,000 EMP/SQ MI)
Corridor Total	*125,000*	*13*	*+ 51,000*	*18*
41st Avenue NE to Lowry Avenue	*2,000*	*1*	*+ 1,000*	*1*
Lowry Avenue to River	*9,000*	*4*	*+ 3,000*	*5*
Downtown (in corridor)	*103,000*	*63*	*+ 43,000*	*90*
1-94 to Lake Street	*8,000*	*7*	*+ 3,000*	*10*
Lake Street to 46th Street	*3,000*	*1*	*+ 1,000*	*2*
Downtown-wide	*122,000*	*44*	*+ 50,000*	*62*
Downtown (outside corridor)	*19,000*	*16*	*+7,000*	*22*
Downtown (in corridor)	*103,000*	*63*	*+ 43,000*	*90*

Source: 2010 Population: 2010 Transportation Analysis Zone (TAZ) System: 2010 US decennial Census
2030 Population: Transportation Analysis Zones 2000: Estimated population within TAZ in 2030 (based on city forecasts)
2010 Employment: 2010 Transportation Analysis Zone (TAZ) System: QCEW/LED data
2030 Employment: Transportation Analysis Zones 2000: Estimated employment within TAZ in 2030 (based on city forecasts)

Figure 2-1: Proposed Study Area

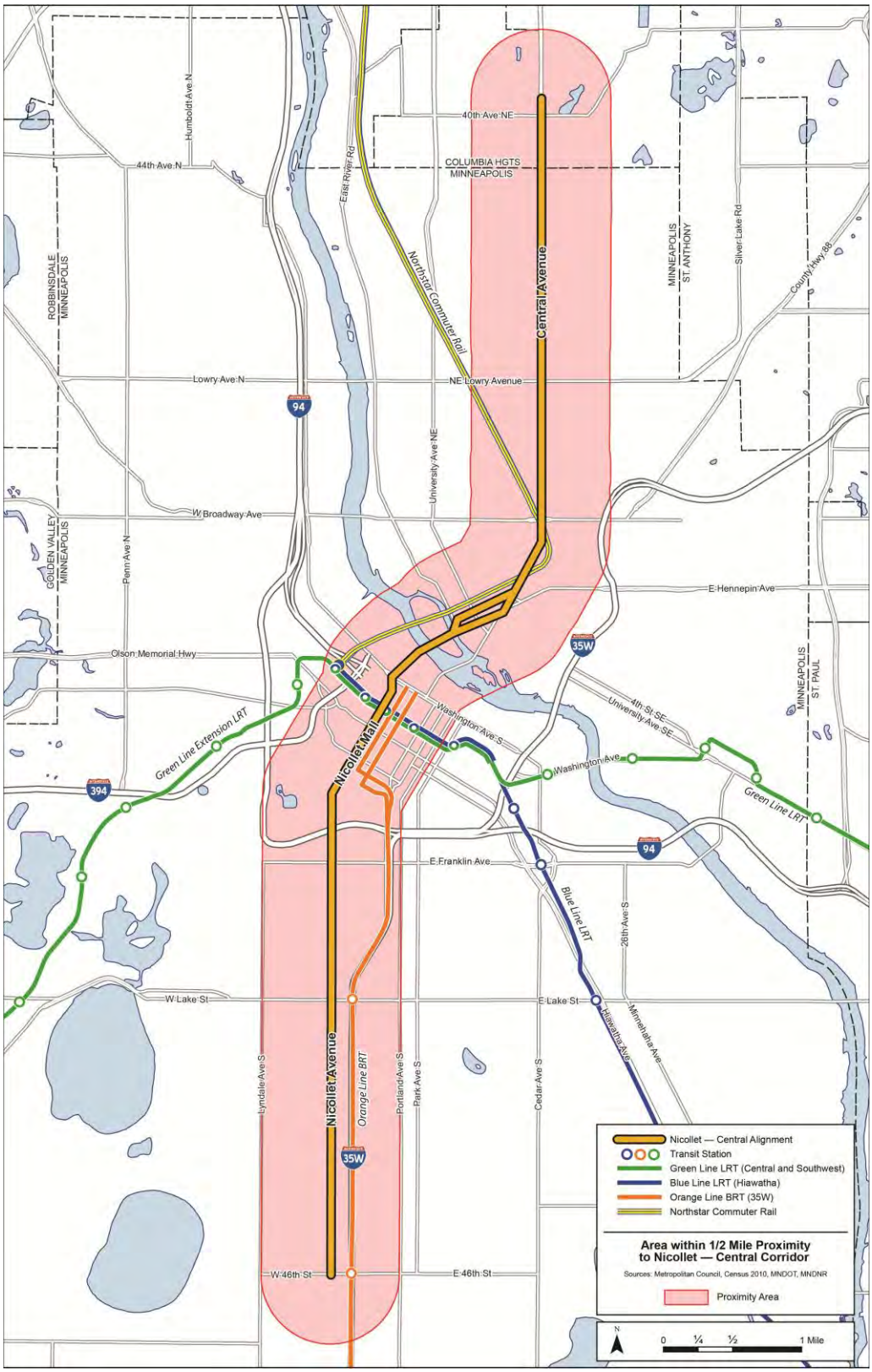


Figure 2-2: Population Density

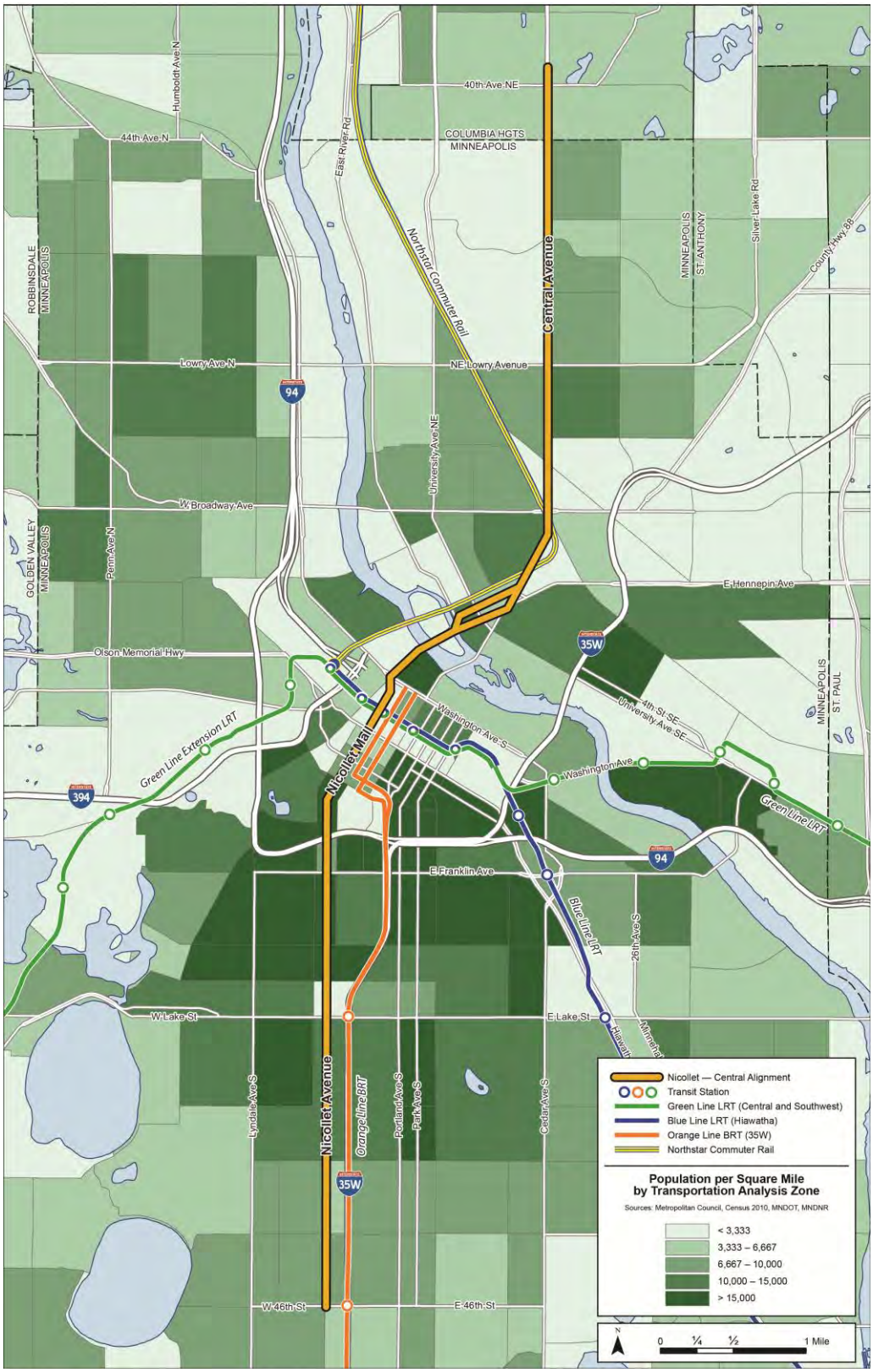
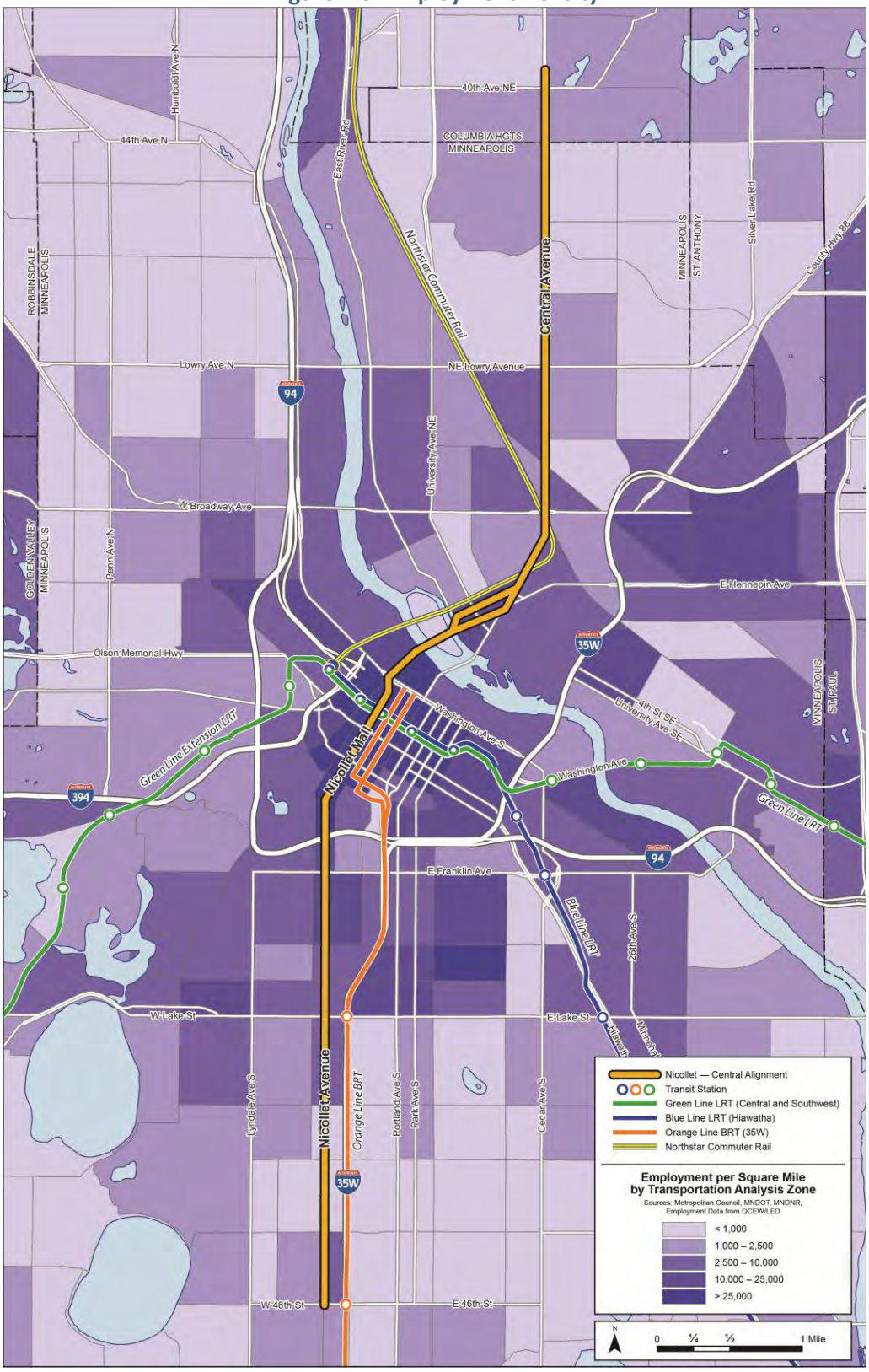


Figure 2-3: Employment Density



2.4. Economic Development

There are infill development opportunities throughout the corridor, but key economic development opportunity areas include (from north to south):

- **Shoreham Yards.** Shoreham Yards is an 18-acre development site on Central Avenue north of Lowry Avenue. Redevelopment plans include transit-oriented, mixed-use office redevelopment between 31st Street and 27th Street.
- **Lowry and Central.** Central Avenue is a commercial corridor and a designated activity center in the city's comprehensive plan. The plan recommends a combination of mixed-use and residential development for Central Avenue and Lowry. This area has experienced increasing housing density and jobs. This infill development growth is expected to continue.
- **East Hennepin Activity Center**. The East Hennepin area, just north of the Mississippi River, is a growing activity center and high-density residential neighborhood where additional housing development is expected in the future.
- **North Nicollet Mall**. Nicollet Mall on the north end near the Minneapolis Central Library has several sites appropriate for high-density mixed use development. A notable potential project site is known as the Nicollet Hotel Block. Metro Transit and City of Minneapolis are working together to determine the appropriate uses for the Nicollet Hotel Block site.
- **Franklin Avenue/I-94 Area**. South of Nicollet Mall, the area between Grant Street and Franklin Avenue has several smaller sites with potential for high density residential and mixed-use development.
- **Nicollet/Lake Street Area**. The Kmart site is located at the intersection of Nicollet Avenue and Lake Street. It is a significant redevelopment opportunity for medium to high-density residential and mixed-use transit oriented development. This is also an opportunity to reconnect the north south grid on Nicollet Avenue. The City has completed more detailed planning for this area through the Midtown Minneapolis Land Use and Development Plan[1].

2.5. Land Use

The existing land uses in the corridor are a mixture of primarily medium to high-density residential and commercial uses (see Figure 2-4). Downtown has a mix of office towers, stores, restaurants, hotels and theaters, along with institutions like the Central Library, the University of St. Thomas, Minneapolis Community and Technical College (MCTC), and Orchestra Hall, as well as the Minneapolis Convention Center. The land use south of downtown is a mixed-use commercial corridor between downtown and Lake Street with pockets of mixed use neighborhood commercial nodes and medium density housing south of Lake Street. Institutions like the Minneapolis Institute of Arts and Minneapolis College of Art and Design are also just off Nicollet Avenue between downtown and Lake Street. In the northern section of the corridor along Central Avenue between Broadway Avenue NE and 18th Avenue NE the land use is primarily light industrial and lofts. To the north of 18th Street on Central Avenue, the land use is a mix of commercial, mixed use, residential, utilities, parks and open space. Land use along Nicollet Avenue is largely characterized by medium density housing, mixed use development, retail and commercial. The urban form and land use patterns throughout the corridor are highly oriented to walking, bicycling and transit. Many of the neighborhoods have a historic street grid that formed largely based on the former streetcar lines. It will be important to coordinate with the business owners throughout the corridor, particularly those with direct access to the corridor and those with an active street presence.

[1] Source: *Midtown Minneapolis Land Use and Development Plan, City of Minneapolis,* December 2005.

2.5.1. Community Plans

The Minneapolis Plan for Sustainable Growth is Minneapolis' regionally-approved comprehensive plan and policy framework for guiding growth and investment in the city. Specifically, the plan directs future growth into a pattern of corridors and nodes to provide density in areas that are well served by transit and are close to commercial, cultural and natural amenities. These areas are defined in the plan, as shown in see Figure 2-5, as growth centers, major retail centers, activity centers, commercial corridors, community corridors, neighborhood commercial nodes. In general, these areas are downtown Minneapolis, light rail transit (LRT) station areas, and the local bus corridors that have been mixed-use commercial corridors for decades, including Nicollet and Central Avenues. The City's zoning code has been updated to reflect these policies, promoting traditional urban form and mixed-use, transit-oriented development in these areas.

In addition, the City also periodically develops small areas plans to provide more guidance on future growth and development in these areas. These plans are adopted by the City Council into the comprehensive plan. Within the Nicollet-Central Corridor, there are several adopted small area plans:

- The *Central Avenue Small Area Plan* was adopted in 2008 and addresses Central Avenue between 37th Avenue NE (the Minneapolis-Columbia Heights boundary) and NE Broadway Street. Selected key plan recommendations include redeveloping the Central Avenue frontage of Shoreham Yards as a mixed-use employment center; concentrating intense urban redevelopments within the historic commercial strip (18th Avenue NE to 27th Avenue NE) at two locations (18th Avenue NE and NE Lowry Avenue); and improving the access and visibility of the existing arts community from Central Avenue.
- The *Midtown Greenway Land Use and Development Plan* was adopted in 2007 and addresses the Midtown Greenway corridor between Minneapolis' western border and Hiawatha Avenue. Selected key plan recommendations include concentrating the most intense development at intersecting transit and commercial streets, such as Nicollet Avenue, and improving pedestrian access and visibility along the Greenway and between the Greenway and adjacent areas.
- The *Midtown Minneapolis Land Use and Development Plan* was adopted in 2005 and addresses the area bounded by Blaisdell Avenue (one block west of Nicollet Avenue), the Midtown Greenway, 11th Avenues S and 31st Street. Selected key recommendations include relocating the Kmart store at the intersection of Nicollet Avenue and Lake Street, reconnecting Nicollet Avenue between the Midtown Greenway and Lake Street, and implementing high intensity, mixed use development in the Lake Street/Nicollet Avenue/I-35W area.
- The *Downtown East North Loop Plan* was adopted in 2003 and addresses the underdeveloped districts of Downtown Minneapolis on the east and west sides of Downtown along the Hiawatha LRT on 5th Street. Selected key recommendations include concentrating future Class-A office development within the Downtown Core, developing "complete communities" in Downtown East and the North Loop so that people can walk to where they work, shop, and play; and developing mixed-use, pedestrian –oriented compact neighborhood nodes that support increased walking, bicycling and transit use.

In addition to these adopted City of Minneapolis plans, the Minneapolis Downtown Council also completed the *Intersections.2025* plan in 2011. Selected key recommendations include:

- doubling downtown's residential population by 2025;
- transforming Nicollet Mall into a curb-less walking environment that shares space with bicycles and quiet, zero-emission vehicles (electric buses or modern streetcars) that offer free shuttle service every few minutes;

- building a new linear park from the LRT station on 5th Street to the river along Nicollet Mall and Hennepin Avenue, including a public gathering place just north of the Central Library;
- maintaining and improving high capacity transportation options for commuters;
- increasing transit's mode share for daytime commuters from 40 percent to 60 percent;
- intensifying regular transit service in close-in neighborhoods; and
- securing stable, reliable transit funding for expanding and maintaining the system.

The *Columbia Heights Comprehensive Plan* adopted in 2010 directs higher-density, mixed-use, transit-oriented development to Central Avenue. Plans include commercial redevelopment along the west side of Central Avenue, with a mix of transit-oriented mixed use development, office space, and civic uses on the east side of Central Avenue. Central Avenue and 40th Street has historically been and will continue to be the city's commercial core.

Figure 2-4: Land Use

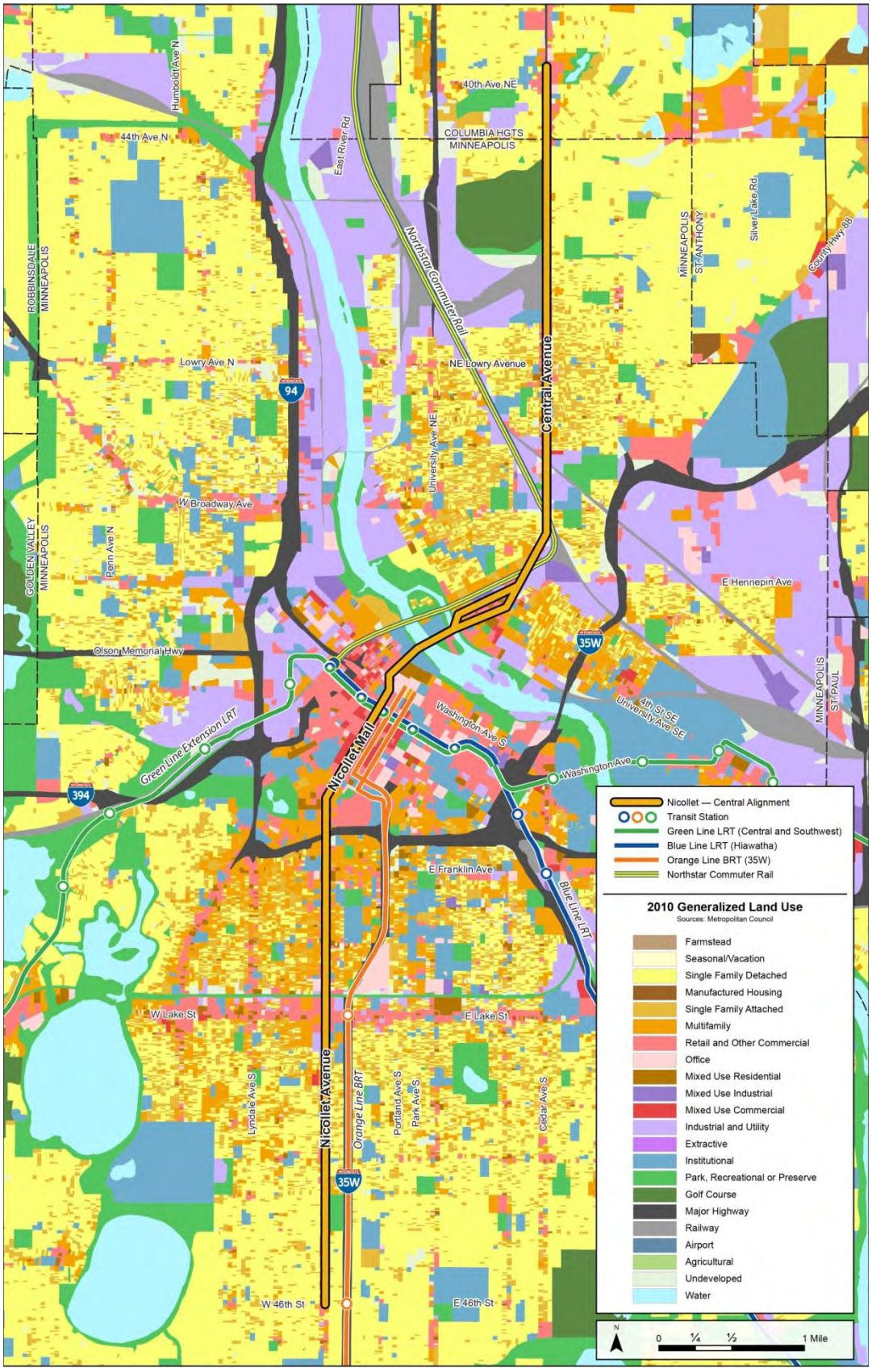
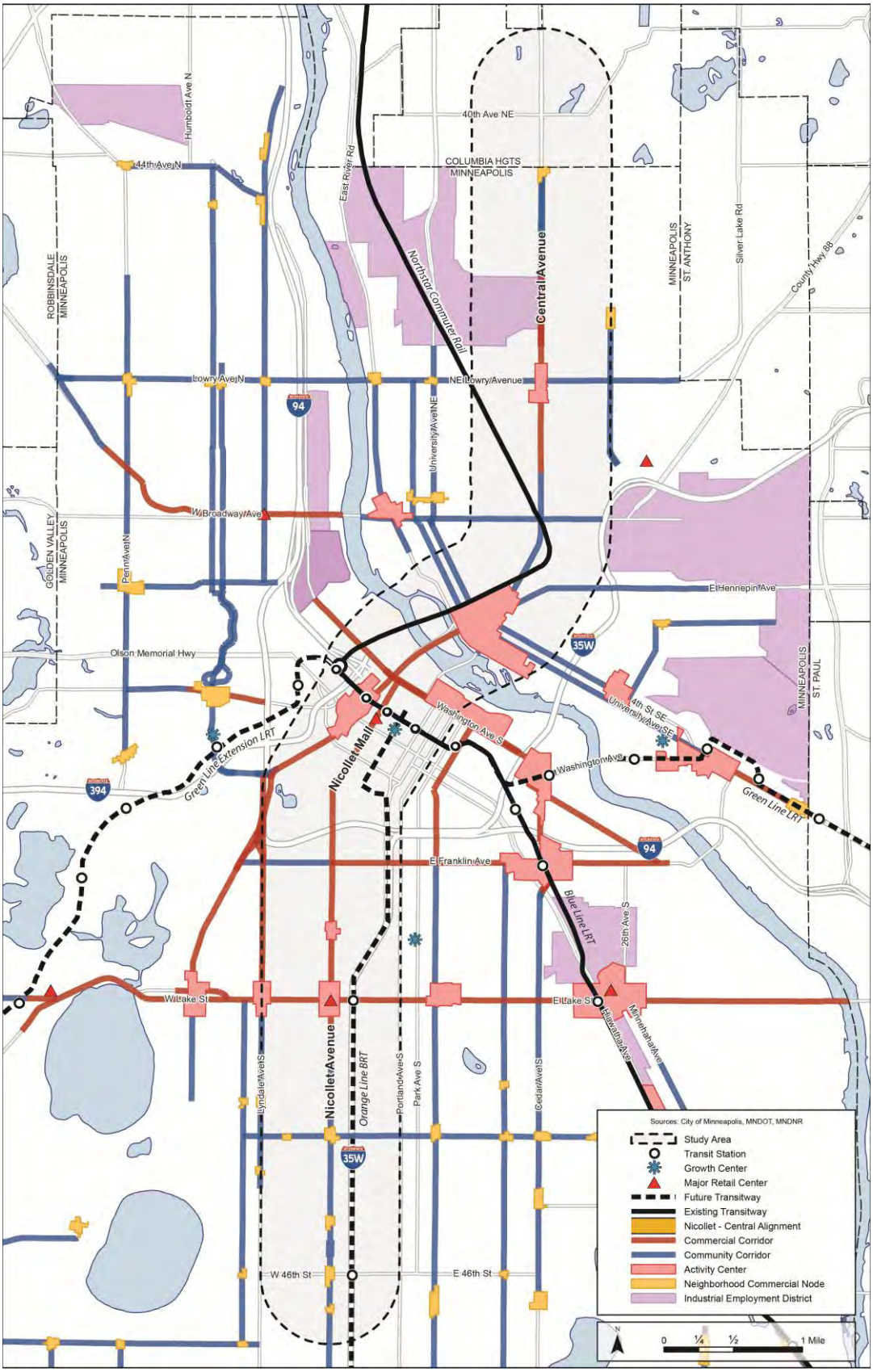


