



Gateway Corridor: Non-Motorized Connections to the Transitway

Compiled by:

Nicole Campbell
Jeremy Jenkins
Timothy Santiago
Josie Warren

May 7th, 2013
Hubert H. Humphrey School of Public Affairs
Spring 2013 Capstone Project

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Figure 1: Two bikers on an off-road trail

Executive Summary

The Gateway Corridor will bring mass transit to areas that currently have limited access to bus service and no rail service. Maximizing ridership and the utility of the transitway is critical. How can the Gateway Corridor effectively serve those who live more than one quarter or one half mile from the stations? In particular, what strategies should be pursued in addition to park-and-ride infrastructure?

The Gateway Corridor represents a vision within a vision: it is a worthy objective in its own right, but it is also an integral part of a new regional transit network serving the Twin Cities metropolitan area. Ensuring the success of the Corridor is thus not merely a service to the communities directly adjacent to the transitway, it is a service to the entire region. Fully integrated pedestrian and bicycle access is crucial to the fulfillment of that vision.

The Gateway Corridor in Context

The Gateway Corridor extends from Minneapolis, through St. Paul and the eastern Twin Cities metropolitan area, and into western Wisconsin. As currently envisioned, the Gateway Corridor transitway stretches from downtown St. Paul to the eastern boundary of Woodbury and Lake Elmo. With the exception of the Northstar Commuter Rail, the Gateway Corridor is the most complicated Twin Cities transit line to date in terms of inter-jurisdictional operations. As the Gateway Corridor moves east from its St. Paul terminus, land use becomes increasingly suburban in character. While many communities are working together to build the transitway, it would be an oversimplification to assume that the communities are unanimous in their vision.

Significant pedestrian and bicycle infrastructure already exists along and in the vicinity of the Gateway Corridor. Connections between cities and between major destinations have received less emphasis than intra-city development. Interstate 94 presents a particular challenge, existing as both a physical and psychological barrier dividing communities. Beginning with this infrastructure, how can those who live or work more than one quarter or one half mile from the stations best be served? Besides park-and-ride infrastructure, what facilities, amenities, or infrastructure are needed?

Several issues must be confronted by the communities building the Gateway Corridor transitway. First, there is a general consensus that the ridership will primarily be commuters of choice rather than transit-dependent commuters. Thus, there is a limited “captive” demand for the service. Second, the realities of Minnesota weather – particularly the challenge of winter, but also the challenge of severe summer storms – must be confronted. Third, the current lack of auxiliary/circulator bus service must be considered. Finally, communities must adapt to the new and changing possibilities presented by transit.



Figure 2: Daunting width of Interstate-94

Current Conditions

The cities served by the Gateway Corridor differ in character and development; it is likely that they will interact in different ways with the proposed transitway. Cooperative planning will be required by the varying levels of land use development, transportation infrastructure, and commitment to new transit along the Corridor. While there is significant use of existing park-and-ride facilities, the Gateway Corridor offers an opportunity to better integrate pedestrian and bicycle access.

Each municipality recognizes the need to close gaps in trail bicycling infrastructure to create a more interconnected network for multi-modal transportation. However, the emphasis each municipality places on this need changes along the corridor. Similarly, each city approaches pedestrian infrastructure differently. Saint Paul emphasizes the desire to make whole communities more pedestrian friendly by supporting transit-oriented development (TOD), and connecting neighborhoods which currently have poor sidewalk access. In the suburban communities, the emphasis is on closing gaps in trail and sidewalk networks at the time of roadway reconstruction, and on separating cycle trails from pedestrian paths, to promote safety and use of each of these modes.

A Vision for Pedestrians and Cyclists

In order to maximize the benefits and promise of transit, non-vehicular access to each station is critical. Encouraging pedestrian and bicycle access to the transitway will enhance ridership by offering new options to those who are transit-dependent by choice or necessity. This access must extend not merely to the immediate area but to communities a mile or more from the Corridor. True integration of transit will facilitate multiple combinations of transportation modality and usage, allowing those who walk, those who cycle, or those who do both (e.g., cycling from home to station, then walking from station to work) the full benefit of the transportation network.



Figure 3: End of bike path

Action Plan

Gaps in the Pedestrian and Bicycle Network

This project began with a charge to “map the gaps” in pedestrian and bicycle trails in the vicinity of the Gateway Corridor. It quickly became apparent that existing data sources are too scattered and too fragmented to expeditiously answer that charge, but it remains an important goal. Existing GIS data on the pedestrian/cycling environment is insufficient; additional research is required before or during station area planning. A comprehensive analysis will take several months but is a crucial step to define the gaps in the bicycle and pedestrian networks. Though each station is unique, every individual station area plan should be designed to seamlessly integrate with the pedestrian and bicycle network.

A More Comprehensive Bicycle Network

The Metropolitan Council and the Minnesota Department of Transportation are collaborating to complete a Regional Bicycle System Master Plan. As it is developed, the Gateway Corridor transitway should be linked to regional trail systems. Moreover, the Gateway Corridor presents an excellent opportunity to incorporate a bicycle route into the project itself. Both the Hiawatha and Southwest transitways have parallel bike and pedestrian trails; the Gateway Corridor should continue this pattern.

Pedestrian and Bicycle Navigability throughout the Corridor

The Gateway Corridor must allow its bicycle and pedestrian users to easily access and navigate the area. While connecting the gaps in the pathways is essential, other infrastructure is needed to help bikers and walkers conveniently access and navigate the corridor. Bikers need access to bicycle lockers at stations, in addition to standard bike racks. Wayfinding signage will be critical for all users; ideally including direction to other infrastructure (such as trails and parks) and integrated with smart technologies. Additional measures, such as enhanced pavement and signage for road crossings, will be useful.

Service Improvements Needed to Facilitate Pedestrian/Bicycle Connections

Facilitating pedestrian and bicycle connectivity requires more than physical infrastructure. Community services will be required to maintain the infrastructure in a safe, secure condition. Chief among these are services related to the safe maintenance of trails, particularly in winter weather; and seamless provision of law enforcement and public safety services across jurisdictions. Because these functions are delivered by municipalities and counties, cooperation and coordinated planning across jurisdictions will be critical.

Additional Amenities on the Corridor

Transit stations chiefly serve as points of departure and arrival for the transit system and its riders, but they can easily be adapted to serve additional functions. Planners and other stakeholders should explore opportunities to enhance transit stations with community services. The service need not speak directly to the transit experience, but it should improve the potential experience for riders. One example: expanding the award-winning Washington County Library Express network by including library locker kiosks at one or more transit stations.

Creating a Bicycle and Pedestrian Advisory Committee

An advisory committee should be established, charged with encouraging non-motorized transportation improvements in the Gateway Corridor. Modeled on existing citizens' advisory committees, the Bicycle and Pedestrian Advisory Committee will become an important liaison between the Commission, citizens' groups, other committees, and the general public. The new committee should be encouraged to work with other local groups to maximize the importance and impact of citizen involvement. A vibrant, sustainable committee will provide an important resource supporting the accomplishment of other goals outlined in this report.



Figure 4: Gateway Corridor Preferred Alternative

PART I

Introduction

Currently in the planning stages, the Gateway Corridor is a transit line that will service the Eastern metropolitan area of Minnesota's Twin Cities. Based on either a light rail transit (LRT) or bus rapid transit (BRT) modality, the Gateway Corridor will bring mass transit to areas that currently have limited access to bus service and no rail service. Financial viability is a key challenge facing the Corridor: ensuring that the ridership justifies the initial and ongoing investment. An important subset of the challenge is attracting ridership from beyond the immediate vicinity of transit stations. How can the Gateway Corridor effectively serve those who live more than one quarter or one half mile from the stations? In particular, what strategies should be pursued in addition to park-and-ride infrastructure?



Figure 5: Riders on transitway, commuting with bicycle

The Gateway Corridor: A Vision Within a Vision

In the not-so-distant future, the Twin Cities metropolitan area will be knitted together by a truly regional, multi-modal transit system. Residents of the region will be able to move about freely, with or without a personal automobile, in a safe and reliable manner. Residents of the suburbs will be able to commute to work in the urban core without a car; likewise residents of the urban core will have new access to work and resources in the suburbs. People throughout the metropolitan area will be able to move across the metropolitan area using a combination of pedestrian, cycling, and mass-transit transportation options, easing highway burdens. New, as of yet unimagined possibilities will unfold as the region adapts to a newly flexible, better integrated metropolitan network.

Some will scoff that this vision of a regional transit network is the hope of environmentalists and the dream of urban planners. It certainly is that, but it is also much more than that: it represents a critical step in the development of the Twin Cities as a major national and international metropolitan community in the twenty-first century. Minnesota's chief competitive economic advantage is its relatively healthy, well-educated workforce. Increased public access to academic and vocational campuses will encourage those institutions to compete on quality, not just location. Increased reliance on pedestrian and

bicycle transportation will encourage improved health outcomes. For these and countless other reasons, transit is good for the people of Minnesota, and thus also for business in Minnesota and the economy of Minnesota.

This revolutionary integration will happen neither quickly nor easily. The work has already begun, but there is much to do: developing and constructing the constituent transit corridors that will comprise the whole. The Gateway Corridor, stretching from Minneapolis into Wisconsin, will be home to a new transitway between St. Paul and the Eastern suburbs. This new transitway is a vision within a vision: the subject of current focus and attention, a project in its own right but also an integral contribution to the whole. Maximizing the impact and effectiveness of the Gateway Corridor transitway is critically important to residents who live along the corridor, but it is critical also to residents throughout the metropolitan area who will come to rely on the integrated regional transit system.

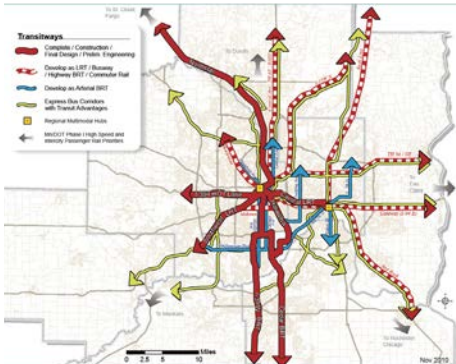


Figure 6: MetCouncil's 2030 Transitway Vision

The Corridor in Context

Politics

The Gateway Corridor is marked by overlapping government boundaries. The line will serve Ramsey County and Washington County as well as the cities of St. Paul, Maplewood, Oakdale, Landfall, Woodbury, Lake Elmo, and Afton. The Corridor also lies within the jurisdiction of the Metropolitan Council as well as various railroad authorities and watershed conservation districts. Beginning in 2013, and lasting until at least 2022, the Corridor will lie entirely within Minnesota's Fourth Congressional District. With the exception of the Northstar Commuter Rail, the Gateway Corridor is the most complicated Twin Cities transit line to date in terms of inter-jurisdictional operations. (The Hiawatha and Southwest LRT lines are contained within one county, Hennepin; and the Central Corridor crosses two counties, Hennepin and Ramsey, but also only two cities, Minneapolis and St. Paul.)

As the Gateway Corridor moves east from its St. Paul terminus, land use becomes increasingly suburban in character, with only light development between Woodbury and Hudson. There are marked differences in current and planned development along the Corridor. These differences reflect, in part, a long history of local choice: Woodbury and Lake Elmo, for example, are adjacent communities that embraced very

different visions of community development. At times the differences have become acute, though there is a general interest in considering development along the I-94 corridor. While the communities are working together to build the Gateway Corridor transitway, it would be an oversimplification to assume that the communities are unanimous in their vision.

The Problem

Significant pedestrian and bicycle infrastructure already exists along and in the vicinity of the Gateway Corridor. This infrastructure includes intra-city sidewalks and trails along with more regional trail options. Connections between cities and between major destinations have received less emphasis than intra-city development. Interstate 94 presents a particular challenge, existing as both a physical and psychological barrier dividing communities to the north and to the south.

The particular problem under consideration is the expansion of transit service to those who live and work outside the immediate vicinity of the planned Gateway Corridor transit stations. How can those who live or work more than one quarter or one half mile from the stations best be served? Besides park-and-ride infrastructure, what facilities, amenities, or infrastructure are

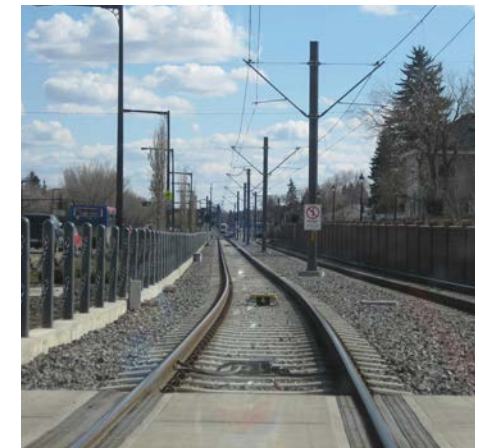


Figure 7: Transitway alignment

needed? How can pedestrian and bicycle access be facilitated? Meetings with local leaders along the Gateway Corridor reveal several themes that merit close attention.

Ridership

There is a general consensus that the ridership will primarily be commuters of choice rather than transit-dependent commuters, particularly for those traveling outside the urban core. This provides both challenge and opportunity: while there is the possibility of encouraging additional commuter choice, the Corridor will not be particularly successful unless it provides distinct advantages to the commuting public. Most suburban residents will have access to conventional automobiles, so the level of true transit-dependence will be low. Urban residents who wish to “reverse-commute” to the suburbs are more likely to be transit-dependent, but it is unclear if there will be sufficient transit-accessible employment opportunities to make this group a substantial ridership base.

Climate Issues

Climatological concerns complicate the issue of commuter choice. The Twin Cities metropolitan area is the northern-most major metropolitan area in the United States. As a direct result, it is

fair to conclude that the Twin Cities present the most challenging climatological environment for major transit development. Examples of mass transit, including LRT and BRT services, exist in even more northern environments, but outside the United States. Thus the Gateway Corridor will need to look to both domestic and international examples for best practices: domestic for comparable political and financial models, but international for climatological design concerns. Given that the success of the Gateway Corridor will be heavily dependent on both its timely reliability and the relative comfort of the transit experience, winter operations (and summer severe weather operations) represent critical challenges.

There is significant skepticism that it will be functionally possible – without even considering financial feasibility – to consistently keep pedestrian and cycling routes clear during the winter months. Severe cold is impossible to mitigate over distance. In the summer, severe weather is hazardous to all commuters but especially to pedestrians and cyclists. All of these conditions emphasize the need for residents outside the urban core to have alternate means of transportation. In turn, this emphasizes the elective and potentially mercurial nature of commuting along the Corridor.



Figure 8: Minnesota sidewalks in the winter

Alternative Vehicular Service

Given these concerns, there is also consensus that effectively serving areas beyond the transit stations will require standard vehicular service. Park-and-ride solutions are one option that will doubtless figure prominently. Another option is the provision of circulator or auxiliary bus service in the suburbs. This service is common in the urban core but unusual or completely absent in the outer suburbs. Local leaders have expressed general support for such services, particularly as adjunct service to the Corridor transit line, but funding is uncertain. There is unanimity on the point that local communities cannot support these bus services, but a variety of views on where the funding might originate from, whether the Gateway Corridor itself, the Metropolitan Council, or some other combination of public and/or private funding. The most common proposals include combinations of circulator/auxiliary bus lines provided/operated by the Metropolitan Council and site-specific shuttles sponsored by major employers, college campuses, and medical campuses.

A More Integrated System

To the extent that pedestrian and bicycle options are considered, municipalities are in favor of retaining local control and responsibility.

However, there is also considerable willingness and growing interest in inter-jurisdictional cooperation. Cities, through the political leadership as well as the staff/planning personnel, could consciously cooperate to stitch together local trail systems that have largely been internally focused. Crossing the barrier of Interstate 94 may be the problem requiring most creativity, but a more integrated system would facilitate commuting, commercial, and recreational opportunities throughout the region. To maximize the participation of municipalities, improvements to the network should emphasize benefits to all residents, including but not limited to those who personally might use the Gateway Corridor transit line.

