



Midtown Corridor Alternatives Analysis

Key Issues Memo

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for





Table of Contents

Introduction	1
1. Markets	1
<i>External Markets</i>	1
<i>Intra-Corridor Travel</i>	1
<i>Special Markets</i>	2
2. Modes	2
<i>LRT Implementation</i>	2
<i>Streetcar Implementation</i>	4
<i>Dedicated Busway Implementation</i>	5
<i>BRT Implementation</i>	6
3. Alignments	6
<i>Midtown Greenway</i>	6
<i>Lake Street</i>	8
<i>Midtown Greenway/Lake Street Combination</i>	9
4. Historic and Cultural Resources	9
5. Land Use and Economic Development	10

Introduction

The Midtown Corridor Alternatives Analysis (AA) will evaluate the benefits, costs, and impacts of implementing a transitway in the corridor. The study will review the potential implementation of light rail transit (LRT), streetcar, dedicated busway, and bus rapid transit (BRT) on either the Lake Street or Midtown Greenway alignment.

This document presents a list of issues and topics that should be addressed in the AA. It is intended to be a living document that will be updated to reflect new issues and topics that arise during the course of the study. This document is also intended to serve as the basis for a project frequently asked questions (FAQ) list. The list of key issues is organized into five primary categories:

1. Markets
2. Modes
3. Alignments
4. Historic and Cultural Resources
5. Land Use and Economic Development

1. Markets

Identifying the appropriate travel markets to be served by a transitway investment in the Midtown Corridor is a crucial step in the AA process. The markets can be classified as one of three types: external trips (either origin or destination outside of the corridor), intra-corridor trips (entirely within the corridor) and special markets (that are not recurring).

External Markets

The Midtown Corridor Transitway can serve trips between corridor destinations and other locations by providing a fast and reliable transit alternative. Short travel times, convenient connections to other regional transitways, and access to key destinations are all important considerations for appealing to riders outside the immediate corridor. As the region's travel patterns continue to decentralize, transit becomes an important travel option for both commuter and discretionary trips to a variety of typical downtown-oriented as well as emerging non-downtown travel markets.

The Midtown Corridor Transitway will provide a strong connection between the Blue Line (Hiawatha) LRT at the eastern terminus and the future Green Line (Southwest) LRT at the western terminus. In addition to connections to the LRT system, connection points exist to the planned Orange Line (I-35W BRT) and the Uptown and Chicago-Lake transit centers. These connections will increase accessibility for transit users and create synergy between our growing network of high-frequency, high-capacity transitways in the region. In addition, the transitway will provide opportunities to connect with many of the region's intersecting north-south bus routes including Routes 4, 5, 6, 11, 12, 14, 17, 18, 22, and 23.

Improved connections with external markets provide greater access to destinations for the residents of the corridor, including job opportunities. In addition, this connectivity provides increased access to businesses in the corridor from residential and other markets outside of the corridor.

Intra-Corridor Travel

Faster, more reliable transit service will enhance opportunities for the growing residential population along the corridor to use transit for its working, shopping and entertainment needs within the corridor at travel generators such as the Lake Calhoun, the Uptown area, Midtown Global Market, Wells Fargo, Allina, Abbott-Northwestern or the many small businesses along the corridor.

Special Markets

Special markets could be event-related travel, and/or transit trips that may be generated solely by the presence of a new or improved transit service. For example, the annual Uptown Arts Fair provides a unique opportunity for people to experience transit service. Another example would be new users riding within the corridor to the occasional entertainment or recreational activity. These markets are served by highly visible and convenient services. Another type of special market consists of induced travel—trips that would not even be made without the existence of a high profile, convenient transportation alternative.

2. Modes

A variety of transit modes will be considered for implementation in the Midtown Corridor including LRT, streetcar, and BRT. Each mode presents unique aesthetic, design, and operational characteristics. In addition to studying various modes for implementation, an analysis of the existing local bus service will be conducted during the AA. Transit service on Lake Street is primarily provided by local Route 21. This route is part of Metro Transit's Hi-Frequency network, which provides service at 15 minute frequency or better on weekdays between 6 a.m. and 7 p.m. and on Saturdays between 9 a.m. and 6 p.m. Supplemental transit service is provided by Route 53, a limited-stop route which provides peak-period, peak-direction service on weekdays. Modifications to the existing bus service will be evaluated to determine how best to complement the transitway improvements in the corridor. The various modes to be considered in the AA are described in more detail in the following sections.