Figure 2-5: Land Use Features



2.6. Historic Districts

Historic districts are properties with significant historical, cultural, architectural, archaeological or engineering importance[2]. The alignment travels directly through the St. Anthony Falls historic district. Washburn Fair-Oaks and Stevens Square historic districts are adjacent to the corridor while Harmon Place, South Ninth Street, Minneapolis Warehouse and Fifth Street Southeast historic districts are within a half mile of the corridor. Several individual landmarks including the Foshay Tower and the State Theater are located in the corridor downtown. According to the *Minneapolis Plan for Sustainable Growth*, Minneapolis will promote the sustainable practice of protecting and reusing the City's culturally significant built and natural environment, including buildings, districts, landscapes, and historic resources, while advancing growth through preservation policies. The Nicollet-Central Transit Alternatives study will take into consideration the City's goal of sustainable growth along with maintaining the cultural, historical and architectural important districts and landmarks in the corridor.

2.7. Section 4(f) Properties

Section 4(f) of the Department of Transportation Act states that agencies can not approve the use of public park land for transportation projects unless there is no reasonable or prudent alternative use of the land. If the use of parkland is the only reasonable and prudent option, any impacts to parkland must be minimized. Section 4(f) regulations can be a major factor when determining the alignment. The Nicollet-Central Transit Alternatives study will identify and minimize any impacts to section 4(f) properties.

The corridor intersects with several parks including the Martin Luther King Jr. Park, the Loring Greenway, Peavey Plaza, the Grand Rounds, Mississippi National River and Recreation Area (MNRRA), Nicollet Island Park, and the Columbia Park Golf Course. Martin Luther King Jr. Park is bounded by Nicollet Avenue to the west, I-35W to the east, 40th Street to the north and 42nd Street to the south. This park hosts a variety of amenities including a recreation center, walking paths, picnic areas and wading pools. Loring Greenway is a partially elevated pedestrian walkway that links Nicollet Mall and downtown Minneapolis with Loring Park and the surrounding residential areas. Peavey Plaza is a park plaza on the east side of Nicollet Mall between 11th and 12th Streets S. The Grand Rounds is a National Scenic Byway with over 50 miles of trails and seven unique Districts. It was designated as a Minnesota State Scenic Byway in 1997 and as a National Scenic Byway in 1998. The corridor intersects the Downtown Riverfront Byway District that traverses through Downtown Minneapolis. MNRRA, located along the Mississippi River, is a 72-mile river park throughout the Twin Cities seven-county area. In addition to the water-based recreational activities, MNRRA contains an extensive network of walking/biking paths through downtown Minneapolis. Nicollet Island Park is located on an island in the Mississippi River adjacent to downtown with residential neighborhoods, educational institutions and other amenities. Columbia Golf Course, a public 18-hole course, is located on Central Avenue between St. Anthony Parkway and Columbia Parkway.

2.8. Underrepresented Communities

The corridor crosses a mix of racially diverse communities ranging from more than 80 percent minority, east of I-35W between 28th and 40th Streets S. to less than 20 percent minority, along the Mississippi River and southern portion of the corridor west of Nicollet, see Figure 2-6. Median household income in the corridor ranges from below $35,000 to $80,000 with higher incomes concentrated in downtown, northern and southern portions of the corridor. Figure 2-7 represents the median household incomes in the corridor.

Throughout most of the corridor more than 10 percent of the households English is a second language. The highest concentration of households with English as a second language are located in the neighborhoods around Lake Street, see Figure 2-8. The initial, corridor-wide analysis shows 13 percent of residents speak Spanish, 4.4

[2] Source: *The Minneapolis Plan for Sustainable Growth, City of Minneapolis*, October 2009

percent African languages including Somali, and 6.8 percent other languages that include Chinese, Hmong, French, and Russian[3]. The Nicollet-Central Transit Alternatives study has a comprehensive *Public Outreach and Decision Making Plan,* which identifies how the project will engage all communities. Special outreach techniques will be implemented to engage underrepresented communities and provide opportunities to participate in the AA process. Project materials and communications will be produced in the appropriate languages to ensure engagement of key stakeholder groups, including providing interpreters at meetings. Additional project outreach channels to these groups may also include newspapers, churches, community sports and events, and other forms of media and network groups.

2.9. Neighborhood Groups

Numerous formally organized neighborhood groups exist throughout the corridor. These groups will be engaged throughout the Nicollet-Central Transit Alternatives study. Input and feedback will be solicited frequently and comments will be considered.

[3] 2010 American Community Survey 5-year estimate, U.S. Census

Figure 2-6: Percent Minority Population

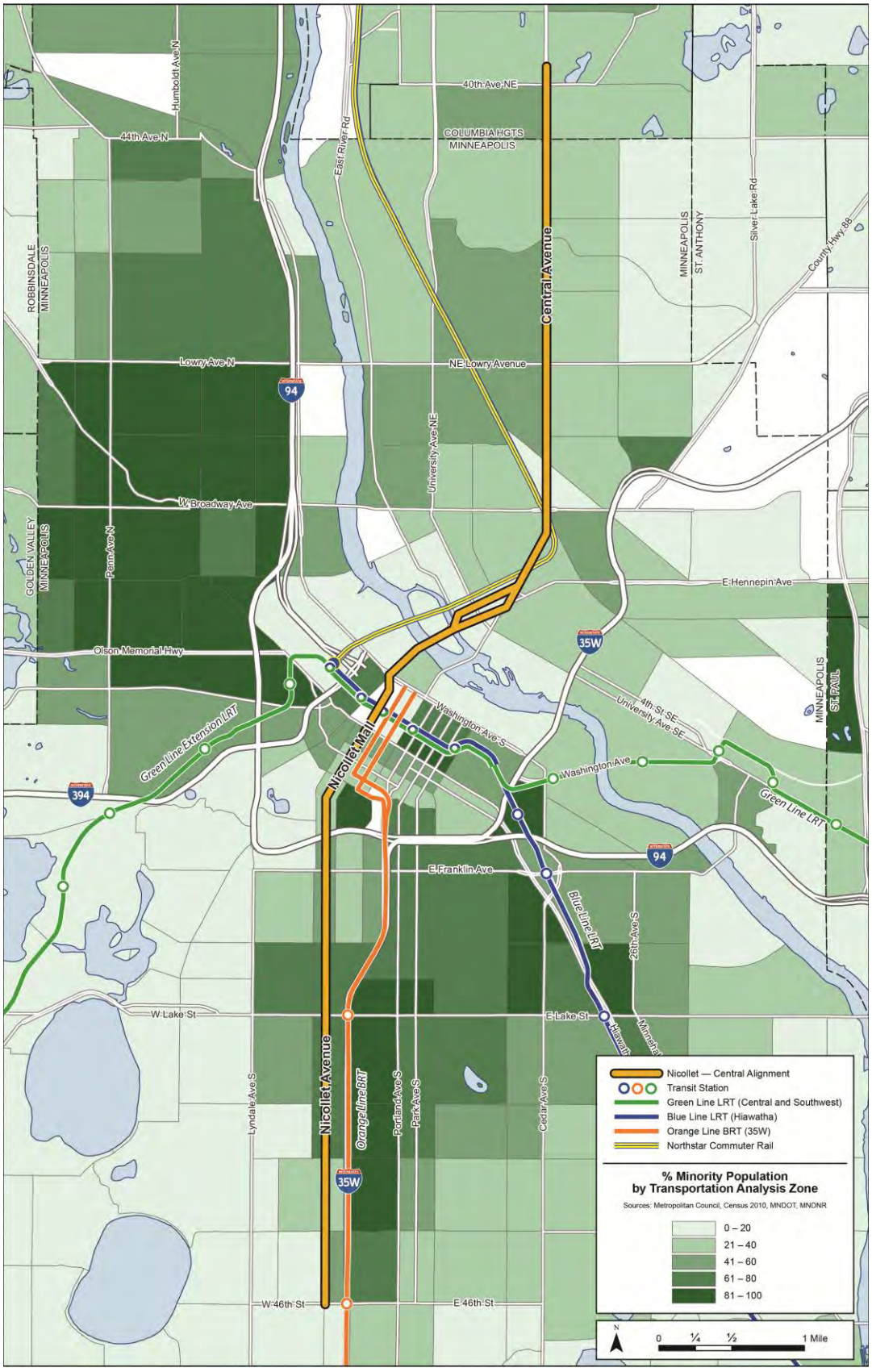


Figure 2-7: Median Household Income

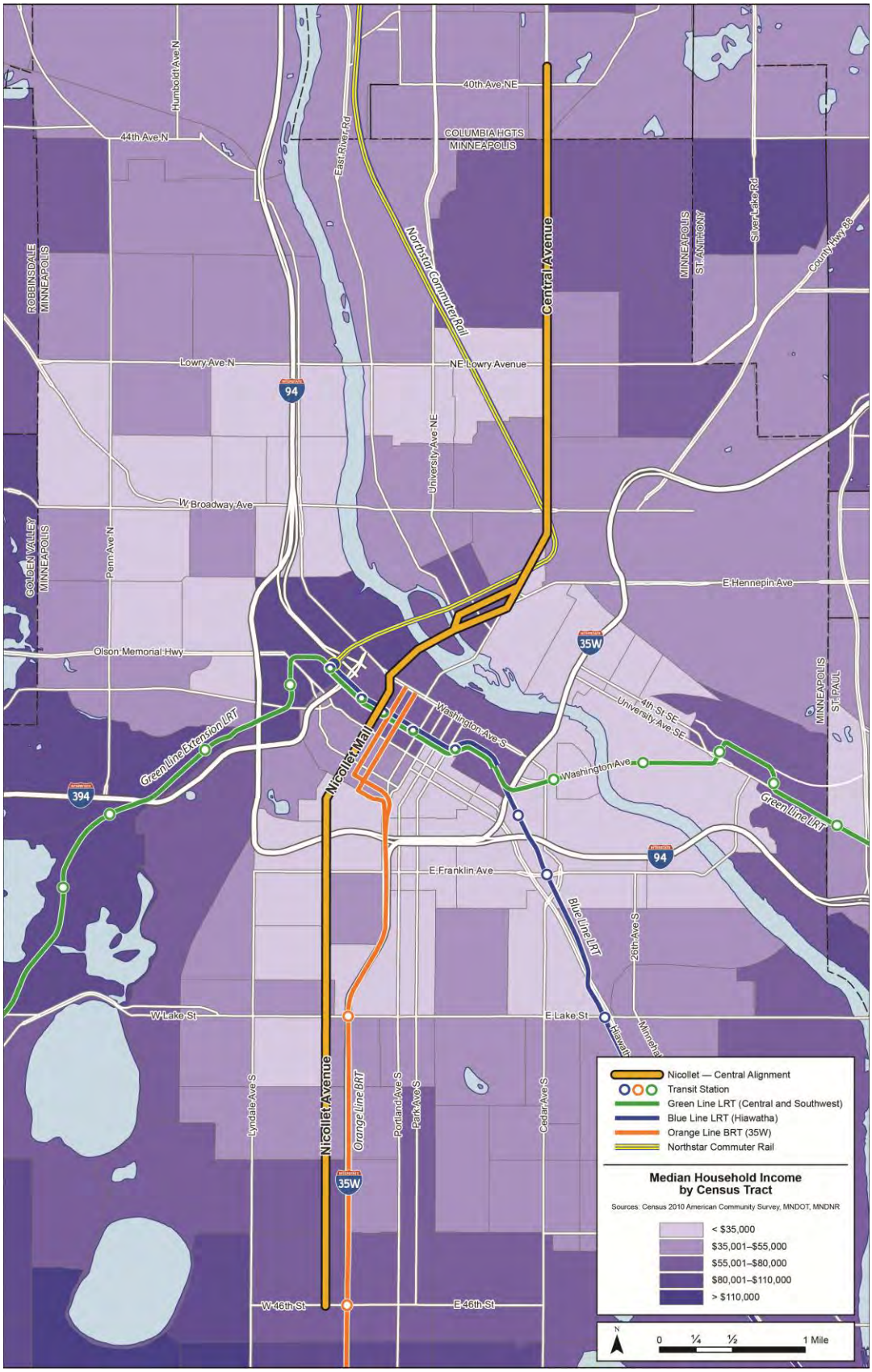
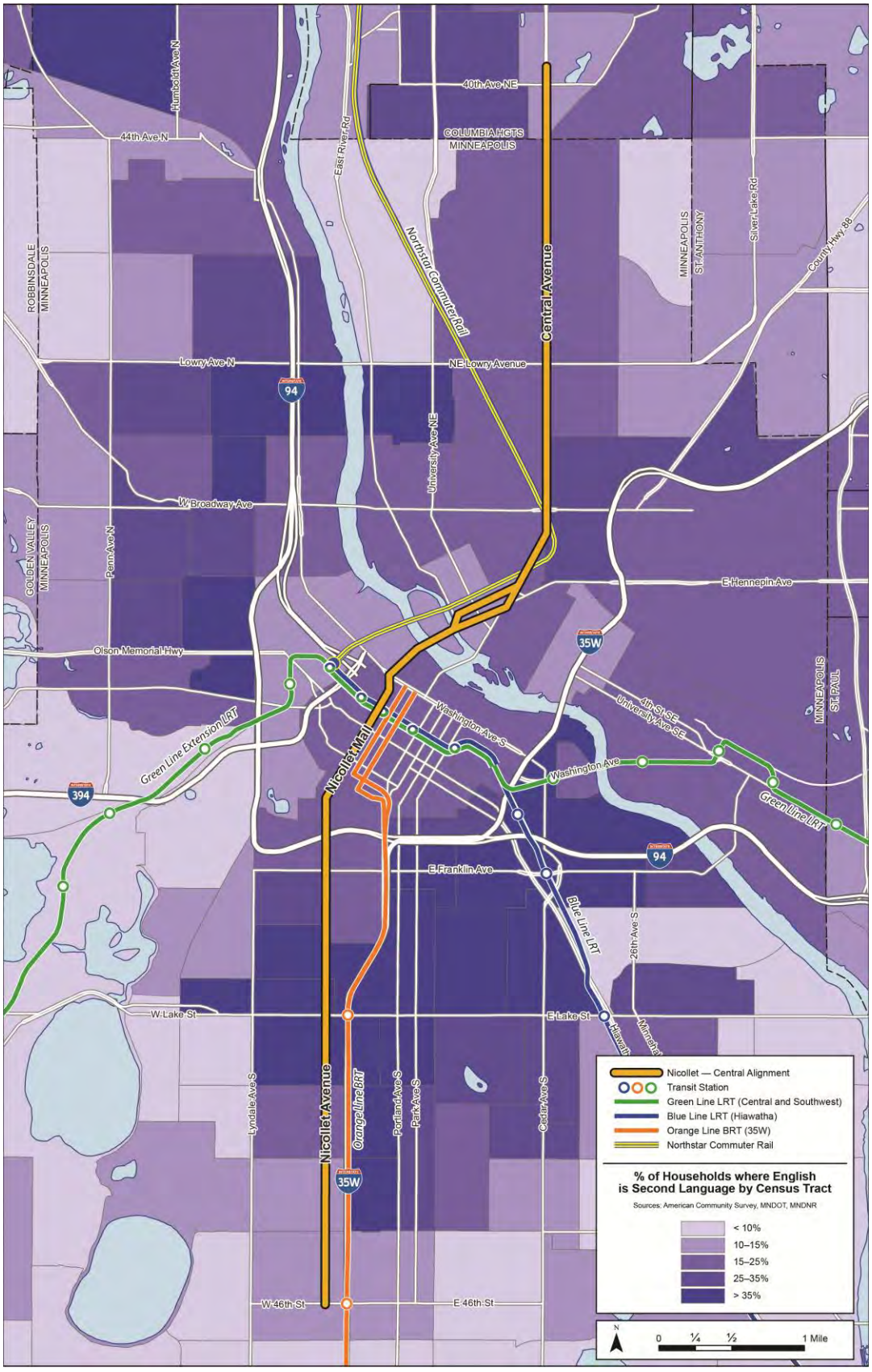


Figure 2-8: English as Second Language



3. Transit

3.1. Transit Service in the Corridor

The following Metro Transit bus routes serve the Nicollet-Central corridor:

- **Route 10 (Central Avenue-University Avenue-Northtown)** – Route 10 has two branches that operate from the Northtown Transit Center south via either Central or University Avenues to the Columbia Heights Transit Center; branches join and continue as a single route 10 south on Central Avenue and crosses the Mississippi River on the 3rd Avenue bridge entering downtown Minneapolis from the north – approximately 10-minute service during rush hour and midday – serves approximately 8,000 weekday riders[4]
- **Route 18 (Nicollet Avenue-South Bloomington)** – Route 18 is a combination of coordinated branches providing higher frequency bus service as the route approaches downtown Minneapolis from the south along Nicollet Avenue – service frequencies range from 30 minutes south of American Blvd. to 7-8 minutes north of Lake St. – serves approximately 11,000 weekday riders[9] – does not cross the Mississippi River
- **Route 59 (Ltd Stop Blaine-Hwy 65-Central)** – approximately 10-minute service during rush hour only in the peak direction only – serves approximately 800 weekday riders[9] – crosses the Mississippi River on the 3rd Avenue bridge

Routes 10 and 18 are part of Metro Transit's High-Frequency Network, which are routes where service frequency is guaranteed at least every 15 minutes for 13-hours a day on weekdays and 9-hours on Saturday. Since March 2010, route 18 and route 10, have provided service at least every 10 minutes all day and operated as a free ride service along Nicollet Mall between Washington Avenue and Grant Street. Table 3-1 provides a summary of Nicollet-Central corridor routes bus routes.

In addition to routes 10, 18 and 59, Nicollet Mall is also served by the following bus routes:

- **Route 11 (Columbia Heights-2nd Street NE-4th Av S.)** – approximately 10-15 minute service during rush hour – serves approximately 4,000 weekday riders[9] – overlaps the corridor for less than 2 miles in downtown Minneapolis between 15th Street/Nicollet Avenue and East Hennepin Avenue/2nd Street NE and crosses the Mississippi River on the Hennepin Avenue bridge
- **Route 17 (Minnetonka Blvd.-Uptown-Washington Street NE)** – approximately 10 minute service during rush hour and 15 minute service during midday – serves approximately 6,000 weekday riders[9] – overlaps the corridor for less than 3 miles between 24th Street/Nicollet Avenue and 5th Street SE/Central Avenue and crosses the Mississippi River on the 3rd Avenue bridge
- **Route 25 (Northtown-Silver Lake-Stinson-Lake of the Isles)** – approximately every 25 minute service during rush hour and 60 minute service midday – serves approximately 1,000 weekday riders[9] – crosses the Mississippi River on the 3rd Avenue bridge
- **Route 568 (Opportunity Partners-Nicollet Ave-50th Street) -** very limited AM and PM service – serves less than 100 weekday riders[9]

[4] Source: Ridership figures provided by the City of Minneapolis based on average weekday ridership in April 2011.

Table 3-1: Nicollet-Central Corridor Bus Routes

Bus Route	Nicollet-Central Corridor Segments				Weekday Midday Frequency	Average Weekday Ridership (April 2011 Average)
	South of Downtown (Nicollet Ave S from 46th St to Grant St)	**Nicollet Mall** (Grant St to Washington Av)	**Crossing the River** (Hennepin/1st Av from Washington Av to Central Av NE)	**North of Downtown** (Central Av NE from Hennepin Av NE to 41st Ave NE)		
Primary Corridor Routes						
10		✓		✓	10 min	8,000
18	✓	✓			7-8 min	11,000
59		✓		✓	peak only	<1,000
Additional Routes on Nicollet Mall						
11	✓*	✓	✓		30 min	4,000
17	✓*	✓			15 min	6,000
25		✓			60 min	1,000
Additional Routes on Hennepin/1st Ave						
4			✓		15 min	7,000
6			✓		10 min	9,000
61			✓		30 min	3,000

*Route 11 enters Nicollet Avenue at 15th Street, and route 17 enters Nicollet Avenue at 24th Street.