Development and re-development opportunities along the Corridor are mixed, each posing significant challenges. Several areas are already fairly well developed. These represent obvious opportunities for connections to the Corridor and development or extension of existing infrastructure. Wide areas of undeveloped land are also available along the Corridor. Here the challenge is planning to take advantage of a transit line that has yet to be finalized. Thus, some cities have the advantage of existing development, but with the accompanying inflexibility; other cities have the advantage of flexibility, but with the accompanying lack of a developed base. All of



Figure 9: Biker on an off-road path

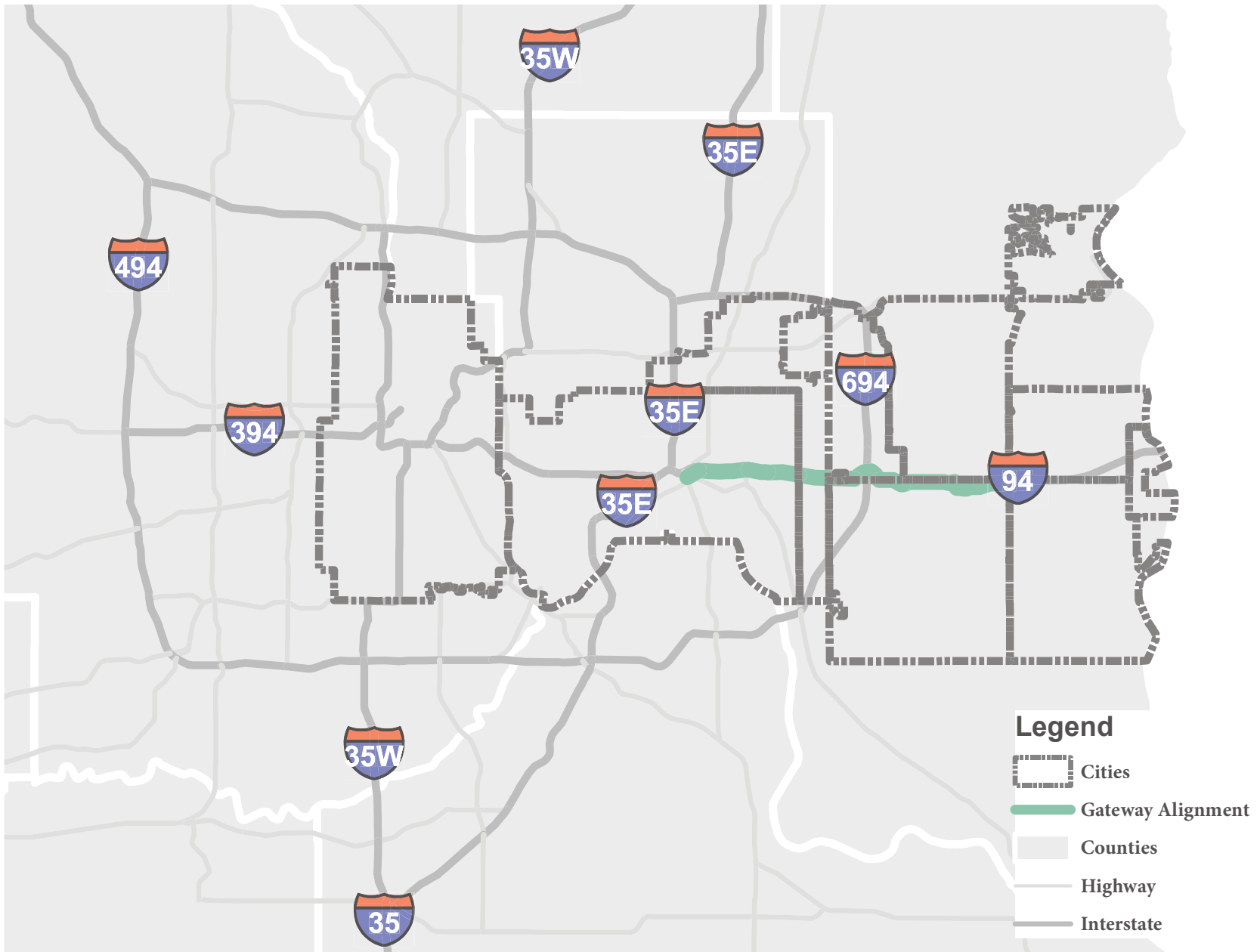
the cities have the challenge of serving current constituencies, many of whom have advantages in the status quo, while also preparing for the decades to come. The Gateway Corridor both facilitates and exacerbates these issues by increasing the potential linkages across cities that have historically operated somewhat more independently.

Broadly speaking, the current consensus is that constituents are aware, at least on a basic level, of the Gateway Corridor project. However, with a few exceptions, constituents have generally not been particularly vocal about the project to date. In particular, they have been nearly silent on issues related to pedestrian and bicycle access; what commentary has been offered has focused on the fact of the project generally or the routes under consideration. Local leaders do not seem surprised by the level of participation at this point since the project remains in a relatively early stage of planning. As plans and proposals become more concrete and move closer to funding, input is expected to increase significantly. Differences between individual municipalities might be brought into sharper relief at that time. At the same time, any change in local political leadership (whether related to the Corridor or not) has the chance to impact the level of understanding and commitment to the project. A clear articulation of plans, options, and

choices now is critical to encourage long-term stability across future administrations.

Perhaps the biggest obstacle – and the biggest opportunity – is the fact that a truly regional transit system does not yet exist in the Twin Cities. Minnesota is slowly assembling a regional infrastructure that is already commonplace in other major metropolitan areas. A fully operational, fully integrated system could dramatically change how the region moves, interacts, and develops. This will both allow and require a new way of thinking about the Twin Cities region, not precluding existing possibilities but opening new possibilities. In turn, the challenge is to develop a Gateway Corridor that is competitive and sustainable in the Twin Cities in 2020 – but that is also prepared for the Twin Cities in 2050 and beyond. It is critically important to consider accessibility, including bicycle and pedestrian accessibility, not only for current use but for use as habits adapt to a truly regional transit system.





Map 1: Regional location of Gateway Corridor

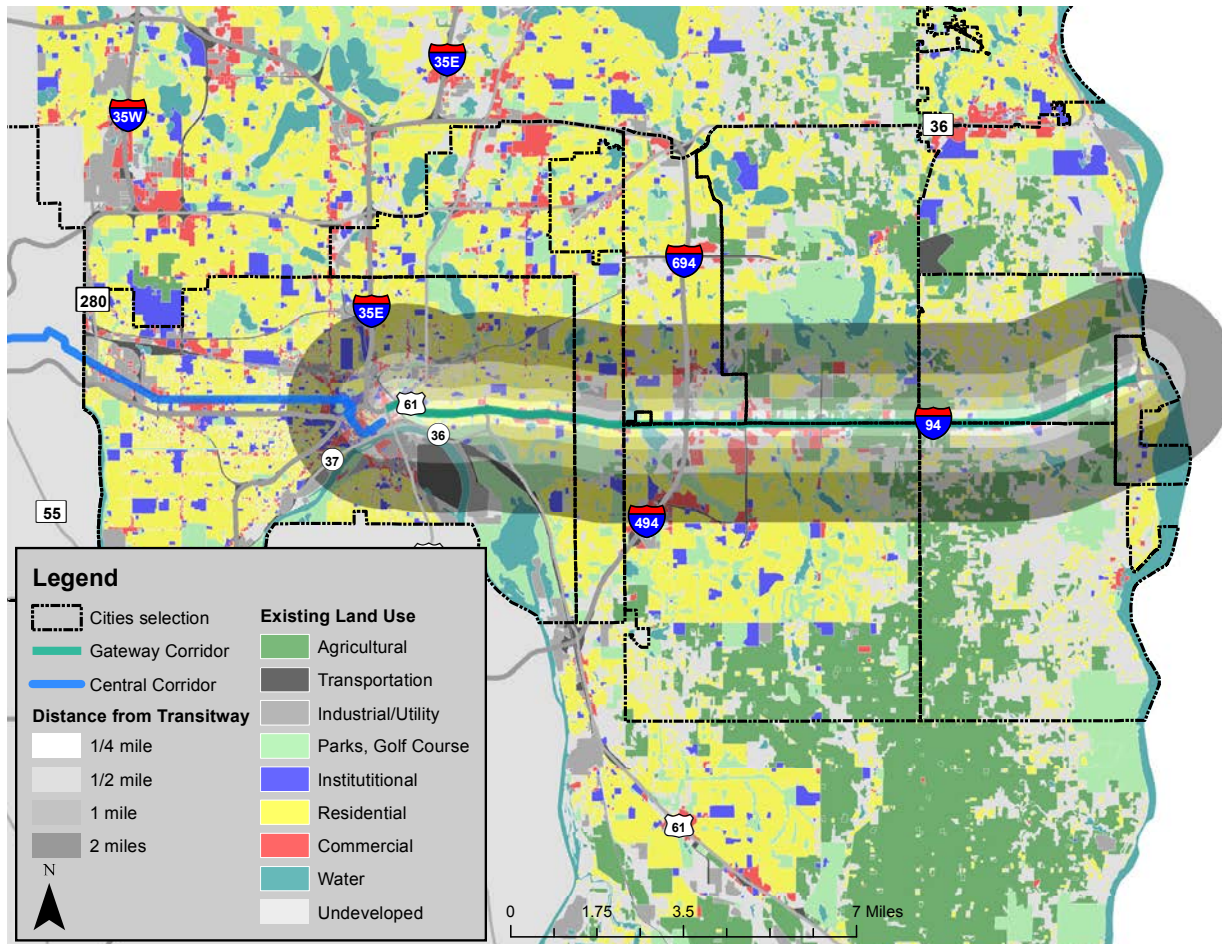
PART II

Current Conditions

The Gateway Corridor transitway will not be built in a vacuum. It is a new infrastructural resource serving established, developed communities. The transitway will serve the public, to be sure, but various stakeholders comprising “the public” have different perspectives and interests to serve. The promise and challenge of the Gateway Corridor is better understood within the framework of current conditions. These include the patterns of land use and development along the Corridor; existing infrastructure; major stakeholder groups; and a contextual (“SWOT”) analysis.

City Conditions

The cities served by the Gateway Corridor differ in character and development; it is likely that they will interact in different ways with the proposed transitway. Key elements of consideration for cities along the Gateway Corridor are summarized here.



Map 2: Corridor-wide land use map

Afton

The City of Afton lies south of Interstate 94, to the east of Woodbury, and just to the west of Lakeland. While Afton is still within the Gateway Corridor, it will receive extended bus service, rather than a designated transitway. The Gateway Corridor alignment will run along the western half of Afton's northern boundary.

Land Use

The primary land uses within a half-mile of the corridor include commercial, institutional, industrial and undeveloped land. Farther out from the half-mile radius, the land uses are largely made up of residential and agricultural, as well as more undeveloped land.

Transportation

Current transit options within the City of Afton are limited to ridesharing, dial-a-ride, and volunteer driver programs. There is a Park and Ride lot in Lakeland, Minnesota, just northeast of Afton, which many Afton residents currently use. It lies on the intersection of I-94 and the St. Croix Trail.

Woodbury

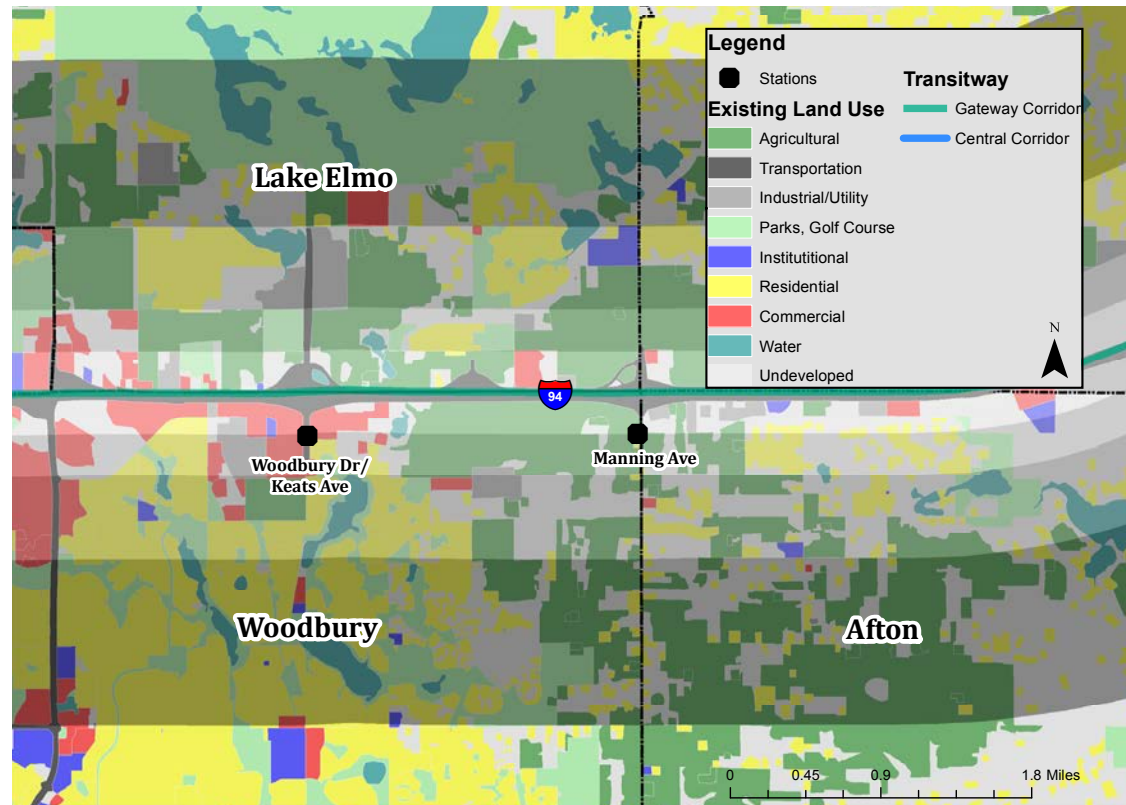
Woodbury lies south of I-94, Oakdale, and Lake Elmo. It is located east of Maplewood and west of Afton. There are two proposed transitway stations for the City of Woodbury. These are located at Woodbury Drive and Manning Avenue. Manning Avenue is the eastern border of the city and this proposed station would be the last on the guideway. Bus service will continue east of this station.

Land Use

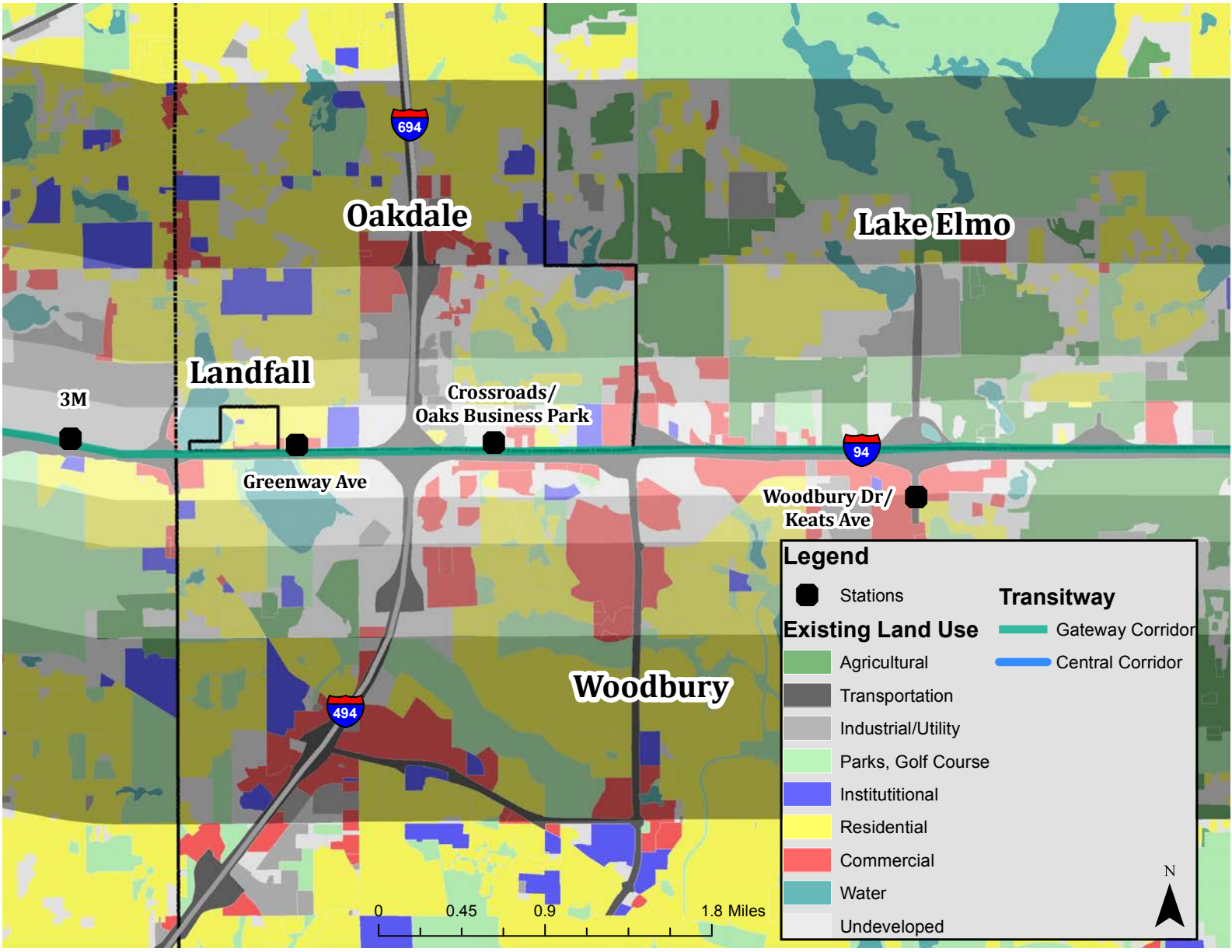
Commercial land uses abut all of the major transportation corridors in Woodbury, including I-94, I-494, and Radio Drive. The majority of the land uses that run parallel to the Corridor are commercial. There are additionally some residential, industrial, institutional, and park space. Farther to the east, closer to Manning Avenue, the predominant land use is agricultural. One to two miles south of the Corridor, land uses become predominantly single-family and park space in nature. The Tamarack Village and City Walk developments, on the west and east sides (respectively) of Woodbury Drive are two predominant developments that might benefit from, as well as provide ridership for, the Gateway Corridor alignment.