LRT Implementation

LRT is an electrically powered rail system running mostly in exclusive rights-of-way. LRT has a higher passenger capacity and higher speed than service operating in mixed-traffic. LRT receives its power from overhead catenary. It can operate as a single vehicle or coupled to other light rail vehicles (LRVs). Station spacing can be as close as one-quarter mile where LRT operates in dense areas such as downtowns, but stations are frequently one-half to one mile apart in other areas. LRT can operate in single-track or double-track configurations. Single-track sections require both directions of service to share a single track, usually to reduce construction costs or operate where right-of-way is limited. Single-track service may present operating and scheduling challenges that can reduce the capacity or frequency of service.

- **How will LRT connect to the Blue Line (Hiawatha) LRT?**

The eastern terminus of the Midtown Corridor is proposed to be at the Lake Street/Midtown Station of the Blue Line LRT. A Midtown Corridor LRT could connect to the Blue Line by constructing an adjacent station at ground level and providing appropriate amenities and an easy transfer for riders. Due to the grade separation of the elevated Blue Line Lake Street/Midtown Station, a direct connection to allow through-routing of vehicles onto the current Blue Line tracks would be challenging.

- **How will LRT connect to the Green Line (Southwest) LRT?**

The western terminus of the Midtown Corridor is proposed to be at the West Lake Station of the Green Line LRT. Like with the connection to the Blue Line, a Midtown Corridor LRT could connect to the Green Line by sharing the existing Green Line station or by constructing an adjacent station and providing appropriate amenities for riders. A direct connection could be more feasible as both are expected to be at grade in this location.

- **Should LRT connect directly (interline) with the Blue Line LRT and Green Line LRT?**

Interlining is a transit scheduling practice in which two separate routes that share a common end point are operated by a single vehicle. As each vehicle reaches the end of the first route, it continues on to the second route without delay. This practice is typically used to improve operational efficiency and to provide a one-seat ride to riders that would otherwise need to transfer from one route to the next. In this case, the proposed termini of the Midtown Corridor connect at the midpoint of Blue Line and the Green Line LRT routes. A detailed evaluation of transit scheduling requirements and rider travel behavior will need to be completed to assess the potential for interlining at these locations.

- **What operational considerations for interlining need to be made for LRT, such as frequency of service, size of trains?**

If the decision is made to interline a Midtown Corridor LRT with the Blue Line and/or Green Line, the Midtown Corridor LRT service will need to be closely coordinated with the connecting LRT services. Interlining these routes would provide a unique situation in which the Midtown Corridor LRT connects at a midpoint of the Blue and Green Lines rather than at their termini. Many factors such as passenger demand, scheduling complexity, and train size would need to be evaluated to create a suitable interlined operation.

- **Where will the operation and maintenance facility (OMF) be located for the Midtown Corridor LRT fleet?**

Metro Transit currently stores and maintains Blue Line LRVs at the Light Rail Operations and Maintenance Facility (OMF) on Franklin Avenue. The Green Line LRT will have separate OMFs for both the east (Central Corridor) and west (Southwest) segments of the line, though most of the major repair work for these LRVs will continue to be done at the main Franklin Avenue facility. Once the number of vehicles required to operate the Midtown Corridor LRT alternative is determined, an evaluation of capacity at the existing OMFs will need to be completed. If a

new OMF is required, it should be sited to minimize impacts to current and anticipated land uses such as residential and commercial areas, and may require additional non-revenue track to reach the preferred site.

Streetcar Implementation

Streetcars are electrically powered rail vehicles which typically operate on city streets in mixed-traffic, although they can also operate in exclusive rights-of-way. Streetcars have a lower passenger capacity than LRT systems, but have higher passenger capacity than a typical bus. Streetcars receive their power from overhead catenary. They operate as a single vehicle. Streetcars generally make frequent stops and function more as a part of a local circulation system than a regional transportation system. Similar to LRT, streetcars can operate in single-track or double-track configurations.