The portion of the corridor crossing the Mississippi River on Hennepin Avenue bridge is served by the following additional routes:

- **Route 4 (New Brighton-Johnson St-Bryant Av-Southtown)** – approximately 7-15 minute service during rush hour and 15 minute service during midday – serves approximately 7,000 weekday riders[5] – crosses the Mississippi River on the Hennepin Avenue bridge
- **Route 6 (U of M-Hennepin-Xerxes-France-Southdale)** – approximately 7.5 minute service during rush hour and 10 minute service midday - serves approximately 9,000 weekday riders[10] – crosses the Mississippi River on the Hennepin Avenue bridge
- **Route 61 (E Hennepin Av-Larpenteur Av-Arcade St)** – approximately 15-30 minute service during rush hour and 30 minute service midday – serves approximately 3,000 weekday riders[10] – crosses the Mississippi River on the Hennepin Avenue bridge

Crossing the corridor in the east-west direction, Routes 21 and 53 on Lake Street together make Lake Street the routes with the highest ridership and most frequent service in the region. Like routes 10 and 18, Route 21 is part of Metro Transit's High-Frequency Network. In addition, Lake Street is included in corridor for the ongoing Midtown Corridor AA. Other primary east-west routes connecting with the corridor include Route 32 (Lowry Avenue), Route 2 (Franklin Avenue), Route 23 (38th Street) and Route 46 (46th Street).

The Hiawatha light rail (Blue Line) runs southeast from downtown along Hiawatha Avenue to the airport and to the Mall of America. The Nicollet Mall Station at 5th Street in downtown Minneapolis intersects the Nicollet-Central corridor. Future LRT lines will also intersect the corridor on 5th Street in downtown: Central Corridor LRT (Green Line) and Southwest LRT (Green Line extension).

[5] Source: Ridership figures provided by the City of Minneapolis based on average weekday ridership in April 2011.

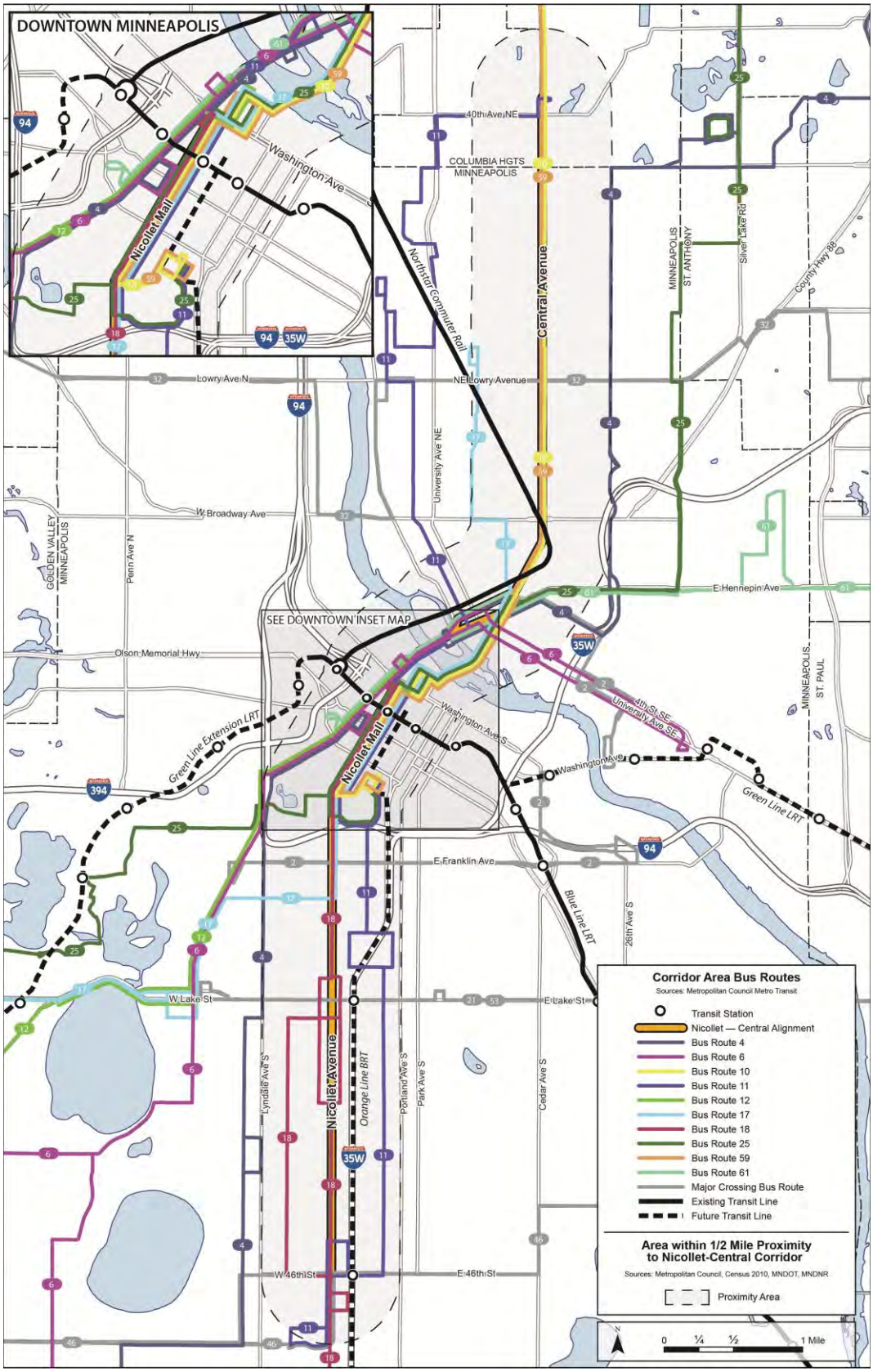
Within downtown Minneapolis, Marquette and 2nd Avenues operating parallel to Nicollet Mall serve most downtown express bus service and the future I-35W BRT service with dual bus-only lanes. Marquette and 2nd Avenues currently serve over 1,300 weekday bus trips[6] and 22,000 passenger boardings[7].

The Northstar Commuter Line runs from downtown Minneapolis north along Highway 10 to Big Lake. The alignment crosses the corridor at West Broadway and Central and runs parallel to the Nicollet-Central corridor as it travels into downtown Minneapolis; however, there are no existing or planned stations in Minneapolis outside of downtown. The station downtown is located a half mile west of the corridor.

The 22-mile I-35W South Highway BRT (Orange Line) parallels the Nicollet corridor south of downtown with stations approximately every 2-3 miles. Pre-BRT implementation of dynamic priced shoulder lanes and high occupancy/toll lanes has been completed, as well as an online transit station at 46th Street. Early design work is currently being developed for the Lake Street Transit/Access Project, and additional corridor planning is being conducted by Metro Transit, Minnesota Department of Transportation (MnDOT), and other agencies. Planned stations near the study area include downtown stations on Marquette and Second Avenues, Lake Street and 46th Street. Figure 3-1 presents the existing and planned transit routes in the corridor.

[6] Source: Metro Transit, February 2012.
[7] Source: Metro Transit March-May 2009 APC data

Figure 3-1: Existing and Planned Transit Routes in the Corridor



3.2. Transit Ridership in the Corridor

The two primary bus routes in the corridor, routes 10 and 18, are among the highest ridership routes in the region, serving over 20,000 weekday rides. These bus routes extend beyond the 9-mile study corridor, covering a total corridor distance of approximately 25 miles; however, there is strong existing demand for short passenger trips within the study corridor. Analysis of Metro Transit boarding and alighting data from Fall 2011 shows these routes averaged 20,300 daily boardings on weekdays. Seventy percent, 14,300, of these trips occur entirely within 9.2 mile corridor from Columbia Heights Transit Center, Columbia Heights to 46th Street in south Minneapolis[8]. While on an even shorter segment between Lowry Avenue and Lake Street contains 53 percent of the trips, or 10,700 trips, as shown in Tables 3-2, 3-3 and Figure 3-2.

Table 3-2: Ridership on Route 10 and 18 Compared with 9-mile Study Corridor

ROUTE AND TRAVEL PATTERN:	NUMBER OF WEEKDAY PASSENGER TRIPS	PERCENTAGE OF WEEKDAY PASSENGER TRIPS
ROUTE 18	*11,600*	*100%*
Travelling entirely north of 46th Street	*8,900*	*77%*
Crossing 46th Street	*2,100*	*18%*
Travelling entirely south of 46th Street	*600*	*5%*
ROUTE 10	*8,700*	*100%*
Travelling entirely south of 41st Ave NE	*5,400*	*62%*
Crossing 41st Ave NE	*2,500*	*29%*
Travelling entirely north of 41st Ave NE	*800*	*9%*
ROUTES 10 AND 18 COMBINED	*20,300*	*100%*
Travelling entirely within 9-mile study corridor	*14,300*	*70%*
Crossing 46th Street or 41st Avenue NE	*4,600*	*23%*
Travelling entirely outside 9-mile study corridor	*1,400*	*7%*

Source: Metro Transit: September 2011 APC and farebox data provided by Metro Transit

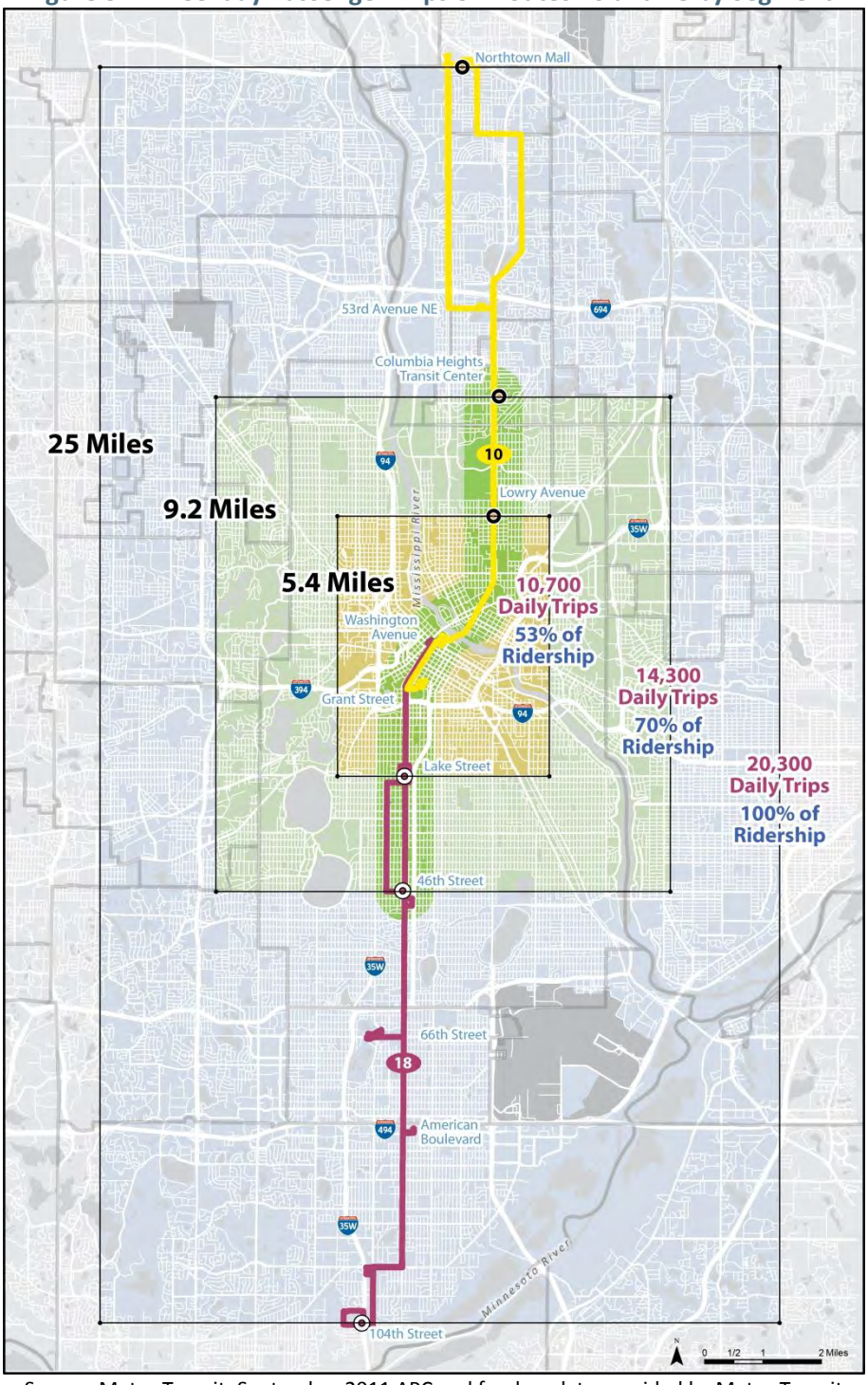
[8] Transit passenger trips were considered to be entirely within the segment if they were a boarding on an inbound bus trip or an alighting if they were on an outbound bus trip.

Table 3-3: Ridership on Routes 10 and 18 Compared with 5-mile Segment

ROUTE AND TRAVEL PATTERN	NUMBER OF WEEKDAY PASSENGER TRIPS	PERCENTAGE OF WEEKDAY PASSENGER TRIPS
ROUTE 18	*11,600*	*100%*
Travelling entirely north of Lake Street	*6,500*	*56%*
Crossing Lake Street	*3,300*	*28%*
Travelling entirely south of Lake Street	*1,800*	*16%*
ROUTE 10	*8,700*	*100%*
Travelling entirely South of Lowry Ave	*4,200*	*48%*
Crossing Lowry Ave	*3,100*	*36%*
Travelling entirely North of Lowry Ave	*1,400*	*16%*
ROUTES 10 AND 18 COMBINED	*20,300*	*100%*
Travelling entirely within 5-mile segment	*10,700*	*53%*
Crossing Lake Street or Lowry Ave	*6,400*	*32%*
Travelling entirely outside 5-mile segment	*3,200*	*16%*

Source: Metro Transit: September 2011 APC and farebox data provided by Metro Transit

Figure 3-2: Weekday Passenger Trips on Routes 10 and 18 by Segment[9]



Source: Metro Transit: September 2011 APC and farebox data provided by Metro Transit

[9] Inbound boardings and outbound alightings.

3.3. Previous Transit Studies in the Corridor

A significant amount of transit planning has already been completed for the Nicollet-Central corridor by both the City of Minneapolis and Metropolitan Council/Metro Transit.

City of Minneapolis Studies

Between 2006 and 2009, the City of Minneapolis completed a series of transportation plans and studies as part of the *Access Minneapolis Transportation Action Plan* process. This planning process was conducted with the assistance of a project management team including Metro Transit, Metropolitan Council, Hennepin County and Minnesota DOT and a 30-member project steering committee of agency, community, and business and neighborhood stakeholders. An extensive public outreach effort was conducted, including 21 public open houses and numerous other meetings with stakeholders. The *Downtown Transportation Action Plan*, the *Streetcar Feasibility Study* and the *Citywide Transportation Action Plan* are particularly relevant to the Nicollet-Central corridor.

The *Citywide Transportation Action Plan*, adopted by City Council in 2009, recommends that the City work with its partner agencies to establish and maintain a Primary Transit Network (PTN) that is a permanent network of all-day transit service, either bus or rail, that is reliable, frequent (at least every 15 minutes or better at least 18 hours a day, 7 days a week), maintains reasonable speeds, and has vehicles and passenger facilities that have the same amenities and quality of service as rail transit. Nicollet and Central avenues were identified as definite, near-term PTN corridors. Feedback during the public involvement process indicated significant public support for this concept, particularly in high-density neighborhoods within relative proximity to the downtown area.

The purpose of the *Minneapolis Streetcar Feasibility Study*, completed in 2008, was to determine the physical, operational and financial feasibility of providing streetcar service as a high quality transit and urban circulator option on the most heavily used PTN corridors in Minneapolis. Streetcar service would improve the quality of transit service in those corridors and support the city's objectives for strengthening these neighborhoods and directing growth into existing transit corridors. The feasibility study evaluated 14 of the most heavily used PTN corridors for streetcar and proposed a long-term 20-50 year vision for a streetcar network of seven streetcar corridors in Minneapolis, including Nicollet and Central avenues, (see Appendix B for key excerpts from the Minneapolis Streetcar Feasibility Study final report).

The goals for the long-term streetcar network, as stated in the *Minneapolis Streetcar Feasibility Study*, are to:

- Increase transit ridership by regular and occasional riders, especially by providing enhanced and attractive local circulation service connecting city neighborhoods with the downtown core.
- Increase the attractiveness of transit to new markets by providing a unique vehicle and customer experience.
- Provide connections and distribution between high capacity regional transit and local neighborhoods.
- Enhance the environment by replacing diesel bus service with clean and quiet electric vehicles.
- Catalyze and organize development and redevelopment potential around a transit investment by providing a quality transit line with a sense of permanence.

In 2007, the City Council also adopted the *Access Minneapolis Downtown Transportation Action Plan*, which recommended consolidating north-south local transit service on Nicollet Mall and north-south commuter express transit service on Marquette and 2nd Avenues and to improve local transit operations on Nicollet Mall. This recommendation was one of three alternatives for north-south transit service evaluated. The two alternatives

which were eliminated included: (1) operating a shuttle bus on Nicollet Mall connecting two peak interception terminals at the north and south ends of downtown and (2) operating express buses on Nicollet Mall during the peak period only and operating a combination of local and express buses on Marquette Avenue. The recommendation was implemented in 2009-2010 with the reconstruction of Marquette and 2nd Avenues with dual bus-only lanes, the relocation of express bus routes from Nicollet Mall to Marquette and 2nd Avenues, the conversion of Nicollet Mall local buses to 100% hybrid electric vehicles, widening the spacing of bus stops on Nicollet Mall from every block to every other block, and the implementation of a free ride service on Nicollet Mall using route 10 and 18 trips that end in downtown.

Metropolitan Council/Metro Transit Studies

In preparation for an update to the Regional Transportation Policy Plan, Metropolitan Council completed the *2030 Transit Master Study* in 2008 to evaluate and rank more than two dozen potential rail and busway corridors in the Twin Cities region, including a 17-mile Central Avenue NE LRT corridor and a 12-mile Nicollet Avenue LRT corridor. The Nicollet Corridor and the Bottineau Corridor were the two highest ridership LRT corridors in the study (excluding Central Corridor (University Avenue) LRT and Southwest LRT), both earning high ridership and medium cost evaluation ratings. LRT on the Central Avenue corridor was shown to have lower ridership than Nicollet, but still outperformed many of the other LRT corridors. Right-of-way constraints on Nicollet and Central avenues were identified as a major implementation issue for LRT in these corridors; therefore, the study recommended Arterial BRT service on Nicollet and Central avenues to emulate the benefits of LRT. The *2030 Transportation Policy Plan* Update in 2010 also recommended Arterial BRT on Nicollet and Central avenues.

In 2012, Metro Transit completed the *Arterial Transitway Corridors Study* to develop a facility and service plan to enhance efficiency, speed, reliability, customer amenities and transit market competitiveness on high demand local bus corridors identified for the Arterial BRT corridors in the Metropolitan Council's *2030 Transportation Policy Plan*, including an 8.8-mile Nicollet Avenue corridor and a 13.5-mile Central Avenue. Nicollet and Central avenues were among the highest performing corridors in the study, but the study did not recommend them for near-term implementation due to the upcoming alternatives analysis. (See Appendix C for key excerpts from the Arterial Transitway Corridors Study final report.)

In addition, LRT was previously studied for a portion of the Nicollet-Central corridor through the Southwest Transitway project. The locally preferred alternative for the Southwest Transitway was adopted by the Metropolitan Council in May 2010 as LRT in the Kenilworth corridor through southwest Minneapolis between downtown and Eden Prairie. One of the alternative alignments considered but not ultimately recommended was the Midtown/Nicollet alignment. Within the Nicollet-Central study area, this LRT alignment was to run under Nicollet Avenue in a cut and cover tunnel between 29th Street and Franklin Avenue and at-grade on Nicollet Avenue/Mall between Franklin Avenue and 3rd Street S.

3.4. Integration with Existing Service

The Nicollet-Central Transit Alternatives study will further analyze the existing and future transit service listed in the previous section that directly serves and connects to the corridor. For bus routes operating primarily along Nicollet Avenue and Central Avenue (Routes 10, 11, 17, 18, 25, 59 and 568), the Study will evaluate how the proposed enhanced service best integrates with the existing service. It will be important to continue to provide a frequent and high level of service to this area that connects transit users with desired destinations and provides a reliable, operable transportation system. Other important areas for integration with existing transit service include:

- Connections to I-35W BRT in downtown and along the corridor
- Connections to intersecting bus routes

- Transit trips continuing south along Nicollet Avenue
- Connections to the network of routes serving Columbia Heights Transit Center
- Transit trips continuing north along Central Avenue

While extensive planning work remains for the corridor, there are three basic categories of options for integrating streetcar or enhanced bus with existing transit services in the corridor. Some combination of the following options may also be considered:

- Replace existing bus service. Replace some or all bus trips with urban circulator trips. Because many trips on the existing primary bus routes in the corridor (routes 10 and 18) extend beyond the termini of the study area, replacing all bus trips with urban circulator trips and forcing existing customer to transfer between services would have a significant negative impact on many existing transit customers. Replacing a portion of existing bus trips with urban circulator trips based upon existing short lines or existing transit demand patterns is also an option.
- Modify existing bus service. Modify existing bus service to operate on a limited stop or non-stop basis, providing a faster service for longer-distance trips in the corridor.
- No change to existing bus service. Maintain existing bus service as is, increasing the passenger-carrying capacity in the corridor, but duplicating service and potentially negatively impacting the reliability of all transit operations in the corridor.

3.5. Operations and Maintenance Facility

The location of an Operations and Maintenance Facility (OMF) will be further evaluated during the Nicollet-Central Transit Alternatives study. It is important that the location chosen not conflict with planned or future development opportunities. The project also needs to determine what support facilities are associated with each alternative and ultimately the LPA. For bus alternatives, support facilities may be easier to identify and provide for given the existing regional facilities for bus operations and maintenance. However, rail alternatives would entail, at a minimum, a streetcar storage and light maintenance facility somewhere along the corridor where right-of-way is limited and such a facility might not be the highest and best use. The Nicollet-Central Transit Alternatives Study will need to determine various aspects of this function, including the size (acreage) of the facility; functions to be housed within the facility; non-revenue track between the facility and mainline; integration with existing operations and maintenance facilities and/or functions; etc. These aspects have cost implications that affect the implementation plan. The City of Minneapolis conducted a preliminary evaluation of potential OMF sites in 2008.

4. Roadway

4.1. Bridges

The corridor traverses the Mississippi River over the Hennepin Avenue bridge (main channel), and the Hennepin and 1st Avenue bridges (east channel). The corridor also travels over I-94 on Nicollet Avenue south of downtown. This study will determine whether these existing bridges have the structural capacity to carry additional loads entailed by any rail transit alternative to be considered, and what improvements could be needed to do so. For the locations where the corridor crosses under a bridge, the vertical clearance may be very close to the minimum and could impact rail transit operations and construction. The alignment crosses under the bridge on Central Avenue between 14th Avenue NE and 18th Avenue NE that carries the Burlington Northern Santa Fe (BNSF) Railroad. This bridge is being replaced by MnDOT, the city of Minneapolis and BNSF Railway. For this underpass, the Nicollet-Central Transit Alternatives Study will coordinate with MnDOT.