Transportation

Three MetroTransit buses including the 351, 353, and 355 currently serve The City of Woodbury. These are express buses that run to Minneapolis and St. Paul. There are three park-and-ride lots within the City that are either at or are nearing capacity. Dial-a-Ride service is also available in Woodbury.



Map 3: Land use map, east end of Corridor



Map 4: Land use map, middle section of Corridor

Lake Elmo

Lake Elmo is located north of Woodbury and Interstate 94, west of West Lakeland Township, and east of Oakdale. The Gateway Corridor alignment runs parallel to the entire length of the southern boundary of the City of Lake Elmo. There are also two planned stations located on the south side of I-94 in Woodbury, along Keats Avenue/Woodbury Drive near the central part of Lake Elmo and at Manning Avenue, to the east of the city.

Land Use:

Within a half-mile radius along the corridor, the primary land uses in Lake Elmo are commercial, agricultural and residential, with some institutional, industrial, and park land. The number of industrial and institutional land uses increase a mile north of the corridor, located along other main transportation corridors.

Transportation

There are currently two bus lines in Lake Elmo, provided by the Metropolitan Transit Commission. Express Route 294 travels from Downtown St. Paul to Stillwater, along Highway 5 (Manning Avenue). Route 351, an express bus, travels along I-94 to Inwood Avenue and a Park and Ride lot in Woodbury, just south of Lake Elmo. There are no Park and Rides within the City of Lake Elmo, but the surrounding cities of Woodbury, Oakdale and Stillwater have a total of six Park and Ride lots.

Oakdale

The City of Oakdale lies to the west of Lake Elmo, to the north of I-94 and the City of Woodbury, and to the east of Maplewood, with Landfall intersecting the southwest corner of the city. I-694 bisects city, intersecting I-94 at its southern border. There are two planned stations within the city: at Greenwood Avenue and at the Oaks Business Park near Helmo Avenue.

Land Use

The majority of the land uses aligning the Gateway Corridor are commercial, institutional, and residential, with some industrial and undeveloped land scattered throughout. Up to a mile north of the corridor, there is some park space, as well as Tanner's Lake on the west side of the city.

Transportation

The two major Interstates that serve the city will be quite congested by the year 2030, with some sections of these Intersections already over capacity. The City of Oakdale is served by the dial-a-ride program and there are two Park and Ride lots within the city, at the Guardian Angels Church and Walton Park. These lots are shared by neighboring cities and are filling to capacity. The southern portion of the city is served by one main bus that travels exclusively to downtown Minneapolis.

Maplewood

The Gateway Corridor will run through the mid-portion of Maplewood. This portion of Maplewood lies just to the west of Oakdale, Landfall, and Woodbury; and to the east of St. Paul. There is one planned station in Maplewood, to the north of I-94.

Land Use

The 3M campus makes up almost the entire portion of Maplewood up to a mile north of I-94 and the Gateway Corridor. North of the 3M campus (deemed industrial land use), there are residential, commercial, industrial, and vacant land uses. Up to a mile south of the Gateway Corridor, the land uses are primarily residential and park/open space, with some commercial uses to the east.

Transportation

3M currently provides ridesharing with the use of passenger vans. Maplewood is served by approximately ten different bus routes in the one-mile radius surrounding the Gateway Corridor. These bus routes provide connections to several of the surrounding cities, including Oakdale, St. Paul, and Landfall. There are four Park and Ride lots within the City of Maplewood, as well as three lots just outside of the city limits. There are also three major transit centers that service the area, located at Maplewood Mall, Little Canada, and St. Paul.

Landfall

Landfall is surrounded by the city of Oakdale on the north, east, and west sides. Interstate 94 and the Gateway Corridor parallel Landfall's southern boundary. There is one planned station in Landfall, located at the bus stop currently serving the City of Landfall.

Land Use

The majority of Landfall is residential, with a few commercial and institutional properties, some parkland, and Tanner's Lake. Harley Davidson and Indian Motorcycle are the two commercial properties along the southern border of the city.

Transportation

Landfall is served by one bus route that connects to St. Paul, Oakdale, Maplewood, and some of the nearby northern suburbs.

St. Paul

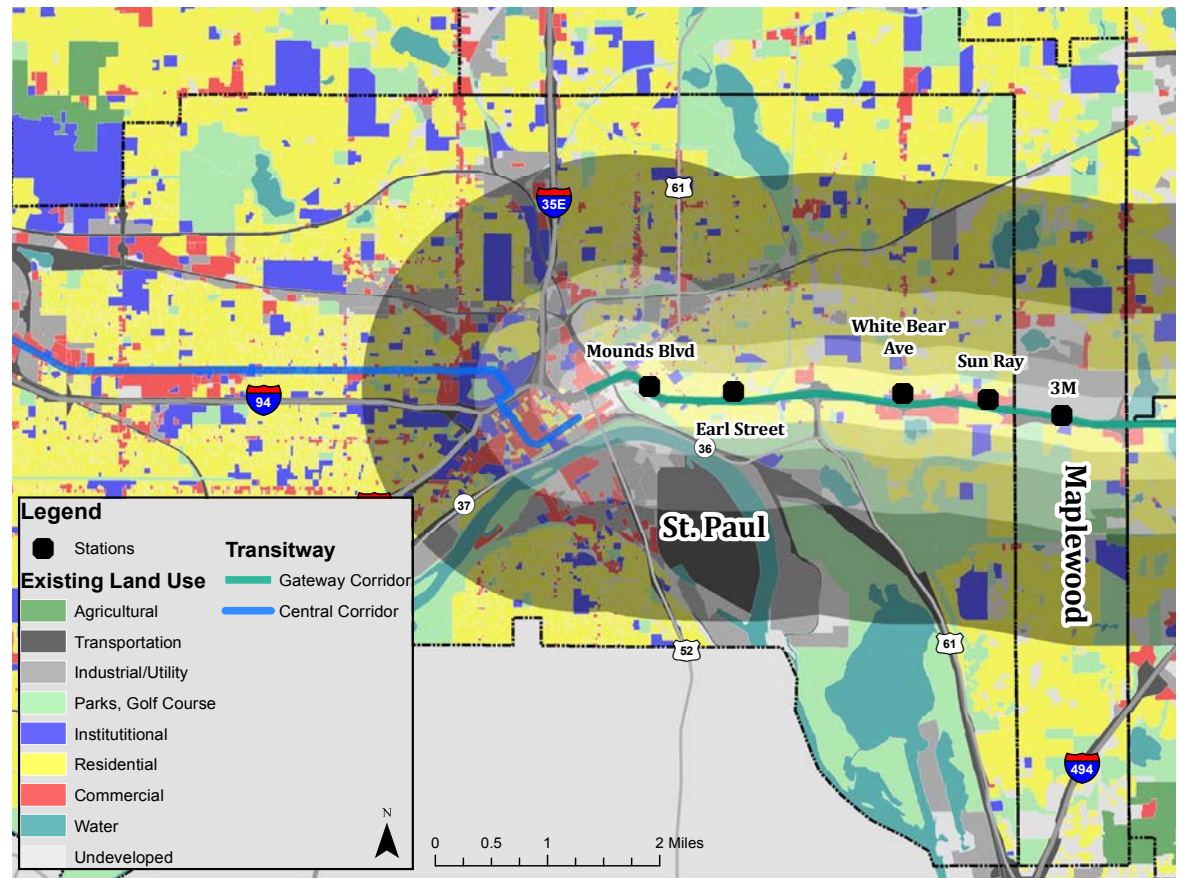
While there will be continued bus service to Minneapolis, St. Paul is the westernmost city that will be served by the Gateway Corridor transitway. There are four proposed stations in St. Paul, including stations located on Ruth Street near the Sunray shopping center, White Bear Avenue, Earl Street, and Mounds Boulevard.

Land Use

Along the section of the corridor that is in St. Paul, the majority of the uses to the east are commercial, residential predominantly makes up the middle portion, and to the west near Mounds Boulevard, there is a mix of parkland, commercial, industrial, and residential. The Mississippi River is approximately one half-mile south of the Gateway Corridor on the easternmost portion in St. Paul.

Transportation

A variety of transportation options are available in St. Paul, including the future Central Corridor Light Rail Transit line, many bus routes with connections to nearby cities, and existing bicycle trails. The Union Depot, the last stop on the Central Corridor line, is located in downtown St. Paul and will be connected to the Gateway Corridor via bus service. There are also Interstates 35E and 94; and Highways 36, 37, 52, and 61, that connect to the transportation network in St. Paul. The St. Paul Downtown Airport lies a mile south of the Gateway Corridor, just beyond the Mississippi River.



Map 5: Land use map, west end of Corridor

City	Count	Share
All Places	112,634	100.0%
Saint Paul	19,386	17.2%
Minneapolis	11,948	10.6%
Maplewood	7,731	6.9%
Woodbury	6,129	5.4%
Stillwater	3,923	3.5%
Bloomington	3,612	3.2%
Eagan	3,056	2.7%
Cottage Grove	2,824	2.5%
Roseville	2,599	2.3%
Oakdale	2,597	2.3%
All other locations	48,829	43.4%

Table 1: Washington County Commute Destinations

City	Count	Share
All Places	212,339	100.0%
Saint Paul	53,717	25.3%
Minneapolis	38,244	18.0%
Roseville	8,903	4.2%
Maplewood	8,266	3.9%
Bloomington	7,009	3.3%
Eagan	4,957	2.3%
White Bear Lake	4,360	2.1%
Edina	3,784	1.8%
Arden Hills	3,713	1.7%
Shoreview	3,415	1.6%
All other locations	75,971	35.8%

Table 2: Ramsey County Commute Destinations

Corridor-Wide Public Transportation

Conversations with transit planners from Metro Transit revealed several insights into the current status of public transportation planning along the I-94 corridor in the Gateway Corridor region.

Key points include:

- Metro Transit is building a new park and ride lot at Manning Avenue, but existing lots are already nearing or exceeding capacity. Commuters from all over the region, including Wisconsin, use the park and ride lots in Washington County.
- Commuters will drive – or bike or walk – to facilities with greater frequency of service. Park and ride lots are already being used by bicycle commuters, but in relatively small numbers.
- A majority of suburban commuters are travelling to Minneapolis. With the exception of one route to Woodbury, there are no reverse-commute transit options available.
- Auxiliary bus routes – local service circulators – have failed in the past, in Woodbury and throughout the region. Demand has not justified the expense of these services.
- Metro Transit considers the cycling and pedestrian conditions around transit stations to be critically important, but planning and implementation is the responsibility of local communities.

Commute Patterns

Using Longitudinal Employer - Household Dynamics (LEHD) data from the U.S. Census Bureau website, tables 1 and 2 show the number of people who lived in Washington and Ramsey Counties that traveled to various cities in the metropolitan area for their primary jobs in 2010. The tables only depict the ten cities with the highest share of commuting residents.

Table 1 shows the results for Washington County. Of the top ten cities to which residents traveled in 2010, five of them have a portion of the Gateway Corridor alignment. The top three cities (Saint Paul, Minneapolis, and Maplewood) are all located outside of Washington County. Ramsey County data is located in Table 2. There are three cities within the top ten indicated that hold a portion of the Gateway alignment. All three of these cities are located within Ramsey County.

Demographics

A brief comparison of demographic data was completed for each community along the corridor. The purpose of this was to further understand who lives along the corridor and how it might affect interest in non-motorized transportation and the development of the transitway corridor. Significant differences were found between St. Paul and Lake Elmo that might affect the demand for bicycle and pedestrian improvements

along the corridor. The further west along the transitway, the more we see communities with higher population densities, more diversity, and a greater share of the businesses. While completing the site visit we found this translates to different amenities for bicyclists and pedestrians, as well as land use types. The differences are primarily due to areas being undeveloped in Washington County along the corridor.

Measures	St. Paul	Oakdale	Woodbury	Maplewood	Lake Elmo
2010 Population	286,068	27,743	61,961	38,018	8,069
Population Density (persons per sq. mile)	5,484	2,501	1,784	2,239	362.7
Median Household Income	\$45,939	\$66,971	\$92,780	\$57,594	\$105,739
Total number of firms (businesses)	23,068	2,150	5,350	3,197	N/A
Race					
White	60.10%	81.40%	81.40%	75.50%	92.30%
Black	15.70%	6%	5.60%	8.20%	0.80%
American Indian/Alaskan	1.10%	0.40%	0.30%	0.50%	0.30%
Asian	15%	8.20%	9.10%	10.40%	3.30%
Hispanic	9.60%	4.30%	3.80%	6.20%	3.50%

Table 3: Demographics of cities along the Corridor



Figure 10: Bike and pedestrian crossing light

Bicycle and Pedestrian Network Gaps

The exact gaps in the network are difficult to discern from data currently available. There is little to no Geographic Information Systems (GIS) data on the pedestrian environment in Washington or Ramsey Counties. A site visit was conducted in February 2013, to assess conditions along the Gateway Corridor. A lack of pedestrian amenities was noted throughout the corridor. This varied by station area, with the more urban St. Paul locations having better pedestrian access than less-developed areas in Washington County. In the areas closest to Hudson Road and I-94 there were also a limited number of bike facilities present. Interstate 94 itself poses a critical barrier to North-South connections for both pedestrians and cyclists. Additional key themes and findings from the site visit include the following:

Urban Pedestrian Environment (St. Paul)

- Sidewalks and a grid present in neighborhoods around Mounds Blvd
- Some sidewalk gaps present, for example a sidewalk only on one side of street, not both
- Signalized crosswalks present at some intersections
- Bus stops and neighborhood destinations within walking distance

Suburban Pedestrian Environment

- Pedestrian signals and crosswalks available at major intersections
- Major streets are wide and difficult to cross due to distance and speed of traffic, especially for the elderly or children
- Some intersections were marked with No Pedestrian Crossing signs, making walking unfriendly and more difficult
- Outside of the mixed-use destinations in Woodbury, there are few sidewalks
- Shared-use paths are present throughout many areas of Woodbury
- Runners were seen running alongside the road

Urban Bicycle Environment (St. Paul)

- Few on-street bike lanes are present in these station areas
- There are parallel streets with low-traffic volume which may be used for biking
- Several trails are present that connect to other areas of St. Paul, including Swede Hollow Park, Phalen Boulevard, and Indian Mounds Park

Suburban Bicycle Environment

- Large shoulders on most roads are suitable for bicyclists
- Network of trails in St. Paul- Woodbury
- Trails don't currently connect to proposed station areas around I-94 but are focused around residential and commercial locations
- Strong potential to connect stations to key destinations already served by local trails

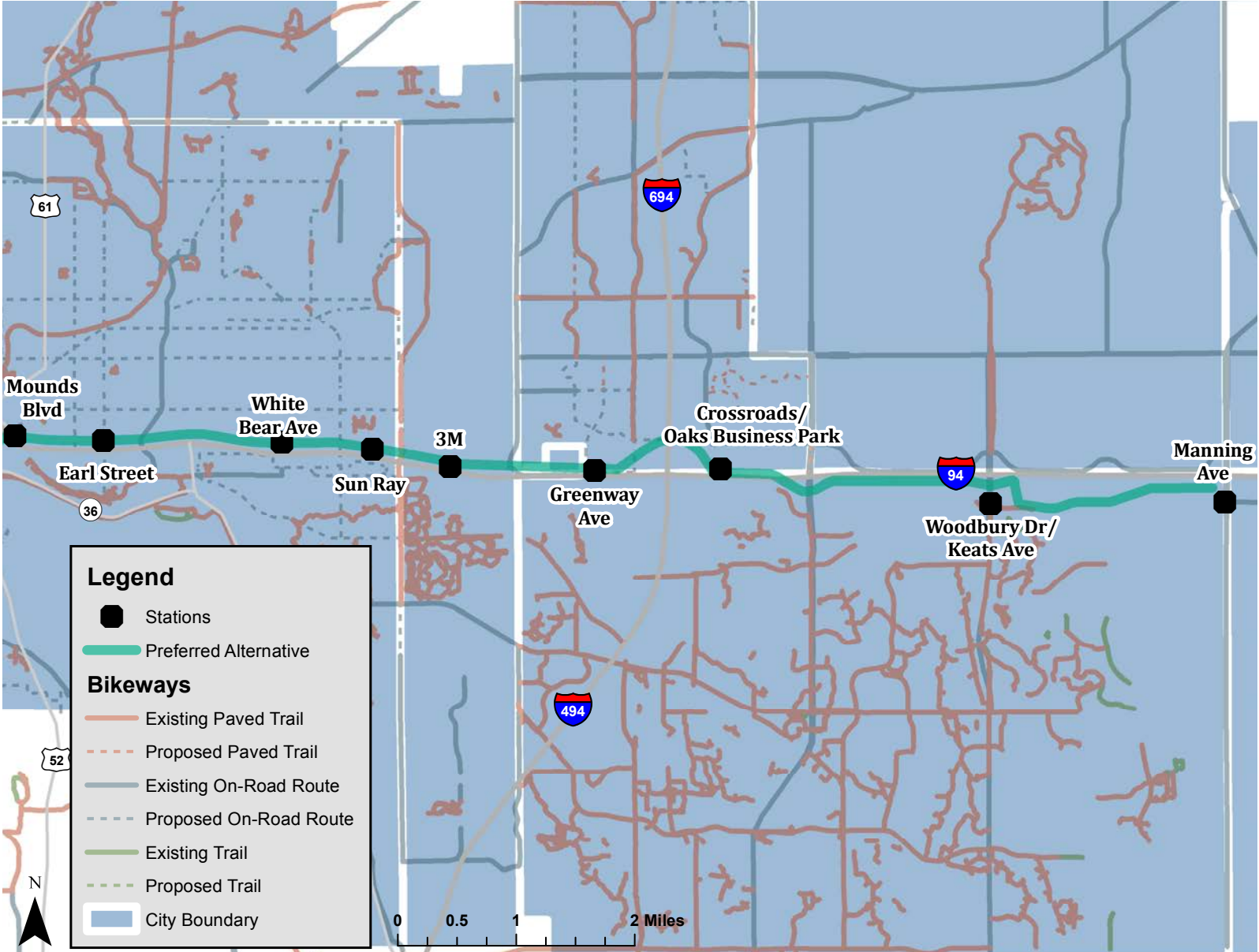
Map 6 summarizes the bicycle gaps in the corridor. However, the best data available, pending a comprehensive updated inventory, is from 2007. The data may not accurately reflect all current bicycle conditions along the corridor.



