
5.0 Definition of Alternatives

5.1 Overview

This chapter presents the transit alternatives evaluated in the Southwest Transitway Alternatives Analysis (AA). This discussion includes descriptions of the alignments, station locations and operating plans for each alternative. Full definitions of the alternatives are provided in *Technical Memorandum No. 3, Definition of Alternatives*.

The alternatives described in this chapter include refinements made over the course of the study as a result of feedback from the Technical and Policy Advisory Committees, study area communities, and public outreach efforts. At the end of each alternative description, the refinements made to the initial alternatives are identified.

5.2 Background and Assumptions

The process for defining and refining the Southwest Transitway alternatives included:

- Reviewing previous studies of the Southwest Transitway.
- Establishing a set of Southwest Transitway Goals and Objectives that address the Purpose and Need.
- Performing a transit technology review to identify which transit technologies address the study area's travel needs as documented in Chapter 3, Purpose and Need.
- Identifying general alignments (i.e., station locations and routings).
- Combining the selected transit technologies and alignments into an initial set of transitway alternatives for agency and public review and comment.
- Modifying the initial transitway alternatives into refined alternatives for evaluation based on comments received.

5.3 Study Review

The Southwest Transitway AA began with a review of previous studies related to the Southwest Transitway. These included local comprehensive plans, the Regional Blueprint, the Transportation Policy Plan (TPP), and all transit studies related directly to the Southwest Transitway including the 2003 Hennepin County Regional Railroad Authority (HCRRA) *Southwest Rail Transit Study* that is a predecessor to this AA.

5.4 Goals and Objectives

The Policy Advisory Committee (PAC) approved the following Southwest Transitway goals to address the mobility needs of the study area:

1. Improve Mobility
2. Provide a Cost-Effective and Efficient Travel Option
3. Protect the Environment
4. Preserve Quality of Life
5. Support Economic Development

The goals were prioritized into two tiers. Tier One goals are those that must be achieved in order for a viable project to exist. Tier Two goals are those that should be achieved assuming a viable project exists. Southwest Transitway goals and objectives are identified in Chapter 4 of this document.

5.5 Transit Technology Review

The next step in defining alternatives was to determine which transit technologies were most likely to address the travel needs of the study area. The Southwest Transitway AA reviewed a broad range of transit technologies including the following:

- **Conventional Diesel Bus (including use on HOV and shoulder bus lanes):** The diesel transit bus is the most commonly used transit vehicle in the world. Buses offer the flexibility of operation in mixed traffic on city streets and highways.



Conventional Diesel Bus

- **Bus Rapid Transit (BRT):** BRT combines the flexibility of buses with the frequency and travel time advantages of rail transit. BRT typically offers high capacity, high frequency bus operation in an exclusive bus-only roadway with on-line, high-amenity stations.



Proposed BRT Service in Eugene, Oregon

- **Light Rail Transit (LRT):** LRT is a medium- to high-capacity passenger rail technology that can be used for service in areas with mixed traffic and closely-spaced stops, and also for long-haul higher-speed trips on exclusive guideways. LRT vehicles are powered from an overhead electrification system. LRT service typically features on-line, high-amenity stations.



The Twin Cities Hiawatha LRT line

- **Streetcar (modern):** Streetcar technology is similar to light rail technology in terms of track gauge, overhead electrification, and regularly scheduled operations, but streetcars typically serve as local area distributors, and are more likely to share street rights-of-way with other vehicles or use semi-exclusive rights-of-way. Stops are typically similar to local street bus stops.



Streetcar in Portland, Oregon

- **Heavy Rail Transit (subway):** Heavy rail, commonly referred to as a rapid transit or subway, is a high-capacity, high-speed transit service that operates on exclusive tracks with an electrified third rail and no grade crossings. High-amenity stations are standard features of rapid transit systems.



New York City subway

- **Commuter Rail (locomotive and diesel multiple unit):** Commuter rail service is defined as passenger rail service operating on existing freight rail tracks into the city center in the morning and from the city center in the afternoon/evening. Service is typically between outer suburban or exurban areas and the city center. Commuter rail typically features high- amenity stations.



New Jersey Commuter Rail

- **Automated Guideway Transit (AGT)/ Monorail:** AGT/monorail systems are electric transit systems in which the vehicles are suspended from or straddle an exclusive guideway. An AGT/monorail system typically serves as a circulator/distributor within a relatively small geographic area. High-amenity stations are standard features of AGT systems.



Las Vegas Monorail

- **Personal Rapid Transit (PRT):** PRT is a transit system that provides point-to-point, demand responsive service to individuals or small groups. PRT is typically designed to serve as a circulator/distributor system providing service within business parks, airports, and campus environments, although this technology could also be used to provide service to/from line-haul transit systems.



Personal Rapid Transit Demonstration vehicle

Each transit technology was evaluated according to the following criteria:

- **Compatible with the study area's transit travel demand**
The technology is easily able to accommodate the transit travel demand of the study area.
- **Proven Technology**
The technology is fully implemented in other locations, with a history that can be researched and studied.
- **Compatible with existing infrastructure**
The technology is compatible with existing and planned infrastructure and will not require a major retrofit of existing infrastructure.
- **Identified in the region's long-range transportation plan and other studies**
The technology is identified as an option in the Metropolitan Council's long-range transportation plan, the *Transportation Policy Plan* (TPP) or in previous Southwest Transitway studies. The following studies have been completed documenting the feasibility of transit technologies for the Southwest Transitway: the *Hennepin County LRT System Draft Environmental Impact Statement (DEIS), 1989*; the *29th Street and Southwest Busway Feasibility Study, 2000*; the Minnesota Department of Transportation's *Exclusive Busway Study, 2000*; and the *Southwest Rail Transit Study, 2003*.

The results of this review, summarized in Table 5.1, identified conventional diesel bus, BRT and LRT for inclusion as feasible transit modes in the Southwest Transitway AA.

Conventional diesel buses were retained based upon the technology's ability to serve expected travel demand, flexibility, compatibility with existing infrastructure, and the fact that it is a proven technology. Conventional diesel buses are identified in the Metropolitan Council's *2030 Transit Plan* as the backbone of the regional transit system.

Bus rapid transit (BRT) was retained based upon its ability to serve expected travel demand, its compatibility with existing infrastructure, and the fact that it is a proven technology. BRT is identified in the Metropolitan Council's *2030 Transit Plan* as a potential transit technology to serve the travel demand in the Twin Cities. BRT was also determined to be a feasible transitway alternative in both the *29th Street and Southwest Busway Feasibility Study, 2000* and Mn/DOT's *Exclusive Busway Study, 2000*.




Light rail transit (LRT) was retained based upon its ability to serve expected travel demand, its compatibility with existing infrastructure (i.e., the Hiawatha LRT line), and the fact that it is a proven technology. LRT is identified in the Metropolitan Council's *2030 Transit Plan* as a potential transit technology to serve the travel demand in the Twin Cities. LRT was also determined to be a feasible transit technology in the *Southwest Rail Transit Study, 2003*.

Appendix A in *Technical Memorandum No. 3, Definition of Alternatives*, provides a more detailed discussion of the evaluation of each transit technology.

In July 2005, the Southwest Transitway TAC forwarded its recommendation of conventional bus, BRT and LRT to the Southwest Transitway PAC, who voted unanimously to retain these technologies for further study.

Table 5.1 Transit Technology Review Results

Modes	Compatibility with Travel Demand	Proven Technology	Compatibility with Existing Infrastructure	Identified in the Regional Transportation Plan	Recommendation
Conventional Bus	○	○	○	○	Retain
Bus Rapid Transit (BRT)	○	○	○	○	Retain
Light Rail Transit (LRT)	○	○	○	○	Retain
Streetcar (Modern)*	◐	○	◐	●	Not Retain
Heavy Rail Transit	●	○	●	●	Not Retain
Commuter Rail	●	○	○	○	Not Retain
Monorail/AGT (Automated Guideway Transit)	●	○	●	●	Not Retain
Personal Rapid Transit (PRT)	●	●	●	●	Not Retain

LEGEND	Compatibility with Travel Demand:	Ability of service type to accommodate expected travel demand	 Fully Meets Criteria  Partially Meets Criteria  Does Not Meet Criteria
	Proven Technology:	Fully implemented and able to be evaluated	
	Compatibility with Existing Infrastructure:	Does not require massive retrofit of existing infrastructure	
	Identified in the Regional Transportation Plan:	Identified in the Metropolitan Council's Transportation Policy Plan (TPP)	
*May be appropriate for intercity/local circulator service connecting to/from the corridor			

5.6 Identification of Alignments (Stations and Routes)

The next step in the process of defining alternatives was to identify the alignments, which are a combination of station locations and the routes linking them.

5.6.1 Station Locations

The guidelines for locating transit stops/stations included service to activity centers; accessibility by bus, auto, bicycle and walking; integration with the community and surrounding environment; and spacing appropriate for transit operations.

Activity Centers

Stations were located to serve concentrations of residential population, employment and destination/activity centers (e.g., shopping centers, medical centers, recreation areas).

Access to the Station

Stations were located in areas easily accessible by walking, bicycle, bus or automobile. Consideration was given to existing and planned roadways, bus routes, pedestrian and bicycle connections and availability of land for park-and-ride facilities.

Integration with the Community and the Environment

Stations were located to be compatible with the community and the natural environment. Considerations included compatibility with existing/proposed land use as identified in local comprehensive plans, the area's potential for transit oriented development or redevelopment, and avoiding environmental and community impacts.

Appropriate Spacing for Transit Operations

Stations were spaced approximately ½ to one mile apart, except in downtowns, where stations were spaced every few blocks. This is typical spacing for BRT and LRT.

5.6.2 Routes

Following the identification of station locations, the second step in defining alignments was to determine the best route for connecting the stations. The guidelines for selecting routes between stations included minimizing travel time, cost, and environmental and community impacts.

Travel Time

Routes were selected to minimize travel time between stations, as shorter overall travel times improve the attractiveness of the transit service and increase transit ridership.

Capital Costs

Routes were selected to minimize capital costs associated with right-of-way, structures, utilities, roadway construction and signal systems.

Operating Costs

Routes were selected to minimize operating and maintenance costs by selecting the most direct path between stations.

Environmental and Community Impacts

Routes were selected to minimize impacts to the existing environment and community including sensitive or protected natural resources, adjacent land uses, vehicular and pedestrian traffic and

public safety.

5.7 Description of Alternatives

The next step in the process combined the technologies and alignments (station and routes) into an initial set of alternatives. The initial set of alternatives included a No Build which is required by the Federal Transit Administration (FTA); an improved conventional bus alternative called Enhanced Bus; two bus rapid transit (BRT) alternatives; and eight light rail transit (LRT) alternatives.

The initial alternatives were presented at three community open houses, several community meetings, and individual meetings with the affected cities to solicit comments. Subsequently, the alternatives were refined based upon comments received. Refinements were incorporated into the alternatives before they underwent the detailed evaluation described in Chapter 7, Evaluation.