4.2. Roadway Configuration

The following roadways are within the Nicollet Central Corridor: Central Avenue, NE, East Hennepin Avenue, 1st Avenue NE, Hennepin Avenue S, Washington Avenue S, Nicollet Mall and Nicollet Avenue. Table 4-1 presents the existing roadway cross sections including the number of parking, bike/shared, driving and turn/median lanes along with the sidewalk and roadway width. Nicollet Avenue, owned by the City of Minneapolis, is a two-lane, two-way commercial corridor with on-street parking that runs through some of the most densely populated neighborhoods in Minneapolis. Nicollet Mall is a 2-lane pedestrian and bus-only mall, owned by the City of Minneapolis. Washington Avenue S (County Road 152) is a three-lane, two-way street with off-peak on-street parking in downtown Minneapolis. Hennepin and 1st Avenues NE (County Road 52) are 3-lane, one-way streets with on-street parking through a high-density, mixed-use activity center. Central Avenue (Trunk Highway 65), owned by MnDOT, is a four-lane, two-way street with on-street parking along a commercial corridor in northeast Minneapolis.

4.3. Traffic

Traffic in the corridor is relatively heavy. Nicollet Avenue has daily traffic counts averaging 9,000 to 12,000 vehicles per day.[10] Traffic on Central is slightly heavier with between 15,000 and 18,000 vehicles per day. These volumes warrant the existing geometry of the roadways. Along Nicollet Mall in the downtown central business district, the corridor is a transit and pedestrian mall (automobiles are not allowed).

[10] Source: *The Minneapolis Plan for Sustainable Growth, City of Minneapolis, adopted October 2009.*

Table 4-1: Approximate Existing Roadway Cross-Sections

Street Name	From	To	Approx. Miles	Traffic Direction	Ped Zone (ft)	Roadway								Ped Zone (ft)	Street Total (ft)
						Parking Lane	Bike/ Shared Lane	#Travel Lane(s)	Turn Lane/ Median	#Travel lane(s)	Bike/ Shared Lane	Parking Lane	Street Total		
Central Ave NE	37th Ave NE	27th Ave NE	1.3	Two-way	15	x		2	x	2	15	x	70*	15	100
Central Ave NE	27th Ave NE	18th Ave NE	0.8	Two-way	15	x		2		2	15	x	70*	15	100
Central Ave NE	18th Ave NE	Broadway St NE	0.5	Two-way	8	x		2		2	8	x	64*	8	80
Central Ave NE	Broadway St NE	Hennepin Ave E	0.7	Two-way		4-lane divided roadway, no parking, sidewalks									
East Hennepin Ave	Main Street	2nd Street	0.05	One-way (NB)				2		1			40		70
East Hennepin Ave	2nd Street	Central Avenue	0.3	One-way (NB)	12	x		2		1		x	56	12***	80
1st Ave NE	Central Ave NE	2nd St SE	0.35	One-way (SB)	12	x		2		1			56	12	80
1st Ave NE	2nd St SE	Main St SE	0.05	One-way (SB)	15			2		2			40	15	70
East Hennepin Ave (Bridge)	Main St SE	1st S	0.1	One-way (NB)	0			2		1			40	10	50
1st Ave (Bridge)	Main St SE	1st S	0.1	One-way (SB)	0			2		1			40	10	50
Hennepin Ave S	1st St S	Washington Ave S	0.15	Two-way	12		x	2	x	2	x		76	12	100
Washington Ave S	Nicollet Mall	Hennepin Ave S	0.05	Two-way	11			3	x	3			88	11	110
Nicollet Mall*	Washington Ave S	Grant St W	0.9	Two-Way	27			1		1			26	27	80
Nicollet Ave	Grant St W	29th St W	1.3	Two-way	15	x		1	x	1		x	50*	15	80
*Interuption of roadway at Kmart															
Nicollet Ave	Lake Street	46th St	2.0	Two-way	15	x		1		1		x	50*	15	80

*Sidewalk width on Nicollet Mall (transit and bike only) varies between 15 and 40 feet. ** under reconstruction 2012-2013 from Lake Street *** Sidewalks are extended into the parking lane in several locations.

4.4. Parking

As residential and commercial development continues in downtown and throughout the corridor, the demand for parking will increase. Maintaining access to existing parking facilities will be important. The Nicollet-Central Transit Alternatives study will evaluate the potential impacts of proposed enhanced transit has on the existing parking supply. Parking in the southern portion of the corridor along Nicollet is largely on-street and is anticipated to be important to the businesses along the corridor. Limiting on-street parking is a primary concern of the business owners in this area. In Downtown, parking is currently not allowed along Nicollet Mall; therefore the parking supply would not likely be directly impacted by the proposed enhanced transit. In the northeast section of the corridor along Central Avenue, parking is largely on-street north of 18th Street. The East Hennepin Activity Center between 1st Avenue and Hennepin Avenue northeast of downtown is a growing commercial and residential area with on-street, surface and structure parking. It will be important to maintain access to and from these existing parking areas during construction and on to revenue operations. Parking capacity and access to parking facilities will be evaluated throughout the corridor to limit the potential impacts.

4.5. Driveways

The portions of the corridor north and south of the Nicollet Mall include numerous driveways that provide access to and from commercial, retail and residential areas. The Nicollet-Central Transit Alternatives study will identify these access points to determine a balance between access and mobility improvements as part of the project.

4.6. Construction Projects

- **Nicollet Avenue S** - Roadway reconstruction is currently underway on Nicollet Avenue between 40th Street and Lake Street and will be completed in 2013.
- **Nicollet Avenue S Reopening** - In the 1970s, Nicollet Avenue between 29th Street and Lake Street was vacated for the development of a Kmart store, as part of an overall economic development strategy for the area. As a result, there is currently a major interuption in the street grid at the intersection of Lake Street and Nicollet Avenue. The re-opening of Nicollet Avenue at Lake Street, including rehabilitation of the Nicollet Avenue Bridge over the Midtown Greenway, has been a priority for many years and in many City-adopted plans. Funding for a portion of the cost to reopen this street is included in the city's capital improvement program, and the City of Minneapolis is currently working to advance this project.
- **Nicollet Mall** – The infrastructure on Nicollet Mall is deteriorating and may need to be reconstructed in the near future. Efforts are underway to secure funding to reconstruct Nicollet Mall. Improving this premier public space is a manner that enhances the economic vitality of downtown is important to many downtown stakeholders. This reconstruction project is a priority for many in the downtown business community.
- **Washington Avenue S** – Hennepin County will be reconstructing Washington Avenue S between Hennepin Avenue and 5th Avenue S in downtown 2014.
- **Central Avenue NE Railroad Underpass** - The bridge on Central Avenue between 14th Avenue NE and 18th Avenue NE that carries the Burlington Northern Santa Fe (BNSF) Railroad is being replaced by the MnDOT, the city of Minneapolis and BNSF Railway. The new structure for the railroad traffic will raise the existing vertical clearance for Central Avenue traffic from 14'-10" to 16'-0." The project will also resurface Central Avenue between 14th Avenue NE and 18th Avenue NE and construct new sidewalks and retaining walls.
- **Central Avenue NE Resurfacing** - Central Avenue from Washington Avenue to 14th Avenue NE, 18th Avenue to 27th Avenue and from 37th Avenue NE to 53rd Avenue NE is being resurfaced. In addition to resurfacing, this project includes pedestrian and bicycle improvements. Pedestrian accessibility

improvements include curb cuts, truncated domes and signal system upgrades. Between Washington Avenue and 27th Avenue NE, bikes lanes and sharrows ('shared arrows' that indicate a designated bike route) will be implemented.

4.7. Freight

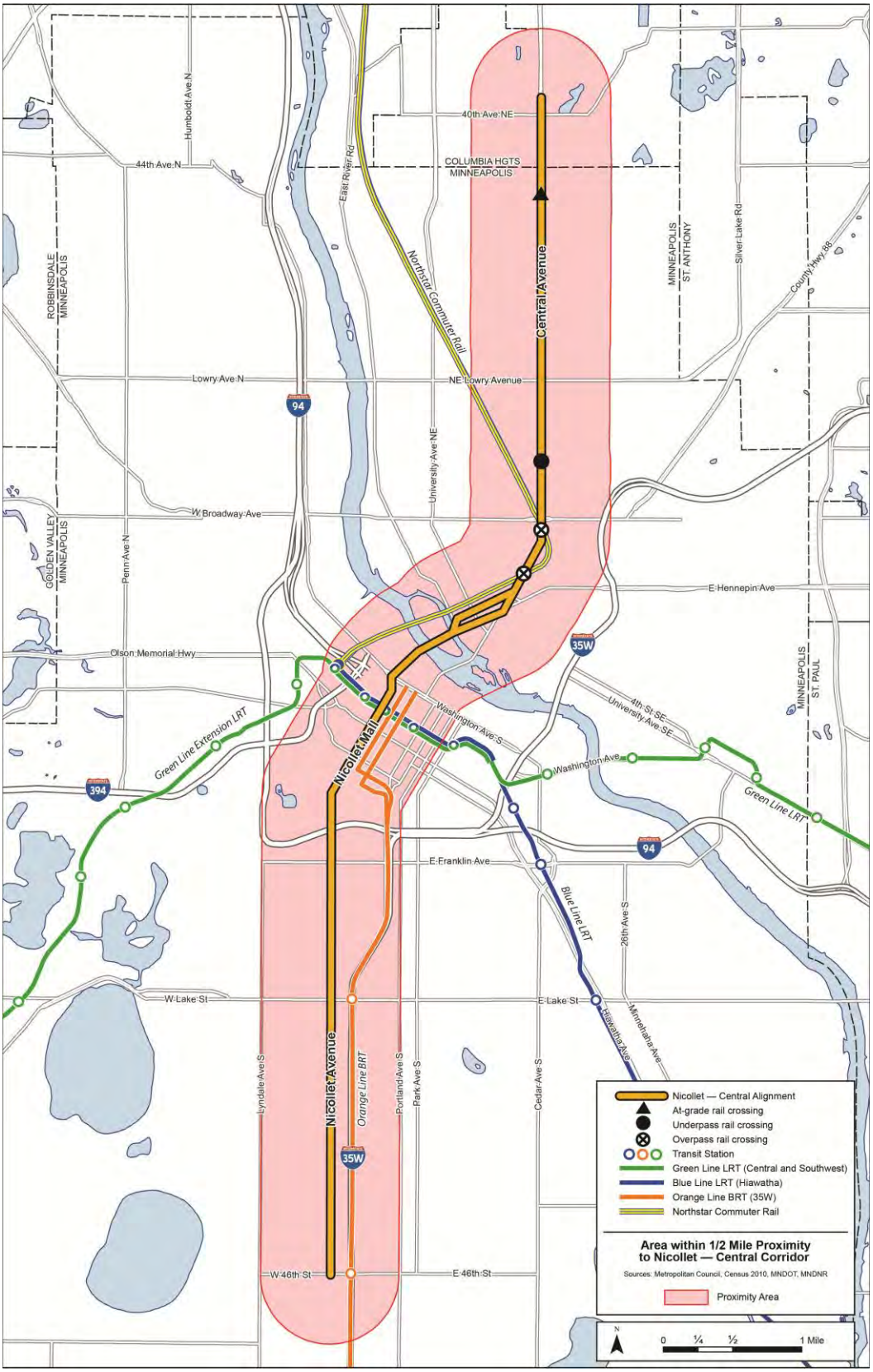
Freight movement is expected to increase in the region with the projected increase in population and employment. Much of the local freight traffic is destined for the seven-county region.[11] According to the *2030 Transportation Policy Plan*, communities that have existing rail service should expect rail operators to maintain or even increase service in their area. Freight movement is expected to shift from trucks and other freight operators to rail as fuel prices increase.

4.8. Rail Crossings

The corridor crosses railroad tracks at four locations on Central Avenue: two overpasses (between 8th Street and 3rd Avenue and Broadway Street) and one underpass (between 14th Street and 18th Street) and one at-grade just south of Columbia Parkway, as shown on Figure 4-1. The at-grade crossing just south of Columbia Parkway will need to be analyzed for any rail transit alternative. This at-grade crossing could require grade separation, and this solution would entail large capital investment, cost and impacts to the adjacent environment. Structures over existing railroad tracks would also need to be analyzed to determine the extent of potential improvements to these structures that may be needed in order to accommodate additional loads associated with a rail transit alternative.

[11] *Metropolitan Council 2030 Transportation Policy Plan*, November 2010.

Figure 4-1: Railroad Crossings



5. Non-Motorized Transportation

5.1. Pedestrians and Bike Lanes

The Minneapolis Bicycle Master Plan recommends the following portions of the corridor for bicycle facilities (from north to south):

- Central Avenue NE – bicycle lanes and shared use/sharrow markings
- Hennepin and 1st Avenues NE – bicycle lanes
- Hennepin Avenue bridge – bicycle lanes
- Nicollet Mall – shared bicycle/bus lanes
- 1st and Blaisdell Avenues S – one-way bicycle lanes (Grant St to 40th Street)
- Nicollet Avenue – bicycle lanes (south of 40th Street)

The corridor also connects with several major on-street and off-street bikeways, including the Midtown Greenway Trail, the West River Parkway Trail, the Cedar Lake Trail, and the St. Anthony Parkway Trail. Minneapolis has a very high bicycle mode share for work trips, with over 4.3% of workers living in Minneapolis commuting by bicycle.[12] There are also several public bicycle-sharing kiosks located along the corridor.[13] Specifically, if the LPA is streetcar, the project will need to address safety of bicyclists within the corridor beyond the bus service that exists today. There is danger associated with thinner bicycle tires getting caught in tracks.

Pedestrian access is an issue throughout the corridor but particularly along Nicollet-Mall. Nicollet-Mall north of 7th Street has an estimated 20,320 pedestrian trips per day.[14] Maintaining pedestrian access will be important for patrons and businesses along Nicollet Mall. There are currently sidewalks throughout the corridor and in many areas enhanced streetscape. Accessibility for people with disabilities will be an important consideration as alternatives are developed. The Minneapolis Pedestrian Master Plan provides guidance, particularly on city-wide policies and practices, for increasing and improving walking in Minneapolis.

[12] Source: 2008 American Community Survey, U.S. Census.
[13] Source: The NiceRide Minnesota public bicycle sharing system (www.niceridemn.org)
[14] Source: 2011, *Minneapolis Bicyclist & Pedestrian Count Report*, City of Minneapolis.

6. Funding and Governance

The *2030 Transportation Policy Plan (TPP)*, adopted by the Metropolitan Council, is the Twin Cities regional long-range transportation plan. Transitway modes in the plan include Commuter Rail, LRT, dedicated busway, Highway BRT, and Arterial BRT. The plan identifies Nicollet Avenue and Central Avenue for future Arterial BRT. Streetcar is not one of the transitway modes recommended in the Policy Plan; however, the Plan states that the Metropolitan Council:

> …will collaborate with local units of government to determine where and when streetcars may be appropriate. If it is determined that streetcars provide positive, significant, and cost-effective transportation benefits beyond alternative bus, BRT, or LRT investments, capital costs for streetcars might be funded by a combination of local and regional funds and may compete for federal transportation funding. If streetcars do not provide an optimal transportation solution and are pursued primarily for development outcomes they should be funded locally and should not compete with other regional priorities for federal and state transportation funding sources. Regardless of funding source, streetcar service would be expected to integrate seamlessly with the regional transit system.

If the LPA mode is arterial BRT or streetcar, it would be a new mode for the Twin Cities region; there are a number of funding and governance issues that will need to be decided.

6.1. Funding

It is not known at this time how the LPA would be funded either in terms of capital or operating costs. The implementation plan developed at the end of the Nicollet-Central Transit Alternatives study will address a funding strategy.

Capital funding assumptions for transitway modes currently in the *2030 TPP* are as follows:

- LRT, Commuter Rail and Dedicated Busway projects: 50% federal, 30% Counties Transportation Improvement Board (CTIB), 10% State, and 10% local
- Highway BRT: 30% federal, 30% CTIB, 30% State, and 10% local
- Arterial BRT: 50% federal, 50% State/Metropolitan Council

Operating funding assumptions for transitway modes currently in the *2030 TPP* are as follows:

- LRT, Commuter Rail and Dedicated Busway projects: 50% State, 50% CTIB
- Highway BRT: 50% State, 50% CTIB
- Arterial BRT: 100% Metropolitan Council

Streetcar projects around the country are being developed with a variety of different funding sources. Since 2009, at least ten cities have received federal capital grants for streetcar projects through the TIGER and FTA Urban Circulator discretionary funding programs, as well as at least one FTA Small Starts grant. These federal grants have ranged from $11 million to $75 million for streetcar projects with total capital costs between $37 million and $188 million. The share of federal funds for these projects varies widely. The source of local capital funds for these projects also vary widely and include city-generated funds (such as TIF funds, special assessment district funds, parking funds, capital improvement funds), regional funds (including transit sales tax revenues, toll road revenues and other regionally-controlled funds), and some state funds and privately-leveraged funds. Operating funds for streetcar lines currently in revenue service also vary, but often include a combination of city, regional and privately-leveraged funds.

In 2010, the City of Minneapolis completed the *Minneapolis Streetcar Funding Study* to better understand if the City has the funding tools to implement an initial streetcar line. The study concluded that there are viable, locally-controlled funding tools that could contribute to development of an initial, downtown-based streetcar line in the $100-150 million capital cost range if 50% of the capital costs were covered by future federal funding. The most promising local funding tools evaluated included:

- downtown parking fees
- tax abatement with ¼ mile of the corridor
- benefit district assessments

It is assumed that federal funds for capital costs for the Nicollet-Central Corridor would be pursued to implement the LPA. Potential federal funding tools for capital costs include:

- FTA Small Starts program (50 percent of project cots with a maximum $75 million federal contribution and maximum $250 million total project costs)
- Discretionary funding programs, such as TIGER, Urban Circulator Grants, Bus and Bus Facilities Grants, etc.

6.2. Changes at the Federal Level

There are several changes at the federal level relevant to funding opportunities and study process that will need to be monitored carefully as the project progresses.

On June 29, 2012, Congress passed a new transportation authorization bill: Moving Ahead for Progress in the 21st Century (MAP-21). MAP-21 is a two-year authorization and is effective as of October 1, 2012. Key changes relevant to this project include:

- eliminating Alternatives Analysis as a requirement for entering the New Starts/Small Starts program
- eliminating the baseline alternative for modeling
- revising the cost effectiveness measure to be cost per rider, rather than a travel time based cost-effectiveness index
- revising the point at which an LPA is adopted into the long-range transportation plan from prior to entering project development to during project development
- elevating the importance of land use and economic development to be on par with Project Justification and Financial Plan
- adding congestion relief as a project justification factor
- prohibiting FTA from requiring a "medium" rating for any specific project justification criterion

In addition, the FTA published a notice of proposed rulemaking (NPRM) on January 25, 2012 (77 Fed. Reg. 3848) that was accompanied by Policy Guidance document on the proposed changes to the project justification measures. FTA has expressed a goal of publishing a final rule by December 31, 2012. However, it is unclear when and how the NPRM and MAP-21 changes will be reconciled, given that they differ in some areas.

6.3. Further Planning, Design and Implementation

Following selection of an LPA, it will need to be decided which agency will advance implementation. Currently, the City of Minneapolis is leading the AA study.

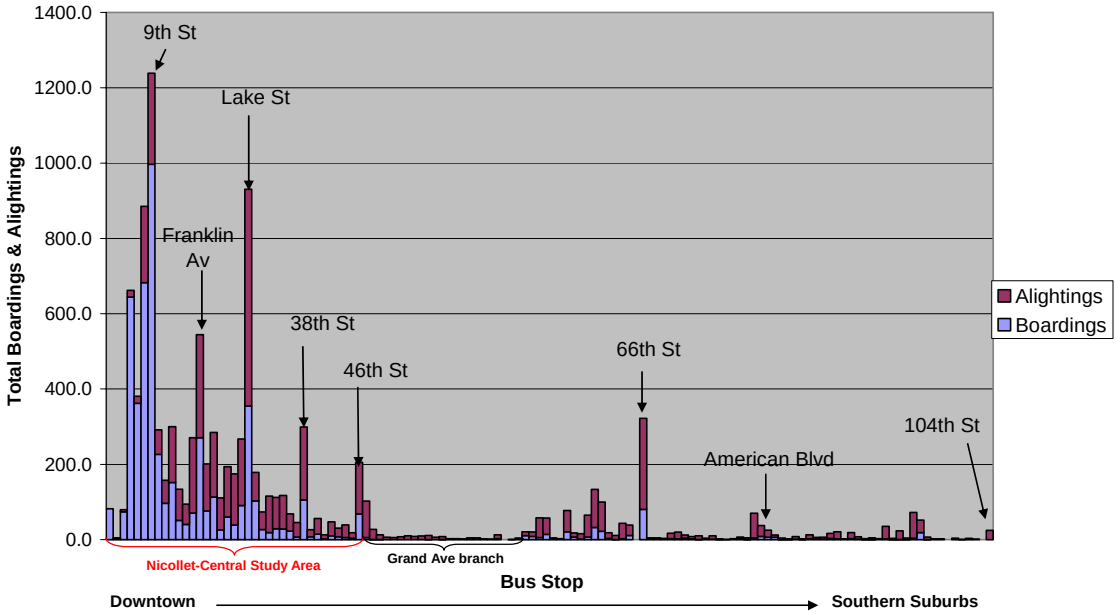
6.4. Ownership and Operations

It is not known who would own and operate the transit enhancement once an LPA is selected and the project is constructed. If the LPA is a streetcar, experience in other cities shows that there are a variety of ownership and operating models. The working assumption for this project is that Metro Transit would own and operate the transit service; however, there has been no agreement by the Metropolitan Council to do so.