Many of the same issues that exist with LRT also apply to potential streetcar implementation. Similar to LRT, without the ability to provide a double-track alignment, streetcar frequency and reliability may be limited by track design. A thorough evaluation of the concept track design and operations plan is essential to determine appropriate and realistic frequencies in corridor service plans.

- **What type of streetcar vehicle will be used?**

There are three general categories of streetcars in use today:

- Vintage streetcars are vehicles that were in use between the 1890s and 1950s that have been restored and rehabilitated to meet most modern vehicle standards.
- Replica streetcars are new vehicles that are built based on vintage streetcar designs.
- Modern streetcars are new vehicles built with modern designs and amenities.

The choice of streetcar type is largely dependent on the desired purpose, performance, look and feel of the system. Vintage streetcars are often used to complement corridors with many historic buildings, but may require more maintenance and often must be retrofitted to adhere to Americans with Disabilities Act (ADA) standards. Modern streetcars are often used to project a contemporary image and are easier to maintain than a fleet of vintage vehicles, but are typically more expensive. Most streetcar systems being planned and implemented today use modern streetcar vehicles. Replica streetcars offer a third option by providing the look and feel of vintage streetcars, but with easier maintenance and passenger amenities of modern streetcars. Typically, replica streetcars are high floor vehicles equipped with lifts to meet ADA requirements.

- **Where will the OMF be located?**

Depending on the design and manufacturer, it is possible for a streetcar to travel using the same tracks and catenary system as other Metro Transit LRVs. Metro Transit currently stores and maintains Blue Line LRVs at the Light Rail OMF on Franklin Avenue. The Green Line LRT will have separate OMFs for both the east (Central Corridor) and west (Southwest) segments of the line, though most of the major repair work for these LRVs will continue to be done at the main Franklin Ave facility. Once the number and type of vehicles required to operate the Midtown Corridor streetcar alternative is determined, an evaluation of capacity at the existing OMFs will

need to be completed. If a new OMF is required, it should be sited to minimize impacts to current and anticipated sensitive land uses such as residential and commercial areas.

- **How will streetcar interface with the Blue Line and the Green Line LRT?**
The connection between a Midtown streetcar and the Blue and Green Lines may be challenging because of the different modes involved. Even if it is possible to operate streetcars on the LRT tracks, additional evaluation would be needed to determine if mixing the two modes in revenue service would be permitted or desirable due to potential operations impacts on the Blue Line and Green Line.
- **What is the scale of streetcar stations compared to LRT requirements?**
Streetcar stations are typically shorter than LRT stations because streetcars are operated using a single vehicle rather than using multi-vehicle trains. An evaluation of ridership demand will determine if multi-vehicle LRV trains are required in this corridor. The size and scope of streetcar stations will also depend on the level of passenger amenities built into the station design including shelters, ticket vending machines, and seating.
- **What is turf track? Can it be used?**
“Turf” track is a specific track structure design in which the rails are embedded into a paved trackway. Grass and soil or other organic materials are then placed atop the trackway adjacent to and between the rails. This design allows the track to better blend into the existing landscape and has also been shown to reduce noise levels compared to other track designs. However, turf track requires additional maintenance and caretaking to ensure the visual effect of the embedded track is maintained and does not interfere with vehicle operations. The benefits of the turf design for a streetcar or LRT mode will need to be weighed against the additional upkeep and maintenance costs before a track design is selected.

Dedicated Busway Implementation

A dedicated busway is a high-capacity transit service that uses bus vehicles and operates in an exclusive runningway. An exclusive runningway provides significant potential for speed and reliability improvements since buses are physically separated from general vehicular traffic. This mode incorporates many of the premium characteristics of LRT such as high-amenity stations, premium vehicles, information technology, and improved service reliability. Typically, stations are spaced between one-half mile and one mile.

- **Is a dedicated busway possible in the Midtown Greenway?**
In 2000, Hennepin County completed the 29th Street and Southwest Corridor Busway Feasibility Study. The study determined that a busway in the Midtown Greenway would be technically feasible.
- **What types of stations will be assumed for a dedicated busway?**
A variety of station types can be used for a dedicated busway, ranging from simple stops with basic shelters to more substantial stations similar to LRT stations. Usually, when dedicated busways are implemented, more prominent stations are used.