5.7.1 No Build

The No Build alternative includes existing and committed infrastructure, facilities and services contained in the region's federally-approved transportation plan, the *Twin Cities 2030 Transportation Policy Plan* (TPP). A no build alternative provides an essential benchmark to test whether project alternatives improve future transit service compared to improvements planned to be implemented without the proposed project. The no build is also used in the subsequent environmental analysis phase of project development in this case an Environmental Impact Statement (EIS) to compare the environmental impacts of the project to projected conditions without the proposed alternatives.

Transit Service and Facilities

The 2030 No Build alternative assumes the future transit service network will closely resemble the dense route structure and extensive facilities of the existing system, with additions reflected in the regional travel model maintained by the Metropolitan Council. The regional travel model incorporates the facilities included in the TPP. By 2030, the current TPP identifies the following transitway services as operational: TH 212 SouthWest Metro Transit bus service to TH 101, Chanhasen and CSAH 41, Chaska; Northstar commuter rail service between Big Lake and Minneapolis; Central Corridor LRT service between downtown Minneapolis and downtown St. Paul via the University of Minnesota; Bottineau Boulevard BRT service between Rogers and downtown Minneapolis; Cedar Avenue BRT service between Apple Valley/Lakeville and the Mall of America in Bloomington; Red Rock commuter rail service between Hastings and downtown Minneapolis via St. Paul; and Rush Line commuter rail between Pine County and St. Paul.

Roadway Facilities

In the vicinity of the Southwest Transitway study area, major improvements programmed for implementation under the TPP include the following:

- Lane Additions: Additional highway lanes on I-494, TH 100, and I-35W.
- HOV lanes: Fully implemented on I-35W through Richfield and Minneapolis, with on-line stations for BRT service, identifying the improved I-35W as a transitway.
- Construction of new highway TH 212 from I-494 in Hennepin County into Carver County.
- Bus shoulder lane expansions on TH 62, I-494, TH 100, TH 169, TH 212, and TH 5, facilitating the planned Express Commuter Bus System on I-494, TH 5 and TH 169.
- Park-and-Ride lots: County Road 60/Minnetonka Boulevard, TH 212/TH 101, and TH 212/CSAH 41.

The No Build alternative is incorporated in the 2030 Twin Cities regional travel demand forecasting

model, used to forecast ridership for the Southwest Transitway AA.

5.7.2 Enhanced Bus Alternative

The FTA requires development of a baseline bus option, the “best bus” alternative, for inclusion in an AA. The FTA defines baseline bus as:

“... the best than can be done for mobility without constructing a new transit guideway. An acceptable baseline alternative emphasizes transportation system upgrades such as intersection improvement, minor road widening, traffic engineering actions, bus route restructuring, shortened bus headways, expanded use of articulated buses, reserved bus lanes, contra-flow lanes for buses and High Occupancy Vehicles (HOVs) on freeways, special bus ramps on freeways, expanded park/ride facilities, express and limited-stop service, signalization improvement, and timed-transfer operations.”¹

In an AA, the best bus alternative, which is different from the no build alternative, is used as the basis for comparison to the “build” alternatives, which for this AA are defined as BRT and LRT. This is done to demonstrate whether a higher level of investment in a build alternative is justified. In the Southwest Transitway AA, the Enhanced Bus alternative is intended to be the best, or baseline, bus alternative.

The Enhanced Bus alternative includes two new limited-stop bus routes providing bi-directional service between Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and downtown Minneapolis; minor modifications to the existing express service; increased service frequencies; and restructured local service to provide access to stops along the new limited-stop routes.

Limited-Stop Route “A” – Eden Prairie, Hopkins, St. Louis Park to Downtown Minneapolis

This route begins at a park-and-ride lot at Mitchell Road and Technology Drive and operates in mixed traffic on Technology Drive, Flying Cloud Drive, Excelsior Boulevard, and TH 7; on bus-only shoulders on TH 169, TH 100, TH 5 and TH 212; and in the I-394 HOV lane to provide service through Eden Prairie, Minnetonka, Hopkins, St. Louis Park and downtown Minneapolis.

Limited-Stop Route “A” stops at Mitchell Road, SouthWest Station, Flying Cloud Drive, TH 212 at Shady Oak Road, TH 169 at Bren Road, TH 169 at Excelsior Boulevard, Excelsior Boulevard at Blake Road, Blake Road just south of TH 7, TH 7 and Texas Avenue, TH 7 and Louisiana Avenue, and TH 7 and Wooddale Avenue.

Limited-Stop Route “B” – Minnetonka, Hopkins, St. Louis Park to Downtown Minneapolis

This route begins at the intersection of Shady Oak Road and Excelsior Boulevard and operates in mixed traffic on Excelsior Boulevard, Blake Road, and TH 7; on bus-only shoulders on TH 100; and in the I-394 HOV lane to provide service through Minnetonka, Hopkins, St. Louis Park and downtown Minneapolis.

Limited-Stop Route “B” stops at the intersections of Shady Oak Road and Excelsior Boulevard, Excelsior Boulevard and 8th Avenue, Excelsior Boulevard and TH 169, Excelsior Boulevard and Blake Road, Blake Road and TH 7, TH 7 and Texas Avenue, TH 7 and Louisiana Avenue, and TH 7 and Wooddale Avenue.

¹ Annual Report on New Starts, FY 2007 New Starts Evaluation and Rating Process.

Table 5.2 summarizes the operating plan for the Enhanced Bus alternative limited stop routes. The detailed Enhanced Bus operating plan is contained in *Technical Memorandum No.5, Operating Plans*.

Table 5.2 Enhanced Bus Service Plan – Frequency (Minutes between Buses) and Hours

	Morning (4:00 - 6:00 AM)	AM Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM - 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday					
Route "A"	20 minutes	15 minutes	20 minutes	15 minutes	30 minutes
Route "B"	20 minutes	15 minutes	20 minutes	15 minutes	30 minutes
Combined (A & B)	10 minutes	7.5 minutes	10 minutes	7.5 minutes	15 minutes
Weekend	No service	No service	No service	No service	No service

Figure 5.1 illustrates the Enhanced Bus alternative, showing Limited-Stop routes A and B. The new routes are in addition to the local bus network, modified to serve new route access points.

The initial Enhanced Bus Alternative was developed in direct consultation with Metro Transit and SouthWest Transit staff. The transit operating plan for the Enhanced Bus alternative is generally carried through as an element of the BRT and LRT alternatives so that ridership forecast differences result from characteristics of the alternative and not from the level of transit service provided.

Refinement

No public or agency comments were received to warrant changes to the initial Enhanced Bus alternative. The initial Enhanced Bus alternative became the final Enhanced Bus alternative.

5.7.3 Build Alternatives

For the Southwest Transitway, the build alternatives, defined as those requiring major infrastructure improvements, are either BRT or LRT. Table 5.3 presents the key characteristics of these two technologies.

Figure 5.1 Enhanced Bus

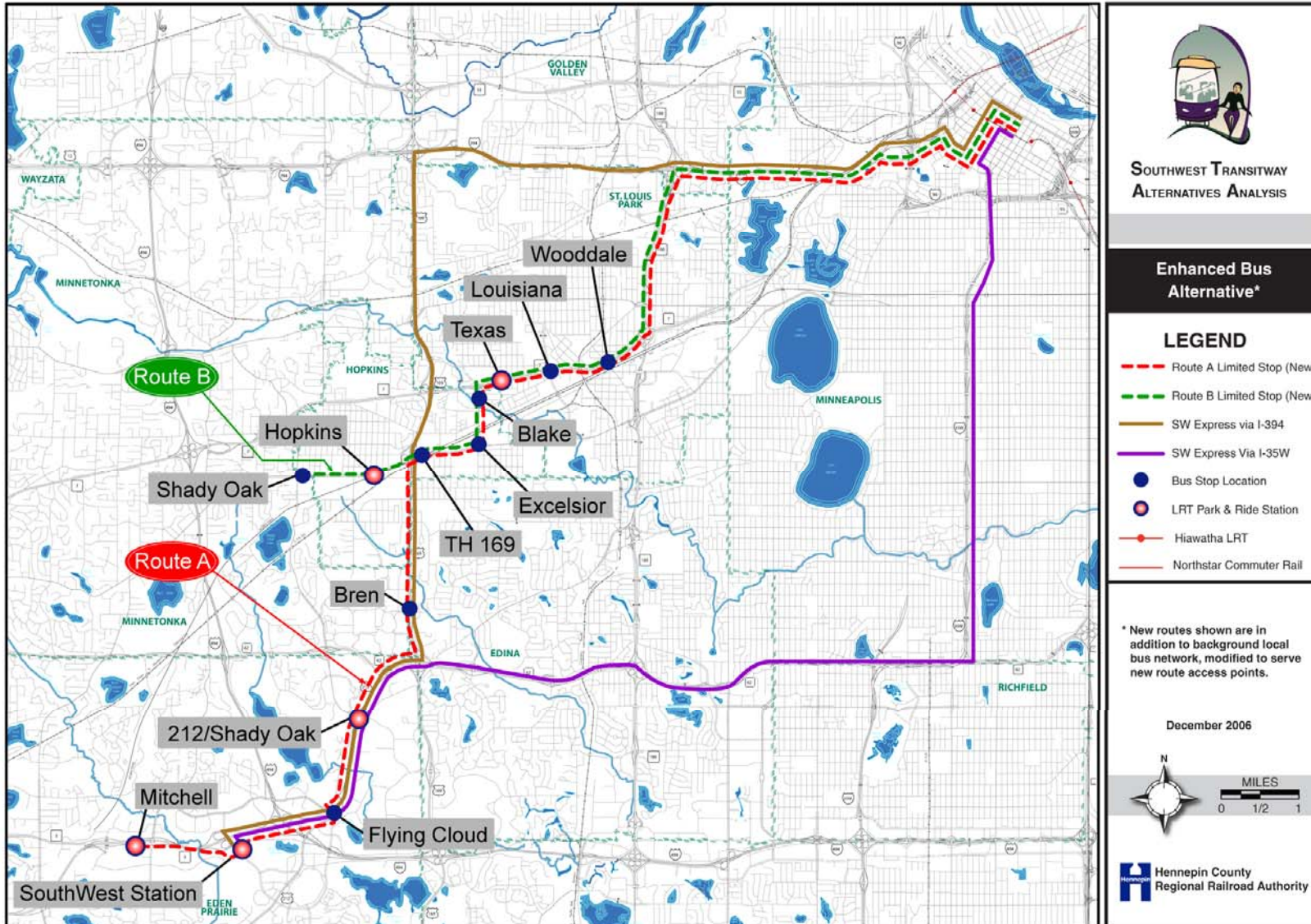


Table 5.3 Characteristics of BRT and LRT

Characteristic	BRT	LRT
Service Type	High frequency (7.5 minute peak), bi-directional, line-haul, limited-stop, seven days per week.	High frequency (7.5 minute peak), bi-directional, line-haul, limited-stop, seven days per week.
Service Hours	Weekday: 4:00 AM to 2:00 AM Weekend/Holiday: 4:00 AM to 2:00 AM	Weekday: 4:00 AM to 2:00 AM Weekend/Holiday: 4:00 AM to 2:00 AM
Station Spacing	Downtown: ¼ to ½ mile First ring: ½ to 1 mile Second ring: 1 to 2 miles	Downtown: ¼ to ½ mile First ring: ½ to 1 mile Second ring: 1 to 2 miles
Fare Collection	Proof of Payment	Proof of Payment
Stations	High amenity, on-line with park-and-ride where appropriate.	High amenity, on-line with park-and-ride where appropriate.
Dedicated Guideway	Two-lane bus only roadway with bypass lanes at station locations (approximately 28 feet in width)	Two exclusive tracks (approximately 30 feet in width)
Vehicles	Low-floor, diesel hybrid vehicles with branding	Light rail vehicles
Intelligent Transportation System (ITS)	Signal priority and pre-emption where feasible	Signal priority and pre-emption where feasible.