Figure 11: Sidewalks as part of a network; City Walk in Woodbury, MN



Figure 12: No pedestrian sign, typical of suburban streets along Corridor



Map 6: Existing bike trails and lanes along the corridor

Bicycling and Pedestrian Environment

Bicycle and pedestrian infrastructure is generally managed by individual municipalities. With the exception of regional trails, cities retain control over the planning, construction, and maintenance of their sidewalk, trail, and bike lane networks within their borders.

Each municipality recognizes the need to close gaps in trail bicycling infrastructure to create a more interconnected network for multi-modal transportation. However, the emphasis each municipality places on this need changes along the corridor. Generally speaking, the more “urban” environment of Saint Paul suggests expanding non-motorized transportation by putting streets on “road diets”, that is, reducing the number of lanes for automobiles, and adding bike lanes and traffic calming measures to balance the needs and safety for all users. In Oakdale, the focus for cycling is on recreation, rather than for a variety of trip purposes. Oakdale addresses safety by suggesting physical separation from auto traffic (rather than bike lanes), and to improve safety at crossings of major highways.

Similarly, each city approaches pedestrian infrastructure differently. Saint Paul emphasizes the desire to make whole communities more pedestrian friendly by supporting transit-oriented development (TOD), and connecting neighborhoods which currently have poor

sidewalk access. In the suburban communities, the emphasis is on closing gaps in trail and sidewalk networks at the time of roadway reconstruction, and on separating cycle trails from pedestrian paths, to promote safety and use of each of these modes.

Tables 4 and 5 show the existing policies related to bicycle and pedestrian planning for each individual city along the Gateway Corridor.



Figure 13: On-road routes; bikers and automobiles must share the road

Bicycle-Pedestrian Planning and Policy Matrix

	Saint Paul	Maplewood	Woodbury
Parks, Trails, Open Space	<p>On 6.11 - "Close gaps in trail system to ensure seamless connections for bicycles and pedestrians across the city"</p> <p>"100 miles of parks trails in city, but significant gaps should be closed."</p> <p>Figure F shows Priority Trails, including the area near Gateway corridor.</p>	<p>Trail Goal 1 - Acquire, develop, and maintain an interconnected trail system for transp, rec, and educational purposes.</p> <p>"City has been dedicated to integrating trail and sidewalk development" (p. 6-35)</p> <p>Table 6-6 Existing and Future Trails</p> <p>Figure 6.2 - Proposed Parks, Trails, Open Space Map -includes existing N-S trails on McKnight, proposed trails on Century -no proposed trails adjacent to Gateway Corridor</p>	<p>The 2036 System Plan is coordinated with the City's Transportation Plan to create a comprehensive network of off-street trails and on-street striped bike lanes (bikeways) to provide for a range of non-motorized recreation and transportation needs.</p> <p>The 2036 System Plan calls for the addition of 62 miles of off-street trails.</p> <p>Figure 6-4 - 2036 Trail System -includes proposed trails along Hubban Road and links to adjacent cities</p>
Transportation	<p>Strategy 1: Best Practices -Balance needs of all users 1.1 -"road diets" for ped/bike/streetscape improvements 1.2 -design for accommodation of ped/bikes on bridges 1.6 -maintain sidewalks, signs, bikeways year round 1.10 -raise motorist awareness of ped/bike; bike awareness of traffic laws -1.11</p> <p>Strategy 2: Balance & Choice -Access to a range of modes 2.1 -Support TOD thru zoning/design guidelines 2.2 -Create more seamless connections betw modes 2.11</p> <p>Strategy 3: Support Active Lifestyles -Formalize rules for ped-oriented streetscapes 3.1 -Develop and maintain connected bicycle system 3.4 -Signage and way-finding 3.7 -Create public bike parking facilities to increase bike trips 3.18 -Support bike-sharing program in Saint Paul 3.13</p> <p>Strategy 4 - Enhance and Connect the City -Coordinate w/ surrounding communities to enhance regional bicycle and pedestrian networks 4.4 -Connect NHi w/ poor sidewalks and access to trails, esp E and N of downtown 4.7</p>	<p>The City will consider the following goals when designing sidewalks and trails:</p> <ul style="list-style-type: none"> § Emphasize harmony with the environment. § Protect users from vehicular traffic. § Create a network of relatively uninterrupted trails. § Tie parks together into a comprehensive park and trail system. § Tie the City trail system with those of adjacent cities and counties. § Also coordinated with school district busing policies. § Provide safe and convenient access to parks, community facilities, work, shopping and schools. § Encourage transit usage. § Support county and regional trail systems. § Tie neighborhoods together. § Bike routes should be off-street, however when not feasible, streets should be designed for safe bicycle passage under all conditions, including wide shoulders, no bump-outs, clearly striped, signage for bicycle awareness, clearly marked intersections where trails cross roads, and trimmed vegetation at intersections. 	<p>Currently there are no designated bicycle lanes located on roadways. However, bicyclists still can and do use the roadways for transit. Because the roadways under the jurisdiction of Washington County as depicted on Figure 6-1 often have wide-paved shoulders, bicyclists tend to use these facilities. However, many of these County roadways also carry considerable volumes of vehicular traffic, which reduces their compatibility for bicycle usage.</p> <p>A key goal for reducing the need for elders to drive is to provide effective and safe pedestrian access between residential areas and destinations that are important to them.</p> <p>One important means to minimize the need for elders to drive is to promote mixed use development which includes elder housing.</p> <p>Promote a walkable, sustainable development pattern that supports alternative forms of transportation (walking, biking and mass transit) while still accommodating the automobile.</p> <p>Provide safe and comfortable walkway and trail linkages from Mixed Use areas to other public facilities, major employment and shopping centers, residential neighborhoods and green space.</p>

Table 4: Bicycle and Pedestrian Policies in Place for Cities Along the Gateway Corridor

Bicycle-Pedestrian Planning and Policy Matrix			
	Landfall	Oakdale	Lake Elmo
Parks, Trails, Open Space	<p>Gives the limited space available for open space in the City of Landfall, there are currently no provisions for the improvement of cycling or pedestrian infrastructure as part of the open space plan for the city.</p> <p>There do not appear to be any dedicated trails for cycling or recreational walking in the city.</p>	<p>Goal 2: Promote trail connections that link destinations and neighborhoods and offer scenic beauty.</p> <ol style="list-style-type: none"> Continuously improve the pedestrian transportation systems through proactive planning and pursue partnerships with surrounding cities. Develop an internal trail system within The Passages of Oakdale. Connect with the Lake Links Trail Network. Provide a trail connection to Lake Elmo Regional Park along 10th or 15th Street. Explore trail connection opportunities adjoining systems such as connections to Inglewood at Larpenaur Avenue, Stillwater Boulevard, and Hadley Avenue. Create priority trail connections and rehabilitate areas within the City trail system that connect to places of interest such as schools, parks, natural areas, and retail. <p>Figure 5.3 Bicycle & Pedestrian Facilities Plan</p> <p>Principle 1: Separate Bicyclists and Pedestrians</p> <p>Principle 2: Create a System of Bicycle Routes</p> <p>Principle 3: Improve the Sidewalk System for Pedestrians</p>	<p>Integrate existing private trails into the public trail plan by allowing City to take over maintenance in exchange for public access. This applies to private trails that lie within the plans for the city's Trail Guide Plan.</p> <p>The trail system within the city should consider connectivity to the regional system, including adjacent cities and county trails.</p> <p>There is little potential for commute trips by bicycle; most trips are within the community, such as children riding to school, or for recreation purposes.</p>
Transportation	<p>There are local residential streets within the city and speed is limited to 10 MPH for safety.</p> <p>The majority of residential areas have sidewalks.</p> <p>No additional pedestrian walkways are planned for the near future.</p> <p>Bicycling or bicycling infrastructure is not specifically discussed in the Landfall Comprehensive Plan.</p>	<p>Continuity: The Oakdale bicycle system should be a direct and continuous network for both purposeful and recreational trips by bicyclists, while accommodating in-line skaters. Special emphasis should be placed on creating safe crossings of I-694, I-64, TH5, and Century Avenue.</p> <p>Safety: User safety should be a prime factor in the design of the bicycle system. The bicycle system should be designed to minimize conflicts between bicyclists and motorized traffic through physical separations, intersection controls, signage and visibility. The bicycle routes should be designed to reduce the number of conflicts between bicyclists and pedestrians, moving motor vehicles, parked motor vehicles and skaters.</p> <p>Separating Bicyclists and Pedestrians: The pedestrian system and the bicycle system should eventually be separated from one another, to the extent possible, for reasons of safety and to promote the use of each system.</p>	<p>The City will need to focus on connecting recreational trails and linking specific destinations to create an adequate commuter trail system.</p> <p>Providing designated trail links between the schools, the Village area, and other key residential and business areas will improve safety for pedestrians and bicyclists.</p> <p>Development of a public trail system, focused on the Old Village, is an ingredient in realizing the Old Village vision. A system so designed would have a likely impact on intra-city vehicular trip generation.</p>

Table 5: Bicycle and Pedestrian Policies in Place for Cities Along the Gateway Corridor



Figure 14: Stakeholders get together to examine a project

Stakeholder Considerations

Major stakeholders can be summarized through a list of groups that are involved in, or will be affected by, the pedestrian and bicycle network along the Gateway Corridor. The intent of the review is to identify and understand the network of relationships between the transitway and the various stakeholders, bringing awareness to possible long-term issues. Identification of specific stakeholders is meant to be exemplary rather than exhaustive.

Major Employers

3M, Hartford Financial, and Metropolitan State University are three major employers along the Gateway Corridor alignment that have planned station areas in their general vicinity. Increased pedestrian and biking access to the corridor would give their employees more options for commuting, as well as increased accessibility for their clients. The empty State Farm complex in Woodbury provides a development opportunity for an additional major employer near the transitway.

Major Retail Centers

There are several major retail centers along the corridor that would benefit from increased pedestrian and bicycle accessibility. These retail centers can also be considered destinations for riders on the transit way. The retail centers included in the stakeholder analysis are City

Walk, Tamarack Village, and Woodbury Lakes in Woodbury; and the Sun Ray and Scenic Hills shopping centers in Saint Paul.

Medical Campuses

The Woodwinds Health Campus in Woodbury is a significant destination for employees as well as patients. While the campus is somewhat more distant from the transitway, its accessibility to the transitway merits consideration, especially for patients who may be reasonably mobile but unable to drive.

Government Bodies

The various cities located along the alignment of the Gateway include: Saint Paul, Maplewood, Oakdale, Landfall, Woodbury, and Lake Elmo. These cities are located within Ramsey and Washington Counties. The representatives of these various government bodies, as well as other local elected officials, have an interest in developing connections from the Gateway Corridor to their constituents.

Community Members

Perhaps the group with the most interest in increased pedestrian and bicycle connections throughout the Gateway Corridor are the community members throughout the area. Transit and bicycle riders, both recreational and commuting, would be the predominant

beneficiaries of increased accessibility to the line. Interstate 94 commuters would benefit from sidewalks and bike paths to the various Park and Ride lots along the corridor. Residents, business owners, and taxpayers in the area would utilize the connections on a daily basis.

Community and Advocacy Groups

The Community Councils of District 1 and 4, the various Chambers of Commerce, Transit for Livable Communities, and neighborhood associations are stakeholders with a vested interest in serving the people in their communities. The further development of the bicycle and pedestrian transit network in the area would be mutually beneficial for these stakeholders and their patrons.

Agencies and Committees

Furthermore, there are several entities that will be involved in the execution and maintenance of an expanded bicycle and pedestrian network. These include the following: the Metropolitan Council, MetroTransit, Minnesota Department of Transportation, the Gateway Corridor Commission, Counties Transit Improvement Board, Parks and Recreation, Public Works, Department of Natural Resources, the Federal Transit Administration, and the Federal Highway Administration.



Figure 15: Community members and advocacy groups come together to review an issue

SWOT Analysis

The context of the project is further illuminated through an analysis of relevant strengths, weaknesses, opportunities, and threats/challenges (SWOT). The Eastern metropolitan area already has significant infrastructure for bicycle and pedestrian traffic; Woodbury boasts the largest and most comprehensive municipal trail system in Minnesota. Park-and-ride facilities in the area are already used at or beyond rated capacity, so a clear demand exists for accessibility beyond the immediate vicinity of the Corridor. At the same time, the heavy emphasis on automotive-oriented development makes alternative transit something of a novelty in the area. The number of adjacent and overlapping jurisdictional entities complicates the articulation of a shared vision for development.

The Gateway Corridor may be buoyed by - or swamped by - significant shifts in social and political culture. Not only is it part of the growing Twin Cities transit infrastructure, it can serve as a model for better integration of multi-modal transit. Rising affinity for cycling and pedestrian transit dovetails with increasing emphasis on environmental sustainability and personal healthcare management: improved bicycle and pedestrian connections can encourage the health of the ecosystem as well as the citizenry. At the same time, accelerating concern over the sustainability of government finances

and economic growth emphasize threats of unpredictable funding and political support. These negative forces could easily exacerbate competition between programs and between municipalities for limited resources.

		Positive	Negative
Internal	<p>S Strengths</p>	<p>W Weaknesses</p>	<p>W</p>
External	<p>O Opportunities</p>	<p>T Threats</p>	<p>T</p>

<p>Fulfills a need for creating integrated multi-modal transportation networks</p> <p>Comprehensive assessment of regional and municipal ped/bike networks</p> <p>Connects the transitway to major housing/commercial nodes outside the radius</p> <p>High Park-n-Ride occupancy for weekday commuters</p>	<p>An historical focus on the development of station areas primarily within 1/4-1/2 mile radius</p> <p>Auto-oriented society/land use plans</p> <p>Auto-oriented built environment</p> <p>Expense of LRT; BRT is unproven in Twin Cities</p> <p>Low transit ridership in suburbs outside peak times (due to lack of service)</p> <p>Overlapping governments</p>
<p>Growth in bicycle culture, including support for expansion of trails</p> <p>Improve safety for all travelers using urban design best practices</p> <p>Break 'silos' between cities and agencies on regional project</p> <p>Make 'unconventional' modes appealing to suburban residents</p> <p>Connect people from throughout the region to job opportunities</p>	<p>Funding for trails and improvements beyond station areas</p> <p>Resistance to changing land use, increasing density around stations</p> <p>Inter-agency cooperation</p> <p>Harsh Minnesota winters will interfere with willingness of people outside of radius to commute via transitway or bike/ped connections</p> <p>Political uncertainty around Corridor</p>

Table 6: Strength, weakness, opportunity, threats analysis performed for Gateway Corridor



Figure 16: Bridge in St. Paul helps to connect two sides of busy street for pedestrians and bicyclists

PART III

A Vision for Pedestrians and Cyclists

Much as the Gateway Corridor is a vision within a vision – a particular goal, in itself, serving the larger goal of a regional transit network – pedestrian and bicycle accessibility is nestled within the vision of the Gateway Corridor. In order to maximize the effectiveness and appeal of the transitway, we must facilitate safe and reliable access for pedestrians and cyclists. In turn, this requires articulation of a vision for that access such that planning is deliberate rather than incidental.

Multimodal Transportation

In order to maximize the impact and effectiveness of the Gateway Corridor, the transitway must successfully appeal to riders beyond the immediate environs of planned transit stations. Because the line is dominated by suburban development of moderate to low density, the service radius of each station will need to be larger than might be expected in the urban core. In turn, this requires transportation to and from the stations. Vehicular access is one option: park-and-ride facilities, public auxiliary/feeder bus lines, and private circulator systems will all increase the use of transit. However, to maximize the benefits and promise of transit, non-vehicular access is also critical. Encouraging pedestrian and bicycle access to the transitway will enhance ridership by offering new options to those who are transit-dependent by choice or necessity. True integration of transit will facilitate multiple combinations of transportation modality and usage.