APPENDIX A: ANAYLSIS OF ROUTE 10 AND 18 EXISTING USAGE (METRO TRANSIT AUTOMATED PASSENGER COUNTER DATA)

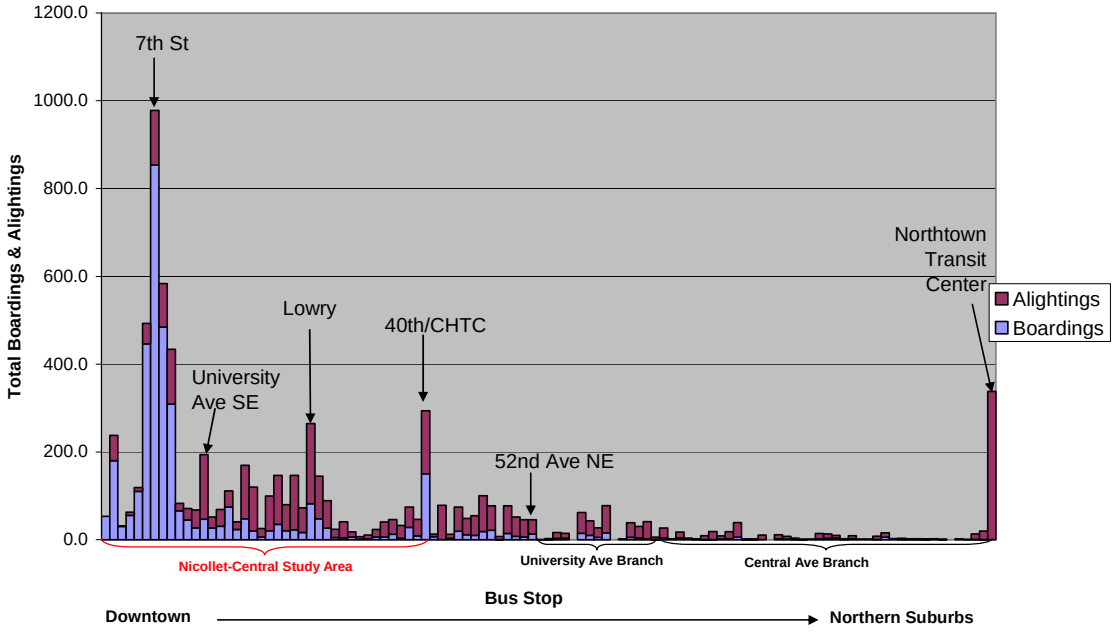
Figure 1: Weekday Outbound Boardings and Alightings

Southbound Route 18 Boardings & Alightings by Bus Stop



Source: Metro Transit Automated Passenger Counter Data, 9/13/2010-11/30/2010 Data Range

Northbound Route 10 Boardings & Alightings by Bus Stop



Source: Metro Transit Automated Passenger Counter Data, 9/13/2010-11/30/2010 Data Range

Figure 2: Weekday Inbound Boardings and Alightings

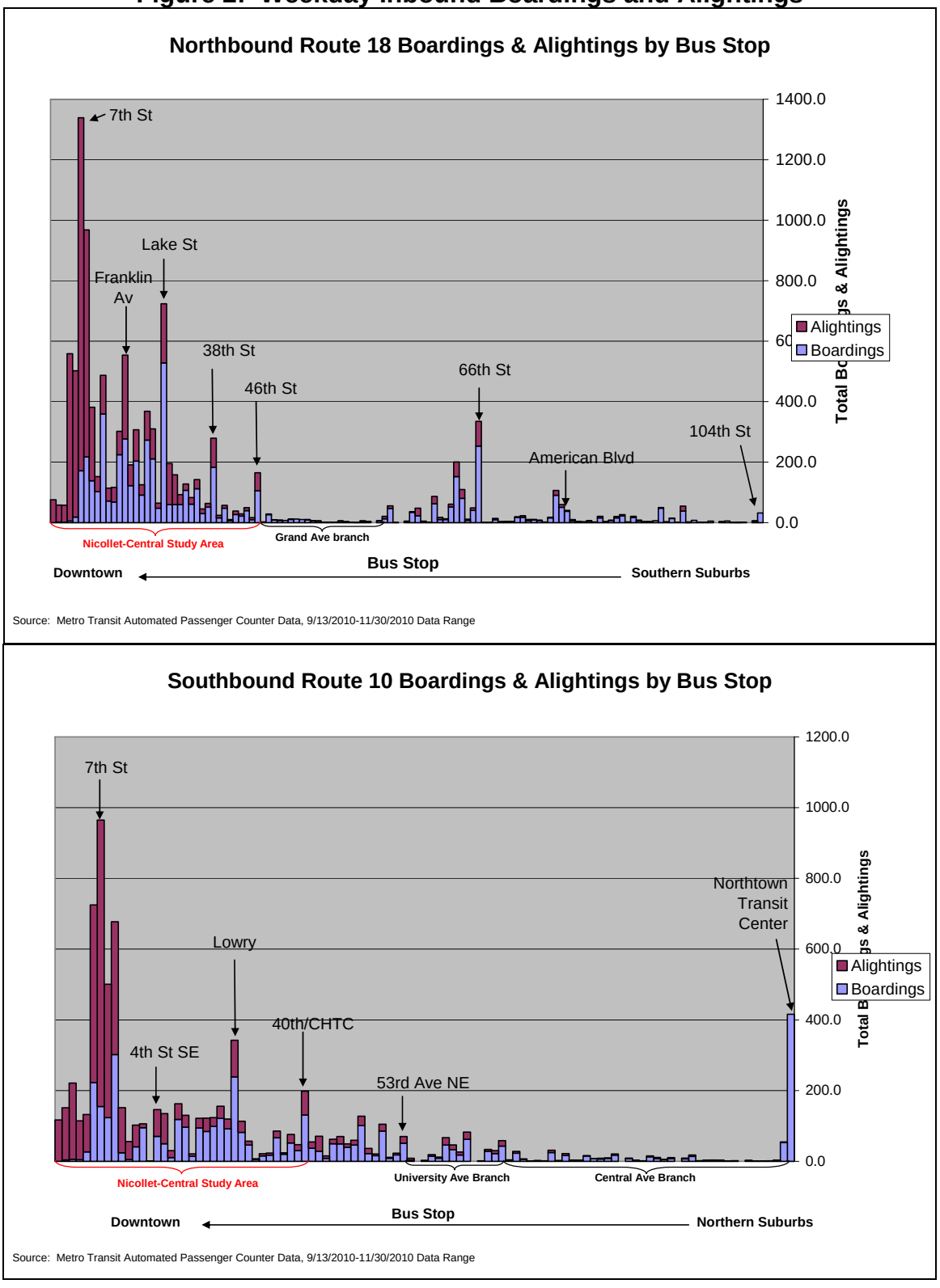
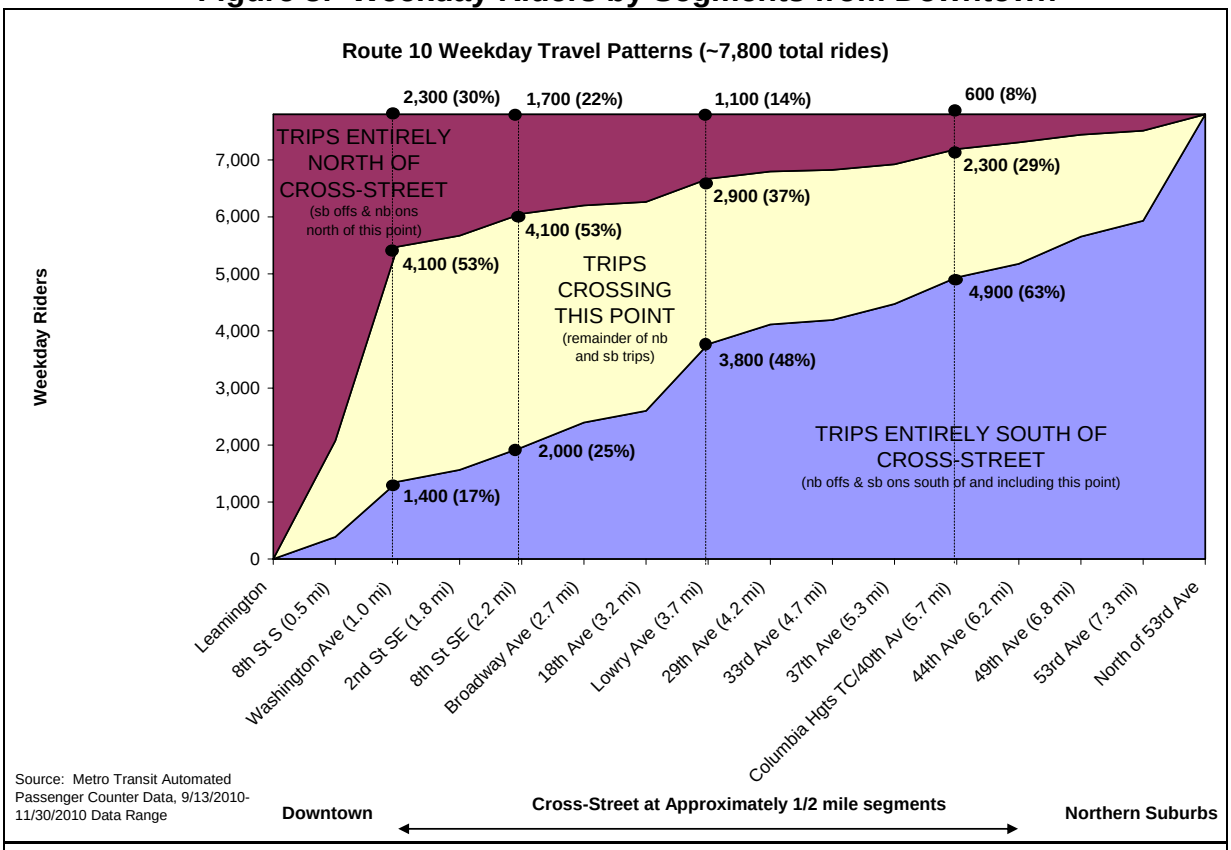
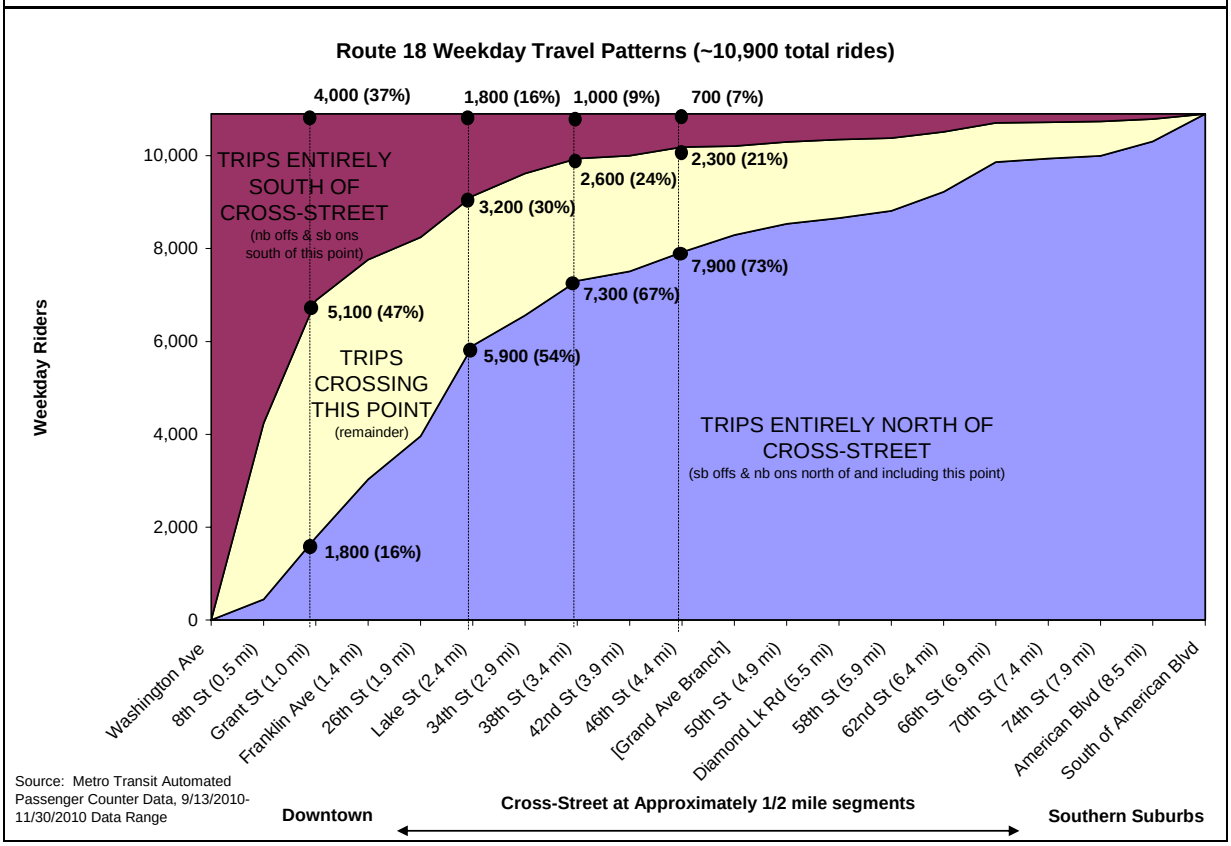


Figure 3: Weekday Riders by Segments from Downtown





APPENDIX B: MINNEAPOLIS STREETCAR FEASIBILITY STUDY

Executive Summary

This Streetcar Feasibility Study is being conducted in conjunction with the Access Minneapolis Ten-Year Transportation Action Plan, which lays the groundwork for transportation improvements that are designed to meet the long-term objectives of the Minneapolis Plan, the City's comprehensive plan.

Streetcars have been successfully implemented or are being implemented in over a dozen cities in North America and are being planned in many more. Streetcar service offers the benefits of a legible, high amenity transit service without the high costs and large scale of a light rail system. The goals for developing a streetcar line include:

- Increase transit ridership by regular and occasional riders; especially by providing enhanced and attractive local circulation service connecting city neighborhoods with the downtown core.
- Increase the attractiveness of transit to new markets by providing a unique vehicle and customer experience.
- Provide connections and distribution between high capacity regional transit and local neighborhoods.
- Enhance the environment by replacing diesel bus service with clean and quiet electric vehicles.
- Catalyze and organize development and redevelopment potential around a transit investment by providing a quality transit line with a sense of permanence.

This study evaluated fourteen Primary Transit Network (PTN) routes identified in the Ten-Year Transportation Action Plan as highly productive transit routes. The study focused on both physical feasibility and the ability of each potential route to meet the objectives articulated above. While all of the seven corridors included in the long-range streetcar network for Minneapolis may not meet each objective to the same degree, they all contribute an important link to a long-term streetcar system.

Long-term Streetcar Network

The long-term streetcar network is a 20-50 year vision for streetcar service in Minneapolis. The long-term network was developed from corridors that are both physically feasible for streetcar service, and that offer the greatest potential for long-term streetcar operation that meet the goals described above.

The fourteen candidate corridors were analyzed in a series of phases using six different categories of evaluation criteria. These were:

- Physical and Geometric Constraints

- Transit Supportive Land Use
- Economic Development Potential
- Transit Operations
- Transit Demand
- Cost-Effectiveness

Figure ES-1 presents a map of the long-term streetcar network and Figure ES-2 highlights the markets served, strengths and constraints for each long-term corridor. As the figures show, all of the corridors in the long-term network are anchored in the greater downtown area, with the exception of the Midtown Corridor. The Midtown Corridor is very different from the other corridors in a number of key ways. These include:

- The Midtown Corridor is a cross-town corridor that is designed to provide local circulation and connectivity between high employment nodes and two light rail lines.
- The exclusive right-of-way offered by the Midtown Corridor provides an opportunity for a completely separated transitway that avoids conflicts between cars and transit vehicles. This separated right-of-way also offers some advantages in the ability to utilize different construction techniques and some sections of single track which reduce construction cost. The right-of-way, which is owned by the Hennepin County Regional Railroad Authority, also brings some unique challenges related to vertical circulation, stop placement and impacts on historic bridges.
- The line would be built alongside a very popular bicycle and pedestrian trail, with unique design and safety constraints presented by the high volume of non-motorized traffic alongside the streetcar.
- The operating plan for the Midtown Corridor streetcar would be essentially dictated by the operation of the light rail lines it touches. Unlike the other streetcar lines, service in the Midtown Corridor would primarily supplement rather than replace existing bus service.
- Unlike the other streetcar lines, the Midtown Corridor service would not be easily visible from the street, particularly Lake Street which is the primary business corridor in the area.
- The Midtown Corridor is not designed for direct physical connections to the other streetcar lines, although connections will be possible at Chicago, Nicollet and Hennepin via vertical circulation.
- The Midtown Corridor would likely be implemented in a single segment, rather than beginning with a starter line (minimal operable segment) and expanding out from there.

Additional information about the Midtown Corridor can be found in Chapter 3. Chapter 4 in this report presents more detailed information about the other long-term corridors and

compares operating costs, capital costs and ridership estimates among each of the long-term streetcar corridors.

Phasing and Implementation

The implementation of most new streetcar systems begins with a relatively low-cost short segment that can serve as a building block to an ultimate line or system. In addition, almost all new streetcar systems in this country have begun with one end "anchored" in the central business district, primarily because all residents have a stake in a healthy downtown. Because of this, "minimal operable segments" were identified for each of the long-term corridors. Initial operating plans, operating costs, capital costs and ridership estimates were then developed for each minimal operable segment. The minimal operable segments are about 2-3 track miles (1- 1.5 route miles) and can serve an important short-term circulation function.

There are several possible phasing scenarios for implementing the long-term streetcar network. One scenario would be to develop a single corridor in logical segments until an entire corridor is built before starting another corridor. The primary advantage of this option would be that a significant share of bus service in the corridor could be replaced with streetcar service. Another option is to construct several minimal operable segments out from the downtown core, before completing any one long-term corridor. While the amount of bus service that could be replaced in this scenario is limited, this scenario may have some benefits in terms of economic development and internal downtown circulation. This report does not make a final recommendation as to which segment(s) should be implemented first, or which phasing approach is more appropriate. Additional work is needed before this decision is made to determine the level of community support in each corridor, the level of private sector interest and the ability to generate sufficient capital and operating funding.

As discussed in Chapter 5, the following minimal operable segments were identified.

- **Hennepin Avenue** from Groveland to 5th Street in downtown (connects to Hennepin Avenue corridor and could be implemented with MOS for Central and University Avenue corridors)
- **5th Street Downtown to East Hennepin area** (connects to Central and University Avenue long-term corridors and could be implemented with MOS for Hennepin Avenue corridor)
- **W. Broadway/Washington Avenue** from 10th Street to either 5th Street/Nicollet or 5th Street/Park Avenue (connects to W. Broadway long-term corridor)
- **Nicollet Avenue** from 13th Street/Grant Street to Washington Avenue (connects to Nicollet Avenue long-term corridor)

- **Chicago Avenue S** from 14th Street/Chicago or Franklin/Chicago to Nicollet Avenue/5th Street via 9th/10th Streets (connects to Chicago Avenue long-term corridor)

As described above, the Midtown Corridor is recommended to be implemented in its entirety due to the close relationship between ridership on the Midtown Corridor and the SW LRT corridor.

The estimated operating costs, capital costs and ridership figures for the minimal operable segments are summarized in Figure ES-3.

Maintenance and Storage Facilities and Potential Sites

One of the most important factors influencing the decision on where to begin building a streetcar network is the ability to find a location to house and maintain the vehicles. These facilities must be located as near as possible to the "revenue" line to minimize the cost. Assuming a fleet size of 8-10 vehicles, a one- to two-acre site would be needed, preferably flat and generally rectangular in shape. Prefabricated steel buildings are a low cost alternative for a maintenance facility if area zoning and design requirements allow for their use.

It is estimated that the development of a fully functional storage and maintenance facility would cost in the range of $2-4 million plus any cost for property acquisition.

Although specific sites were not identified in this study, a general review of current zoning identified the following areas as having potential for location of a streetcar maintenance and storage facility:

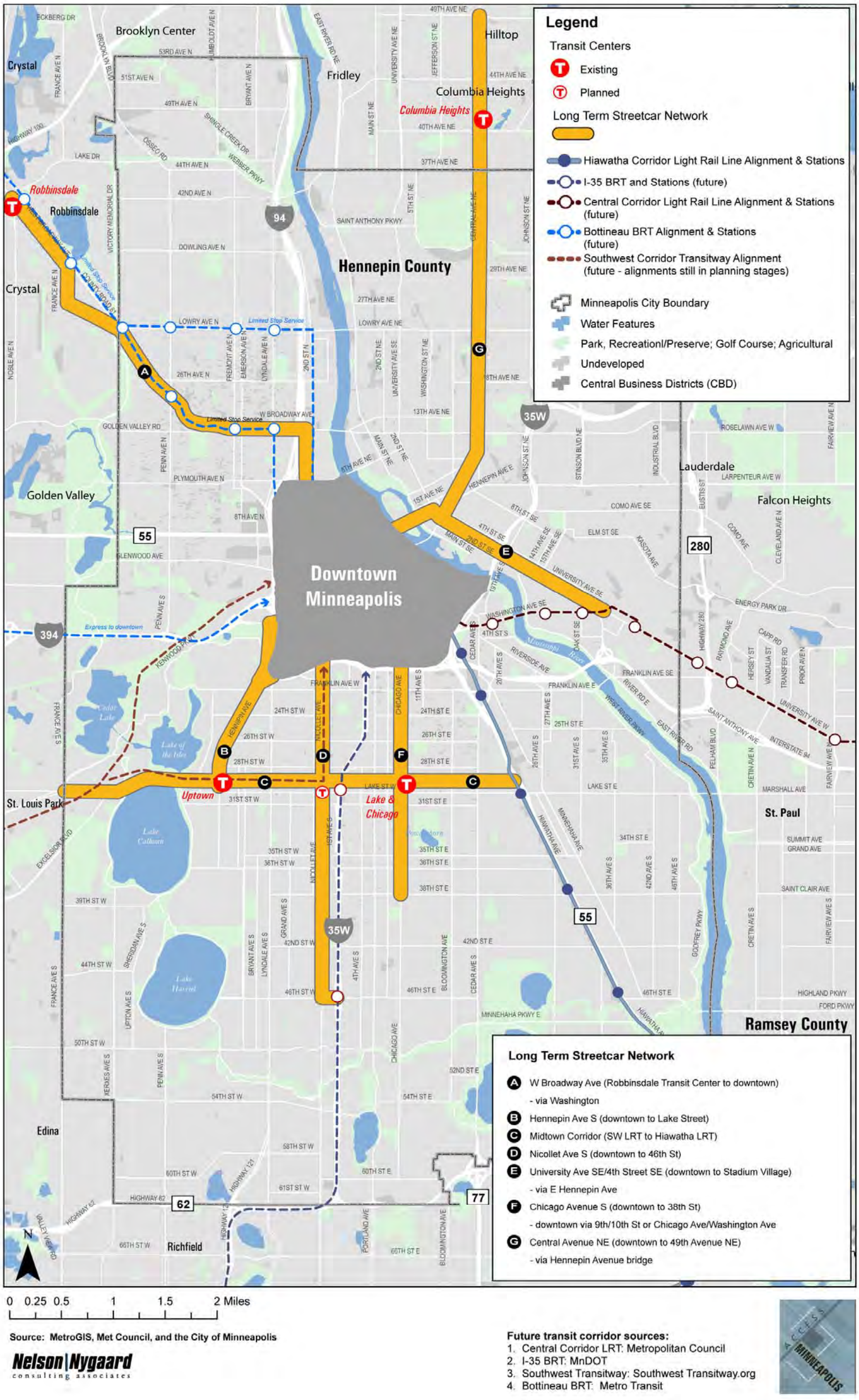
- Dunwoody Boulevard and I-394
- North of the Basilica of St. Mary
- Industrial Park northwest of Washington Avenue and 10th Avenue North
- Area east of Metrodome
- Nicollet Avenue and 31st Street (Bus Garage)
- On the east end of the Midtown Corridor (near 28th St E and 21st Ave S).

Owner/Operator Arrangements

Nationally, streetcar implementation has been approached somewhat differently than implementation of other transit investments, due to the unusual financial arrangements that have often provided a high level of city and private funding to streetcar projects.

Chapter 6 presents several owner/operator arrangements that summarize the experience of other cities (Portland, Memphis and Seattle). Based on the three case studies, and the options that seem most likely in Minneapolis, it is recommended that the City take responsibility for implementation of the first streetcar line (with the possible exception of the Midtown corridor). This recommendation is made primarily because the City is the only governmental unit strongly advocating for streetcar at this time, the funding will likely come from private and city funds, and the initial primary circulation benefits will be to city residents, employees and visitors. Given their experience in successfully operating rail transit in Minneapolis, it is likely that Metro Transit would be the operator of streetcar service, either directly or through contract with the city. Additional dialogue with Metro Transit will be needed to finalize any operating plans for streetcars.