5.7.3.1 Bus Rapid Transit (BRT) Alternatives

Effective bus rapid transit service is defined as frequent, direct, easy to understand, comfortable, reliable, operationally efficient, and above all, rapid. Bus rapid transit encompasses a wide variety of potential features, allowing the BRT concept to be tailored to the needs and resources of the community for which it is proposed. For the Southwest Transitway, BRT alternatives were identified as offering high-capacity, high-frequency bus operation in an exclusive, bus-only, two-lane roadway (“guideway”), with on-line, high-amenity stations. Passing lanes are provided at stations.

Two BRT alternatives, labeled BRT 1 and BRT 2, were designed to serve the travel needs of the study area. In developing these BRT alternatives the consultant team reviewed the *29th Street and Southwest Busway Feasibility Study, 2000*, *Mn/DOT’s Exclusive Busway Study, 2000*, and the Federal Transit Administration’s Report, *the Characteristics of Bus Rapid Transit*.

In order to ensure that the ridership differences that the travel demand model shows between the Enhanced Bus (baseline) alternative and BRT alternatives are due to the BRT technology, two routes similar in structure and operations to the Enhanced Bus Limited-Stop Routes “A” and “B” are assumed to operate as the Southwest BRT alternatives in the BRT guideway. These two primary bus routes operate on the BRT guideway under both BRT alternatives. These routes combine with existing and planned express and local routes to provide overall BRT service within the guideway. Limited-Stop Route “A” operates along the entire length of the guideway and stops at all BRT stations. Limited-Stop Route “B” enters the guideway in Hopkins and also stops at all BRT stations.

In addition to the new Limited-Stop routes, SouthWest Metro Transit and Metro Transit express routes would use the BRT exclusive two-lane roadway for portions of their routes. In contrast to the Limited-Stop routes, express buses would not stop at BRT stations once they have entered the guideway. The BRT operating plans also include a number of feeder buses which provide local

service to BRT stations. The feeder bus plan for each BRT alternative is described in *Technical Memorandum No.5, Operating Plans*.

The new Limited-Stop “A” and “B” routes provide overlapping service from the Shady Oak Station to Minneapolis, combining to offer 7.5-minute headways from Shady Oak into downtown Minneapolis. Table 5.4 summarizes the service plan for the BRT routes which stop at all stations.

Table 5.4 BRT Limited-Stop Service Plan – Frequency (Minutes between Buses) and Hours

	Morning (4:00 - 6:00 AM)	AM Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM - 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00AM)
Weekday					
Entire Guideway Routes BRT 1-1 and BRT 2-1 (Route “A”)	20 minutes	15 minutes	20 minutes	15 minutes	30 minutes
Hopkins to Downtown Routes BRT 1-2 and BRT 2-2 (Route “B”)	20 minutes	15 minutes	20 minutes	15 minutes	30 minutes
Combined (A & B)	10 minutes	7.5 minutes	10 minutes	7.5 minutes	15 minutes
Weekend	15-60 minutes	15-60 minutes	10-20 minutes	10-20 minutes	15-60 minutes

More information on the BRT operating plans can be found in *Technical Memorandum No.5, Operating Plans*.

The alignment for the BRT guideway for both BRT alternatives is described below:

BRT 1 – Initial Alternative

The exclusive bus-only guideway in the BRT 1 alternative extends from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. The two primary routes operating on this guideway, BRT 1-1 and BRT 1-2, provide overlapping service from Shady Oak Road to Minneapolis, combining to offer 7.5 -minute headways from Shady Oak into downtown Minneapolis.

Routing

BRT 1-1 (Route A – Eden Prairie to Minneapolis)

The route begins near the intersection of TH 5 and the HCRRA’s Southwest right-of-way. From that point the route enters a new exclusive (bus-only) guideway in the HCRRA’s Southwest right-of-way to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive guideway in the HCRRA’s Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive guideway in the HCRRA’s Cedar Lake Corridor. When it reaches the new Van White

Boulevard, the route exits the exclusive guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line, then loops around using 3rd and 4th Streets.

BRT 1-2 (Route B – Minnetonka to Minneapolis)

This route begins at Shady Oak Road and the HCRRA's Southwest right-of-way. From that point the route enters new exclusive guideway in the HCRRA's Southwest right-of-way to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive guideway in the HCRRA's Cedar Lake Corridor. When it reaches the new Van White Boulevard, the route exits the exclusive guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line, then loops around using 3rd and 4th Streets.

Guideway

A new exclusive two-lane bus-only roadway with station passing lanes would be constructed in the HCRRA's Southwest right-of-way from TH 5 to West Lake Street, in the Kenilworth Corridor from West Lake Street to Penn Avenue, and the Cedar Lake Corridor from Penn Avenue to Dunwoody Boulevard. The existing bus lanes on Hennepin Avenue would be used for access throughout downtown Minneapolis.

Stations

BRT 1 provides service to the following BRT stations: TH 5, TH 62, Rowland Road, Shady Oak Road, Hopkins, TH 169, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, 12th Street, 8th Street, and 4th Street.

BRT 1 – Refined Alternative

Based upon comments received, the initial BRT 1 alternative was modified as follows:

- The initial alternative did not include a Penn Avenue Station. In response to comments from the Bryn Mawr neighborhood, a station was added at Penn Avenue.
- To provide better feeder bus connections, the station originally identified at TH 169 was moved to Blake Road.

Figure 5.2 illustrates refined alternative BRT 1. The detailed description of BRT 1 is contained in *Technical Memorandum No. 3, Description of Alternatives*.

BRT 2 – Initial Alternative

The exclusive bus-only guideway in the BRT 2 alternative extends from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis. As with BRT 1, the two primary routes, BRT 2-1 and BRT 2-2, provide overlapping service from Shady Oak Road to Minneapolis, combining to offer 7.5-minute headways from Shady Oak into downtown Minneapolis.

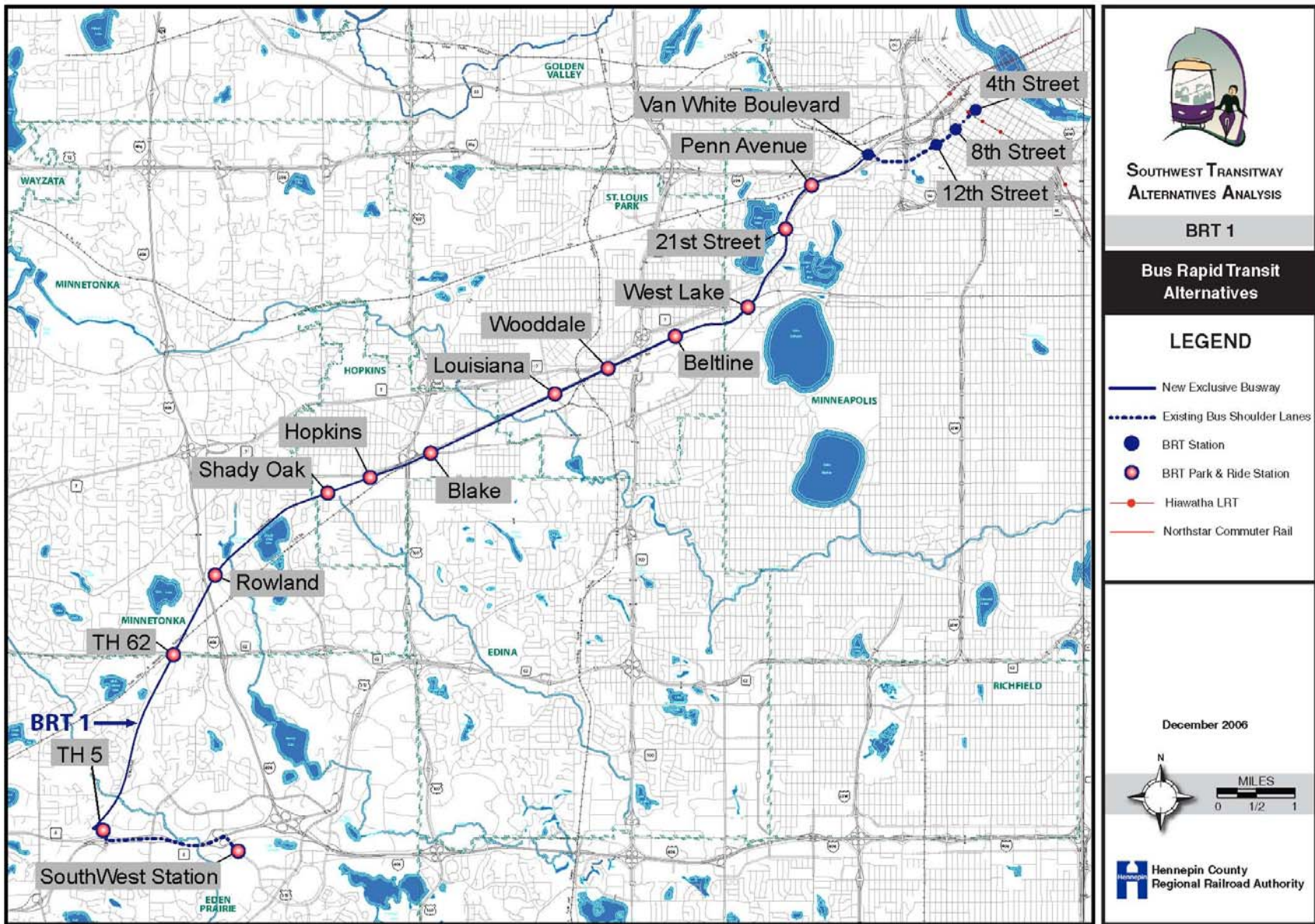
Routing

BRT 2-1 (Route A: Eden Prairie to Minneapolis)

The route begins near the intersection of TH 5 and HCRRA's Southwest Corridor right-of-way in Eden Prairie. From that point the route uses the existing bus-only shoulders along TH 5 to the Prairie Center Drive interchange, where it enters new reserved bus-only lanes along Prairie Center Drive. It follows Prairie Center Drive south, then turns east into new reserved bus-only lanes along Singletree Lane and new right-of-way to Prairie Center Drive. At Prairie Center Drive, it turns north and continues in new bus-only shoulders to TH 212. At TH 212, the route enters an exclusive (bus-only) guideway along the east side of the TH 212 right-of-way, then swings east and north along new right-of-way through the Golden Triangle area. After crossing Shady Oak Road, the exclusive guideway crosses over TH 212 into the City West area, then crosses over TH 62 into the Opus area of Minnetonka. At Bren Road the route leaves the bus-only guideway and follows new reserved bus-only lanes along Bren Road to the TH 169 interchange. At TH 169 the route follows the existing bus-only shoulders north to Excelsior Boulevard, where it then enters an exclusive guideway located in the HCRRA's Southwest right-of-way.