Figure 17: Pedestrians connect to transit

Pedestrian → Transit → Pedestrian

A person will be able to walk, safely and with reasonable ease, to a transit station. After disembarking, the person will be able to continue on foot, safely and with reasonable ease, to the desired destination. Safe and reasonable access will not be limited to the immediate environs of the transit stations but will extend for a mile or more in all directions. “Pedestrians” includes those who require mobility aids (canes, walkers, wheelchairs, personal scooters); infrastructure will reflect this fact.



Bicycle → Transit → Bicycle

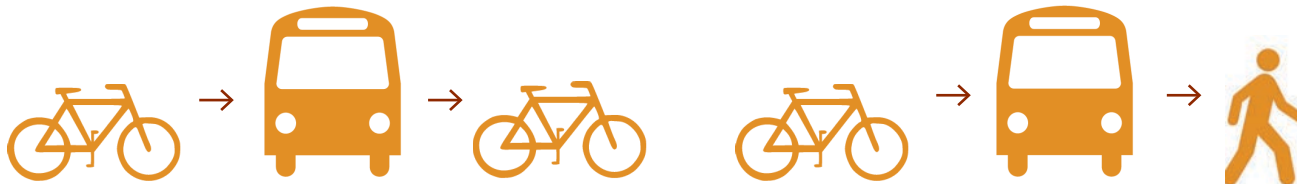
A person will be able to ride a bicycle, safely and with reasonable ease, to a transit station. After disembarking, the person will be able to continue by bicycle, safely and with reasonable ease, to the desired destination. Safe and reasonable access will not be limited to the immediate environs of the transit stations but will extend for several miles or more in all directions. This modality combination requires adequate allowance for transporting bicycles on/in the transit vehicle.

Bicycle → Transit → Pedestrian

A person will be able to ride a bicycle, safely and with reasonable ease, to a transit station and securely leave the bicycle at the transit station. After disembarking, the person will be able to continue on foot, safely and with reasonable ease, to the desired destination. Later, the person can reverse the commuting process. Storage infrastructure will consider a variety of cycle styles (e.g., recumbent bikes) and cycle price-points (e.g., the desire of riders to store expensive cycles in lockers, not chained to racks).



Figure 18: A bicyclist uses the bus to connect to a destination



Transit → Transit

The Gateway Corridor is but one piece of the larger, integrated whole. It is critical that stations facilitate transfer between the Gateway Corridor transitway and other transitways. A person will be able to move a bicycle, safely and with reasonable ease, at connection points so that the entire experience is as seamless as possible.

Pedestrian/Bicycle → No Transit

The Hiawatha LRT Line demonstrates the possibility of integrating pedestrian/bicycle trails along the length of a transitway. Expansion and integration of pedestrian and bicycle connections is critical to the success of the Gateway Corridor and regional transit more broadly. As part of this effort, trails will not only be linked to stations but to each other, allowing for safe and reliable non-motorized transportation across the region. A person will be able to easily move within communities and between communities, either by foot, by cycle, or by transit.



Figure 19: Transit users have multiple options



Livability and Sustainability

The Gateway Corridor will have a safe and inviting feel for residents, commuters, and visitors to the region. Future development will prioritize the prized regional trail system by integrating transportation via connections to the trails and between them. The suburban character must be preserved while enhancing livability through sustainable development, increased access to services, and heightened accessibility.

The Gateway Corridor is envisioned as a model of sustainability for the region. Transit will be seamlessly integrated with bicycling and pedestrian connections to regional trails and community assets. Walkable, mixed use development will be surrounding the stations. There will be opportunities for residents, visitors, and commuters to shop at local businesses and have access to services before and after commuting on the transitway.

Economic Development

The transitway will make amenities along the Gateway Corridor more accessible to the surrounding communities, attracting regional tourists. Traditionally, economic development from transit lines has been focused on the immediate vicinity of the stations. However, as pedestrian and bicycle connections are better integrated, local communities could better leverage transit as development opportunity for parcels outside of the immediate vicinity.



Figure 20: Suburban Intersection

PART IV

An Action Plan for the Gateway Corridor

This project began with a charge to “map the gaps” in pedestrian and bicycle trails in the vicinity of the Gateway Corridor. It quickly became apparent that existing data sources are too scattered and too fragmented to expeditiously answer that charge in a narrow manner. In response, we have developed an action plan that focuses on six key steps to improving pedestrian and bicycle service in the Corridor:

1. Identify and address gaps in the pedestrian and bicycle network.
2. Integrate the Corridor with a more comprehensive bicycle network.
3. Improve pedestrian and bicycle navigability throughout the Corridor.
4. Review and improve services needed to facilitate pedestrian and bicycle transit.
5. Consider additional amenities at transit stations.
6. Establish an advisory committee to advance and sustain progress towards these goals.



Figure 21: A signal-assisted pedestrian crossing allows for easier access

Issue 1: **Gaps in the Pedestrian Network** ***Context***

The Gateway Corridor currently does not have adequate bicycle and pedestrian infrastructure to meet the needs of transit riders. Currently, the majority of transit users travel by car to park and ride facilities. If there is to be an increase in ridership, transit stations will need to be truly multi-modal.

Existing GIS data on the pedestrian/cycling environment is insufficient; additional research is required before or during station area planning. A comprehensive analysis will take several months but is a crucial step to define the gaps in the bicycle and pedestrian networks. Steps should be taken now, as well as during development and construction of the Gateway Corridor project.

Action Steps

1. Inventory gaps in the pedestrian network during station area planning. The focus should be on connecting destinations within the immediate station area as well as in an extended range – up to a mile for pedestrian connections, up to several miles for bicycle connections.
2. Develop and implement station area plans that prioritize pedestrian access. This should include access to commercial destinations, employment centers, residential neighborhoods, and recreation/outdoor opportunities.

Logistics

Each station has a unique context that should be addressed during station area planning. Urban stations such as Mounds Boulevard and Earl Street currently have sidewalks, crosswalks, and pedestrian signals but improvement is needed for connectivity, ADA compliance, and filling in existing gaps. Experience from University Avenue and the Central Corridor could provide a model for the St. Paul Gateway stations.

East of St. Paul, many station areas are lacking pedestrian access on most, if not all streets. Once these stations are further developed and new development moves into the station area, it will be important to integrate pedestrian access with new and existing development in the corridor. As an example, Sacramento, California, is a city with experience connecting pedestrians to stations along freeway right-of-way. Stations provide at-grade bicycle and pedestrian connections that link with low-volume streets and nearby trails (FHWA).

Sustainability

Once the pedestrian/cycling network is planned and built, it will require little long term investment beyond basic maintenance, while still providing use to visitors, residents, and commuters. Each city should continue to maintain and support this infrastructure as they do other sidewalks, trails, and pedestrian amenities in the community.



Figure 22: Pedestrian access includes ADA-compliant sidewalks

Issue 2:

A More Comprehensive Bicycle Network

Context

The Metropolitan Council and the Minnesota Department of Transportation are working together to complete the Regional Bicycle System Master Plan. Their goals include a proposed set of regional bikeway corridors and regional critical links; a proposed update to the Regional Bicycle System map; and a defined methodology and framework for monitoring the performance of the regional bicycle system. This initiative provides additional impetus for better linking the Gateway Corridor transitway to regional trail systems. In addition, the Gateway Corridor presents an excellent opportunity to incorporate a bicycle route into the project itself.

Create a network of bicycle boulevards along residential streets to attract bicyclists of all comfort levels.

A bicycle boulevard is a low-volume street that has been designated for bicyclists but still allows motor vehicle traffic to share the space. Many communities around the country have begun to use bicycle boulevards because of inexpensive implementation and the resulting increase in comfort for all bicyclists. Attracting bicyclists of all skill levels would increase the number of multi-modal trips to and from the transitway. A local example to follow is Bryant Avenue S in Minneapolis and the advisory bike lanes in Edina.

Connect key destinations in the region: community to community, residential, transit, open space and parks, and employment centers and commercial.

Improving connectivity between major destinations will increase transportation options along the corridor and draw visitors from other areas to the corridor. The corridor currently has a large number of trails and on-road routes for bicyclists that would greatly be enhanced by a more comprehensive network.

Using the existing trails, developing bicycle boulevards in residential areas, and developing a shared use path to parallel the transitway would make bicycling and walking in the region more attractive.

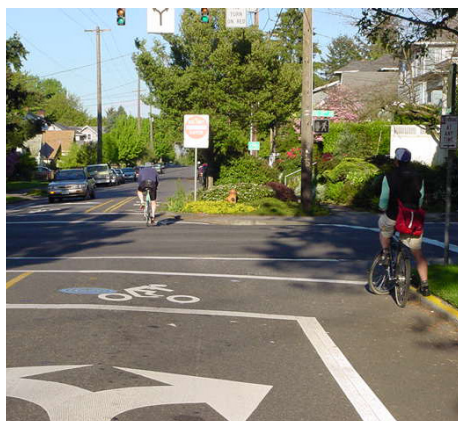


Figure 23: Bicycle Boulevard, Portland, OR

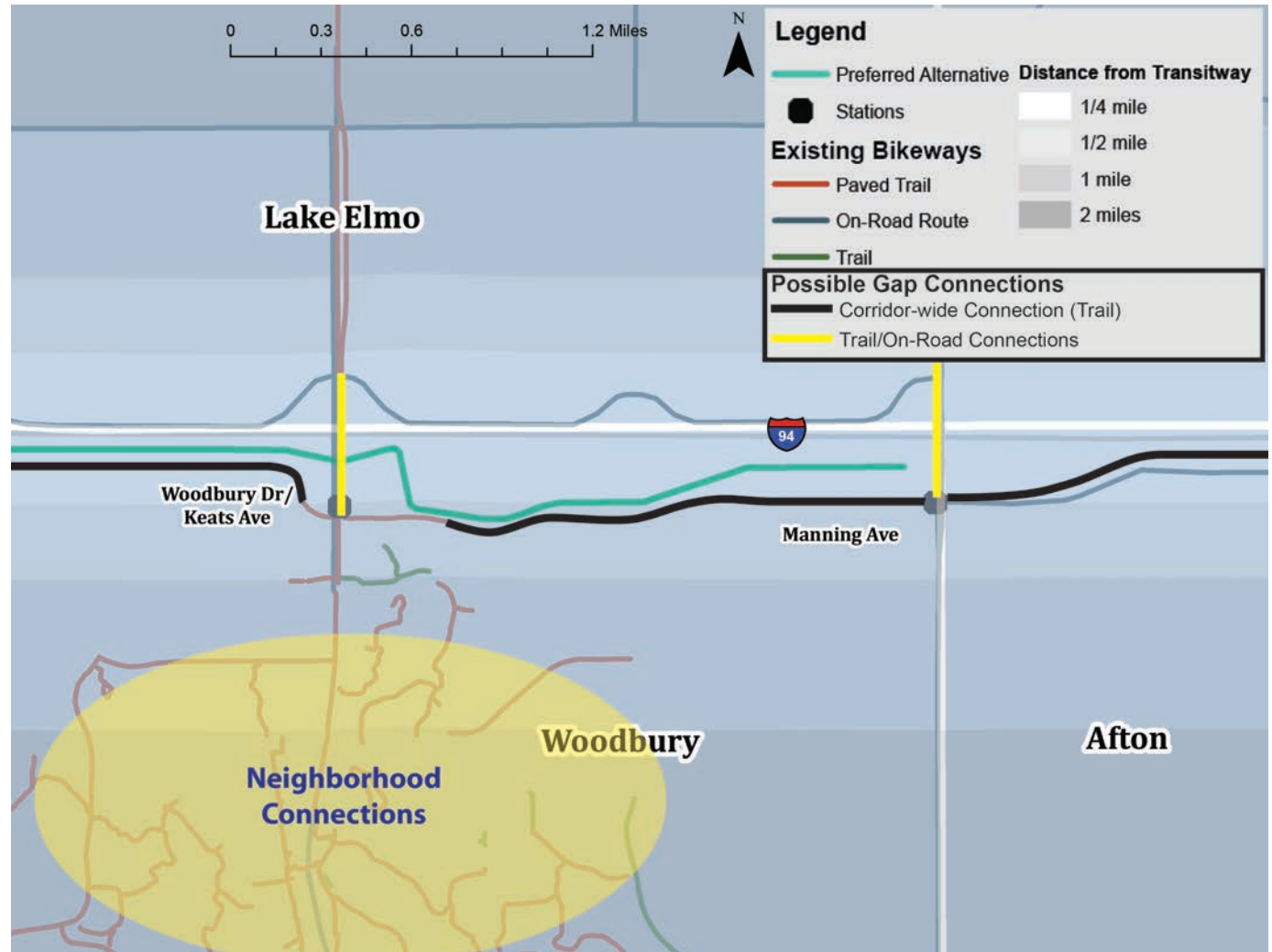
Fixing the Network Gaps: Examples of Possibilities

As mentioned throughout the study, the data we have is incomplete and unreliable at this time. However, the Metropolitan Council regional bicycle network study and station area planning will continue to inform the work that should be done to improve bicycling along the corridor as the project progresses. In the next year there will be an updated map and a regional gap study that will have incorporated feedback from residents, compiled data from all the communities along the corridor, and provided some insight into network gaps at the regional level. The following maps provide an example of what could be done to fix some of the gaps along the corridor. It is by no means comprehensive and at this point is still dependent on a number of variables. Our main focus was in improving bicycle access to transit along the Gateway Corridor.

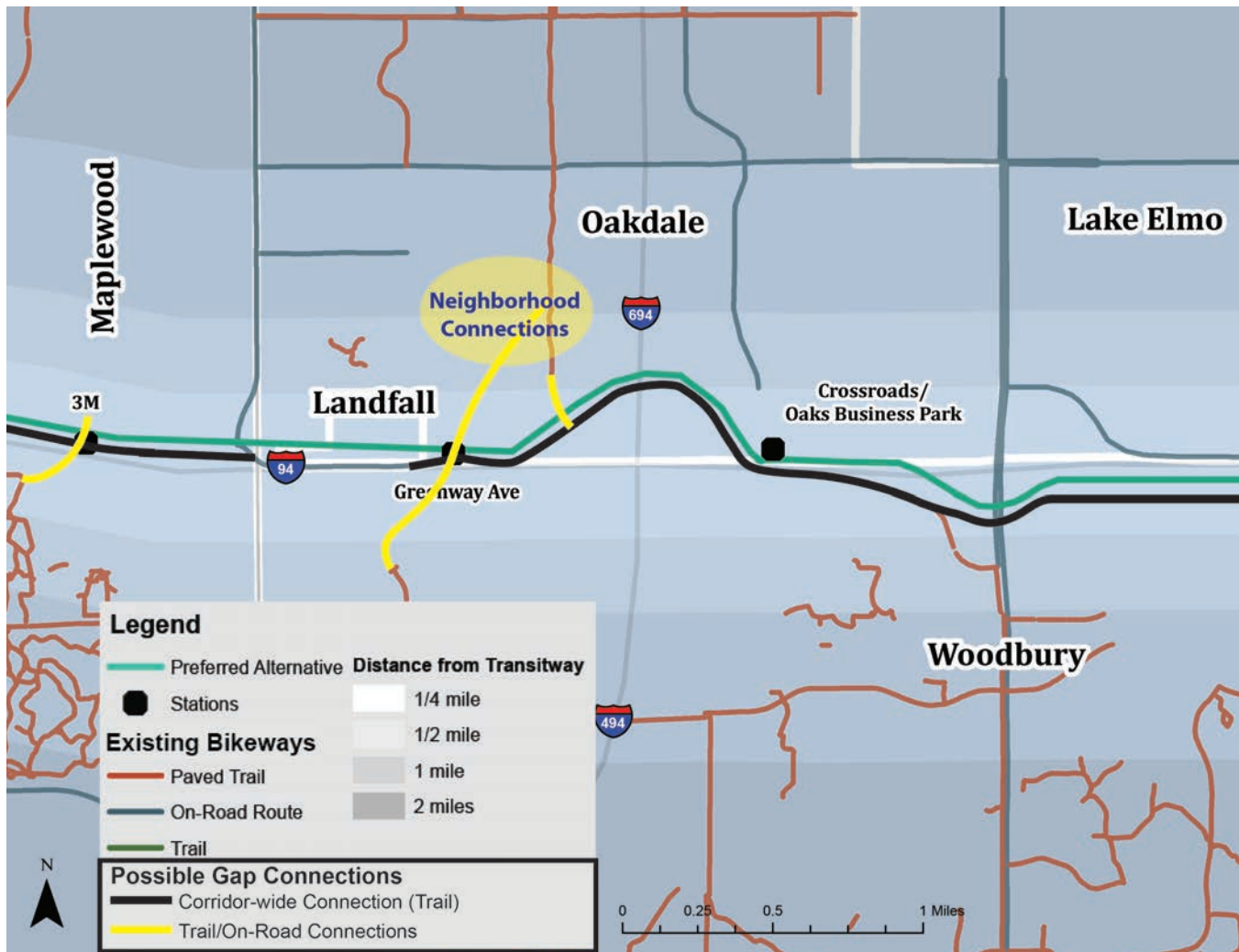
Map 6: Existing and Planned Bike Paths and Trails Along the Corridor

Section 1: Afton to Woodbury

- Connect the parallel transitway shared use path to existing trails in Woodbury and to the existing on-road route in Afton. If possible, incorporate into the transitway design and continue separated trail into Afton.
- Create more connections across I-94 to link both Lake Elmo and Woodbury to the transitway. Our map fills the gap between Woodbury Drive and Keats Avenue, as well as creating a connection north across I-94 along Manning Avenue.
- Enhance neighborhood connections in Woodbury. Woodbury has a number of trails and is developing more as they grow and build out. Making sure that all residents have access to the trail network and that it connects to the transitway is key.



