



SOUTHWEST
transitway

green means go.

Southwest LRT

Technical Memorandum No. 2

DESCRIPTION OF THE ALTERNATIVES

PRELIMINARY
FOR REVIEW ONLY

September 9, 2009



Table of Contents

1.0	PURPOSE	1
1.1	BACKGROUND	1
1.1.1	Southwest Transitway Alternatives Analysis (AA)	1
1.1.2	Alternative Development Process.....	2
1.1.3	Evaluation of Preliminary Alternatives in the AA.....	4
1.2	NEPA/MEPA SCOPING PROCESS	6
1.2.1	Alternatives Proposed.....	6
1.2.2	Evaluation of Alternatives	6
1.3	REFINED AA CONCEPTUAL ENGINEERING PLANS	7
1.3.1	LRT 1A.....	7
1.3.2	LRT 3A.....	8
1.3.3	LRT 3C-1 (Nicollet Mall).....	9
2.0	DEFINITION OF ALTERNATIVES	9
2.1	2030 NO-BUILD ALTERNATIVE	9
2.1.1	Highway/Roadway Network	10
2.1.2	Transit Network.....	11
2.2	BASELINE ALTERNATIVE	11
2.2.1	Enhanced Bus Alternative Description	12
2.3	BUILD ALTERNATIVES.....	14
2.3.1	LRT 1A (HCRRA – Kenilworth).....	14
2.3.2	LRT 3A (Opus/Golden Triangle – Kenilworth)	16
2.3.3	LRT 3C-1 (Nicollet Mall) (Opus/Golden Triangle – Midtown/Nicollet Mall).....	18
2.3.4	LRT 3C-2 (11 th /12 th Street) (Opus/Golden Triangle – Midtown/11 th /12 th Street)	20
2.3.5	Transit Service Assumptions	22

List of Figures

Figure 1- Study Area Map	3
Figure 2 - TPP Congested Principal Arterial Segment Map	10
Figure 3 - Transitways Map.....	11
Figure 4 - Baseline Alternative	13
Figure 5 - Build Alternative LRT 1A	15
Figure 6 - Build Alternative LRT 3A	17
Figure 7 - LRT 3C-1 (Nicollet Mall)	19
Figure 8 - LRT 3C-2 (11 th /12 th Street)	21

List of Tables

Table 1 – Project Goals and Objectives.....	2
Table 2 – Evaluation Results of the Southwest Transitway Alternatives Analysis	5
Table 3 – Enhanced Bus Service Plan Operation Hours and Frequency (in minutes).....	22

Appendices

Appendix A - Southwest Transitway Alternatives Analysis (AA), Technical Memorandum 3: Definition of Alternatives

Appendix B – Scoping Information Booklet (English Version)

Appendix C – Scoping Technical Memorandum 1 LRT 3C (11th/12th Sub-Alternative)

Appendix D - Scoping Technical Memorandum 2: LRT 3E Alternative

Appendix E – Conceptual Engineering Plans

Appendix F – Technology Drive Alternative Comparison

1.0 PURPOSE

The purpose of this technical memorandum is to describe the alternatives considered for the selection of the Locally Preferred Alternative (LPA) as a culmination of the Southwest Transitway Alternatives Analysis (AA). The alternatives were presented to the public and resource agencies for comment through the official National Environmental Policy Act (NEPA) and Minnesota Environmental Policy Act (MEPA) Scoping process.

1.1 Background

The Southwest Transitway AA, 2007, identified three light rail transit (LRT) alternatives (LRT 1A, 3A and 3C), as well as a Transportation System Management (TSM) alternative for further evaluation in the Draft Environmental Impact Statement (DEIS) Process, during which the LPA would be selected. The intent was to provide an opportunity for the public and resource agencies to formally comment on the alternatives through the NEPA/MEPA Scoping process and to consider potential impacts to critical environmental resources prior to selection of the LPA.

On September 8, 2008, the Hennepin County Regional Railroad Authority (HCRRA) and the Federal Transit Administration (FTA) initiated the NEPA/MEPA Scoping comment period. The comment period ended on November 7, 2008. As part of that comment period process, a Scoping booklet was drafted that included the proposed alternatives for inclusion in the DEIS process. The alternatives identified in the Scoping booklet included a No-Build Alternative, which is required under the NEPA/MEPA process, the Enhanced Bus Alternative, which serves as the TSM/Baseline Alternative required under the FTA New Starts program, and the three Light Rail Transit (LRT) alternatives from the AA, 2007. For a detailed description of the three LRT alternatives refer to Appendix A - Alternatives Analysis Technical Memorandum 3: Definition of Alternatives and Appendix B for the Scoping information booklet in English.

This memorandum contains only a brief summary description of the alternatives developed during the AA. The focus of this memorandum is to document changes to the alternatives carried forward from the AA study and the additional alternative that resulted from the NEPA/MEPA Scoping process.