BRT Implementation

BRT is a high-capacity transit mode that uses bus vehicles while incorporating many of the premium characteristics of LRT and dedicated busways, but operates in mixed-traffic lanes. BRT vehicles make fewer stops than streetcars because the stations are spaced further apart.

- **What is known about BRT on Lake Street?**

Lake Street was identified in the Arterial Transitways Corridor Study (ATCS) as one of eleven corridors in the Minneapolis-Saint Paul area with potential for upgraded transitway improvements. The proposed improvements included many features found in BRT systems including off-board fare collection, transit signal priority, and enhanced station branding and amenities. The Lake Street corridor received the highest technical evaluation score among those studied; however, no definitive conclusions were recommended due to the more detailed analysis that would be completed during the Midtown Corridor AA. This alternative will need to be assessed to determine if any modifications should be made or if the alternative should be carried forward using the assumptions made in the ATCS.

- **What types of stations will be assumed for BRT?**

During the ATCS, a range of BRT station types were developed to allow the stations to fit the various conditions in a corridor. In addition to physical stations, in some locations bump-outs (or curb extensions) were assumed where parking currently exists. Bump-outs provide additional space for station shelters and amenities and also eliminate the need for buses to merge in and out of traffic to access stations. This helps minimize bus delays, but can have an impact on traffic flow due to transit vehicles stopping in the through lane of traffic. This will be analyzed in more detail during the AA.

3. Alignments

The Midtown Corridor Transitway is proposed to provide east-west service between the Blue Line LRT Lake Street/Midtown Station and the proposed Green Line LRT West Lake Station. Two primary alignments are being considered. One would connect these stations via the Midtown Greenway, while the other would connect these stations via Lake Street.

Midtown Greenway

The Midtown Greenway is one block north of Lake Street and is the former Chicago Milwaukee and St. Paul Railroad corridor. Approximately 2.6 miles of the former rail corridor between Hennepin Avenue and Cedar Avenue runs in a below-grade trench with cross-street bridges approximately at every block. The rest of the corridor runs at-grade. The corridor currently contains an active bicycle and pedestrian trail that runs the length of the study area. While the grade separated corridor would offer speed advantages versus a street-running alternative, many challenges exist that need to be considered.

- **Is double-track essential or can single-track with passing areas be used?**

In a double-track configuration two parallel tracks are used throughout the length of the corridor. This eliminates conflicts with vehicles travelling in opposite directions and allows a

large degree of freedom for scheduling service. When existing geometric conditions do not allow for a double-track arrangement, a single-track configuration with passing areas may be used instead. Under the single-track configuration, vehicles travelling in opposite directions share a single track. Segments of double-track are then installed where possible to allow oncoming vehicles to pass by each other. A single-track configuration can generally be constructed at a lower cost than a double-track configuration, but limits service scheduling options and adds operational complexity.

The below-grade alignment is spanned by 35 bridges along the length of the corridor. Supports for each bridge crossing vary in number, size, location and span, and the arrangement of bridge supports in some locations makes a double-track configuration difficult without modification to the existing bridge structures or the bicycle and pedestrian path. The more transit service is restricted to single-track segments the more challenging it will be to operate high frequency service. A thorough evaluation of the impact of concept track design on operations plans and desired frequencies in the corridor is essential in determining whether consideration of a mixed double and single-tracked LRT or streetcar alternative is feasible.

- **What is the amount of space that can be used for transit if full trail use is retained in the greenway?**

Approximately one-half of the Midtown Greenway has been converted into a multi-use trail which has become very popular with non-motorized commuters and recreational users in recent years. In many cases the retention of existing trail width will leave a restricted amount of room for transit service to operate. The constraints of fully retaining the multi-use trail will require creative solutions for building a sufficiently wide transit operations envelope.