For this alternative, the exclusive guideway in the HCRRA's Southwest right-of-way begins near Shady Oak Road. It continues east, passing under TH 169, where it is joined by the route branch coming north from Bren Road. The combined route continues in the exclusive guideway to West Lake Street in Minneapolis.

Figure 5.2 BRT 1



Just north of West Lake Street the route enters an exclusive guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive guideway in the HCRRA's Cedar Lake Corridor. When it reaches the new Van White Boulevard, the route exits the exclusive guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line, then loops around using 3rd and 4th Streets.

BRT 2-2 (Route B – Minnetonka to Minneapolis)

This route begins at Shady Oak Road and the HCRRA's Southwest right-of-way. From that point the route enters new exclusive guideway in the HCRRA's Southwest right-of-way to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive guideway in the HCRRA's Cedar Lake Corridor. When it reaches the new Van White Boulevard, the route exits the exclusive guideway and follows new reserved bus-only lanes along Dunwoody Boulevard and Hennepin Avenue into downtown Minneapolis. The route ends at the intersection of 5th Street and Hennepin Avenue, adjacent to the existing Hiawatha LRT line, then loops around using 3rd and 4th Streets.

Guideway

BRT 2 uses bus-only shoulder lanes on TH 5, Prairie Center Drive, Singletree Lane, Flying Cloud Drive, portions of TH 212, Bren Road, and TH 169. New sections of two-lane bus-only roadway with station passing lanes would be constructed to extend Singletree Lane near Eden Prairie Center, and enter the Golden Triangle, City West and Opus areas. A new, exclusive two-lane bus-only roadway would also be constructed in the HCRRA's Southwest right-of-way from the Shady Oak Road station to West Lake Street, in the Kenilworth Corridor from West Lake Street to Penn Avenue, and in the Cedar Lake Corridor from Penn Avenue to Dunwoody Boulevard. The existing bus lanes on Hennepin Avenue would be used for access throughout downtown Minneapolis.

Potential Route Variations

This alternative includes a route variation in Eden Prairie. After serving the SouthWest Metro Transit station, the route could continue east on bus-only shoulders along TH 5. Once it passes under I-494 and Valley View Road, the route would enter an exclusive guideway that carries it into the Golden Triangle area. This variation does not include an Eden Prairie Center station.

Stations

BRT 2 provides service to the following BRT stations: TH 5, SouthWest Station, Eden Prairie Center, Golden Triangle, City West, Opus, Shady Oak Road, Hopkins, TH 169, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, 12th Street, 8th Street, and 5th Street.

BRT 2 – Refined Alternative

Based upon comments received, the initial BRT 2 alternative was modified as follows:

- The initial alternative did not include a Penn Avenue Station. In response to comments from the Bryn Mawr neighborhood, a station was added at Penn Avenue.
- In the initial alternative, the terminal station was located at TH 5. To avoid an additional freeway crossing, the terminal station was moved from the south side of TH 5 to Mitchell Road.
- In the initial alternative, westbound vehicles were proposed to use TH 5 between the SouthWest Metro Transit Station and Mitchell Road. For operating efficiency, westbound vehicles are proposed to use Technology Drive rather than TH 5.
- In the initial alternative, the BRT guideway crossed I-494 at Eden Prairie Center. The

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- refinement includes crossing I-494 at Flying Cloud Drive rather than at Prairie Center Drive.
 - To provide better integration with Eden Prairie’s plan for the Major Center Area, the Eden Prairie Center Station was moved west about 1/3 miles and re-named the Eden Prairie Town Center station.
 - To provide better feeder bus connections, the station originally identified at TH 169 was moved to Blake Road.

Figure 5.3 illustrates refined alternative BRT 2. More information about BRT 2 can be found in *Technical Memorandum No.3, Definition of Alternatives*.

5.7.3.2 Light Rail Transit (LRT) Alternatives

Light rail transit is a medium- to high-capacity passenger rail service that can be used both for service in areas with mixed traffic and closely-spaced stops, and also for long-haul higher-speed trips on exclusive guideways. LRT service is characterized by train service that is frequent, direct, easy to understand, comfortable, reliable, operationally efficient and rapid. LRT typically operates in exclusive or semi-exclusive rights-of-way and is powered by an overhead electrification system. LRT typically features on-line, high-amenity stations.

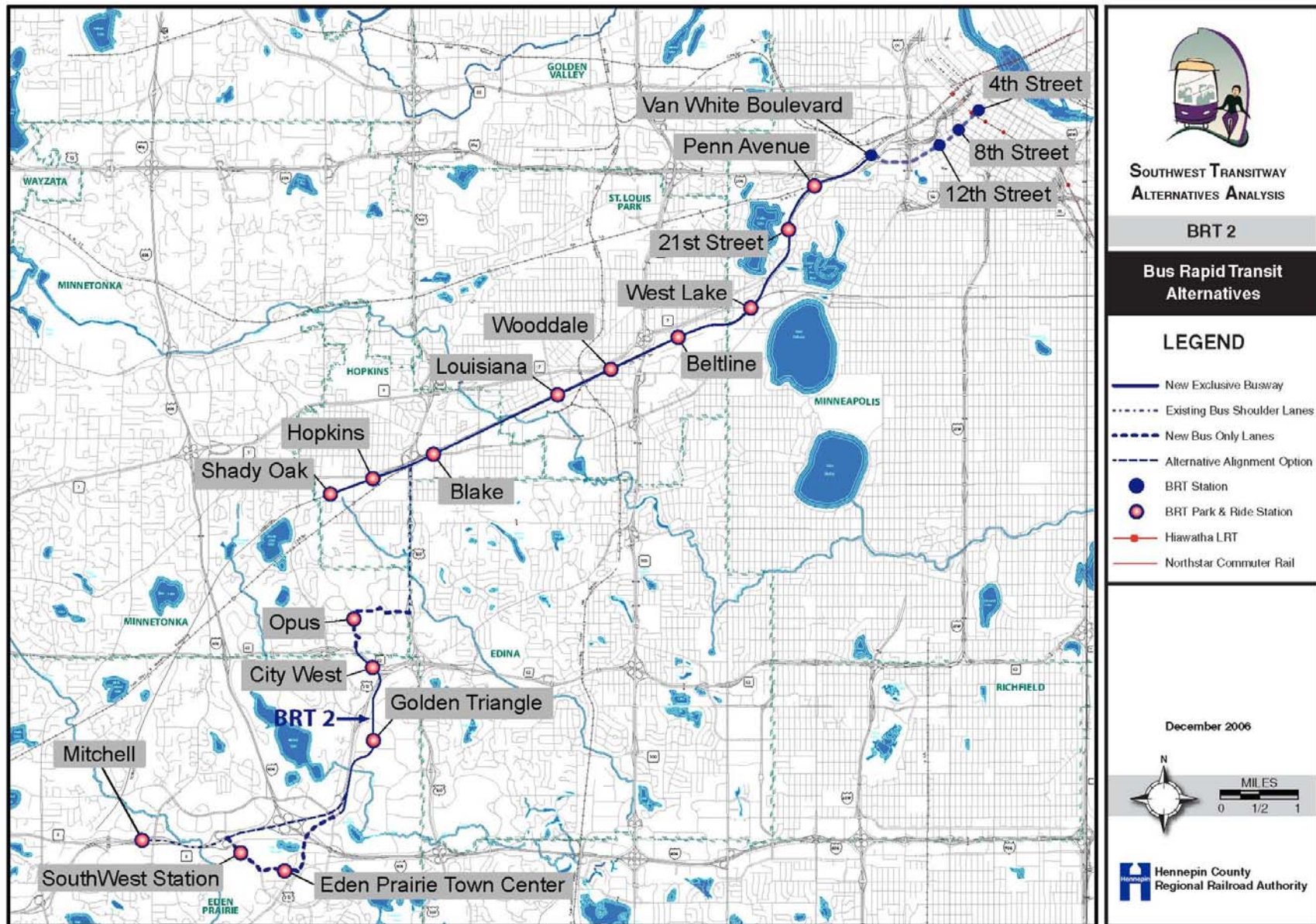
Eight initial LRT alternatives were defined to serve the travel needs of the study area. The eight LRT alternatives are identified using a combination of a numeric (1, 2, 3, or 4) and alphabetic (A or C) designations. The numbers designate the four possible routings west of Louisiana Avenue in St. Louis Park. The letters designate the two possible routes east of Louisiana Avenue.

In developing the initial LRT alternatives, the HCRRA’s *Southwest Rail Transit Study, 2003* was reviewed. The four LRT alternatives recommended for continued study in the 2003 study were included in the Southwest AA’s initial set of alternatives. These alternatives are identified as LRT 1A, LRT 2A, LRT 3A, and LRT 4A, and are described in more detail later in this chapter.

An additional four LRT alternatives were added to the initial set of alternatives. These alternatives were defined to use the same routings as LRT 1A, LRT 2A, LRT 3A, and LRT 4A west of West Lake Street in Minneapolis. East of West Lake Street these alternatives, labeled LRT 1C, LRT 2C, LRT 3C and LRT 4C use the HCRRA’s Midtown Corridor and Nicollet Avenue. This LRT routing, labeled as “C”, is similar to an LRT routing recommended for the Southwest Transitway in the 1988 Draft Environmental Impact Statement (DEIS).

Alternatives numbered “1” designate routes that use the HCRRA’s Southwest right-of-way through Eden Prairie, Minnetonka, Hopkins, to Louisiana Avenue in St. Louis Park. Alternatives numbered “2” designate routes that use TH 5 and I-494 rights-of-way through Eden Prairie and Minnetonka and HCRRA’s Southwest right-of-way through Hopkins to Louisiana Avenue in St. Louis Park. Alternatives numbered “3” use a combination of new exclusive rights-of-way through Eden Prairie, Minnetonka and part of Hopkins, in addition to the HCRRA’s Southwest right-of-way through Hopkins to Louisiana Avenue in St. Louis Park. Alternatives numbered “4” designate shortened routes using the HCRRA’s Southwest right-of-way from Shady Oak Road in Minnetonka to

Figure 5.3 BRT 2



Louisiana Avenue in St. Louis Park. These alternatives do not provide direct LRT service to areas of Minnetonka west of Shady Oak Road and Eden Prairie. LRT alternatives 1 through 4 mirror those resulting from the HCRRA’s *Southwest Rail Transit Study, 2003*.

Alternatives with the letter “A” designate routes that use the HCRRA’s Southwest right-of-way through St. Louis Park, and the HCRRA’s Kenilworth and Cedar Lake Park Corridors in Minneapolis. Alternatives with the letter “C” designate routes that use the HCRRA’s Southwest Corridor in St. Louis Park, the HCRRA’s Midtown Corridor in Minneapolis, and a shallow tunnel under Nicollet Avenue in Minneapolis. In general, the A and C routings are similar to those contained in the HCRRA’s *Draft Environmental Impact Statement (DEIS) Hennepin County LRT System, 1988*.