Map 7: Possible gap connections in east end of Corridor



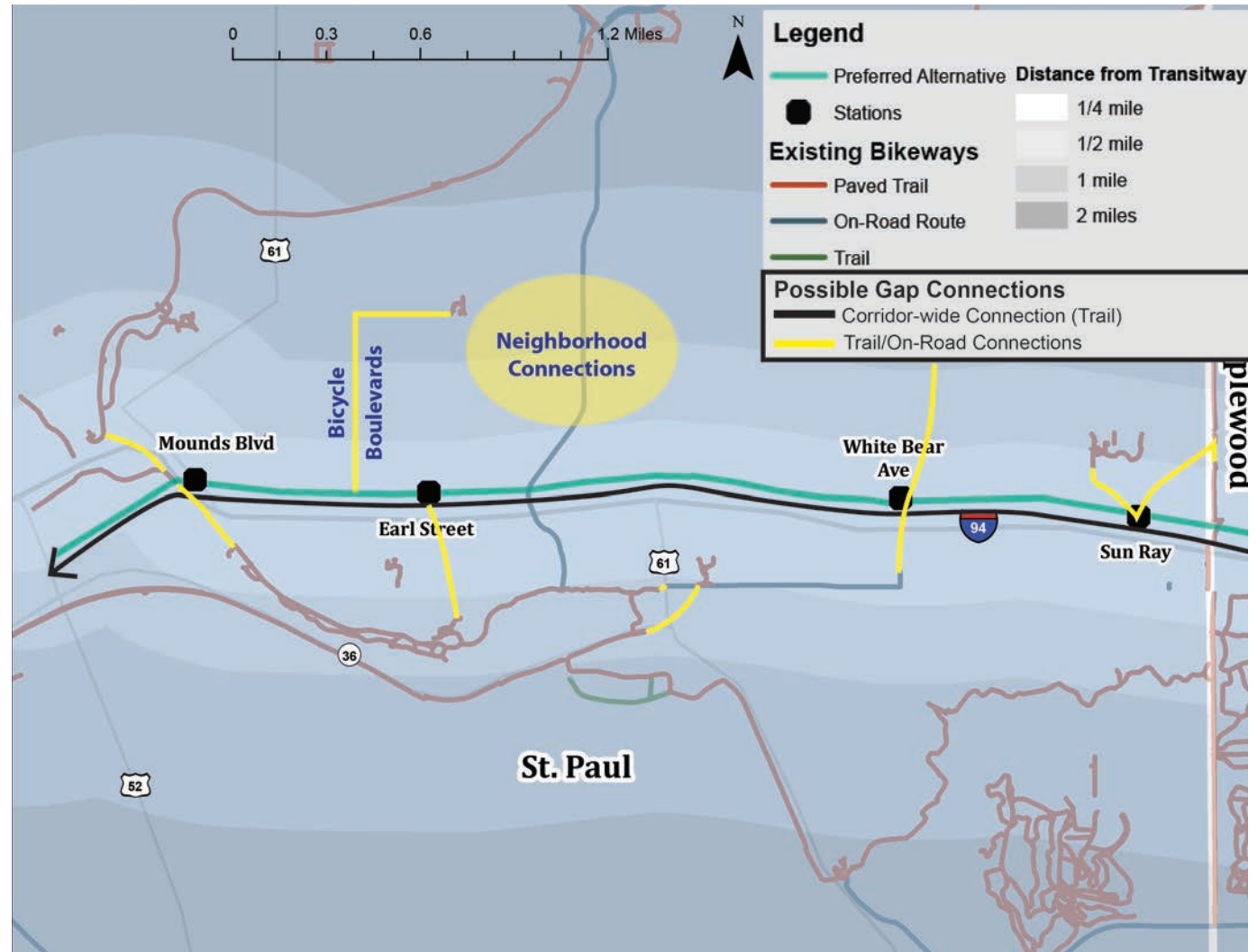
Map 8: Possible gap connections in middle section of Corridor

Section 2: Woodbury to Maplewood

- Continue the shared use path parallel to the transitway.
- Continue connecting local trails to the transitway bike route and to major area destinations such as parks, shopping, and employment centers.
- On the north side of I-94 connect the residential areas to existing trails. This could include bicycle boulevards or new bike paths.
- Provide connections to 3M buildings through the parallel shared use path and existing trails.
- Create new bicycle connections as development occurs. Oakdale has several areas where transit and non-motorized transportation routes could be integrated into development opportunities.

Section 3: Maplewood to St. Paul

- Continue to the shared use path parallel to the transitway
- Enhance connections in St. Paul along the parks and the Metro State campus to fully integrate the existing trails and the new stations (Mounds Boulevard and Earl Street)
- Enhance neighborhood connections through the development of a network of bicycle boulevards on residential streets. One key connection would be to get residents safely to Johnson Parkway and to connect that to the transitway path.
- Create a north- south connection near Earl Street.
- Develop a bicycle facility on or parallel to White Bear Avenue.
- On the east side, connect the park trails and trails along McKnight Road to the Sun Ray shopping center and the proposed transit station.



Map 9: Possible gap connections in west end of Corridor



Action Steps

1. Continue to identify and inventory gaps in the network. As the station locations are finalized along the transitway, use the data to prioritize the gaps found in this report, the Regional Bicycle System Master Plan, and additional research completed along the corridor.
2. Continue to implement the recommendations from the current proposed trails in the corridor, as well as the new plans which will emerge in future work. The appendix lists possible funding sources that could help develop the bicycle network along the corridor.
3. Incorporate a new bicycling or shared-use trail parallel to the transitway, akin to that established for the Hiawatha LRT line.

Logistics

As regional studies are completed it will be important to incorporate that information into the station area plans and goals for the transitway. This may require an additional Network Gap study focusing on the Corridor, or there may be enough information to prioritize and develop the needed connections for bicycle connections to be successful. The City of St. Paul completed “Bike Walk Central Corridor Action Plan: An Implementation plan of the Central Corridor Development Strategy and Station Area Plans.” A plan like this could benefit the entire Corridor by compiling ongoing non-motorized planning work that occurs throughout the transitway planning process. The Corridor should aim to have a level of uniformity in non-motorized connectivity. The Corridor, and its individual communities, should remain engaged in this process and continue to follow bicycling policies and planning at the regional level. Opportunities may to further regional goals of improving bicycling transportation.

While they are different from the Gateway Corridor in many aspects, both the Hiawatha and Southwest transitways have parallel bike and pedestrian trails. Since the Gateway Corridor transitway is not yet designed, it may be possible to incorporate a parallel trail on or next to the.

Sustainability

Nationally there are several examples of this. One is the successful Orange Line BRT project in suburban Los Angeles. The Orange Line considered one of the first full-BRT projects in the U.S. and has been lauded as an example for other projects looking to integrate BRT and bicycles. The transitway has an 18 mile bike path paralleling the project and has high numbers of cyclists for recreation and commute trips (Streetsblog).

As evidenced by work on the Regional Bicycle System Master Plan, non-motorized transportation is continuing to gain momentum in the Twin Cities region. The Gateway Corridor is in a unique place where both transit and non-motorized transportation are underutilized. Increasing utilization of both are key goals for the region in order to facilitate population, among other issues (Metropolitan Council). The transitway will increase the desirability and feasibility of completing non-motorized transportation projects in the East Metro.

ISSUE 3:

Pedestrian and Bicycle Navigability throughout the Corridor

Context

The Gateway Corridor, being an extensive transitway that will traverse many cities, must allow its bicycle and pedestrian users to easily access and navigate the area. While connecting the gaps in the pathways that exist for these groups is essential, the Gateway Corridor should install other infrastructure that will help bikers and walkers conveniently access and navigate the corridor.

Wayfinding

Implementing multi-modal navigation tools along the corridor will allow bikers and pedestrians to easily access major nodes of activity along the Corridor, as well as the transitway itself. Wayfinding instruments will allow people to find their destinations easily, as well as to provide some idea of how long it will take them to get there. Philadelphia created a system that color-coded parts of the city. They posted signs and maps throughout the various districts. The signage would show the name of a popular destination; the color, indicating which part of the city it was located in; an arrow sending the user in the right direction, and the number of miles it would take for someone to get there by walking. Because the Gateway Corridor is lengthy and goes through many cities, it might be confusing for visitors as well as local residents to

navigate. Wayfinding tools will be an important investment for the various cities to employ in order to help bring people to their sections of the Corridor.

Bicycle Lockers

Providing adequate bicycle parking facilities at the stations and nearby park-and-ride lots would increase ridership for the Gateway Corridor and bring more bike and pedestrian traffic to the area. Installing bicycle lockers at these locations would allow riders to securely store their bikes while they continue to travel throughout the day without having to worry about theft, harsh weather, or damage to their vehicle. One study from the Victoria Transport Policy Institute's Planning and Marketing Division found that, "30% of users of Vancouver's bike lockers at a transit station had not previously used public transit to commute (<http://www.vtpi.org/tdm/tdm2.htm>)." Providing bicycle lockers at Gateway Corridor station areas would provide ease of access to the transitway and the convenience of leaving bikes at the stations.

Providing lockers at nearby park-and-ride stations would help to bring some of this new ridership to other parts of the corridor. A study from the Federal Highway Administration reports



Figure 24:
Pedestrian using QR code for wayfinding

that surveys in California revealed “30 percent to 68 percent of bicycle locker users at park-and-ride lots formerly drove alone to their destination before switching to bike-and-ride.” Bicycle lockers at these facilities would allow users more choices of where to park their bikes, while still allowing them to access the transitway.

(http://safety.fhwa.dot.gov/ped_bike/docs/case9.pdf)

Action Steps

1. Municipalities should develop and deploy wayfinding tools for bicyclists and pedestrians along the entire length of the corridor. These tools may include signs with directional information, maps showing various locations along the Corridor, specialized pavement showing pedestrian crossings, and other infrastructural improvements.
2. Municipalities should install bicycle lockers at stations along the corridor and at nearby park-and-ride lots. Lockers at stations should be as close to the actual station as possible to ensure higher rates of usage.



Figure 25: Bicycle locker example

Logistics

Wayfinding

At every junction in the bicycle and pedestrian paths, there should be a sign signaling the direction to a nearby local destination. Indicated destinations will be made up of the stations of the Gateway Corridor itself, as well as major activity nodes along the corridor. The signs should provide an indication of how far in the signaled direction the destination is, as well as how long it would take someone to get there by walking or biking. The indicated mode of transportation should be clearly indicated by displaying a bike or pedestrian icon on the signs. Any text should be large and simple enough for a biker to easily interpret the sign while passing it at speed. Maps should be placed periodically along the trails to show users where they are in comparison to the entire Corridor. Because the Corridor will connect with other transitways in the Metropolitan area, municipalities should consider multilingual text.

For pedestrians, there should be a QR Code (or similar device) on the signs which can be scanned using smartphones or tablet devices. The information provided using the codes will include more detailed knowledge of nearby connecting bus routes, stores, services, parks, and various historic and tourist information. Pedestrian crossings to the transit line should be

colored or specially paved to clearly indicate to pedestrians, bikers, transit users, and automobile users alike where pedestrians will be crossing.

Bicycle Lockers

Providing lockers at the stations along the Corridor will give bicyclists a convenient method of securing their items while completing their various errands. At the end of their journey, they can simply return to the station, pick up their items, and return home. These lockers could be rented on a yearly basis, as is currently required by MetroTransit.

Sustainability

Wayfinding

Signage will be semi-permanent, making implementation the most expensive cost throughout the life of the transitway. Once it is in place, the only changes that would need to be made are additions or deletions of major destinations as they change. Wayfinding signage, especially if coupled with smart technology such as QR codes, would reduce the amount of paper required to provide printed maps along the bikeways and pathways for all users.

Bicycle Lockers

The bicycle lockers implemented at the stations and park-and-ride lots should be of high quality. While this may prove to be expensive in the short-term, higher quality lockers prove to require less long-term maintenance costs and are less likely to be tampered with or broken into, providing more security and ensuring higher usage by bicycle riders. They also tend to last longer and are more weatherproof.

ISSUE 4:

Service Improvements Needed to Facilitate Connections

Context

Facilitating pedestrian and bicycle connectivity requires more than physical infrastructure. Community services will be required to maintain the infrastructure in a safe, secure condition. We identify two critical concerns: the maintenance of clear, safe paths in most weather conditions; and the seamless provision of public safety services in order to maintain public support for multi-modal transit.

Weather conditions present several challenges. Minnesota's northern climate brings significant winter precipitation that must be managed by public works. Localities already deal with this challenge, but the arrival of the Gateway Corridor transitway may require a new look at the scope and priority given to the management of winter precipitation. Extreme cold is also a threat to commuters. During the summer months, severe weather can quickly produce life-threatening conditions. Commuters travelling significant distances by foot or cycle will be at additional risk during severe storms.

The Metropolitan Council will be responsible for policing Gateway Corridor vehicles and stations. Beyond the stations, a variety of local police and sheriff's forces are responsible for police protection. The success of pedestrian and bicycle

commuting depends on not only the reality of safety but the public perception of safety. Local forces will need to develop strategies and procedures to ensure seamless service between jurisdictions, including the Metropolitan Council.



Figure 26: Plowed Bike Trail Next to Road

Action Steps

1. Municipalities should review the current standards and procedures related to snow/ice mitigation on pedestrian/bicycle paths, including trails as well as roadsides. Are current levels sufficient to meet the demand of commuters using the transitway? Will priorities need to be adjusted (e.g., the frequency of plowing, or the order in which trails are plowed)?
2. Municipalities should review potential provisions for shelter (from extreme cold or from severe weather) available along likely pedestrian routes. Is shelter available? If not, is it reasonable to provide shelters, and in what form would it be provided?
3. Sherriff's Offices in Ramsey and Washington County should review the placement and functionality of severe-weather sirens. Are the sirens audible from all points along likely pedestrian routes, or are additional sirens required?
4. Public safety officers in all impacted jurisdictions, including the Metropolitan Council, should begin reviewing plans for cooperation and intercommunication. While there is doubtless already close cooperation between these agencies, they should begin considering how the arrival of the Gateway Corridor transitway will present new challenges. Best practices along existing lines, particularly the Hiawatha LRT Corridor, should be reviewed; however, there are a greater number of agencies involved along the Gateway Corridor, some with relatively less experience partnering with the Metropolitan Council.

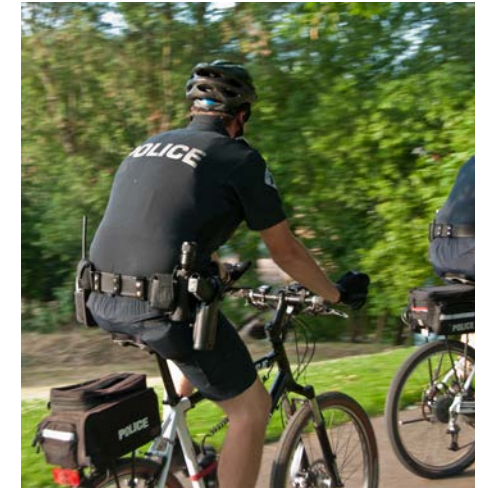


Figure 27: Police Bicycle Patrol

Logistics

All of the services considered in this section, with the exception of the Metropolitan Council's police force, are currently provided by local city and county governments. These services will continue to be provided by and funded by the local governments. Primary responsibility for implementation will remain with the local governments, emphasizing the need for close cooperation between jurisdictions. Unless additional funding is provided by transit funding (and that seems unlikely for the services described here) then these new considerations will need to be evaluated within existing budget parameters. Implementation of the steps identified does not require that the transitway be operational or under construction as long as the general location of transit stations is specified. Therefore, municipalities should begin considering these issues at the earliest possible date so that plans will be complete and publicized by the time the project nears completion.

Sustainability

Services facilitating pedestrian and bicycle commuting will need to be maintained or improved throughout the life of the transitway, which is to say indefinitely into the future. However, the steps identified here are primarily new considerations for existing services. Once these considerations are adopted into agency planning, they may become largely self-sustaining. Public input, including input from a proposed Advisory Committee, would help guide planning while increasing public support for the overall transit system.