Figure ES-1 Long-Term Streetcar Network (Corridors Outside of Downtown)



Source: MetroGIS, Met Council, and the City of Minneapolis

Nelson|Nygaard consulting associates

Future transit corridor sources:
1. Central Corridor LRT: Metropolitan Council
2. I-35 BRT: MnDOT
3. Southwest Transitway: Southwest Transitway.org
4. Bottineau BRT: Metro Transit

Figure ES-2 Summary of Long-Term Streetcar Corridors

Corridor	Markets Served	Strengths	Constraints
W Broadway Ave	• Short term: Developing close-in high density residential neighborhoods in North Loop to downtown • Long term: Improved local service to residential / commercial neighborhoods in North Minneapolis; long-term potential for moderate density redevelopment in corridor; connecting to regional routes at Robbinsdale transit center	• Economic development potential in North Loop, W Broadway and Robbinsdale. • If aligned with Park Avenue; strong economic development potential in East Downtown. • Good opportunity for maintenance/storage facility near 10th Ave N. • Provides additional service in a developing underserved corridor. • Adequate right of way width; limited conflict with bus volumes.	• Not the strongest mix of uses – mostly residential with limited commercial. • No major special generators along the corridor limits visitor/tourist appeal. • If via Park Avenue, would not penetrate the core of downtown. • Depends on new development to achieve high ridership. • Minimal bus replacement until the route gets to Robbinsdale transit center. • Dependent on alignment and transit technology decisions in Bottineau Blvd Alternatives Analysis (currently underway)
Hennepin Ave S	• Short term: tourists, downtown workers, MCC students and visitors to entertainment district, Walker Art Center / Minneapolis Sculpture Garden and residents in Loring Park. • Long term: Uptown to Dinkytown route connecting downtown with two of the most active neighborhoods in the city. Possible game day connection to Twins new stadium.	• Economic development potential along Hennepin in greater downtown (near 10th Street) and in the East Hennepin area. • Has the highest potential for ridership if Uptown is linked with University • Once route reaches Uptown – significant bus replacement – could potentially replace all buses if alignment serves Uptown-Dinkytown. • Serves multiple anchors, special generators and mix of uses	• Short term conflicts with high bus volumes on Hennepin. • Need solution to I-94 Bottleneck to provide connection to Uptown • Traffic and on-street parking issues on Hennepin between Groveland and Uptown.
Central Ave NE	• Short term: tourists, downtown workers, visitors to entertainment district, East Hennepin residents and businesses connected to core • Long term: Residents and businesses along corridor; connecting regional routes at Columbia Heights transit center	• Moderate economic development potential especially East Hennepin area and near Lowry and Shoreham Yards. • Opportunity to replace significant numbers of buses once the alignment reaches Columbia Heights transit center (if connected to Nicollet). • Maintenance and storage potential at Shoreham Yards.	• Relatively modest ridership until bus replacement begins. • Bridge crossing required to reach downtown (likely Hennepin Avenue). • Needs to be connected to another corridor to serve significant ridership. • No special generators and limited mix of uses.
University Ave SE /4th St SE	• Short term: tourists, downtown workers, visitors to entertainment district, East Hennepin residents and businesses connected to core • Long term: University students, staff and local residents.	• Moderate economic development potential in East Hennepin area and along river. • Long term has the highest potential for ridership if linked with Hennepin and Uptown. • Potential to replace most buses in the Hennepin and University/4th corridor • Serves multiple anchors (downtown, Uptown, U of M), special generators and mix of uses.	• Requires a bridge crossing – likely on Hennepin Avenue.
Nicollet Ave S	• Short term: tourists, downtown workers and visitors to inner core, Convention Center and very dense downtown neighborhoods. • Long term: serves high density residential neighborhoods south of I-94 and all of Nicollet Avenue S., connecting to regional routes at I-35W BRT 46th Street station	• Prominent downtown circulator service on Nicollet Mall • Potential to reduce bus service once the line reaches Lake Street; could essentially eliminate buses on Nicollet Avenue once the line reaches 46th. • Potential for higher density development between downtown and Franklin Avenue. • Opportunity to "knit together" Nicollet Ave at Lake Street with redevelopment potential. • Very high ridership potential, especially as buses are replaced.	• Limited breadth and intensity of economic development potential downtown and south of Franklin (except at Lake Street). • Limited opportunity for maintenance and storage facility if line does not connect to Lake Street. • Dependent on SW LRT Corridor decision. • Requires significant capital costs to connect Nicollet to Lake Street (reconnection of Nicollet Avenue) • Conflicts with high bus volumes on the Nicollet Mall in the short term.
Chicago Ave S	• Short term: Local circulation near-downtown neighborhoods including Elliot Park. • Long term: Potential redevelopment in East Downtown; employment centers at HCMC, Children's Hospital and Abbot-Northwestern Hospital and related facilities.	• Economic development potential especially in Elliot Park and East Downtown. • High ridership potential if the alignment goes to Lake St or 38th St. • Opportunity to replace significant numbers of buses in downtown long term. • Can leverage City street reconstruction.	• Limited opportunity for maintenance and storage facility on line. • Limited economic potential between downtown and Midtown Corridor.
Midtown Corridor	• Local connections to regional service connecting two LRT lines with Uptown and high employment district between I-35 and Chicago; intensification opportunities along corridor; local neighborhood circulation.	• Connectivity to employment and residential from LRT lines • Development potential on corridor but less intensity and breadth than other downtown serving corridors • Existing grade separated ROW – no conflict with other modes; higher speed potential. • Potential for single track construction which reduces cost.	• Trench location requires vertical circulation and limits stop spacing and visibility • Limited opportunity for maintenance and storage facility on line. • Dependent on SW LRT Corridor decision. • Very limited opportunity to reduce bus service (with the exception of Route 53).

Figure ES-3 Summary of Minimal Operating Segments Characteristics

	Hennepin Avenue	*Central and University Avenues*	*W Broadway/Washington Avenue to Nicollet Avenue (Option A)*	*W Broadway/Washington Avenue to Park Avenue (Option B)*	*Nicollet Avenue (Option A)*	*Nicollet Avenue (Option B)*	*Midtown Corridor*	*Chicago / 9th/10th Streets to Nicollet Avenue (Option A)*	*Chicago / 9th/10th Streets to Nicollet Avenue (Option B)*
From	Groveland	5th Street / Hennepin Ave	10th Avenue N/ Washington Ave	10th Avenue N/ Washington Ave	Nicollet Avenue / 5th Street	Nicollet Avenue / 5th Street	West Lake Station (SW LRT)	Nicollet Avenue / 5th Street	Nicollet Avenue / 5th Street
To	5th St / Hennepin Ave	Central Avenue NE	5th Street / Nicollet Avenue	5th Street / Park Avenue	13th Street S	Franklin Avenue	Lake St/Midtown Station	14 Street / Chicago Ave S	Franklin Ave / Chicago Ave S
Operating Characteristics									
Peak Vehicle Requirement	*2*	*2*	*2*	*2*	*2*	*2*	*5*	*2*	*2*
Annual Service Hours	*11,448*	*11,448*	*11,448*	*11,448*	*11,448*	*11,448*	*28,175*	*11,448*	*11,448*
Estimated Annual Operating Costs (assuming $149.75/hour)	*$1,714,338*	*$1,714,338*	*$1,714,338*	*$1,714,338*	*$1,714,338*	*$1,714,338*	*$4,219,206*	*$1,714,338*	*$1,714,338*
Ridership Estimates									
Estimated Annual Ridership	*463,000 – 566,000*	*364,000 – 445,000*	*338,300 – 413,500*	*307,300 – 375,600*	*402,000 – 491,400*	*446,900 – 546,200*	*1,000,000[1]*	*310,600 – 379,600*	*329,800 – 403,100*
Economic Development									
Special Use Generators	*High*	*Moderate*	*Moderate*	*Moderate*	*High*	*High*	*Moderate*	*Moderate*	*Moderate*
Development Opportunity	*Moderate to High*	*Moderate to High*	*Moderate*	*High*	*Moderate*	*Moderate*	*Moderate to High*	*High*	*High*
Capital Cost Estimates ($2007)									
Track Miles	*2.6*	*2.2*	*2.2*	*3.4*	*1.8*	*2.7*	*4.4*	*2.2*	*3.1*
Capital Cost (excluding vehicles and maintenance facility)[2]	*$26,000,000*	*$22,000,000*	*$22,300,000*	*$33,900,000*	*$17,900,000*	*$26,900,000*	*$24,850,000*	*$21,900,000*	*$30,800,000*
Additional Capital Costs	*1) Center Stations (5th – 10th) - $300,000* *2) LRT Crossing - $50,000*	*1) Hennepin Bridge (Miss. River) - $2.08 M* *2) Center Stations (5th – Washington) - $150,000*	*1) 4th Avenue N Bridge - $70,000* *2) LRT Crossing - $50,000* *3) Mall Modifications - $300,000*	*1) 4th Avenue N Bridge - $70,000* *2) LRT Crossing - $50,000*	*1) LRT Crossing - $50,000* *2) Mall Modifications - $2,100,000* *3) I-94 Bridge - $400,000*	*1) LRT Crossing - $50,000* *2) Mall Modifications - $2,100,000* *3) I-94 Bridge - $400,000*	*1) Side Track - $6,200,000* *2) Vertical Circulation - $2,000,000* *3) At-Grade Embedded Track - $382,000*	*1) I-94 Bridge - $660,000* *2) LRT Crossing - $50,000*	*1) I-94 Bridge - $660,000* *2) LRT Crossing - $50,000*
Subtotal	$26,350,000	$24,100,000	$22,700,000	$34,000,000	$20,450,000	$29,450,000	$33,500,000	$22,600,000	$31,500,000
Vehicle Costs[3]	$12,000,000	$12,000,000	$12,000,000	$12,000,000	$12,000,000	$12,000,000	$18,000,000	$12,000,000	*$12,000,000*
Non-revenue track[4]	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$2,800,000	$4,500,000	*$4,500,000*
Maintenance Facility[5]	$4,000,000	$4,000,000	$4,000,000	$4,000,000	$4,000,000	$4,000,000	$4,000,000	$4,000,000	*$4,000,000*
Total Capital Costs ($2007)	$46,900,000	$44,600,000	$43,200,000	$54,500,000	$40,950,000	$49,950,000	$58,300,000	$43,100,000	$52,000,000

[1] Annual ridership on the Midtown Corridor estimated based on 3,300 weekday boardings developed in the Southwest Transitway Alternatives Analysis Study. Saturday boardings are estimated to be 80% of weekday and Sunday boardings are estimated to be 60% of weekday.
[2] Assumes approximately $9,950,000 per track mile for embedded track and approximately $5,650,000 for ballasted track (Midtown Corridor).
[3] Assumes $3,000,000 per vehicle. Costs include one spare vehicle per minimal operable segment. If all segments were implemented together, the number of spare vehicles would likely be lower.
[4] For planning purposes, it is assumed that ½ mile of single track would be required to access a maintenance facility.
[5] Maintenance facility costs would only apply to the first shortest operable segment.

Hennepin County has jurisdiction over the streets/right-of-way where several of the streetcar corridors are proposed including Midtown, West Broadway, Hennepin and University/4th. Mn/DOT has jurisdiction over the Central Avenue corridor. These agencies will need to be closely involved in any future work in these corridors.

All of the corridors have some potential for the development of a public-private partnership or even a private not-for-profit owner/operator arrangement. The extent to which this is feasible will vary depending on the corridor and its development potential.

Potential Funding Options

A preliminary review of options for funding the development, capital and operating costs associated with streetcar implementation in Minneapolis is identified in Chapter 7. Several potential sources are explored, including federal, state and local sources, as well as private financing options. The primary funding options that were explored include:

Federal Funding

- Project Earmarks/Federal Demonstration Projects
- Federal Transit Act Formula Funds
- Housing and Urban Development Funds

State and Local Funding Options

- Taxes (e.g, local sales tax, hotel guest tax, convention center tax, etc.)
- Fees (e.g., transit impact development fee, in-lieu of parking fee, etc.)
- Benefit Districts (e.g., Local Improvement District, Tax Increment Financing, Special Assessment District, etc.)
- Parking (e.g., meter and/or ramp revenues)
- Streetcar funding (e.g., farebox revenue, advertising revenue, naming rights)
- Other (e.g., air rights, non-profit status, etc.)

A review of six streetcar systems around the U.S. was conducted to better understand the variety of funding mechanisms that have been used to pay for capital and operating costs. While there is no single funding option that appears to be a perfect fit for funding streetcar services in Minneapolis, there are a number of options that could be pursued. New legislation may be required to develop a full funding package, which is likely to include a variety of sources.

Next Steps

This study identified a long-term streetcar network which will require at least twenty or more years to achieve. The study also identified a number of possible starting places, each of which offers different advantages to riders, to the City and to other stakeholders.

The next major steps in developing a streetcar network are to determine a financing strategy and to select a minimal operable streetcar segment to begin building the long-term network. The following "next steps" have been identified to help move this process forward. These steps are discussed in more detail in Chapter 8.

1. Develop detailed funding plan
2. Identify site for maintenance and storage facility
3. Gauge developer support and economic development potential
4. Develop design guidelines for streetcar construction (will ensure that streetcar requirements are considered when streets are reconstructed)
5. Determine who will own and operate the service
6. Further evaluate the impact on the local bus network
7. Continue to gauge political and community support

Once a preferred initial segment is identified, there are a number of steps required to move toward implementation. The responsibility for each step will depend on the organizational structure selected for implementation and operations phases.

- Preliminary engineering
- Environmental Assessment (EA) or Environmental Impact Statement (EIS)
- Finalize funding plan
- Final Design
- Develop public information campaign during construction
- Solicit construction bid
- Procure and prepare vehicles
- Solicit bid for operations (if not being administered by Metro Transit)
- Develop marketing materials and initiate advertising campaign
- Testing and training
- Final implementation details

Figure 4-2 Long-Term Streetcar Network in Downtown

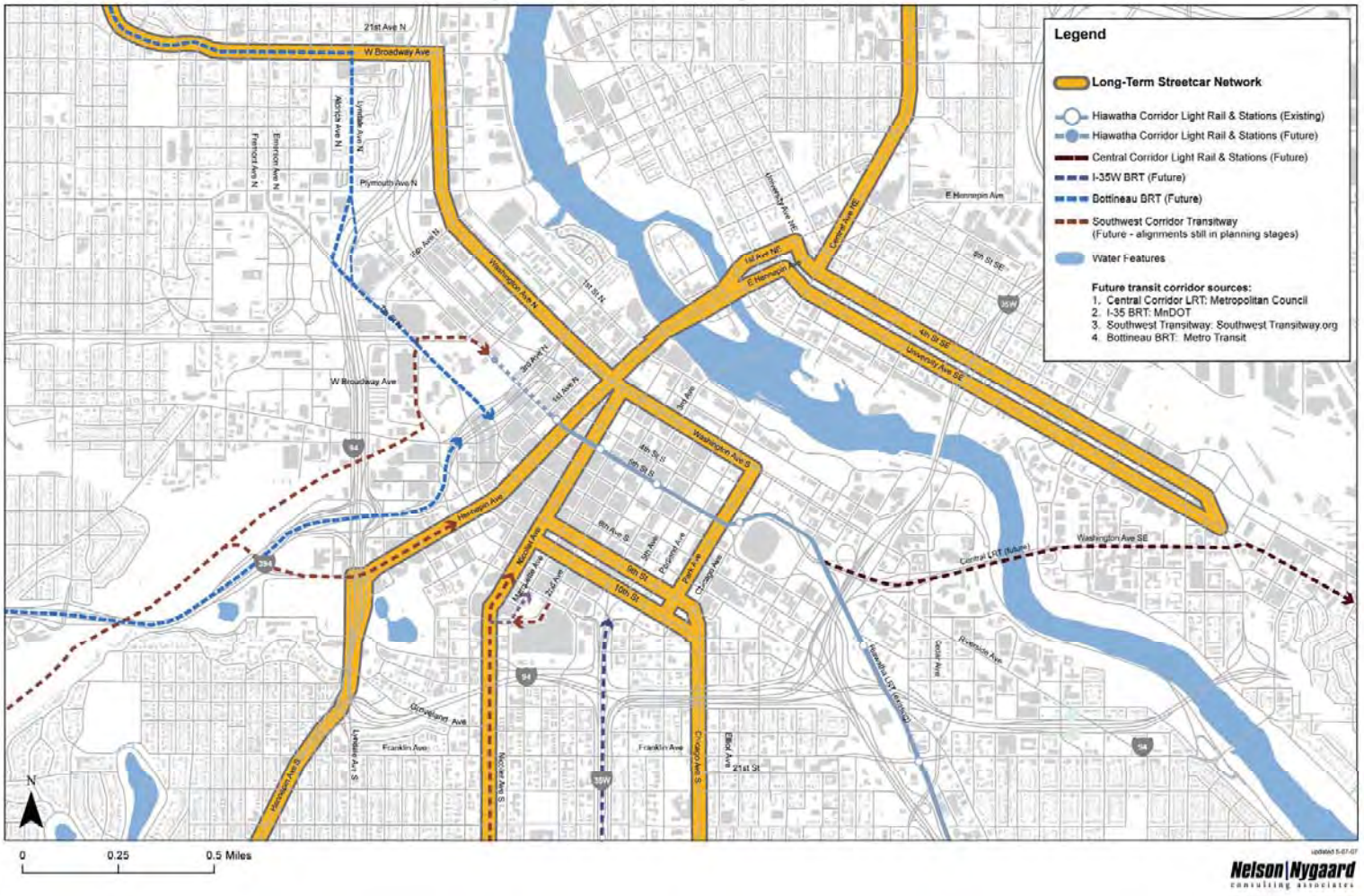


Figure 4-12 Summary of Long-Term Streetcar Network Characteristics

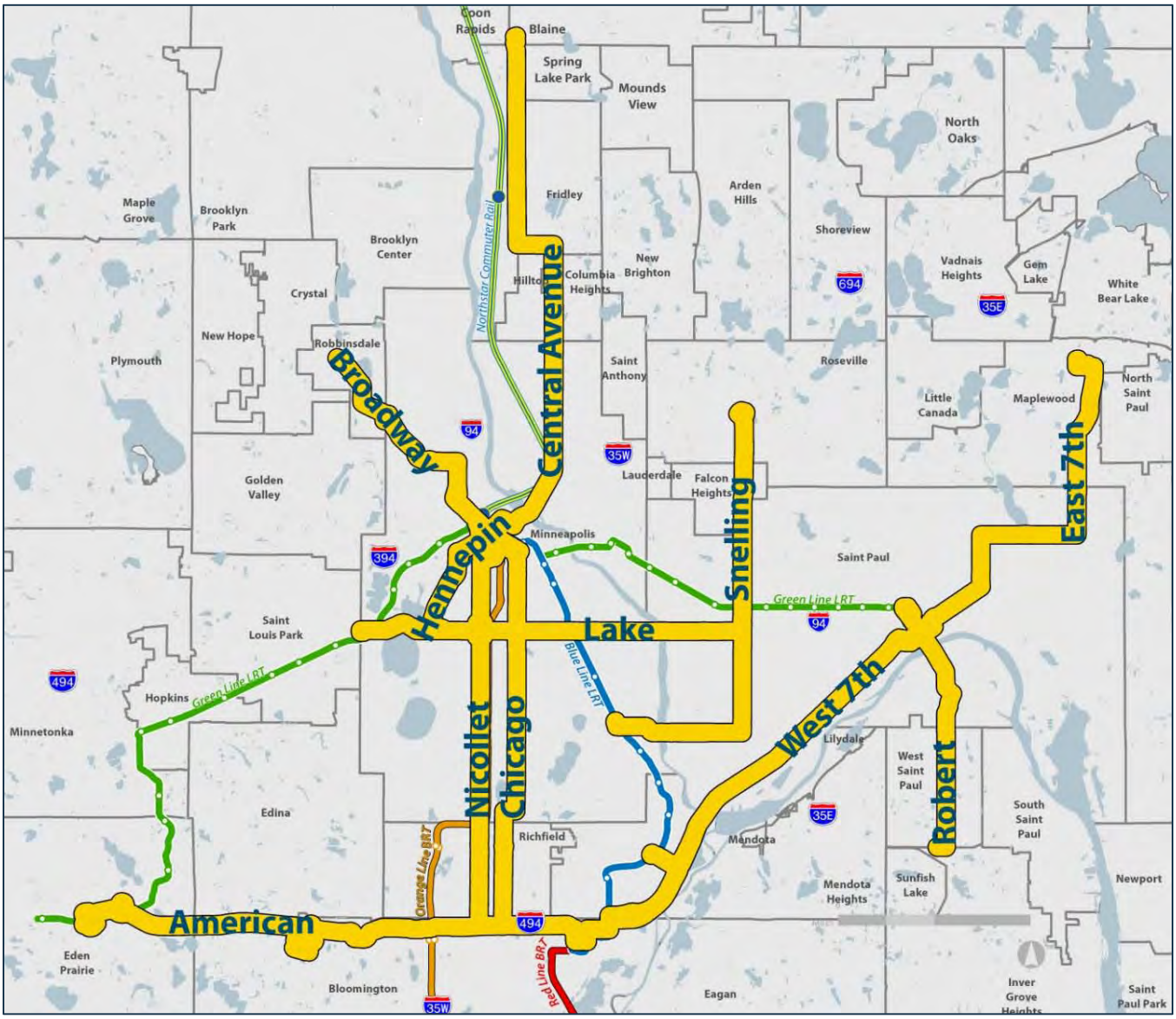
	Hennepin Avenue / University/4th to Univ. of Minnesota[4]	W Broadway/Washington Avenue to Nicollet Ave or Park Ave	Central Avenue NE[5]	Nicollet Avenue	Chicago Avenue S
From	*Lake Street*	*Robbinsdale Transit Center*	*49th Avenue NE (Columbia Heights)*	*46th Street / Nicollet*	*38th Street / Chicago Avenue S*
To	*University Avenue SE / Washington Avenue SE*	*5th Street / Nicollet Avenue or 5th Street / Park Avenue*	*5th Street / Nicollet Avenue*	*Washington Avenue*	*Nicollet Avenue / 5th Street*
Operating Characteristics					
Peak Vehicle Requirement	9	7	10	9	8
Annual Service Hours	45,800	34,400	45,700	47,300	45,500
Estimated Annual Operating Costs (assuming $149.75/hour)	$6,859,100	$5,148,400	$6,849,900	$7,083,900	$6,820,700
Ridership Estimates					
Estimated Weekday Ridership	9,700 - 11,800	4,400 – 5,300	5,500 – 6,800	9,900 – 12,000	10,900 – 13,322
Estimated Annual Ridership – Low	3,128,300 – 3,823,500	1,467,700 – 1,793,900	1,706,500 – 2,085,700	3,278,100 – 4,006,600	3,573,000 – 4,367,000
Capital Cost Estimates ($2007)					
Track Miles	7.8	8.4	12.2	8.6	7.0
Estimated Cost per Track Mile	$9,948,067	$9,948,067	$9,948,067	$9,948,067	$9,948,067
Subtotal	*$77,594,900*	*$117,387,200*	*$119,346,800*	*$85,553,400*	*$69,636,500*
Additional Capital Costs	1) Lowry Tunnel - $244,000 2) Hennepin Bridge (Miss. River) - $2.08 M 3) LRT Crossing - $50,000 4) Midtown Corridor Bridge – $120,000	1) 4th Avenue N Bridge - $70,000 2) LRT Crossing - $50,000 3) Mall Modifications - $300,000 4) I-94 Bridge - $660,000	1) Hennepin Bridge (Miss. River) - $2.08 M 2) 9th Street NE RR Bridge - $300,000 3) Broadway Street NE Bridge - $440,000 4) 36th Ave NE RR Crossing - $50,000	1) LRT Crossing - $50,000 2) Mall Modifications - $2,100,000 3) I-94 Bridge - $400,000 4) Midtown Corridor Bridge - $200,000	1) I-94 Bridge - $660,000 2) Midtown Corridor Bridge - $180,000 3) LRT Crossing - $50,000
Subtotal	*$80,100,000*	*$118,500,000*	*$122,200,000*	*$88,300,000*	*$70,500,000*
Vehicle Costs[6]	$33,000,000	$27,000,000	$36,000,000	$33,000,000	$30,000,000
Non-revenue track[7]	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$4,500,000
Maintenance Facility[8]	$4,000,000	$4,000,000	$4,000,000	$4,000,000	$4,000,000
Total Capital Costs ($2007)	$121,600,000	$154,000,000	$166,700,000	$129,800,000	$109,000,000
Cost Effectiveness Measures[9]					
Capital Cost per Passenger – Low	$31.80	$85.85	$79.93	$32.40	$24.96
Capital Cost per Passenger – High	$38.87	$104.92	$97.69	$39.60	$30.51
Operating Cost per Passenger – Low	$1.79	$2.87	$3.28	$1.77	$1.56
Operating Cost per Passenger – High	$2.19	$3.51	$4.01	$2.16	$1.91
Service Efficiency Measure					
Passengers per Service Hour – Low	68.3	42.7	37.3	69.3	78.4
Passengers per Service Hour – High	83.5	52.2	45.6	84.7	95.9

[4] Hennepin and University corridor ridership were combined for purposes of ridership estimates because bus service on these two corridors is currently interlined and ridership estimates were pivoted based on existing bus ridership.
[5] From an operating perspective, the terminus in the Central Avenue NE corridor makes the most sense at the Columbia Heights Transit Center but was extended to 49th St at the request of the City of Columbia Heights.
[6] Assumes $3,000,000 per vehicle. Costs include a 20% spare ratio.
[7] For planning purposes, it is assumed that ½ mile of single track would be required to access a maintenance facility.
[8] Maintenance facility costs would only apply to the first shortest operable segment.
[9] These cost effectiveness measures are not the same ones used by the FTA to evaluate light rail.