The alternatives also include potential route variations for some of the LRT alternatives. For all A alternatives, one variation uses Dunwoody Boulevard and Hennepin Avenue rather than Royalston Avenue to access downtown Minneapolis. This route variation cannot “interline” or operate with the Hiawatha LRT line westbound to access the Warehouse and proposed Intermodal stations. The service frequency and span (hours of service) for the Southwest LRT alternatives is assumed to be the same as the existing operating plan for the Hiawatha Light Rail line. Table 5.5 summarizes this service plan. All LRT alternatives include feeder bus service which provides local bus service to and from LRT stations. More information about the LRT alternative operating plans and feeder bus service can be found in *Technical Memorandum No.5, Operating Plans*.

Table 5.5 LRT Service Plan – Frequency (Minutes between Trains) and Hours

	Morning (4:00 - 6:00 AM)	AM Peak (6:00- 9:00 AM)	Mid-Day (9:00 AM - 3:00 PM)	PM Peak (3:00- 6:00 PM)	Evening (6:00 PM - 2:00 AM)
Weekday	15-30 minutes	7.5 minutes	10 minutes	7.5 minutes	15-30 minutes
Saturday	15-30 minutes	15-30 minutes	10 minutes	10 minutes (to 7:30 PM)	15-30 minutes
Sunday/ Holiday	15-30 minutes	15-30 minutes (to 10:00 AM)	10 minutes	10 minutes	15-30 minutes

Each LRT alternative is described below.

LRT 1A – Initial Alternative

LRT 1A operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The LRT route begins near the intersection of TH 5 and the HCRRA’s Southwest right-of-way. From that point the route enters a new exclusive light rail transit (LRT) guideway in the HCRRA’s Southwest right-of-way to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA’s Kenilworth Corridor to Penn Avenue. At

Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lake Corridor to street level, where it enters Royalston Avenue. In Royalston Avenue the route operates on semi-exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Potential Route Variations

Two route variations are included in the LRT 1A alternative, one in Eden Prairie and the other in downtown Minneapolis.

Under the LRT 1A alternative as described above, the LRT route must cross the TC&W Railroad tracks near TH 62. The TH 62 overpass and the existing grades in that area make the crossing difficult. To avoid this potentially difficult and costly crossing, a short route variation that uses the TC&W and Canadian Pacific right-of-way may be evaluated in future engineering studies. Under this variation the route turns into the railroad right-of-way after passing beneath TH 62, and runs next to the railroad tracks to a location approximately ¼ mile west of the Minnetonka-Hopkins city limits. At that point the route crosses beneath the freight tracks and turns north, following new right-of-way until it reaches the HCRRA's Southwest right-of-way. The route then enters the HCRRA's Southwest right-of-way and proceeds towards Minneapolis.

The second route variation uses Dunwoody Boulevard and Hennepin Avenue rather than Royalston Avenue to access downtown Minneapolis. Under this variation the route leaves the HCRRA's Cedar Lake Corridor at the new Van White Boulevard and enters Dunwoody Boulevard and Hennepin Avenue to 5th Street in downtown Minneapolis. While this route variation can interline with the Hiawatha LRT line eastbound it cannot interline with the Hiawatha LRT line westbound to access the Warehouse and proposed Intermodal stations.

Stations

LRT 1A provides service to the following stations: TH 5, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston.

Because this route operates on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Plaza and Metrodome LRT stations.

The Hennepin Avenue variation of this alternative does not include service to the proposed Royalston, the proposed Intermodal, and the Warehouse stations. However, it does provide service to new stations at 14th Street and 10th Street as well as to the existing LRT stations at Nicollet, Government Plaza, and the Metrodome in downtown Minneapolis.

LRT 1A – Refined Alternative

Based upon comments received, the initial LRT 1A alternative was modified as follows:

- The initial alternative did not include a Penn Avenue Station. In response to comments from the Bryn Mawr neighborhood, a station was added at Penn Avenue.
- To provide better access to the bus network, the stations along the Hennepin Avenue option were moved from 14th and 10th Streets to 12th and 8th Streets.
- Because of freight railroad grade constraints, the potential route deviation that shares the TCW-

CP right-of-way turns north following the Minnetonka-Hopkins jurisdiction boundary rather than ¼ mile west.

Figure 5.4 illustrates refined alternative LRT 1A.

LRT 2A – Initial Alternative

LRT 2A operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The LRT route begins near the intersection of TH 5 and the HCRRA's Southwest right-of-way in Eden Prairie. From that point the route enters an exclusive LRT guideway along the south side of TH 5, crossing under Prairie Center Drive. As it approaches the I-494/TH 5 interchange, the route climbs and crosses over TH 5, descending along the west side of the I-494 exit ramp to TH 5. It continues north along the west side of I-494 right-of-way to the HCRRA's Southwest right-of-way, where it turns east and crosses under the freeway.

After entering the HCRRA's Southwest right-of-way, the route continues on an exclusive LRT guideway to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lake Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on semi-exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Potential Route Variation

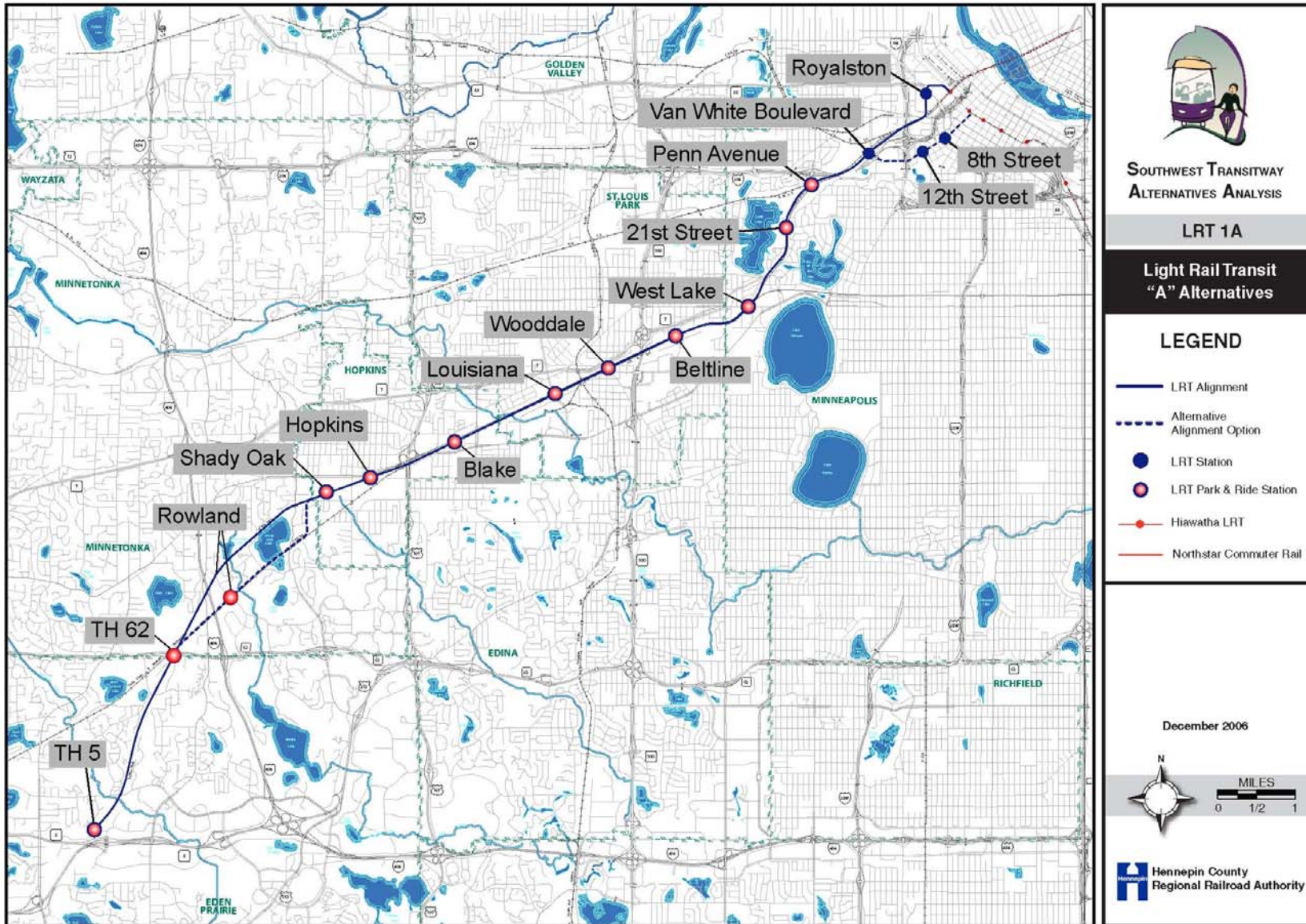
This alternative includes the potential Hennepin Avenue route variation described under LRT 1A.

Stations

LRT 2A provides service to the following stations: TH 5, SouthWest Station, Valley View, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston.

Because this route can operate on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Center and Metrodome LRT stations.

Figure 5.4 LRT 1A



LRT 2A – Refined Alternative

Based upon comments received, the initial LRT 2A alternative was modified as follows:

- The initial alternative did not include a Penn Avenue Station. In response to comments from the Bryn Mawr neighborhood, a station was added at Penn Avenue.
- To provide better access to the bus network, the stations along the Hennepin Avenue option were moved from 14th and 10th Streets to 12th and 8th Streets.
- To avoid an additional freeway crossing, the terminal station was moved from TH 5 to Mitchell Road.
- Because of existing terrain and access issues, the Valley View Station was moved south approximately ¼ mile.
- The TH 62 Station was moved approximately ¼ mile south, adjacent to the athletic club's south parking lot.

Figure 5.5 illustrates refined alternative LRT 2A.