Figure 28: Washington County Library Express facility outside City Hall, Hugo, Minnesota



Figure 29: Heated lamp for transit users

ISSUE 5: **Additional Amenities on the Corridor**

Context

Transit stations are, by design, points of inflection: touchstones by place and time. While they chiefly serve as points of departure and arrival for the transit system and its riders, transit stations can easily be adapted to serve additional functions. The thoughtful inclusion of additional services can make the stations more useful to citizens, thereby increasing the appreciation of and demand for transit. For example: the Washington County Library has already initiated an award-winning Library Express program that uses “library lockers” – in essence, small, self-service library kiosks – to expand its service network. Installing a Library Express facility at a transit station is one potential example of using transit stations for community-friendly, but not specifically transit-oriented, purposes.

Planners and other stakeholders should explore additional opportunities to enhance transit stations with community services. The Library Express example suggests several important considerations. The service need not speak directly to the transit experience, but it should improve the potential experience for riders. In particular, the service should increase accessibility to citizens: library lockers make the public library system more accessible to transit-dependent (or transit-preferred) riders without requiring transit service to the libraries themselves.

Action Steps

1. Cities, Counties, and other stakeholders should consider opportunities to provide service-enhanced transit stations by locating additional amenities at the stations. As an example, the Washington County Library should actively consider the operational and budgetary feasibility of installing library lockers at one or more transit stations.
2. Cities and Counties should solicit feedback from citizens on the types of services that would be most helpful and convenient. This feedback can be assessed for feasibility.
3. Library lockers are only one example of an additional amenity that should be provided along the Corridor to accommodate users. Other amenities include:
 - Fix-it stations around the Twin Cities, which include air pumps and tools to fix flat tires
 - Heated gas lamps to warm transit and Corridor users in the winter
 - Community-specific kiosks with resources to provide information and welcome visitors
 - Nice Ride bike share

Logistics

It is important that these services be considered, at least conceptually, before station design begins. Since designers and engineers will encourage modularity and uniformity to the extent possible, any services that might have design implications (e.g., physical space in or near the station) will be easier to account for if included in the early design. It may be possible to add services later, even after construction, but within stricter design limits.

Funding for these services may vary according to the service. Library lockers might be partially or fully funded through the Library budget rather than a transit-specific funding mechanism.

Sustainability

The sustainability of any proposed service will depend on the nature of the service. As a general rule, sustainability will be driven by demand for the service over time, particularly when compared with competing opportunities. If a service is popular, it will merit sustained support; if the service is not popular, the funding agency will reconsider its support.

ISSUE 6:

Creating a Bicycle and Pedestrian Advisory Committee

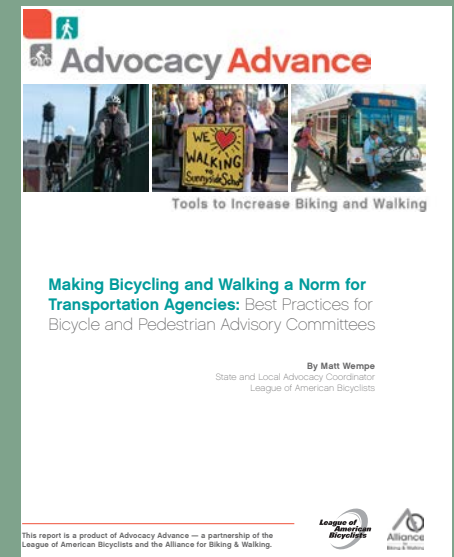
Context

One possible way to guide the proposed actions outlined in this report is to create a group whose purpose is to advise the non-motorized transportation improvements in the Gateway Corridor. An advisory committee could assist in completing or encouraging many of the action items in this toolkit. There are successful examples nationally and locally that the Gateway Corridor Commission could look to for guidance. The advisory committee would become an important liaison between the Commission, citizens' groups, other committees, and the general public.

Action Steps

1. Develop a Bicycle and Pedestrian Advisory Committee to guide the policies, planning, and implementation of non-motorized transportation in the Gateway Corridor.
2. Encourage the Committee to work with other local groups to maximize the importance and impact of citizen involvement.

In addition to connecting with and learning from other local advisory groups, there is an excellent resource developed by Advocacy Advance. Advocacy Advance is a partnership between of the oldest and largest non-profit organizations working to support safe walking and biking around the country- the Alliance for Biking and Walking and the League of American Bicyclists. Their report, Making Bicycling and Walking a Norm for Transportation Agencies: Best Practices for Bicycle and Pedestrian Advisory Committees has information on developing committees, case studies, as well as the benefits and challenges of working with an advisory committee.



Logistics

There are many examples of advisory committees for non-motorized transportation. Regionally, citizen advisory committees are common for many issues and jurisdictions, including some committees required by Minnesota statute. One successful example from another region shows how an advisory committee could contribute specifically to pedestrian and bicycle transportation.

Olympia, Washington Bicycle and Pedestrian Advisory Committee

Free work and technical guidance by dedicated community members- In the late 1990's the Bicycle and Pedestrian Advisory Committee in Olympia, Washington began to inventory the missing sidewalks along that had been neglected over many years of auto centric development. The committee, with the help of public works and community volunteers, completed an inventory that estimated it would cost nearly \$50 million to build the missing sidewalks, something the small city could never feasibly do. However, the inventory and prioritization was so comprehensive that the committee began to look for a funding source for their work, while several advocacy organizations formed in the community around this issue. After making it on a ballot measure for the city, a measure passed which increased

city funding of sidewalks from \$150,000 to \$1 million per year. The city of Olympia consistently highlights this project and the benefit received by effective citizen involvement.

Minneapolis Bicycle Advisory Committee & Hennepin County Bicycle Advisory Committee

Hennepin County and Minneapolis both have active and respected bicycle and pedestrian advisory groups. The Minneapolis Bicycle Advisory Committee has been active in the bicycle planning work in Minneapolis, as well as with policies and implementation of a variety of bicycle projects. Both advisory groups have been active in the planning and implementation of bicycling studies, policies, and infrastructure around Southwest LRT and Hiawatha LRT (City of Minneapolis).

The Bicycle and Pedestrian Advisory Committee will maximize its impact by partnering with other committees that share overlapping missions and perspectives. For example, in May 2013 the Woodbury Environmental Advisory Commission sought public input on improving pedestrian and bicycle routes throughout Woodbury. If an advisory committee associated with the Gateway Corridor already existed, it could have provided helpful input to – and received helpful input from

– the Woodbury EAC on this project. Note that the two bodies will share interests but not the same perspective, so they will be complementary rather than redundant.

Sustainability

While advisory committees do require time and resources, most communities find a positive return on investment. A key to sustainability is a staff champion for the committee so it maintains a purpose and continues to meet goals shared by the corridor communities and the advisory committee's participants.





Figure 30: A traffic calmed street

PART V

Improving Safety Through Better Transportation Infrastructure for All Users

In addition to connecting gaps in sidewalks, bike lanes, and trails from Saint Paul to Woodbury, it is also important to ensure that all modes are able to integrate with each other as travel and land use patterns continue to evolve. Two effective practices in bringing modes together is in the policies currently being drafted under MnDOT's Complete Streets program, and by implementing traffic calming measures, which are intended to safely integrate all modes of transportation through design.

From MnDOTs Complete Streets Work Plan:

“Complete Streets involves integrating every mode into the transportation system to create a safe, accessible and efficient transportation system for everyone. From Alexandria to Zumbrota, from Roseau to Red Wing, Minnesota state highways:

Connect cities and other states for cross state travel and commerce

Move goods on a network of truck routes, encouraging economic growth

Serve children getting to and from school using school bus routes and bus stops

Provide community “main streets” in many cities across the state

Provide transit routes in the Twin Cities and greater Minnesota, serving thousands of transit passengers, bicyclists and pedestrians each day

Assist emergency service response to efficiently connect people to the medical facilities they need”

Complete Streets in Minnesota

Minnesota’s Department of Transportation has reviewed and plans to implement Complete Streets policies for state-funded roadways across the state. Among the provisions in this plan are to make travel safer and easier for automobile traffic, as well as public transportation and non-motorized travellers.

The major thoroughfares connecting Gateway Corridor to areas outside of the station areas include State Highways and County State-Aid Highways, both of which utilize state funds. By adhering to the vision and principles of Complete Streets for state-funded highways, the Gateway Corridor and surrounding areas will realize the benefits of improved infrastructure and improved safety in accessing transit and accessible amenities around it.

Traffic Calming Measures

Traffic calming measures are proven infrastructure features that can be integrated as part of or in addition to Complete Street plans. They are intended to naturally reduce automobile speeds and provide safer interactions among all modes of travel, wherever the modes are integrated with one another. Implementation of these features creates a more welcoming and pleasurable transportation environment, particularly for bicycles and pedestrians, and improves the symbiotic relationship between transportation infrastructure and the built and natural environments.

A wide variety of traffic calming exist, each appropriate for their own reasons, in environments ranging from suburban residential areas, retail developments, and mixed-use urban environments. Examples of these features are discussed below, including examples of their general applicability in areas along the Gateway Corridor.

Curb Extensions, Reduced Curb Radii, and Chicanes

These features aid in reducing speeds of automobiles making turns at intersections and driveways, or along straightaways, in the case of chicanes. While temporarily reducing speed for a driver, it makes them more aware of potential conflicts with other vehicles, pedestrians, and cyclists. These features are appropriate in virtually all areas pedestrians exist, where reduced auto speeds are desired, or both. Examples include the intersections of wide residential streets, and driveways of retail complexes.

Pedestrian Refuges, Medians and Islands

These features provide a means for pedestrians or bicyclists to seek refuge while crossing a busy street. Cyclists and pedestrians encountering a busy street may feel intimidated and unsafe crossing a high-speed, busy road, particularly where traffic signals may warrant multiple cycles to cross safely, or two-way traffic may not provide a large enough break for a traveler to cross all lanes safely. Along the Gateway Corridor, these features, if they don't already exist, would be most appropriate in areas with higher pedestrian and bicycle use, especially along busier roadways, such as county roads, or in areas with vulnerable populations, such as children near parks and schools, or near retirement communities.



Figure 31: Example of a chicane

Narrowing of Traffic Lanes

Typical lane widths for new construction is 12 feet, with additional widths generally required for turn lanes and parking lanes. In many cases, the combined width of the roadway may be over-designed. Reduced lane widths have a negligible effect on safety, and generally prompt automobiles to travel more slowly, and for drivers to be more attentive. Combined with curb extensions, narrower travel lanes can significantly reduce the real and perceived safety threats to cyclists and pedestrians. Along the Gateway Corridor, these features would be appropriate where trails and residential streets cross, and near pedestrian-oriented areas around station areas, including parking lots.

Curbside Parking

Curbside, or parallel, parking naturally calms traffic, reducing speeding and enhancing driver awareness due to potential conflicts between moving vehicles and parked cars and pedestrians. The threat of a conflict is largely a perceived one, as the effect of curbside parking subconsciously alters traveller behavior. Curbside parking is generally more common in Saint Paul than in the suburbs. Where it currently exists, it should be retained; where it does not exist, consideration should be made about the potential benefits of reconfiguring parking.



Figure 32: Example of a woonerf

Woonerfs

Woonerf, otherwise known as a pedestrian zone or a shared street, is a word that translates from Dutch to “street for living”. Common in Europe, woonerfs eliminate the segregation of public space modes, by making the same space appropriate for multiple uses, including cars, bikes, pedestrians, and recreational uses. In the US, many shopping center parking lots act as woonerfs, where pedestrians, shopping carts, and automobiles are attentive to their environment, and few incidents between these modes occur. Along the Gateway Corridor, these features would be appropriate to connect gaps in a trail system where few other options exist. They also could be integrated into existing parking lots in suburban areas, perhaps by reducing parking in favor of outdoor dining and shopping, pedestrian plazas and open space, or cordoned off for special promotional events.

Roundabouts

A roundabout is a feature that is gaining popularity in the United States, and is common in many other countries around the world. Roundabouts bring all modes of traffic together at an intersection, with priority going first to pedestrians, then to traffic within the roundabout. They are designed such that vehicles going through the intersection travel no more than 15 mph. These features improve auto-to-auto safety by eliminating high-speed conflict points (like side-impact collisions), improving throughput of automobiles that might otherwise be stuck at stoplights, and making equal all travelers traversing the intersection, regardless of mode.



Figure 33: Example of a roundabout in an urban setting

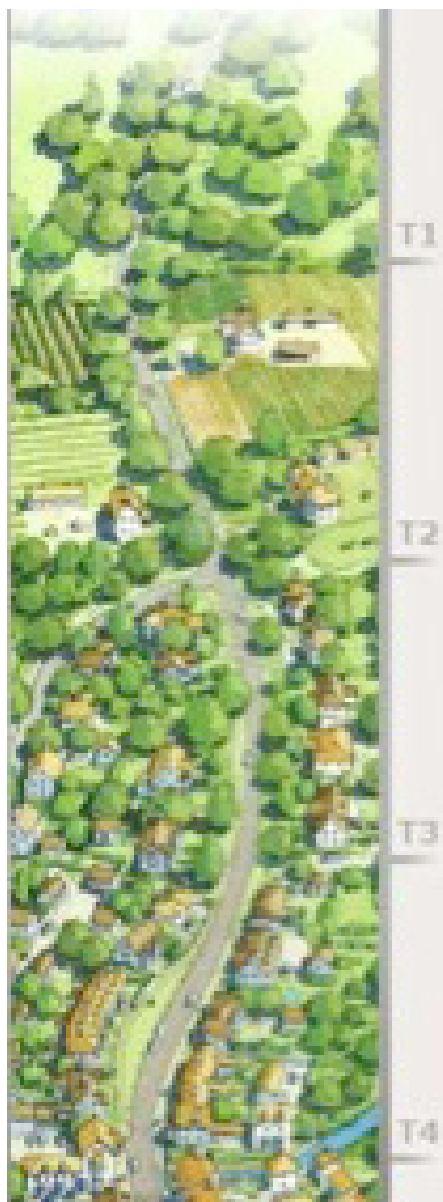


Figure 34: Rural-urban transect, Part 1

Land Use and Development Best Practices

The potential for redevelopment opportunities around station areas will undoubtedly grow once the Gateway Corridor is operational. In response to this, it is important to plan for opportunities to develop areas according to non-motorized transportation goals.

Re-Evaluate Parking Requirements Near Station Areas

Part of a successful transportation project such as this is ensuring a built environment amenable to transit users, cyclists, pedestrians, as well as automobiles. In the past, much of the development in suburban areas involves large setbacks from the roadway for commercial developments, which typically involves large parking lots. These lots are often sized to accommodate anticipated traffic for only the busiest of shopping days. The sizing of these lots is often determined by the developer (who may oversize a lot on cheap land to attract tenants), or by city zoning requirements (who usually dictate spaces on a square footage basis). As a result, many parking lots are oversized and underutilized for most of the year.

In an area designed or retrofitted to become transit-oriented development, municipalities and property owners have an opportunity to repurpose these spaces. Some cities, in an effort to reduce an overabundance of parking area,

have reduced parking minimums and have even implemented parking maximums. In addition, combining parking areas for businesses that have peak use at different times of day (say, an office building and a restaurant), can reduce the supply of parking to better match demand.

Additionally, since many of the station areas will act as park-and-rides for commuters, the transit agency can contract with existing business developments to utilize available parking spaces during off-peak shopping times. This is already occurring for express bus service in Woodbury at Guardian Angels Church and the Woodbury Theater.

Increasing Development Densities Near Transit Stations

It is the goal of this section to address general approaches to integrating multiple modes of infrastructure around the Gateway Corridor. The built environment changes significantly along the corridor, from a central business district in downtown Saint Paul, to century old homes in the east to suburban development in the west. Additionally, as each city in the corridor has their own long term plans and goals to address with multi-modal transportation, no one solution for addressing pedestrian and bicycle connectivity will fit for all station areas.

Using the concept of the rural-urban transect, we see how transit-oriented development can upgrade existing station areas while transitioning into the existing built environment. A steady transition from an urban, mixed-use environment near each station to the existing low-density residential development, as demonstrated in Figure X below, can provide opportunities to better integrate pedestrian and cycling facilities while redeveloping and upgrading existing developments.

Part of the success of the Gateway Corridor will be in connecting stations not only to the immediate vicinity of the station area, but also with neighborhoods within a few miles of the corridor with safe, connected, and integrated bicycle and pedestrian accessibility.