APPENDIX C: METRO TRANSIT ARTERIAL TRANSITWAY CORRIDORS STUDY

Introduction to the Arterial Transitway Corridors Study

In 2011, Metro Transit embarked on the *Arterial Transitway Corridors Study*, a year-long study of improvements along some of the Twin Cities' most heavily traveled transit corridors. The purpose of the ATCS was to develop a facility and service plan to enhance efficiency, speed, reliability, customer experience, and transit market competitiveness on 11 high-demand urban transitway corridors, shown in the map below.



INTRODUCTION

The chart below summarizes which Purpose and Need elements apply to each corridor, providing a framework for why each corridor is included in this study.

	Snelling	Lake	American	Central	Broadway	Hennepin	Nicollet	Chicago	West 7th	East 7th	Robert
Corridor transit service is a critical element of the regional transportation system											
Corridor forms important connection to regional fixed guideway transit system	•	•	•	•	•	•	•	•	•	•	•
High existing corridor transit demand offers opportunity for service improvement	•	•		•	•	•	•	•	•	•	•
High demand challenges existing transit capacity		•		•		•	•	•			
Corridor serves large proportion of people who depend on transit	•	•		•	•	•	•	•	•	•	•
Corridor serves an area with rapidly growing population and/or employment			•	•	•	•	•	•	•	•	•
Existing passenger waiting facilities offer opportunities for improvement	•	•	•	•	•	•	•	•	•	•	•
Speed and reliability improvements are required to decrease costs and improve ridership											
Slow transit travel speeds lead to high operating cost/lower service attractiveness		•		•	•	•	•	•		•	
Customer boarding time and fare collection cause delay	•	•	•	•	•	•	•	•	•	•	•
Roadway configuration and intersection controls challenge speed and reliability	•	•	•	•	•	•	•	•	•	•	•
Roadway configuration presents opportunities for travel time savings	•	•	•	•	•	•	•	•	•	•	•
Planned roadway improvements offer potential for construction coordination	•	•	•	•			•		•		•

What is Arterial Bus Rapid Transit?

Arterial bus rapid transit (arterial BRT) is high-frequency, limited-stop service offering an improved customer experience on urban arterial streets. Arterial BRT provides improved speed, frequency, passenger experience, and reliability by upgrading vehicle, runningway, and station quality without the higher capital costs, construction impacts, and right-of-way requirements of an LRT or dedicated busway corridor. These improvements lead to lower operating costs and improved ridership. Lower costs also allow for faster implementation of transit improvements

Arterial bus rapid transit concepts have been used to increase transit speeds and provide a better customer experience in several places throughout the U.S., including Kansas City, Las Vegas, Oakland, Boston, New York City, Cleveland, Seattle, and Los Angeles. After implementing arterial BRT, communities have seen travel time decrease and ridership increase, for a fraction of what it would cost to implement LRT or a dedicated busway.

Component	Typical Results
Travel Time	15–25% faster travel
Ridership	20–40+% increase
Capital Costs	$1 million–$3 million per mile

Rapid Bus

The arterial BRT concept developed in this study for the Twin Cities metro area uses a working title of **Rapid Bus**. The actual name will be determined through a future project implementation phase. Eight specific system features make up the Rapid Bus concept studied in the ATCS.

System Features Common to All Corridors

Station Design

Bus stops would be upgraded to premium transitway stations with enhanced amenities and information

Fare Collection

Off-board fare payment speeds boarding and increases convenience, police enforcement enhances security

Vehicle Design

Rapid Bus vehicles would have a unique look distinct from regular local and express service

Identity/Brand

A system brand will be developed to differentiate Rapid Bus transitways from other transit services

Features Tailored to Individual Corridors

Station Size

Stations and boarding platforms would be sized to projected passenger demand and available space

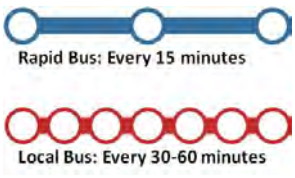
Runningway

Current road lanes would not change but spot improvements would allow buses to move more quickly in traffic

Signal Priority

Signal priority would allow buses additional green time to minimize delay and increase speed

Service Plans



Service plans respond to corridor demand. Rapid buses run every 15 minutes or better, 7 days per week

Study Goals and Objectives

Part of this study focuses on prioritizing corridors for implementation. To do this, the project team developed an evaluation framework.

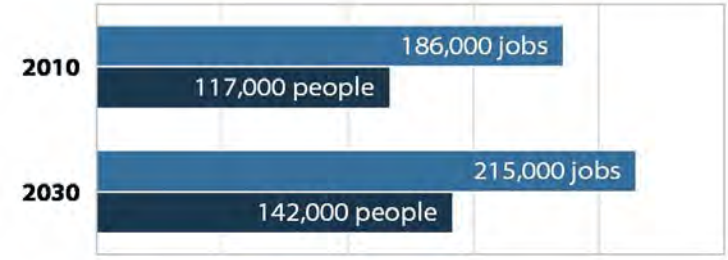
The Rapid Bus concepts developed for the 11 corridors focus on developing new ridership to work toward achieving *Transportation Policy Plan* ridership targets by meeting the following goals:

1. **Mobility:** Provide mobility benefits by connecting major destinations along the study corridors more quickly with more frequent transit service.
2. **Affordability:** Implement affordable transit improvements.
3. **Integration:** Seamlessly integrate with existing and planned transit systems.
4. **Customer Experience:** Provide an enhanced customer experience by developing passenger infrastructure and information commensurate with existing and planned levels of transit service.
5. **Growth:** Support anticipated corridor growth and redevelopment.

CENTRAL AVENUE EXISTING CONDITIONS

The proposed Central Avenue corridor follows Central Avenue from downtown Minneapolis to 53rd Street in Columbia Heights, turning west on 53rd, and following University Avenue north to the Northtown Transit Center. The alignment serves downtown Minneapolis, a mixed-use commercial corridor in northeast Minneapolis north of the Mississippi River, Columbia Heights Transit Center at 41st Avenue, and downtown Columbia Heights. The corridor transitions to a more suburban setting north of downtown Columbia Heights and in Fridley.

***Population and Employment** within 1/2 mile of corridor*



(2030 forecasts based on approved local plans)

Future Land Use Changes

- Strong East Hennepin Activity Center which will continue to grow.
- Redevelopment opportunity at the A-Mill site which could create hundreds of new housing units
- Continued housing densification and job creation at the Lowry Activity Center
- Redevelopment opportunity just off Central and Broadway in the Minneapolis Public Schools old headquarters
- Stable Commercial Corridor north of Broadway.

General Roadway Conditions

Central Avenue has two travel lanes per direction . Parking is allowed on northbound Central Avenue between 37th and 27th Avenue; and on both sides of Central between 27th and 13th Avenue. Currently, there are no bike lanes on Central Avenue. Signalized intersection are spaced every 2-3 blocks.

Central Avenue at Spring Street

Central Avenue at 40th Avenue

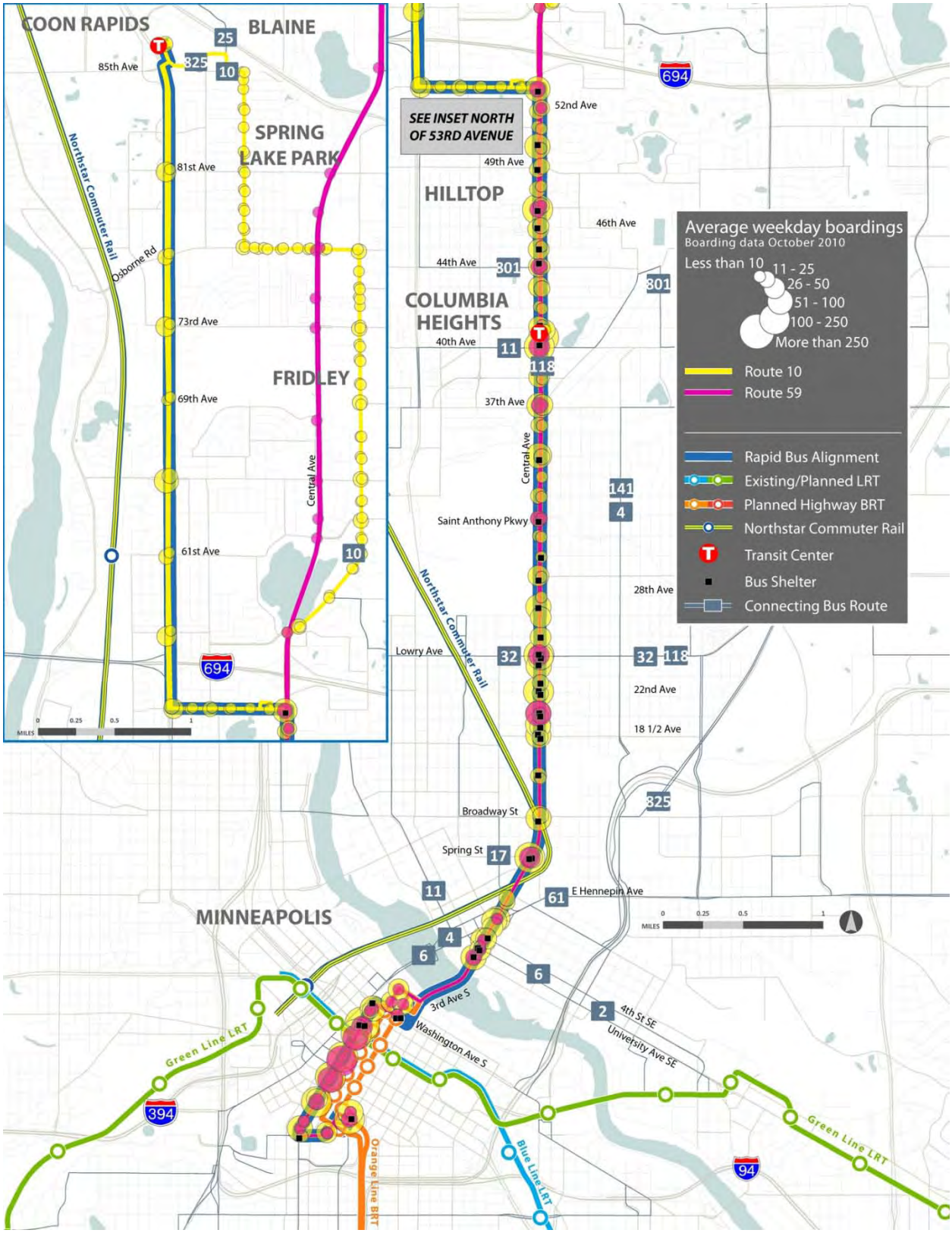
Existing Transit Service

Route 10 is the primary route serving the Central Avenue corridor. The route has three patterns—10N, which follows Central Avenue from downtown to Northtown; 10U, which follows Central/University to Northtown; and 10C, which turns back at the Columbia Heights Transit Center. During weekdays, every third trip generally does one of the above-noted patterns, each at about 30-minute frequencies, resulting in a combined 10-minute or better frequency. On Saturdays, the 10N and 10U operate at 60-minute frequencies each and the 10C operates at 30-minute frequencies, resulting in a combined 15-minute average frequency. On Sundays, the 10N, 10U, and 10C all operate at 60-minute frequencies, resulting in a combined 20-minute frequency. Route 10 is part of Metro Transit's Hi-Frequency Network between downtown Minneapolis and the Columbia Heights Transit Center.

Key Performance Indicators (2010)	
Average Weekday In-Service Speed (Route 10)	13.1 mph
Average Weekday Corridor Riders (All Routes)	7,000
On-Time Performance (Route 10)	81.9%

Route 59 also serves this corridor, providing peak-only limited stop service between Central Avenue/53rd Street and downtown Minneapolis. A few Route 59 trips also provide service north of 53rd Street. Route 118 also operates on Central Avenue from Lowry Avenue to the Columbia Heights Transit Center, directly connecting a portion of the corridor to the University of Minnesota.

EXISTING TRANSIT SYSTEM



CENTRAL AVENUE RAPID BUS CONCEPT

By the Numbers

- **13.5** miles long
- **28** proposed station locations
- **0.5 mile** on average between stations
- **16%** faster trip between downtown Minneapolis and Northtown versus current Route 10
- **98%** of existing customers within one stop of a station
- **2** transitway connections (Green Line LRT and Blue Line LRT)
- **16 buses** needed to provide service

Concept Operating Plan

Two Rapid Bus patterns are introduced—one to Northtown Transit Center and a shortline running to 53rd Avenue. Upon implementation of Rapid Bus, the 53rd Avenue and University Avenue patterns of Route 10 are replaced with Rapid Bus. Service frequencies on the remaining Route 10 pattern (via Central Avenue) are adjusted. Route 59 is also replaced by Rapid Bus service.

Conceptual Station Designs

Weekday Frequency

EXISTING SERVICE	Rush Hours	Midday	Evening	Late Night
Route 10	10	10	20	30
Route 59	10	--	--	--

SERVICE CONCEPT	Rush Hours	Midday	Evening	Late Night
Rapid Bus to Northtown	**15**	**15**	**15**	**30**
Rapid Bus to 53rd	**15**	**30**	**--**	**--**
Route 10	30	30	60	60
Route 59	*Replaced*			

Cost and Ridership

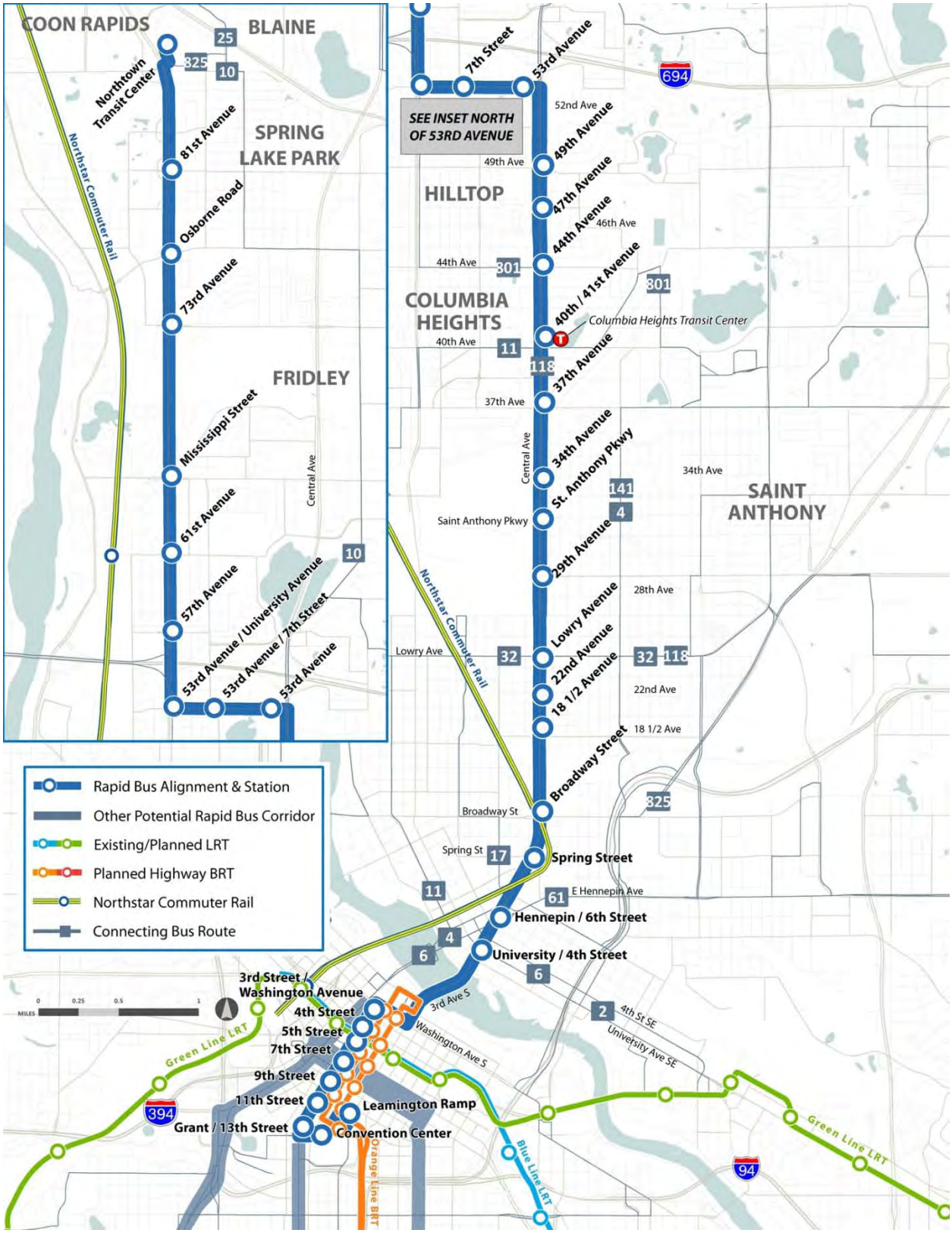
CONSTRUCTION COST (2011$)	
Total Estimated Cost to Build (Includes Vehicles)	**$58,000,000**
Cost per Mile	$4,200,000

ANNUAL OPERATING COST (2011$)	
Rapid Bus Base Service	$7,380,000
Reductions to Existing Bus Service	-$4,480,000
Net Change in Service Costs	$2,900,000
Additional Rapid Bus Costs	$1,780,000
Total Change in Costs	**$4,680,000**

WEEKDAY RIDERSHIP	
2010 Corridor Ridership	7,500
2030 Corridor Ridership ("Baseline" without Rapid Bus)	10,700
Additional Ridership From Adding Rapid Bus	+ 3,700
2030 Corridor Ridership (Rapid Bus + Background Service)	**14,400**

CENTRAL AVENUE

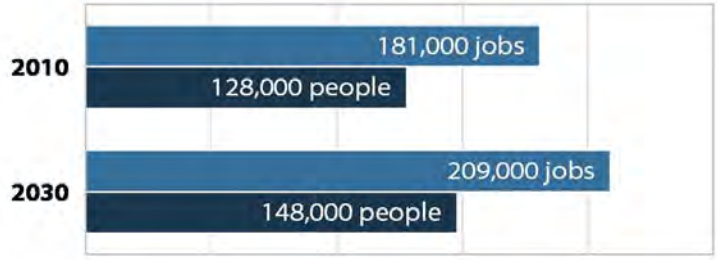
RAPID BUS CONCEPT



NICOLLET AVENUE EXISTING CONDITIONS

The proposed Nicollet Avenue corridor begins in downtown Minneapolis and follows Nicollet Avenue to American Boulevard, south of I-494. South of downtown, Nicollet Avenue is primarily commercial, with a Kmart-anchored shopping center at Lake Street (where Nicollet Avenue terminates between 29th Street and Lake Street). In south Minneapolis and Richfield, adjacent land uses transition to medium-density residential, with commercial activity at major cross streets. Commercial and office land uses are located near the Nicollet/I-494 interchange.

***Population and Employment** within 1/2 mile of corridor*



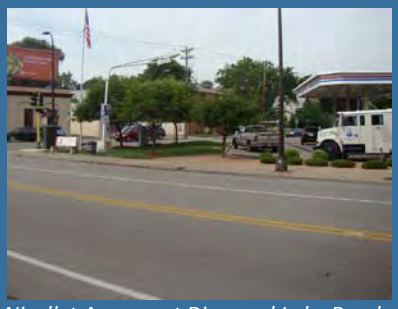
(2030 forecasts based on approved local plans)

Future Land Use Changes

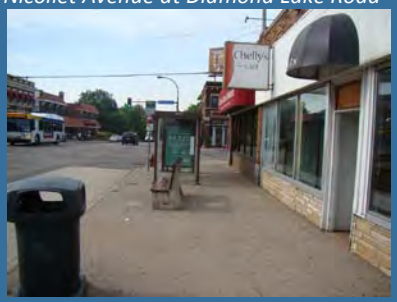
- The Nicollet Avenue corridor is a "Community Corridor," meaning that the preferred and planned mix of land uses is small scale commercial and residential.
- Redevelopment opportunity in the commercial area at the southern end of Nicollet between 60th and 62nd Street. This area could see a significant growth in housing or job growth in the future.
- Redevelopment opportunity in the Activity Center at Nicollet and Lake in the future, especially if Nicollet Avenue is reconnected.

General Roadway Conditions

Most of Nicollet Avenue has a center turn lane and one travel lane per direction. Parking is allowed between Grant and 29th Street, and also between 52nd and 62nd Street. No bike lanes are currently on Nicollet, but there are bike lanes on Blaisdell Avenue and 31st Street. Signalized intersections are spaced every 1-3 blocks.



Nicollet Avenue at Diamond Lake Road



Nicollet Avenue at 38th Street

Existing Transit Service

Route 18 is the primary route serving the Nicollet Avenue corridor. The route begins in downtown Minneapolis, and travels south on Nicollet Avenue to Bloomington. At Lake Street, the route leaves Nicollet Avenue where the street grid is interrupted. Between 31st Street and 29th Street, southbound Route 18 buses deviate to Blaisdell Avenue and northbound buses deviate to 1st Avenue.