LRT 3A – Initial Alternative

LRT 3A operates from Mitchell Road in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

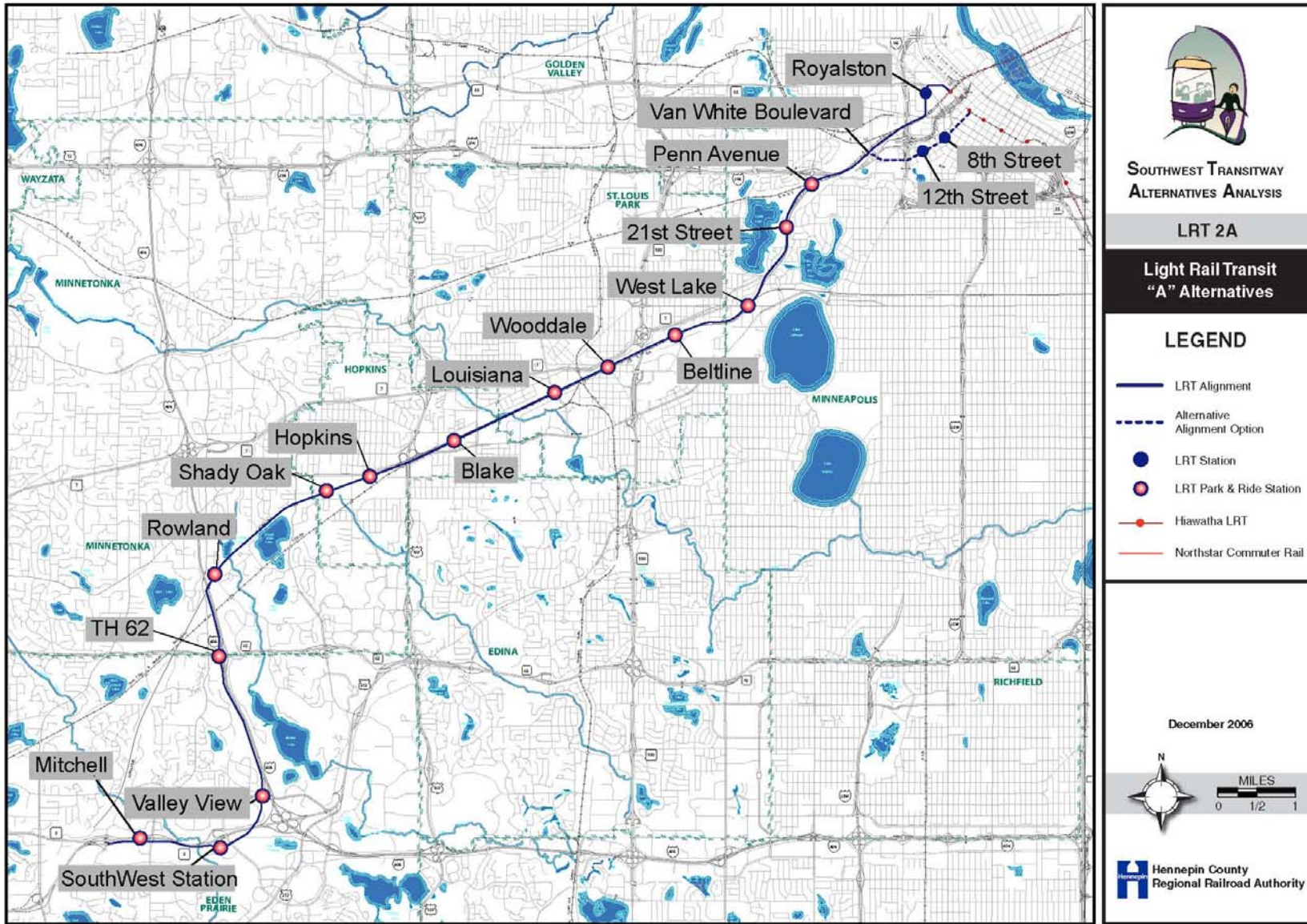
Routing

The route begins near the intersection of TH 5 and the HCRRA's Southwest right-of-way in Eden Prairie. From that point the route enters an exclusive (LRT) guideway along the south side of TH 5, crossing under Prairie Center Drive. It turns south along the east side of Prairie Center Drive, then turns east into new right-of-way located behind the existing properties on the north side of Singletree Lane. The route continues along the south side of Leona Road to Prairie Center Drive, where it turns north. It runs along the east side of Prairie Center Drive, over I-494 and into the east side of the TH 212 right-of-way.

The route then swings east and north along new right-of-way through the Golden Triangle area. After crossing Shady Oak Road, the route crosses over TH 212 into the City West area, then it crosses over TH 62 into the Opus area of Minnetonka. The route follows new right-of-way through Opus, crossing under Smetana Road and continuing north paralleling the Minnetonka-Hopkins city limits. After reaching the HCRRA's Southwest right-of-way, the route turns east and enters an exclusive LRT guideway to West Lake Street in Minneapolis.

Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lake Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on semi-exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Figure 5.5 LRT 2A



Potential Route Variation

This alternative includes a route variation in Eden Prairie. After serving the SouthWest Metro station, the route would cross under Prairie Center Drive and continue along the north side of Technology Drive. It then turns northeast, crossing over I-494 and intersecting Flying Cloud Drive. The route follows along the east side of Flying Cloud Drive and into the east side of the TH 212 right-of-way. The variation does not include an Eden Prairie Center area station.

This alternative also includes the potential Hennepin Avenue route variation described under LRT 1A.

Stations

LRT 3A provides service to the following stations: TH 5, SouthWest Station, Eden Prairie Center, Golden Triangle, City West, Opus, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston.

Because this route can operate on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Center and Metrodome LRT stations.

LRT 3A – Refined Alternative

Based upon comments received, the initial LRT 3A alternative was modified as follows:

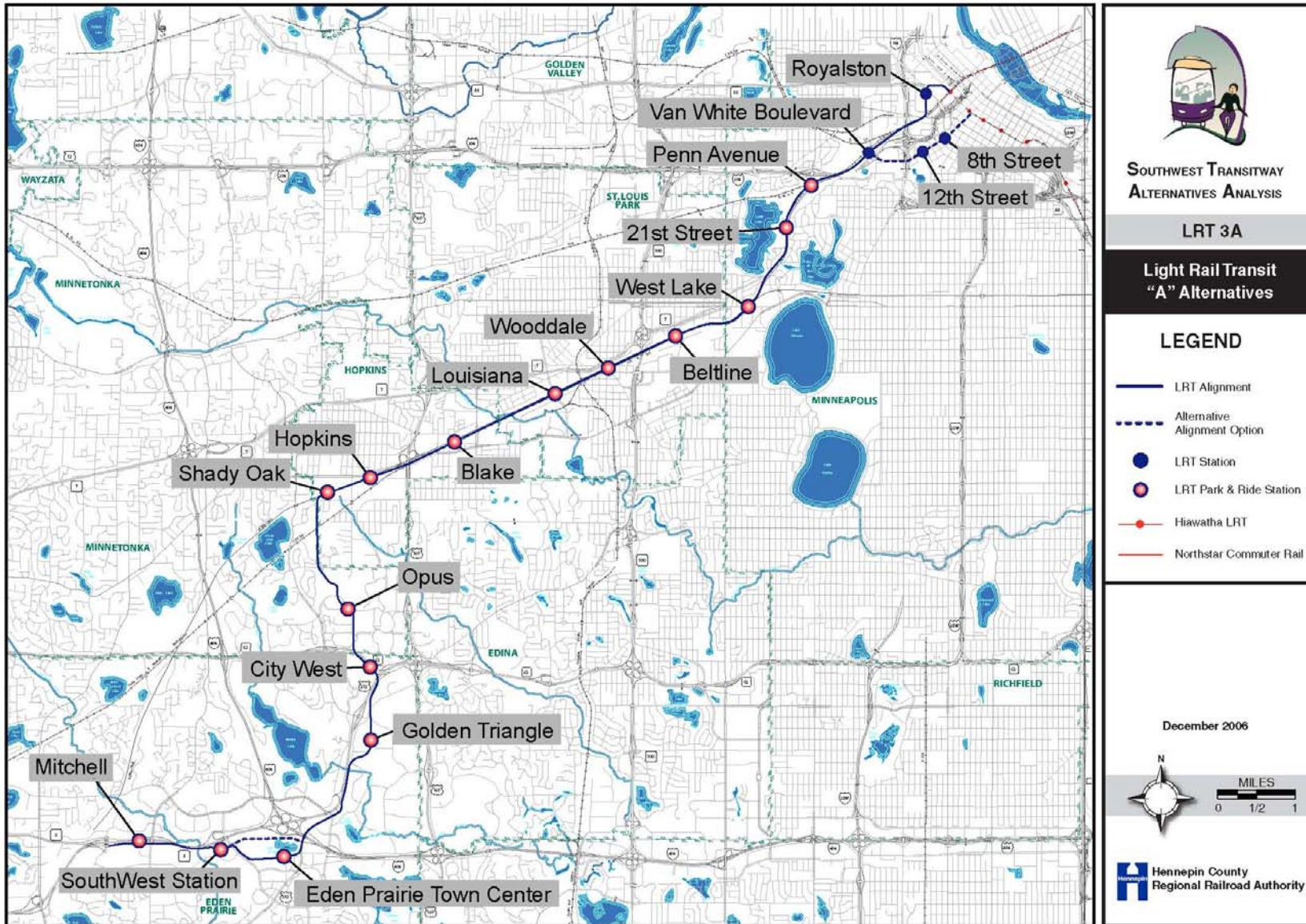
- The initial alternative did not include a Penn Avenue Station. In response to comments from the Bryn Mawr neighborhood, a station was added at Penn Avenue.
- To provide better access to the bus network, the stations along the Hennepin Avenue option were moved from 14th and 10th Streets to 12th and 8th Streets.
- To avoid an additional freeway crossing, the terminal station was moved from TH 5 to Mitchell Road.
- The routing is now proposed to cross I-494 at Flying Cloud Drive rather than Prairie Center Drive.
- To provide better integration with Eden Prairie's plan for the Major Center Area, the Eden Prairie Center Station was moved west approximately 1/3 mile and re-named Eden Prairie Town Center Station.
- Because of existing terrain, the routing through the north end of the Opus development was modified.

Figure 5.6 illustrates refined alternative LRT 3A.

LRT 4A – Initial Alternative

LRT 4A operates from Shady Oak Road in Minnetonka to downtown Minneapolis, providing service to Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Figure 5.6 LRT 3A



Routing

The LRT route begins near the intersection of Shady Oak Road and the HCRRA's Southwest right-of-way. From Shady Oak Road the route enters an exclusive LRT guideway in the HCRRA's Southwest right-of-way to West Lake Street in Minneapolis. Just north of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Kenilworth Corridor to Penn Avenue. At Penn Avenue the route enters an exclusive LRT guideway in the HCRRA's Cedar Lake Corridor to Glenwood Avenue in Minneapolis. At Glenwood Avenue the route climbs from the Cedar Lake Corridor to street level where it enters Royalston Avenue. In Royalston Avenue the route operates on semi-exclusive LRT guideway in the median of Royalston Avenue to 7th Street. At 7th Street the route enters a shallow tunnel under 7th Street to 5th Street. At 5th Street the route continues through downtown Minneapolis on the Hiawatha LRT tracks.

Potential Route Variation

This alternative includes the potential Hennepin Avenue route variation described under LRT 1A.

Stations

LRT 4A provides service to the following stations: Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, 21st Street, Van White Boulevard, and Royalston.

Because this route can operate on the Hiawatha LRT tracks through downtown Minneapolis it also provides direct service to the proposed Intermodal, as well as existing Warehouse, Nicollet, Government Center and Metrodome LRT stations.

LRT 4A – Refined Alternative

Based upon comments received, the initial LRT 4A alternative was modified as follows:

- The initial alternative did not include a Penn Avenue Station. In response to comments from the Bryn Mawr neighborhood, a station was added at Penn Avenue.
- To provide better access to the bus network, the stations along the Hennepin Avenue option were moved from 14th and 10th Streets to 12th and 8th Streets.