- **Are there any limitations with catenary/power systems because of limited bridge clearance or issues with historic structures?**

As previously mentioned, both LRT and streetcar systems are commonly powered using an overhead catenary system. The presence of designated historic bridges or other structures in the Midtown Corridor may pose significant challenges in meeting the minimum height requirements for catenary power systems. While the minimum height requirements for a streetcar catenary power system are typically lower than for an LRT catenary power system, achieving required clearances under bridges in the Midtown Greenway may still prove challenging to the final design of the system.

- **What will be needed to provide safe and quick access to stations from neighborhoods?**

The Midtown Greenway is located in a trench below the grade of the surrounding area. Current access to the Midtown Greenway is provided using ramped trails and stairs. A critical design element that will be required for any mode constructed in the Midtown Greenway is vertical circulation, or the ability to move between the street and Greenway levels. Transitway stations constructed in the Greenway will need to provide vertical circulation, including elevators, to riders to allow fast and easy access to the surrounding areas. Additionally, the Greenway is

located approximately one-eighth of a mile (about one block) north of Lake Street. Pedestrian connections to Lake Street as well as the areas to the north of the Greenway will need to be reviewed to ensure safe and easy access for the transitway users to the surrounding neighborhoods and business districts.

Lake Street

Lake Street, a former streetcar corridor and current high-frequency bus corridor, is the primary east-west commercial corridor in south Minneapolis and contains a mix of retail and residential uses. Lake Street is the principal corridor for both automobile and transit traffic in south Minneapolis and serves both local access and longer distance auto trips. Traveling from St. Paul to St. Louis Park, Lake Street is most continuous east-west through street in south Minneapolis. It is part of a rich street grid in south Minneapolis, and parallels the 26th and 28th streets one-way pair, 31st Street, and 35th and 36th streets one-way pair. Together, these roadways serve the east-west auto travel market in this area. Lake Street is lined with diverse businesses along the length of the corridor. A transitway on Lake Street provides direct access to many of these businesses and destinations.

- **Can an exclusive runningway for any of the modes be considered on Lake Street?**

The majority of Lake Street is comprised of two travel lanes in each direction and a parking lane on both sides of the roadway. The implementation of a transitway with a dedicated right-of-way on Lake Street would likely require the removal of some travel and/or parking lanes. The full extent of required infrastructure will require a detailed evaluation.

- **What are the impacts of running a transitway in mixed-traffic lanes?**

An exclusive runningway offers transit vehicles a significant benefit for speed and reliability. However, in densely developed urban corridors this is often a challenge to provide due to right-of-way limitations and traffic capacity concerns. When providing an exclusive runningway is not feasible, transit vehicles are operated in mixed-traffic lanes. Mixed-traffic lanes do not provide exclusive travel lanes to vehicles, leading to potential transit delays due to traffic congestion. These delays affect the ability of a transitway investment to provide reliable, attractive service that is competitive with an automobile. A thorough analysis of the opportunities and constraints for some level of exclusive travel lanes for transit will be evaluated in the AA. Options for consideration include queue jump lane sections, or parking restrictions during peak periods.

- **How will a transitway on Lake Street impact roadway congestion?**

Lake Street plays a significant role as an arterial roadway providing east-west travel through south Minneapolis. It experiences significant levels of congestion in the peak travel periods. The implementation of a transitway on Lake Street would require a thorough analysis to assess the full impact on current traffic operations, including a possible shift in auto volumes to parallel roadways.

- **What types of stations on Lake Street will be assumed for each mode?**

Lake Street is a dense urban corridor with a significant number of businesses on both sides. Lake Street was recently reconstructed with a slightly narrower roadway while maintaining four lanes of traffic and parking on both sides of the street. The narrower roadway allowed for wider sidewalks and additional widening at intersections through the creation of bump-outs to shorten pedestrian crossing distances. Each mode to be considered on Lake Street will have a different station design associated with it. LRT stations require more space than streetcar or BRT stations. The use of bump-outs and station placement for the various alternatives will be analyzed and evaluated during the concept development phase. Some existing bus stops on Lake Street are located at bump-outs, while others are located curbside.

Midtown Greenway/Lake Street Combination

In addition to the individual alignment options to be evaluated on Lake Street and the Midtown Corridor, there is the potential to develop alternatives that use both alignments in some combination.