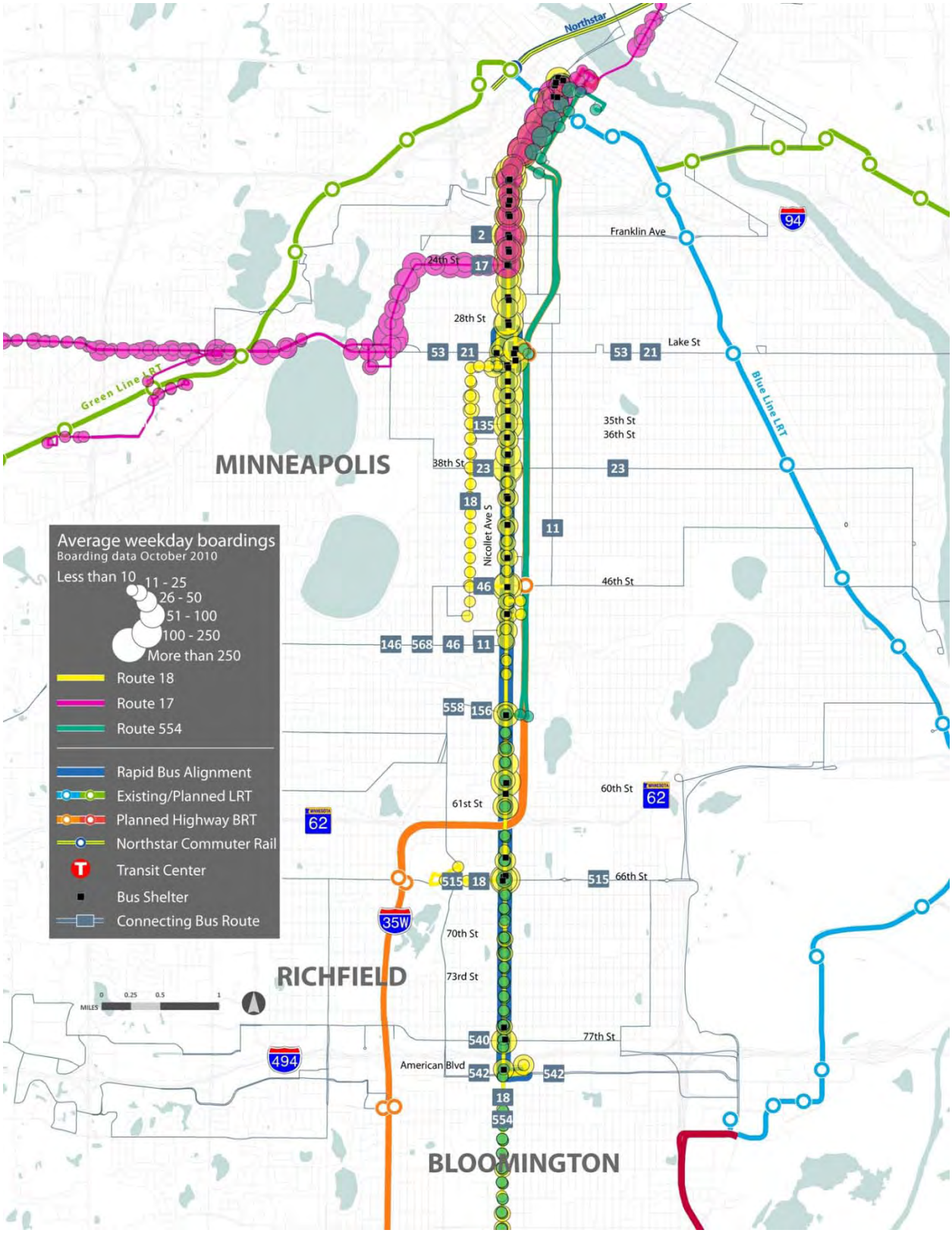
Route 18 includes a number of shortline service patterns; as a result, service frequencies diminish on Route 18 as the alignment travels south. In general, average weekday service frequencies are 8 minutes north of 46th Street, 15 minutes between 46th Street and American Boulevard, and 30 minutes between American Boulevard and south Bloomington. Saturday frequencies are generally 8 to 12 minutes and Sunday frequencies are generally 10 to 20 minutes. North of 66th Street, Route 18 is part of Metro Transit's Hi-Frequency Network.

Key Performance Indicators (2010)	
Average Weekday In-Service Speed (Route 18)	10.9 mph
Average Weekday Corridor Riders (All Routes)	13,600
On-Time Performance (Route 18)	90.4%

In addition to Route 18, peak-only **Route 554** provides express service between the southern portion of the Nicollet Avenue corridor and downtown Minneapolis via I-35W north of Diamond Lake Road. Route 17 operates on Nicollet Avenue north of 24th Street.

NICOLLET AVENUE

EXISTING TRANSIT SYSTEM



NICOLLET AVENUE RAPID BUS CONCEPT

By the Numbers

- **8.8** miles long
- **28** proposed station locations
- **0.3 mile** on average between stations
- **20%** faster trip between downtown Minneapolis and American Boulevard versus current Route 18
- **99%** of existing customers within one stop of a station
- **2** transitway connections (Green Line LRT and Blue Line LRT)
- **13 buses** needed to provide service

Concept Operating Plan

Two Rapid Bus patterns are introduced—one to American Boulevard and a shortline running to 66th Street. Upon implementation of Nicollet Avenue Rapid Bus, the number of patterns on Route 18 is reduced to two—one operating to 46th Street via Grand Avenue and the other operating the full length of the route to south Bloomington. Route 554 remains unchanged.

Weekday Frequency

EXISTING SERVICE	Rush Hours	Midday	Evening	Late Night
Route 18	7.5	7.5	10	20
Route 554	30	--	--	--

SERVICE CONCEPT	Rush Hours	Midday	Evening	Late Night
Rapid Bus (to 66th)	**15**	**15**	**15**	**30**
Rapid Bus (to American)	**15**	**15**	**30**	**--**
Route 18	15	30	60	60
Route 554	30	--	--	--

Conceptual Station Designs

Cost and Ridership

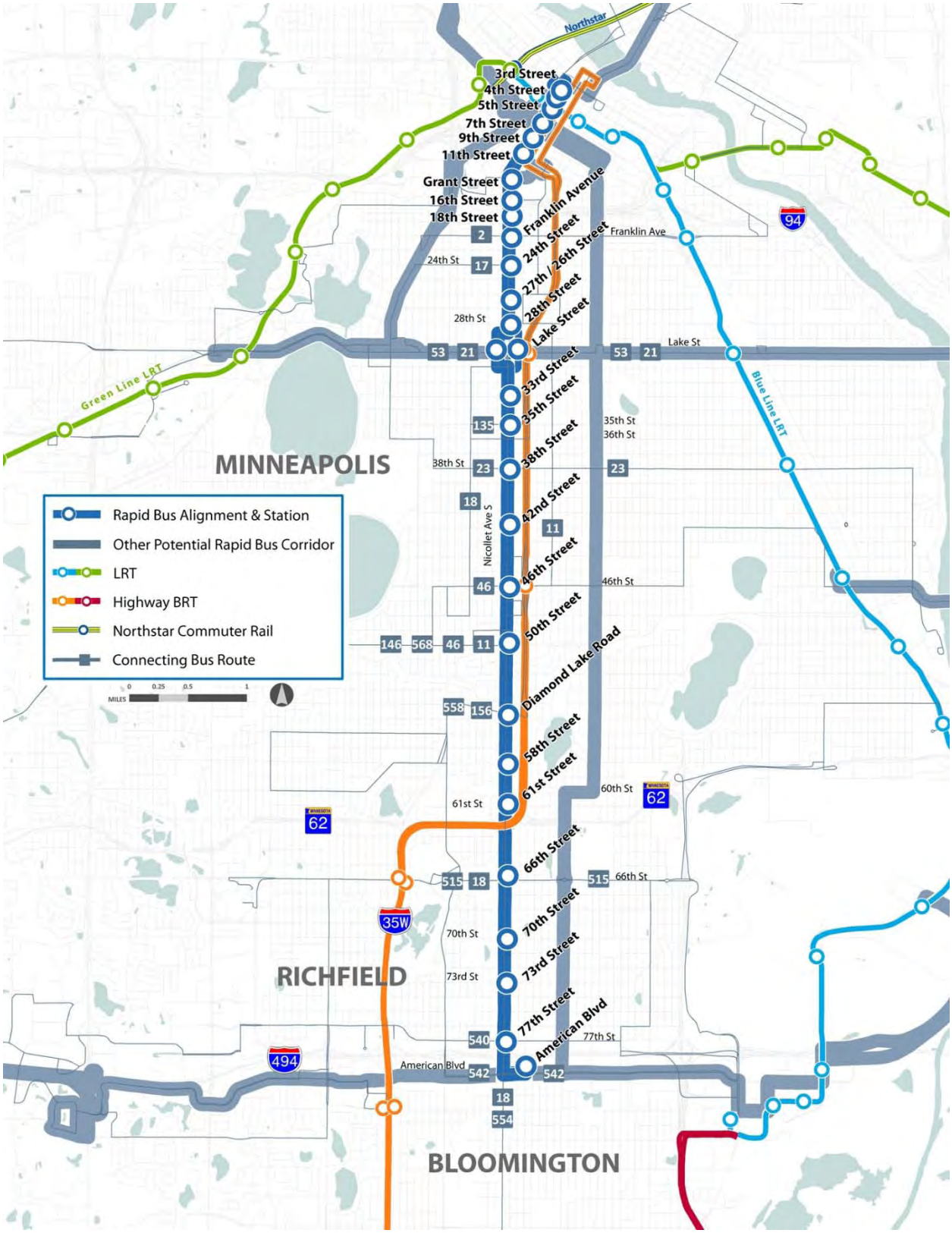
CONSTRUCTION COST (2011$)	
Total Estimated Cost to Build (Includes Vehicles)	**$52,700,000**
Cost per Mile	$6,000,000

ANNUAL OPERATING COST (2011$)	
Rapid Bus Base Service	$7,870,000
Reductions to Existing Bus Service	-$5,130,000
Net Change in Service Costs	$2,740,000
Additional Rapid Bus Costs	$1,640,000
Total Change in Costs	**$4,380,000**

WEEKDAY RIDERSHIP	
2010 Corridor Ridership	13,800
2030 Corridor Ridership ("Baseline" without Rapid Bus)	17,300
Additional Ridership From Adding Rapid Bus	+ 3,000
2030 Corridor Ridership (Rapid Bus + Background Service)	**20,300**

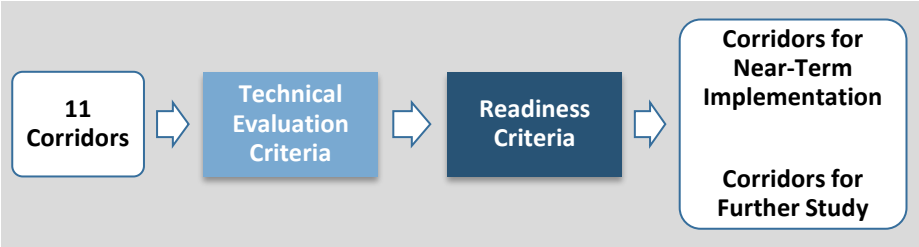
NICOLLET AVENUE

RAPID BUS CONCEPT



How do the corridors compare?

The 11 corridors studied for Rapid Bus were evaluated and prioritized for near-term implementation using a two-part approach that considered both **technical evaluation criteria** and **readiness criteria**.



First Component: Technical Evaluation

As outlined in the introduction to this report, the Rapid Bus concepts developed in this study focus on meeting the following goals:

1. **Mobility:** Provide mobility benefits by connecting major destinations along the study corridors more quickly with more frequent transit service.
2. **Affordability:** Implement affordable transit improvements.
3. **Integration:** Seamlessly integrate with existing and planned transit systems.
4. **Customer Experience:** Provide an enhanced customer experience by developing passenger infrastructure and information commensurate with existing and planned levels of transit service.
5. **Growth:** Support anticipated corridor growth and redevelopment.

To compare the corridors, technical evaluation measures were developed for each of the five identified goals.

Weight	Goal	Evaluation Measure
5%	Goal 1: Mobility (Transit Market Indicators)	• Jobs within ½ mile of corridor (2008)
		• Population within ½ mile of corridor (2010)
		• Transit-dependent persons[2] within ½ mile of corridor
35%	Goal 1: Mobility (Rapid Bus Outcomes)	• Percent decrease in end-to-end travel time
		• 2030 corridor ridership (weekday)
		• 2030 ridership over 2030 baseline
		• User benefits (annual)
20%	Goal 2: Affordability	• O&M cost per annual Rapid Bus passenger
		• 2030 Rapid Bus passengers per in-service hour (annual average)
		• Capital cost per corridor mile
		• Capital cost per annual Rapid Bus passenger
15%	Goal 3: Integration	• Percent of Rapid Bus hours paid for by existing service hours
		• Percent of existing local bus boardings within 1 stop of stations
		• Number of connections to fixed guideway transitways
5%	Goal 4: Experience	• Percent of stations where concept required modification to fit
10%	Goal 5: Growth	• Forecasted change in jobs within 1/2 mile of stations
		• Forecasted change in population within 1/2 mile of stations

[2] Population over 16 minus available autos

HOW DO THE CORRIDORS COMPARE?

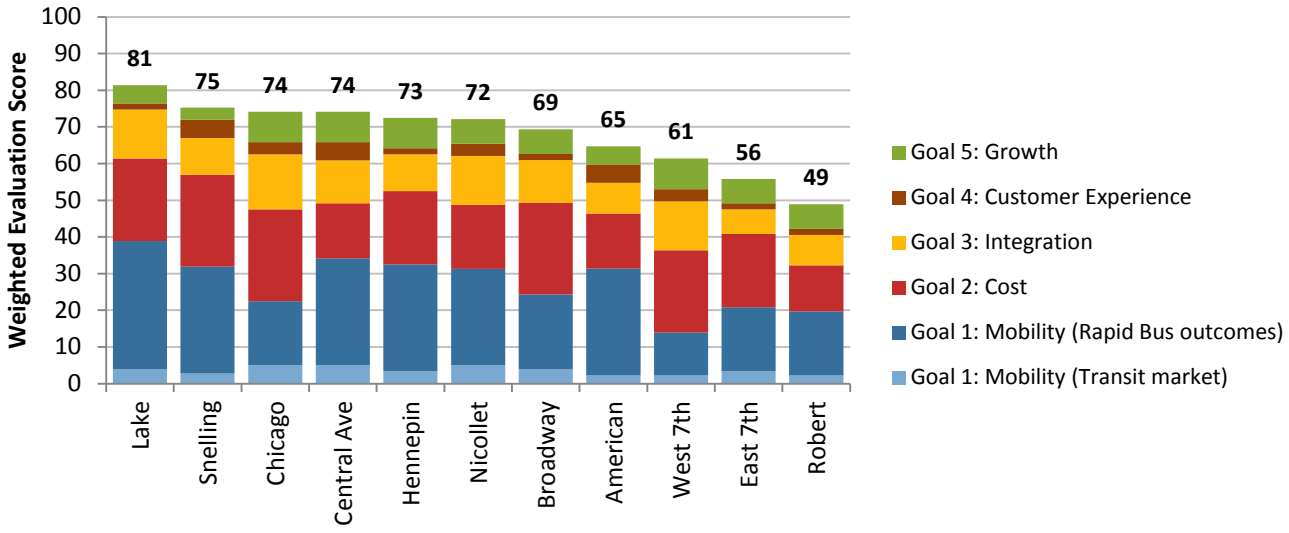
The measures were scored using a three-point scale (a minimum of one point and a maximum score of three points per evaluation measure). The chart below shows the scores for each of the evaluation measures in the first tier of the evaluation process. For each measure, the three-point scores were distributed using the natural breaks between the raw values in a corridor-blind analysis.

Key to Symbols
● Highest performance (3 points)
O Medium performance (2 points)
○ Lowest performance (1 point)

		Snelling	Lake	American	Central	Broadway	Hennepin	Nicollet	Chicago	West 7th	East 7th	Robert
Goal 1: Provide mobility benefits by connecting major destinations												
Transit market indicators (5% of total score)												
1-A	Jobs within ½ mile of corridor (2008)	○	○	O	●	●	●	●	●	O	O	O
1-B	Population within ½ mile of corridor (2010)	O	●	○	●	O	○	●	●	○	O	○
1-C	Transit-dependent persons within ½ mile of corridor	O	●	○	●	O	O	●	●	○	O	○
Rapid Bus outcomes (35% of total score)												
1-D	Percent decrease in end-to-end travel time	●	●	●	O	●	O	O	○	○	○	O
1-E	2030 corridor ridership (weekday)	O	●	○	O	○	●	●	O	○	O	○
1-F	2030 ridership over 2030 baseline	O	●	●	●	○	●	O	○	○	O	○
1-G	User benefits (annual)	●	●	●	●	O	O	O	O	○	○	O
Goal 2: Implement affordable transit improvements (30% of total score)												
2-A	O&M cost per annual Rapid Bus passenger	O	●	○	O	O	O	O	●	O	O	○
2-B	2030 Rapid Bus passengers per in-service hour (annual average)	O	O	○	○	●	O	O	●	O	O	○
2-C	Capital cost per corridor mile	●	○	●	O	O	○	○	O	●	O	O
2-D	Capital cost per annual Rapid Bus passenger	●	●	○	○	●	●	O	O	O	O	○
Goal 3: Seamlessly integrate with existing and planned transit systems (15% of total score)												
3-A	Percent of Rapid Bus revenue hours paid for by existing service hours	O	O	○	O	O	○	●	●	●	○	○
3-B	Percent of existing local bus corridor boardings proximate to proposed stations	O	●	○	●	●	●	●	●	●	O	●
3-C	Number of connections to fixed guideway transitways	O	●	●	O	O	O	O	●	O	○	○
Goal 4: Provide an enhanced customer experience (5% of total score)												
4-A	Percent of stations where concept required modification to fit	●	○	●	●	○	○	O	O	O	○	○
Goal 5: Support anticipated corridor growth and redevelopment (10% of total score)												
5-A	Forecasted change in jobs within 1/2 mile of proposed stations	○	○	O	O	O	O	O	●	●	O	O
5-B	Forecasted change in population within 1/2 mile of proposed stations	○	O	○	●	O	●	O	O	O	O	O

Technical Evaluation Weighting

After scoring the corridors on the three-point scale, measures were weighted based on the relative importance of each goal to the Rapid Bus concept. The weightings, noted in the evaluation chart on the previous page, place a large emphasis on mobility improvements and affordability, with less weight assigned to system integration, customer experience, and area growth. The figure below graphically represents the results of the first component of evaluation based on the quantitative measures.



Second Component: Readiness

The first component of the evaluation process identified the corridors that best met the goals and objectives of the ATCS using quantitative measures. Near-term decisions to implement Rapid Bus will not be based solely on technical merit, but will also take into consideration other factors that may influence the ability to quickly implement the Rapid Bus concept in a corridor. In the second component of evaluation, three qualitative readiness criteria are applied.

Will the corridor be studied in the near future in more detail for other modes?

The 11 corridors examined in this study are among the strongest transit corridors in the Twin Cities. Some of these corridors have been studied previously for other kinds of transit improvements by partner agencies. Alternative Analysis (AA) studies will be initiated in 2012 on some of these corridors. For corridors where additional in-depth study will be conducted in the near future, Rapid Bus is not recommended for near-term implementation, but remains a worthy mode for consideration in the upcoming AA studies.

The corridor information compiled and evaluated in the ATCS will serve as an input to the AA studies, which will include a comparison of transit modes in greater detail than in any previous studies, including the ATCS. Results of these upcoming AA studies will aid decision makers in selecting the appropriate level of transit investment for the corridors. For this reason, the **Lake Street**, **Nicollet Avenue**, **Central Avenue**, and **Robert Street** corridors are not recommended for Rapid Bus implementation at this time. Corridors may be reprioritized as plans are developed in the AA processes for each corridor.

Does the corridor's success depend on forecast growth or connections to an unfunded fixed guideway investment?

The Rapid Bus corridors represent a variety of different markets and locations within the Twin Cities region, with service oriented toward downtown Minneapolis, downtown St. Paul, and crosstown corridors. Connections to existing and future transitways and future forecast growth are also vital components in the analysis, which evaluated each corridor for its ridership potential in the forecast year of 2030. For corridors whose success depends on forecast growth or connections to an unfunded fixed guideway investment, Rapid Bus implementation is not recommended in the near term. Once these transitway investments are further along in project development and funding commitments, Rapid Bus implementation in these corridors could be considered.

The **American Boulevard** corridor benefits from connections to the Green Line (Southwest) LRT and Orange Line (I-35W South) BRT. The corridor has potential to form a vital east-west link between these transitways, along with the Blue Line (Hiawatha) LRT and the Red Line (Cedar Avenue) BRT. The success of Rapid Bus on American Boulevard also

HOW DO THE CORRIDORS COMPARE?

depends on substantial planned job and housing growth at three key districts along the corridor, where the City of Bloomington is targeting its development efforts. Interim steps toward Rapid Bus implementation will focus on building the transit market as these areas develop. Although the American Boulevard corridor is not recommended for Rapid Bus implementation in the near term, future study will continue to examine ways to maximize benefit to the area through Rapid Bus. This may include consideration of a 78th Street alignment west of the Normandale Lakes district, with a potential offline connection to north-south express service on Highway 169.

The **Hennepin Avenue** corridor also benefits to a connection to the Green Line (Southwest) LRT at West Lake Station. Unlike American Boulevard, Hennepin Avenue is currently a strong transit corridor whose successful implementation—in terms of ridership—is less dependent on the transitway connection. However, adding Hennepin Avenue Rapid Bus as an overlay on existing bus service would be duplicative under current conditions, as route branches outside the corridor limits would necessitate retaining a large amount of local bus service. In advance of Green Line (Southwest) LRT implementation, a broader restructuring of routes 6, 12, and 17 would be studied. This restructuring study may present a better opportunity for implementing Rapid Bus.

Is additional planning needed at this time to better develop Rapid Bus and other bus service in the corridor?
In addition to the aforementioned Alternatives Analyses, other studies are currently underway for the Bottineau Transitway (which may travel in the same area as the West Broadway Avenue corridor) and the Gateway Corridor (which may share a segment with the East 7th Street corridor). While not directly studying the same alignments reviewed in the ATCS, these corridor studies may influence the implementation of Rapid Bus in the West Broadway Avenue and East 7th Street corridors, respectively. Identifying a preferred transitway alternative on Bottineau and Gateway may help determine and/or refine the alignment and service configuration of Rapid Bus in the corridors. Once these studies have selected a preferred alignment and mode, more informed decisions could be made about how and when to implement Rapid Bus in these corridors as part of a greater discussion of transit network connections to the transitways.

As mentioned in the previous section, Hennepin Avenue Rapid Bus should be studied in the context of broader service restructuring in advance of Green Line (Southwest) LRT implementation.

Discussions are also ongoing regarding the future location of east-west transit operations in downtown Minneapolis. Both the West Broadway Avenue and Chicago Avenue corridors would travel through downtown on an east-west alignment. The outcome of these discussions may shift the alignment of these routes and their complementary local service from 7th/8th streets to one or more other streets. For this reason, engineering of these corridors should not begin until a downtown alignment is solidified.

In addition, implementing Rapid Bus in the Chicago Avenue corridor would allow for significant reductions in Route 5 service levels south of downtown. However, Route 5 also provides high service levels northwest of downtown; retaining this service without a paired southern segment would greatly increase operating costs. This may be avoided through extending the Rapid Bus corridor through downtown to the northwest. Future study of this corridor may examine the potential to extend Chicago Avenue Rapid Bus to duplicate the Route 5, traveling on Emerson-Fremont through north Minneapolis.

For these reasons, it is recommended that Rapid Bus not be implemented on **West Broadway Avenue**, **Chicago Avenue, Hennepin Avenue** or **East 7th Street** in the near term, but that service and concept plans continue to be studied to refine the Rapid Bus concepts in these corridors as they relate to ongoing study efforts.

The figure on the following page summarizes the evaluation scores and screening process used to apply readiness criteria to the corridors.

HOW DO THE CORRIDORS COMPARE?