Figure 5.7 illustrates refined alternative LRT 4A.

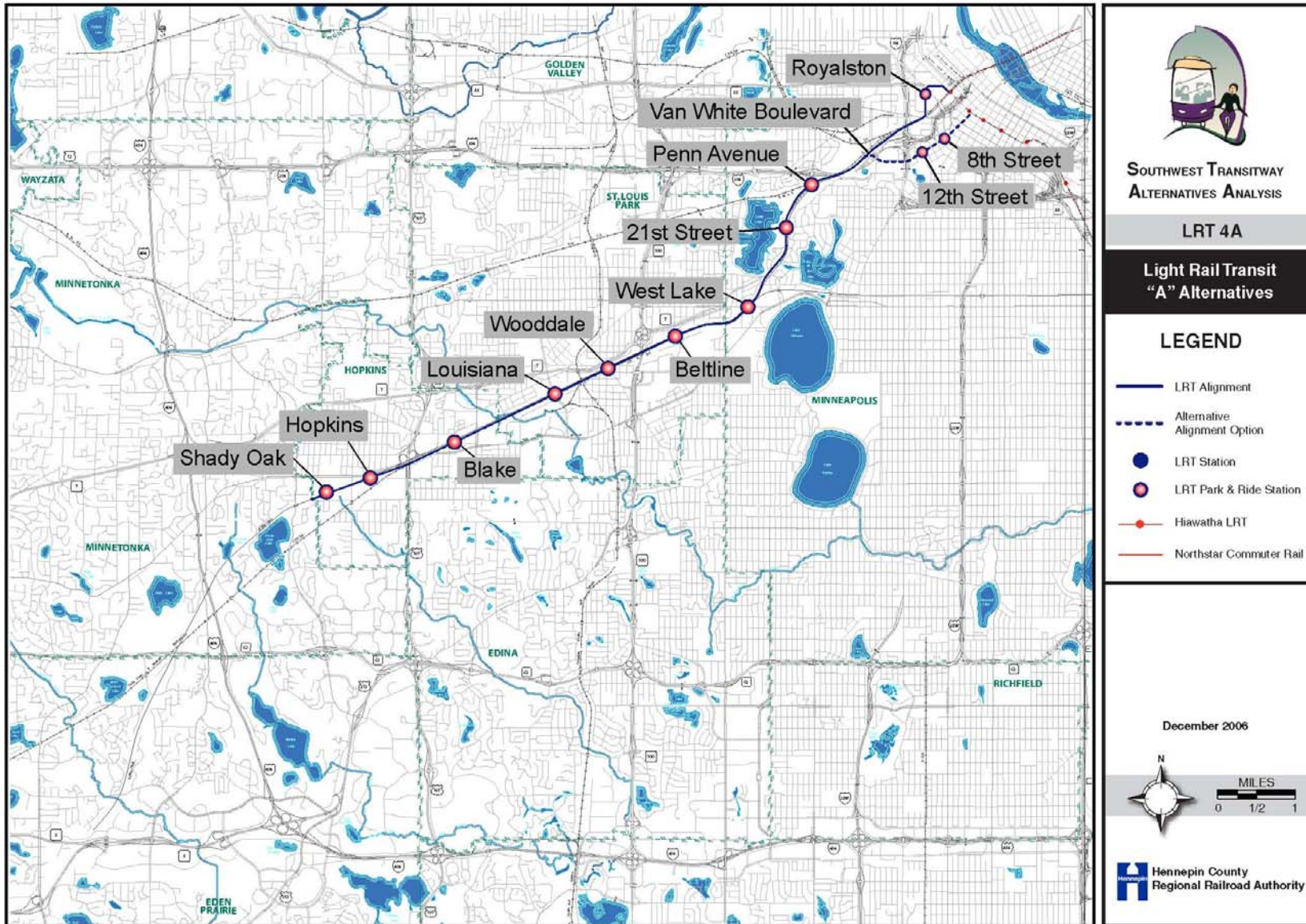
LRT 1C – Initial Alternative

LRT 1C operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The LRT route begins near the intersection of TH 5 and the HCRRA's Southwest right-of-way. From that point the route enters an exclusive LRT guideway in the HCRRA's Southwest right-of-way to West Lake Street in Minneapolis. Just east of West Lake Street the route enters an

Figure 5.7 LRT 4A



exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a shallow tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues to 4th Street.

Potential Route Variation

This alternative includes the potential shared railroad right-of-way route variation described under LRT 1A.

Stations

LRT 1C provides service to the following stations: TH 5, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street (Nicollet routing), 8th Street (2nd/Marquette routing), and 4th Street.

LRT 1C – Refined Alternative

Based upon comments received, the initial LRT 1A alternative was modified as follows:

- Because of freight railroad grade constraints, the potential route deviation that shares the TCW-CP right-of-way turns north following the Minnetonka-Hopkins jurisdiction boundary rather than ¼ mile west.
- Because of transit operating issues, the LRT C alternatives under the 2nd/Marquette one-way pair option would operate on a loop via 4th Street.
- Because of parking ramp access issues and to facilitate better pedestrian flow, stations on the 2nd/Marquette one-way pair option were moved to 7th Street rather than 8th Street.

Figure 5.8 illustrates refined alternative LRT 1C.

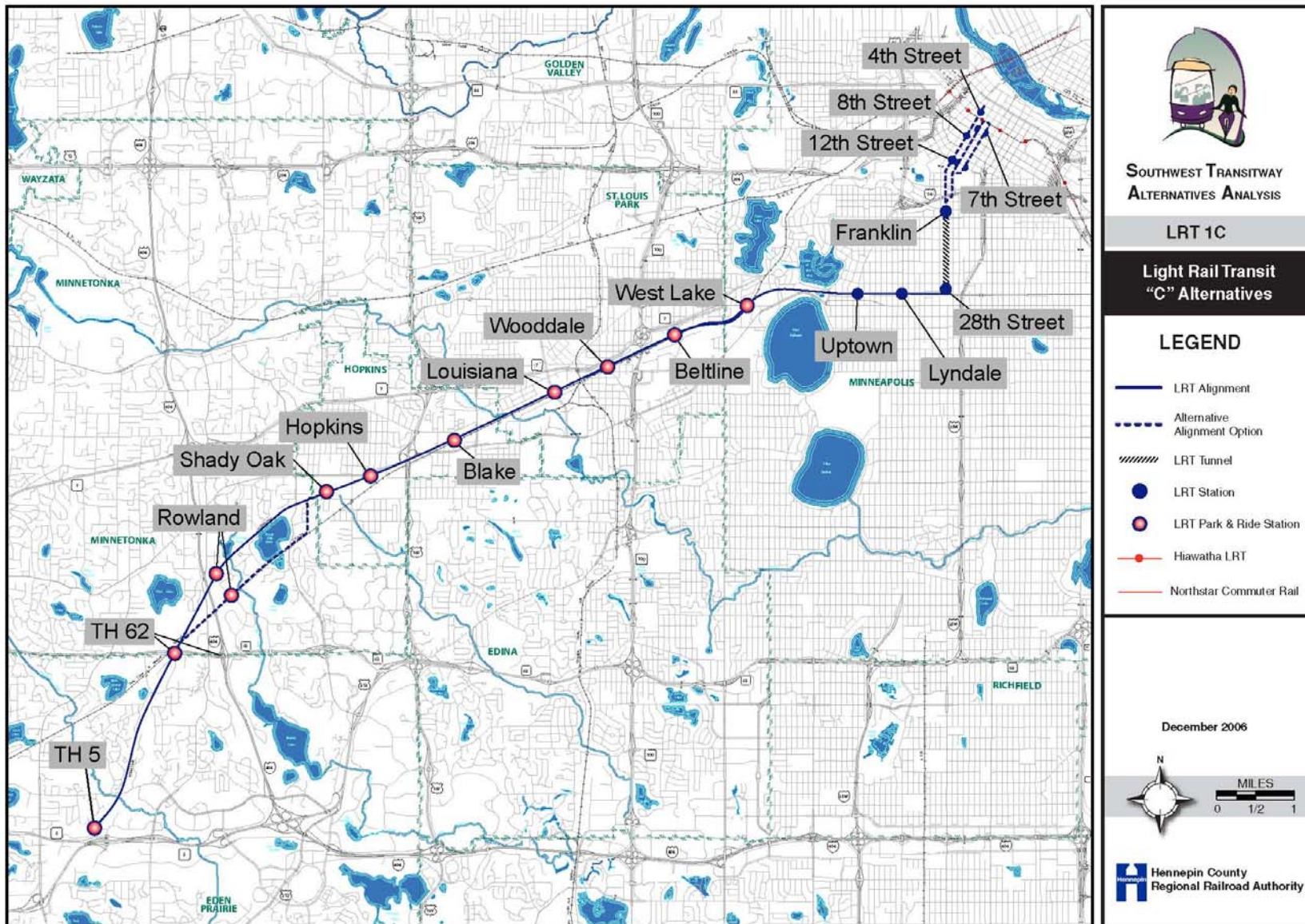
LRT 2C – Initial Alternative

LRT 2C operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The route begins near the intersection of TH 5 and HCRRA's Southwest right-of-way in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. As it approaches the I-494/TH 5 interchange, the route climbs and crosses over TH 5, descending along the west side of the I-494 exit ramp to TH 5. It continues north along the west

Figure 5.8 LRT 1C



side of I-494 to the HCRRA's Southwest right-of-way, where it turns east and crosses under the freeway.

After entering the HCRRA's Southwest right-of-way, the route continues in an exclusive LRT guideway to West Lake Street in Minneapolis. Just east of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a shallow tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant Street, the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues to 4th Street.

Stations

LRT 2C includes service to the following stations: TH 5, SouthWest Station, Valley View, TH 62, Rowland Road, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street (Nicollet routing), 8th Street (2nd/Marquette routing), and 4th Street.

LRT 2C – Refined Alternative

- To avoid an additional freeway crossing, the terminal station was moved from TH 5 to Mitchell Road.
- Because of existing terrain and access issues, the Valley View Station was moved south approximately ¼ mile.
- The TH 62 Station was moved approximately ¼ mile south, adjacent to the athletic club's south parking lot.
- Because of transit operating issues, the LRT C alternatives under the 2nd/Marquette one-way pair option would operate on a loop via 4th Street.
- Because of parking ramp access issues and to facilitate better pedestrian flow, stations on 2nd/Marquette one-way pair option were moved to 7th Street rather than 8th Street.

Figure 5.9 illustrates refined alternative LRT 2C.