1.1.1 Southwest Transitway Alternatives Analysis (AA)

The AA was initiated in 2005 and involved the study of ten potential build alternatives including eight LRT alignments and two bus rapid transit (BRT) alignments. In addition to the build alternatives, a “No-Build Alternative”¹ and Enhanced Bus Alternative (referred to as the Baseline Alternative²) were also considered among the options evaluated pursuant to FTA criteria. The HCRRA oversaw the analysis and development of the alternatives contained in the AA. The AA

¹ The No-Build Alternative is defined as the existing transportation system plus transportation enhancement projects for which funding has been committed, contained in the Metropolitan Council’s *2030 Transportation Policy Plan* (TPP). The current transit facilities and services, with minimal modifications or expansions, form the basis of this alternative. A No-Build Alternative provides a benchmark against which project alternatives may be compared to one another.

² The Baseline Alternative may be defined as the existing transit system plus low capitol cost enhancements intended to improve operating efficiencies. This alternative serves as a basis for comparison to the build alternatives as part of the FTA’s New Starts Process, and is designed as the “best that can be done” alternative. Low capitol cost infrastructure and bus transit improvements include intelligent transportation systems (ITS) techniques, travel demand management (TDM) strategies, and other system improvements.

was intended to formally study a variety of alternatives that could address the mobility challenges and opportunities identified within the Southwest corridor.

1.1.2 Alternative Development Process

The AA identified and evaluated alternatives through a two-phase process. The first phase was the alternative selection process that identified plausible alternatives and transit technologies that best achieved the goals and objectives of the project. The second phase (discussed in Section 2.1.2) was the analysis of the alternatives to determine the alignments that best satisfied the intended project goals in light of the purpose and need of the project.

The initial step was a review of previous plans and studies for the Southwest LRT to identify and screen potential alignment segments, identify significant planning and environmental issues, opportunities, or constraints the project would contend with, and develop a contextual background dataset and knowledge base for project planners. Several planning studies were conducted and their results adopted by a variety of governing agencies, including the Mn/DOT, Hennepin County and the HCRRA, and the Metropolitan Council. These reports and studies included Comprehensive LRT System Plan for Hennepin County (1988), the Draft Environmental Impact Statement Hennepin County Light Rail Transit System (1988), the Transit 2020 Master Plan (2000), and the Southwest Rail Transit Study (2003), and the regional 2030 Transportation Policy Plan (2004) among other plans and studies.

The second step involved the identification of goals and objectives to address mobility, community, and environmental needs in the Study Area. Refer to Table 1 for the Project Goals and Objectives. These goals were prioritized in a two-tiered order, with Tier One goals being those that must be achieved in order for the project to be viable, and Tier Two goals being those that should be achieved assuming the project is viable. Refer to Figure 1 for a map of the Study Area.