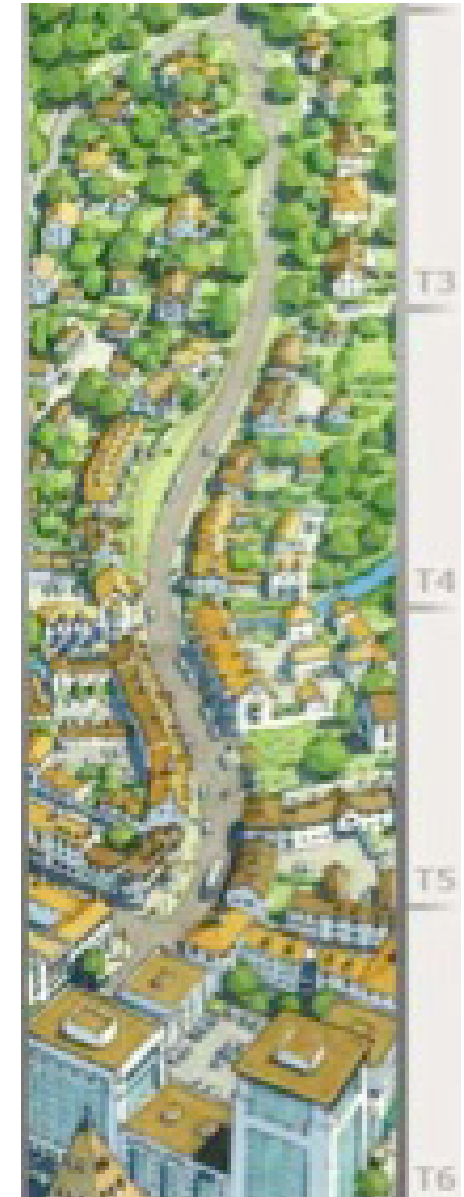


Figure 35: Rural-urban transect, Part 2



Figure 36: A transformed suburban intersection that promotes the use of non-motorized transportation

PART VI

Conclusion

Further Research

This report focused on a macro-level scale of the Gateway Corridor. To best determine the non-motorized transportation needs, a closer look at the individual communities is necessary. Further research could be done on these topics.

Bicycle-Friendly Policies

- Look closely at the community plans for bicycle accommodations
- Consider Complete Streets policies and design implementations

Urban Design Principles

- Examine station areas for opportunities to implement Complete Streets and traffic calming measures
- Focus on making the stations multi-modal

Land Use and Development Best Practices

- Evaluate parking requirements and development guidelines before station area development begins. This includes setbacks, retail development requirements, parking maximums and other non-motorized access opportunities.

Neighborhood Integration

- Connect major destinations with outlying neighborhoods using and enhancing the existing network of paths and trails
- When developing new residential and commercial nodes, consider how to best connect to transit and the existing non-motorized transportation network

Bringing it All Together

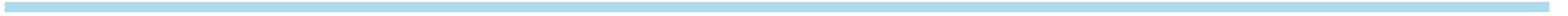
The Gateway Corridor is an implementation of a vision with a vision: a new transit line serving the eastern metropolitan region of the Twin Cities, an integral component of a larger, still nascent regional transit network. It offers an alternative to Interstate 94 and a new means of commuting, but it offers much more than that: the as-of-yet unimagined possibilities that will be made possible by truly regional, truly integrated multimodal transportation.

Fully integrating pedestrian and bicycle transportation with the Gateway Corridor is critical to the success of the transitway project. In practical terms, integration will increase ridership, contributing to the financial viability of the system. More broadly, the vision of local and regional transit will be irreparably crimped if only those who live adjacent to stations – and those willing to drive to stations – are served by the transit networks.

Integration of pedestrian and bicycle transportation will require identifying and filling the gaps of the existing pedestrian and bicycle networks; integrating the stations of the transitway and the overall Corridor with the regional trail network; facilitating pedestrian and cyclist navigation; implementing services and amenities to make the system safe, reliable, and attractive; and developing a sustainable means

for oversight, feedback, and improvement. Maximizing the effectiveness and impact of the network will depend in part on fresh consideration of patterns of development and land use over time.

All vision is determined in part by perspective. The Gateway Corridor is a shared vision, but it is not a unanimous vision. Various municipalities, jurisdictions, and stakeholders along the Gateway Corridor have similar but non-identical visions for building, operating, and embracing the Corridor. Issues of pedestrian and bicycle infrastructure will present particular challenges for cooperative development. The success of the project will ultimately rise and fall on the measure of sustained interest and cooperation between the communities along the Gateway Corridor.



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Interviews

Research for this project included personal interviews with a variety of stakeholders. Interviews were held with political leaders and representatives of several jurisdictions, including the Gateway Corridor Commission, the Metropolitan Council, Washington and Ramsey counties, and the cities of St. Paul, Maplewood, Oakdale, Woodbury, and Lake Elmo. Representatives of the business community were contacted as well as transit experts.

Interviews were conducted “on background” to encourage candid remarks. The project team agreed not to quote or cite individuals, and we will therefore omit a list of specific individuals contacted. This report attempts to present a sense of the context and vision surrounding the project without limiting or representing the opinions of specific individuals or constituencies.

Local Comprehensive Plans

The following comprehensive plans were used and referenced throughout the report. They are available through the respective city and county websites:

City of Saint Paul Comprehensive Plan

City of Landfall Comprehensive Plan

City of Maplewood Comprehensive Plan

City of Woodbury Comprehensive Plan

City of Oakdale Comprehensive Plan

City of Lake Elmo Comprehensive Plan

City of Afton Comprehensive Plan

Ramsey County 2030 Comprehensive Plan

Washington County 2030 Comprehensive Plan

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Figure 4: gatewaycorridor.com

Figure 5: Flickr Image, TheeErin

Figure 6: MetCouncil 2030 Transportation Policy Plan

Figure 7: Flickr Image, britl

Figure 8: Courtesy of Josie Warren

Figure 9: Living Design (8-4), Dan Burden

Figure 10: i Stock Image

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Figure 12: Courtesy of Nicole Campbell

Figure 13: Flickr Image, Crosby ci

Figure 14: Living Design (15-11), Dan Burden

Figure 15: Living Design (15-8), Dan Burden

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Figure 17: Flickr Image, Elvert Barnes

Figure 18: Flickr Image, Blog do Milton Jung

Figure 19: Flickr Image, EnvironmentBlog

Figure 20: Flickr Image, dno1967b

Figure 21: Living Design (7-20), SPOT Devices

Figure 22: Flickr Image, MML

Figure 23: Living Design (8-5), Ryan Snyder

Figure 24: theculturevulture.co.uk/blog/architecture-design/walkit/

Figure 25: Flickr Image, TheBeastieBoy

Figure 26: Courtesy of Josie Warren

Figure 27: Flickr Image, kightp

Figure 28: Washington County

Figure 29: Flickr Image, Janellie

Figure 30: Living Design (10-3), Dan Burden

Figure 31: lgam.wdfiles.com

Figure 32: telegraph.co.uk

Figure 33: safety.fhwa.gov

Figure 34: transect.org

Figure 35: transect.org

Figure 36: Living Design (14-11), Urban Advantage, Inc.

Data

All of the data used in the creation of maps and tables seen in the report were provided by the following sources:

Census QuickFacts, www.census.gov

Census LEHD Data, <http://lehd.ces.census.gov/>

MetroGIS Datafinder, datafinder.org.

Shapefiles from SEH Inc.

Maps

All maps were created by the authors of this report. Maps labeled as Figures are sourced under "Image Credits."

Data used for the maps are sourced under "Data."

Tables

All tables presented in the document were created by the authors of this report.

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Appendix

Page 88: Potential Federal Funding Sources

Page 89: AdvocacyAdvance.org Find It, Fund It Table

Page 90: Notes from Corridor Site Visit, February 18

Page 91: MetroTransit Park-and-Ride Facilities

Page 92: MetroTransit Express Bus Routes

Examples of Potential Funding Sources for Non-Motorized Transportation

Federal Funding

In 2012, a new surface transportation bill, MAP-21 (Moving Ahead for Progress in the 21st Century), replaced the previous SAFETEA-LU surface transportation bill. Due to these changes many of the previously funded federal grant programs distributed through the state are undergoing program changes and may no longer have grants available.

- MAP-21 created a Transportation Alternatives (TA) program to replace the previous surface transportation bill, SAFETEA-LU. Programs which had their own dedicated funding, such as Recreational Trails and Safe Routes to School are no longer required programs.
- Also see the federal funding summary from Advocacy Advance in this appendix

State Funding (subject to change with state funding decisions)

- The state has provided grants to local communities for bicycling and pedestrian improvements through Safe Routes to School, recreational trails programs, and as part of MnDOT district projects.
- Minnesota Department of Natural Resources Grants: <http://www.dnr.state.mn.us/grants/recreation/index.htm>
- MnDOT's bicycle funding info page: <http://www.dot.state.mn.us/bike/funding.html>

Local Funding

- Under MAP-21, MPO's over 200,000 will now run their own competitive grant processes with TA funding for non-motorized transportation projects. The Gateway Corridor communities will be eligible to apply for these grants through the Metropolitan Council.

Other Funding Sources

- BikesBelong.org- a non-profit organization that gives grants for a variety of bicycle projects to advocacy organizations and municipalities
- Private businesses can invest in improvements
- Land trusts

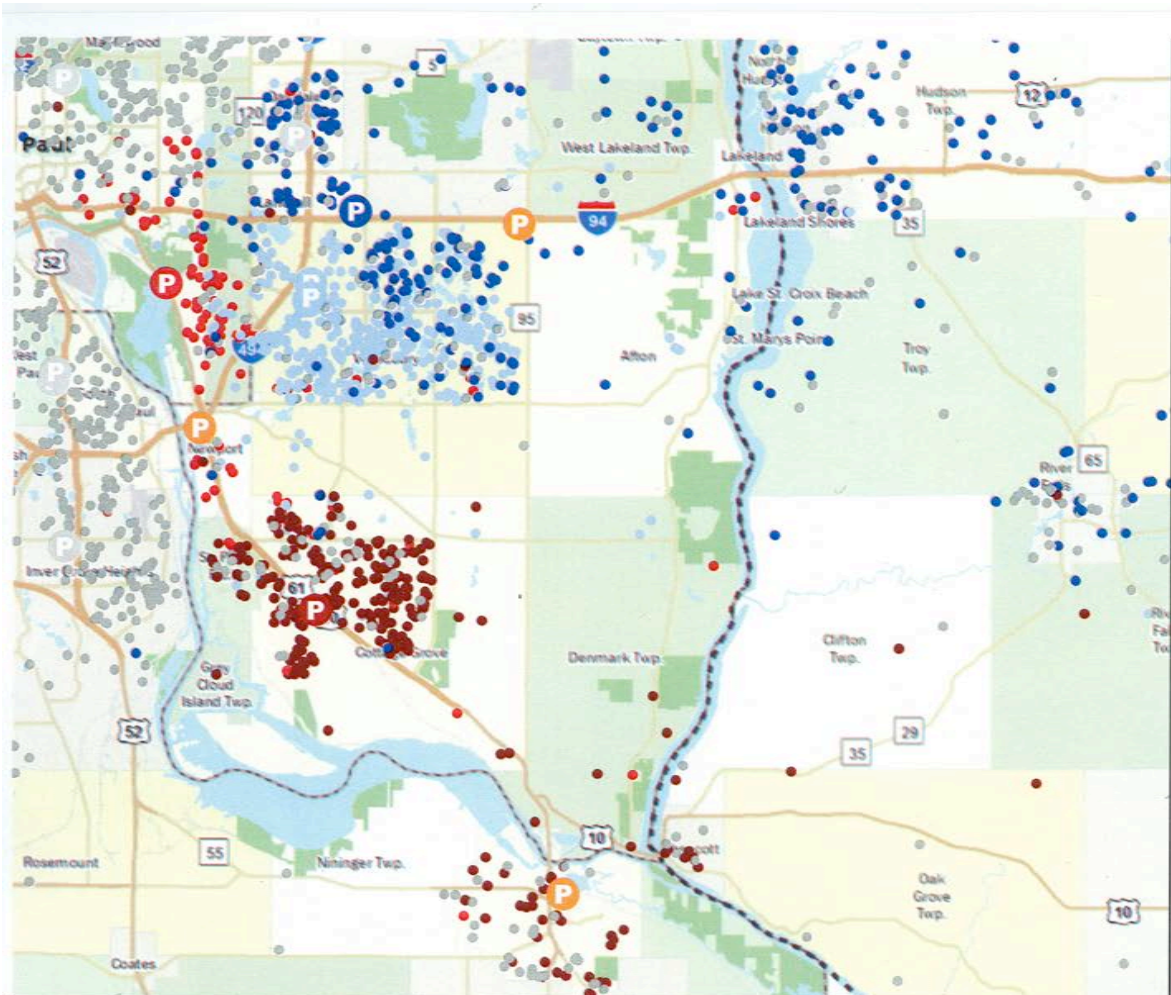
Find It Fund It Table

This table indicates potential eligibility for pedestrian and bicycle projects under federal highway and transit programs. In each case there are specific requirements that must be met within eligibility criteria and eligibility will be determined on a case-by-case basis.

	TAP	CMAQ	STP	HSIP	RTP	NHPP	FLTP	TTP	PLA	UZA	402	SGR	BBF	5310	5311	SRTS	BYW	FLH	TCSP	JOBS	FTA	FTA-TE
Bicycle and Pedestrian plan			X						X						X				X		X	
Bicycle lanes on roadway	X	X	X	X		X	X	X		X						X	X	X	X		X	X
Paved shoulders	X	X	X	X		X	X	X		X						X	X	X	X			
Signed bike route	X	X	X			X	X	X		X						X	X	X	X		X	
Shared use path/trail	X	X	X	X	X	X	X	X								X	X	X	X		X	
Single track hike/bike trail	X		X		X													X	X			
Spot improvement program	X	X	X	X												X			X		X	
Maps	X	X	X								X					X			X		X	
Bike racks on buses	X	X	X				X	X		X		X	X		X				X		X	X
Bicycle parking facilities	X	X	X				X	X		X		X	X		X	X	X		X		X	X
Bicycle share (capital and equipment costs only; operations not eligible)	X	X	X			X	X	X										X	X	X	X	X
Bicycle storage/service center	X	X	X				X	X		X		X	X		X	X			X	X	X	X
Sidewalks, new or retrofit	X	X	X	X		X	X	X		X				X		X	X	X	X		X	X
Crosswalk, new or retrofit	X	X	X	X		X	X	X		X				X		X	X	X	X		X	X
Trail/highway intersection	X	X	X	X	X	X	X	X								X	X	X	X			
Signal improvements	X	X	X	X		X	X	X								X			X		X	X
Curb cuts and ramps	X	X	X	X		X	X	X		X				X		X			X		X	X
Traffic calming	X		X	X			X	X								X			X		X	X
Coordinator position		X														X						
Safety/education position	X		X								X					X						
Police patrol	X										X					X						
Helmet promotion			X								X					X						
Safety brochure/book		X	X		X						X					X					X	
Training		X	X		X						X				X	X					X	
Technical Assistance	X	X	X												X	X					X	

2/18 Corridor Site Visit Notes

- Mounds
 - Metro State
 - Neighborhood-old, large homes
 - Busy road where station would likely be
 - some traffic calming, sidewalks present, grid
- White Bear Ave
 - Street owner?
 - wide, fast moving traffic, not bike/ped friendly
 - shoveled sidewalks
 - bus stops
 - Target
- Old Hudson Road (White Bear/Earl St)
 - single family homes
 - Harding HS
 - multi-family housing
 - senior housing
 - potholes everywhere
- Earl
 - no bus stops
 - at this point- no bikers (or pedestrians really), bike racks, or infrastructure
 - Cerenity senior housing
 - run down homes
 - Metro Mobility at a different senior housing place
 - bike trail through Municipal forest
- Sun Ray
 - Suburban Ave/Hudson Rd
 - gas station, fire dept., fast food
 - Summit Hill Housing
 - Apartments
- Picture- first (and only bike lane)
- Maplewood/3M
 - Nothing around
 - high concentration of jobs, not walkable
 - 3M circulator?
- Oakdale
 - Hudson & Greenley
 - TOD
 - mobile home park-Landfall
 - bus stop
 - large church
 - undeveloped along frontage road
 - CrossRoads
 - The Oaks Office Center
 - Buying houses up around here?
- Radio Drive- Woodbury
 - Tamarack shopping
 - no sidewalks, car centric
 - Abandoned State farm
 - across street from large townhome rental community
 - furniture stores, strip malls
 - Woodbury- mixed use housing, Dunn Bros, shopping, etc.
 - First bike racks!!
 - Comment from Dunn Bros- no groceries nearby
 - Walmart across the street
- Manning/Lake Elmo
 - farm/vacant land
 - gas station



Park-and-Ride Facilities

- P Cottage Grove
- P Hwy 61 & Lower Afton Rd
- P Guardian Angels
- P Woodbury Lutheran Church
- P Woodbury Theatre
- P Christ Episcopal Church
- P Hastings Park-and-Ride (planned)
- P Newport Park-and-Ride (planned)
- P I-94 and Manning Avenue (planned)
- P Other park-and-rides

Name	City	Year Established	2012 Capacity	2012 Usage	2012 % Utilized	'11-'12 ΔUsage	2011 Usage	'10-'11 ΔUsage
Cottage Grove	Cottage	2003	525	314	60%	54	260	-11
Guardian Angels Catholic Church	Oakdale	2006	415	405	98%	-9	414	9
Hwy 61 & Lower Afton Rd	St. Paul	1987	114	136	119%	31	105	-11
Woodbury Theatre	Woodbury	2002	550	472	86%	0	472	51
Christ Episcopal Church	Woodbury	1985	50	55	110%	8	47	19
Woodbury Lutheran Church	Woodbury	1974	50	55	110%	1	57	2



St. Paul service

Sector 3 Express Bus Routes