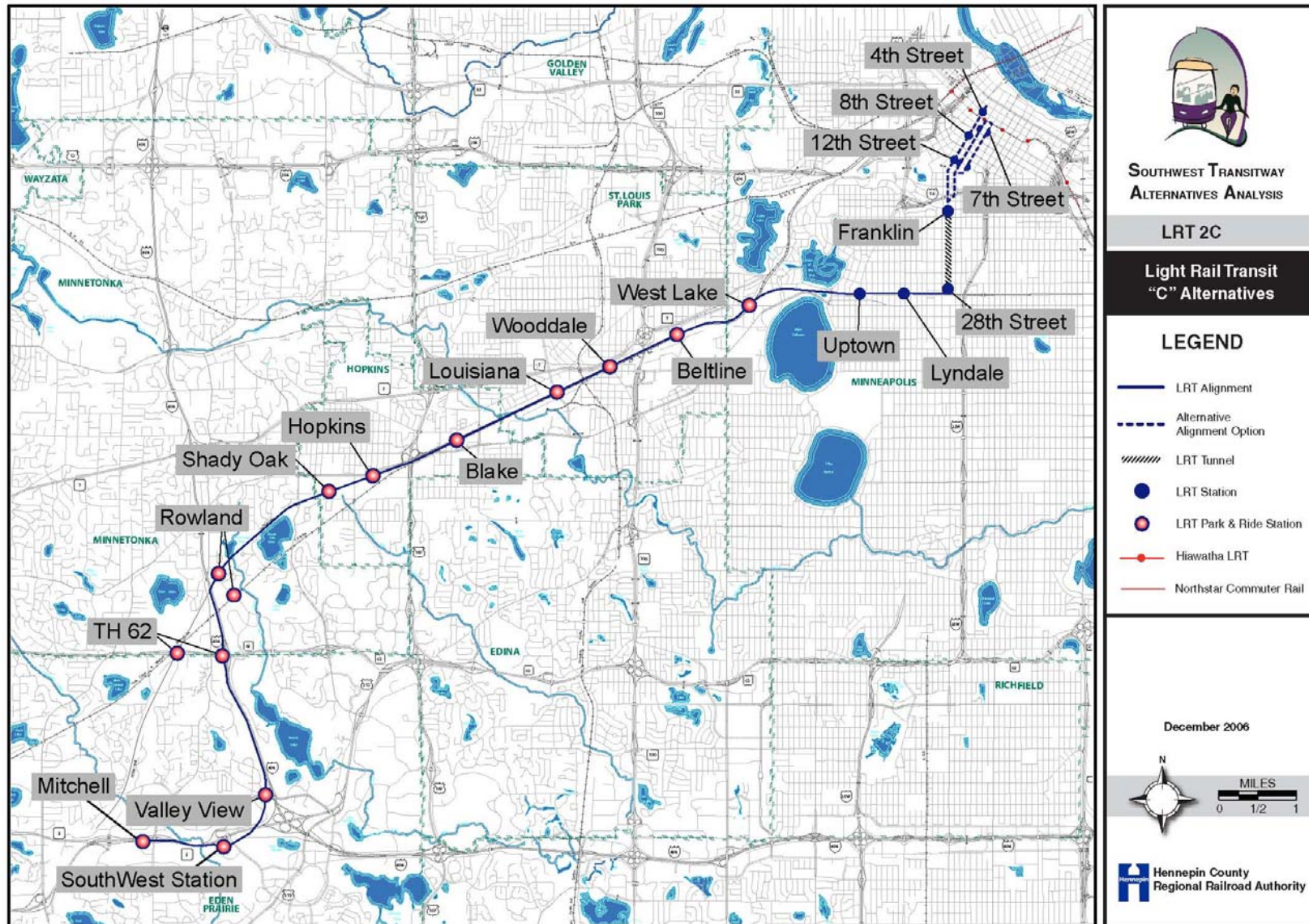
LRT 3C – Initial Alternative

LRT 3C operates from TH 5 in Eden Prairie to downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The LRT route begins near the intersection of TH 5 and HCRRA's Southwest right-of-way in Eden Prairie. From that point the route follows along the south side of TH 5, crossing under Prairie Center Drive. It turns south along the east side of Prairie Center Drive, then turns east into new right-of-way located behind the existing properties on the north side of Singletree Lane. The route continues along the south side of Leona Road to Prairie Center Drive, where it turns north. It runs

Figure 5.9 LRT 2C



along the east side of Prairie Center Drive, over I-494 and into the east side of the TH 212 right-of-way. The route then swings east and north along new right-of-way through the Golden Triangle area.

After crossing Shady Oak Road, the route crosses over TH 212 into the City West area, then crosses over TH 62 into the Opus area of Minnetonka. The route follows new right-of-way through Opus, crossing under Smetana Road and continuing north paralleling the Minnetonka-Hopkins city limits. After reaching the HCRRA's Southwest right-of-way, the route turns east and follows an exclusive LRT guideway to West Lake Street in Minneapolis.

Just east of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a shallow tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route either operates two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Potential Route Variation

This alternative includes the potential Eden Prairie route variation described under LRT 3A.

Stations

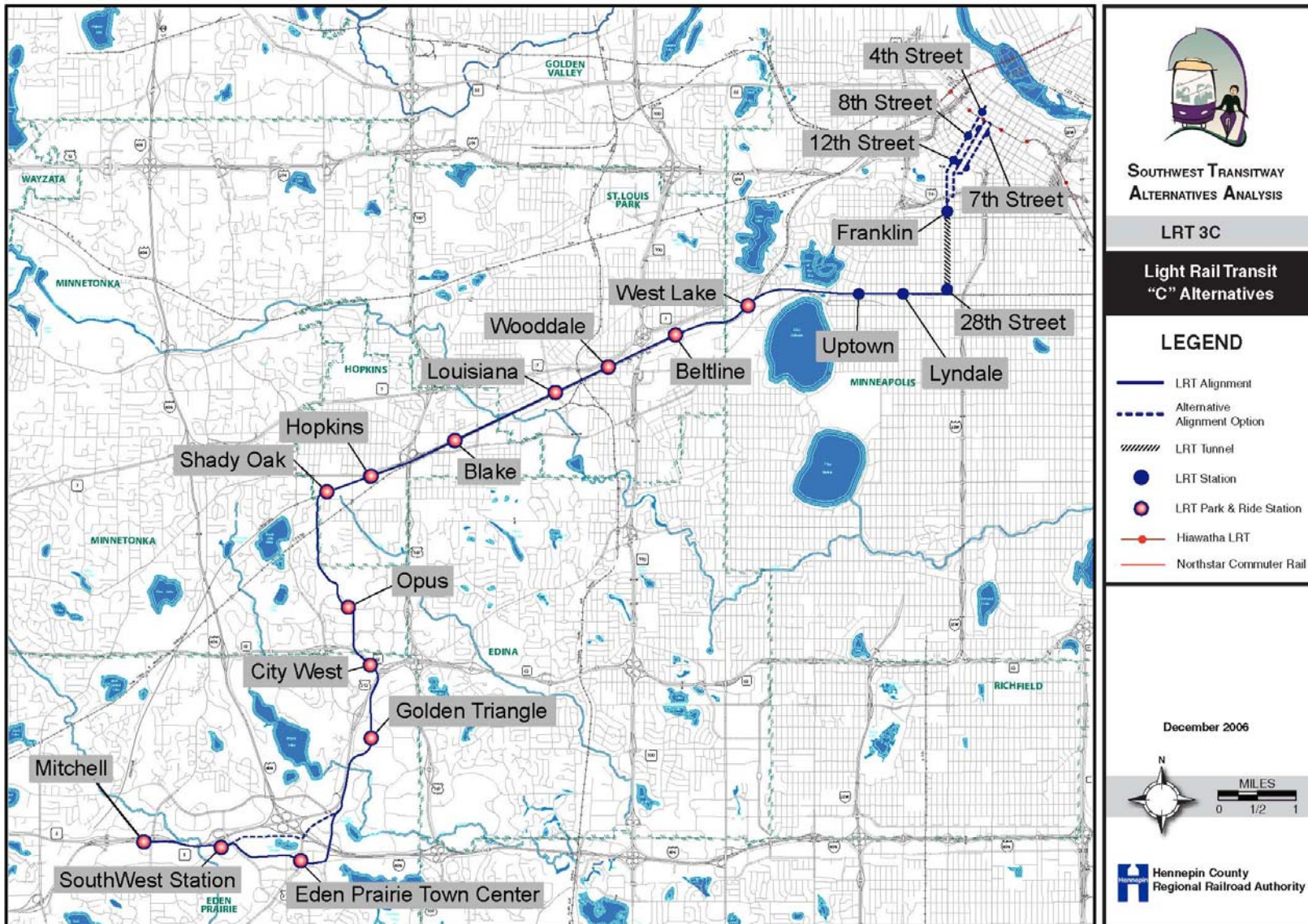
LRT 3C provides service to the following stations: TH 5, SouthWest Station, Eden Prairie Center, Golden Triangle, City West, Opus, Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street (Nicollet routing), 8th Street (2nd/Marquette routing), and 4th Street.

LRT 3C – Refined Alternative

- To avoid an additional freeway crossing, the terminal station was moved from TH 5 to Mitchell Road.
- The routing is now proposed to cross I-494 at Flying Cloud Drive rather than Prairie Center Drive.
- To provide better integration with Eden Prairie's plan for the Major Center Area, the Eden Prairie Center Station was moved west approximately 1/3 mile and re-named Eden Prairie Town Center Station.
- Because of existing terrain, the routing through the north end of the Opus development was modified.
- Because of transit operating issues, the LRT C alternatives under the 2nd/Marquette one-way pair option would operate on a loop via 4th Street.
- Because of parking ramp access issues and to facilitate better pedestrian flow, stations on the 2nd/Marquette one-way pair option were moved to 7th Street rather than 8th Street.

Figure 5.10 illustrates refined alternative LRT 3C.

Figure 5.10 LRT 3C



LRT 4C – Initial Alternative

LRT 4C operates from Shady Oak Road in Minnetonka to downtown Minneapolis, providing service to Minnetonka, Hopkins, St. Louis Park, and Minneapolis.

Routing

The LRT route begins near the intersection of Shady Oak Road and the HCRRA's Southwest right-of-way. From Shady Oak Road the route enters an exclusive LRT guideway in the HCRRA's Southwest right-of-way to West Lake Street in Minneapolis. Just east of West Lake Street the route enters an exclusive LRT guideway in the HCRRA's Midtown Corridor to Nicollet Avenue. At Nicollet Avenue the route turns northward entering a new exclusive LRT guideway in a shallow tunnel under Nicollet Avenue to Franklin Avenue. At Franklin Avenue the route exits the shallow tunnel and operates at-grade on Nicollet Avenue to Grant Street. At Grant the route will either operate two-way on Nicollet Mall or as a one-way paired loop on 2nd and Marquette Avenues.

Stations

LRT 4C provides service to the following stations: Shady Oak Road, Hopkins, Blake Road, Louisiana Avenue, Wooddale Avenue, Beltline Boulevard, West Lake Street, Uptown, Lyndale Avenue, 28th Street, Franklin Avenue, 12th Street, 8th Street(Nicollet routing), 8th Street (2nd/Marquette routing), and 4th Street.

LRT 4C – Refined Alternative

- Because of transit operating issues, the LRT C alternatives under the 2nd/Marquette one-way pair option would operate on a loop via 4th Street.
- Because of parking ramp access issues and to facilitate better pedestrian flow, stations on the 2nd/Marquette one-way pair option were moved to 7th Street rather than 8th Street.

Figure 5.11 illustrates refined alternative LRT 4C.

Figure 5.11 LRT 4C