- **Can separate transitway components be successfully implemented both on Lake Street and within the Greenway?**

Due to the close proximity of the Lake Street and Midtown Greenway alignments, the implementation of transitway improvements on one will impact ridership and transit service on the other. Partial transitway improvements could include off-board fare collection, transit signal priority, and transit stop/station improvements. Full or partial transitway improvements to one alignment would not necessarily preclude the implementation of improvements to the other alignment, but could potentially reduce use of those improvements.

- **Can the Midtown Greenway and Lake Street be used in combination?**

A potential alignment could use both the Midtown Greenway and Lake Street to create a one-way loop. This alignment option would eliminate many of the issues using single-track in the Midtown Greenway, but has some potential challenges of its own:

- Since there is no visual connection, the separation of eastbound and westbound stations can be confusing for riders.
- The cost of installing two sets of catenary support (for the rail option) would be higher than if both directions used the same alignment.
- Travel times would vary significantly between an alignment on Lake Street and one in the Midtown Greenway below-grade corridor due to the different corridor characteristics.

4. Historic and Cultural Resources

Many historic and cultural resources are present within the Midtown Corridor study area. The Midtown Greenway alignment is within the Chicago Milwaukee and St. Paul Railroad Grade Separation Historic District. This historic district is listed on the National Register of Historic Places. A key question is what types of improvements and/or modifications will be allowed within the historic district. This will require

coordination with the State Historic Preservation Office (SHPO). Many of the detailed questions regarding historic and cultural resources do not need to be completely resolved during the AA; however, any potential issues that could slow the implementation of the project will be identified through the AA.

- **Are there any limitations on station locations/access due to historic districts?**

Many of the bridges crossing the Midtown Greenway are historic and are “contributing elements” to the historic district. In addition, other historic properties are located throughout the corridor adjacent to both Lake Street and the Midtown Greenway. Potential impacts to these historic resources will need to be assessed before final decisions on station location can be made.

- **What changes can be made to bridges?**

The historic district designation in the corridor may limit the degree to which they can be modified or removed. Structural modifications to the bridges in the corridor, many of which are in an advanced state of deterioration, will also add significant time and cost to the final project and will need to be taken into consideration. Hennepin County, working with SHPO and MnDOT, will soon begin a management plan for the bridges in the Midtown Greenway that could help inform the AA.

- **What changes can be made within the right-of-way?**

The historic designation of the Midtown Greenway may present obstacles to the widening of or modification to the corridor right-of-way. It is not impossible to make modifications; however, it adds additional time and cost to the project.

- **Does the historic designation influence the design of a transitway?**

The historic corridor designation may have some influence on the various design elements of any proposed transitway. Although the AA will not be detailing these design details, it is important to take them into account during the early planning stages of the project.

5. Land Use and Economic Development

The implementation of transitway improvements such as LRT, streetcar, dedicated busways, and BRT have been linked to increased development and redevelopment activity. For transit investments to be successful, an important element to evaluate is whether land uses around the potential transit corridor have the potential to stimulate economic development. This is an important link to transit because the more development surrounds a transit corridor, the greater the potential for ridership to feed the transit investment.

Land use and economic development are two important items that will be part of the AA process. The City of Minneapolis has already completed several land use and development studies in this area, both at key corridor nodes and along the corridor itself. Land uses within the Midtown Corridor primarily consist of residential and commercial areas with some areas of industrial and park/open space. In recent years, many industrial parcels have been redeveloped and replaced by either housing or commercial land uses. The Midtown Corridor has several fairly large scale development projects in the planning or



implementation phases that could increase housing density. Job density will also increase, although not as significant as housing.

- **Should potential for development go beyond currently adopted plans?**

Current and future land uses have been evaluated in a number of land use, development, and small area plans. Many of these plans have been created with the anticipation of future transitway investments in the Midtown Greenway. However, these plans may require revision to reflect the findings and recommendations of the Midtown Corridor AA and the selection of the locally preferred alternative.

- **Do currently adopted plans have the support of the area residents and stakeholders?**

Public involvement was a key factor in developing the land use plans. That said, the Midtown Corridor has a large number of stakeholders with a variety of interests and goals. Various land use decisions may not have the support of every stakeholder.