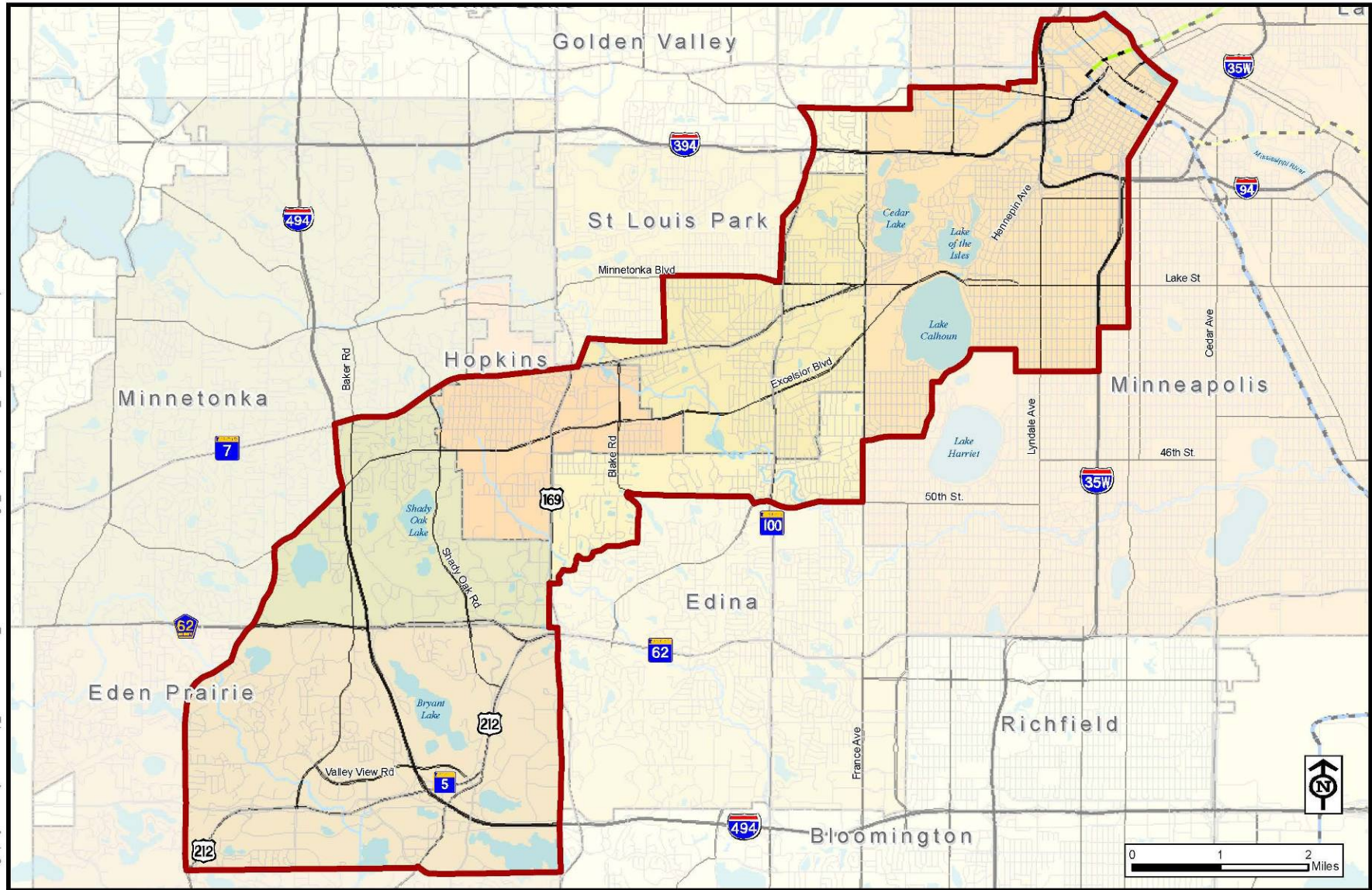
Table 1 - Project Goals and Objectives

Tier	Goals and Objectives
Tier One	Improve Mobility
	Provide a Cost-Effective and Efficient Travel Option
Tier Two	Protect the Environment
	Preserve the Quality of Life
	Support Economic Development

Source: Southwest Transitway Alternatives Analysis Final Report, 2007.

Figure 1- Study Area Map

Southwest Transitway Study Area



Map Document: (\\mspe-gis-file\gisproj\HennCty\87130\map_docs\mxd\TECH_MEMO\TechMemo4\Fig1_studyareaA.Laits_8x11_20090810.mxd) 8/18/2009 --csers

	Legend	
LPA Report	Study Area	Hiawatha Light Rail
	Municipal Boundaries	Northstar Commuter Rail
		Central Corridor Light Rail

The third step was to define the transit technologies most capable of addressing the travel needs of the Study Area. A broad range of alternatives were considered, including conventional buses, LRT, BRT and commuter rail. Each of the alternative technologies were evaluated based on four criteria; 1) compatibility with the Study Area's transit travel demand; 2) proven technology; 3) compatible with existing infrastructure; 4) identified in the region's long-range transportation plan and other studies.

The fourth step was to identify the alignments, which involved identifying potential station locations and the routes linking them. Station location selection was based on several factors including existing and proposed land uses, accessibility, community and environmental considerations, and station spacing for transit operations. The guidelines for selecting routes between stations included minimizing travel time, capital and operating costs, and environmental and community impacts. Through this process, the initial alignment alternatives were established.

Finally, steps five and six involved the combination of alternatives and the selected transit technologies relative to the project goals for presentation to the public and agencies. The initial set of alternatives included a No-Build Alternative (required for consideration by the FTA), an Enhanced Bus Alternative, and BRT and LRT alternatives. Preliminary operating plans for the alternatives were also developed. Public and agency comments were sought as part of this process. Following public and agency responses, the alternatives were modified into refined alternatives for evaluation during the conclusion of the AA.

1.1.3 Evaluation of Preliminary Alternatives in the AA

The second phase of the alternative selection process was to evaluate the alternatives against the project goals and objectives. As noted, ten potential build alternatives were advanced for consideration in the AA following the alternative selection process. To evaluate the alternatives equally, a set of evaluation criteria were established to provide the technical framework necessary to assess each alternative's suitability with the project goals and objectives. The Southwest Technical Advisory Committee (TAC) developed the evaluation criteria, and the Southwest Policy Advisory Committee (PAC) approved the evaluation measures. The evaluation measures included several components of the FTA's New Starts Project Justification Criteria.

The methodology and approach for screening the initial alternatives was a blend of quantitative and qualitative information. The evaluation measures were drawn from the five project goals: assessed impacts and influences on transportation systems; mobility; populations served and travel patterns; capital and operating costs; impacts to and compatibility with the natural, manmade, and social environment; and potential for and influence on economic development. Assumptions and analysis methodologies were developed for each of the criteria in order to provide a common basis of comparison for the build alternatives relative to the No-Build Alternative. The data were aggregated into ratings that indicated the performance of each alternative relative to the goals and evaluation measures. The following rating system was used:

- ◆ Alternative Strongly Supports the Goal
- ◆ Alternative Supports the Goal
- ◆ Alternative Does Not Support the Goal

Table 2 presents the summary findings from the AA for the ten build alternatives and the Baseline Alternative considered. Screening of the alternatives resulted in a "short-list" of three fixed guideway LRT alternatives to be carried forward for further consideration with the ultimate

goal of identifying an LPA. These alignments satisfied the goals and deemed to best fit the purpose and need of the project. The three short-listed alternatives are the LRT 1A, LRT 3A, and LRT 3C alternatives. All three alignment alternatives would provide a dual LRT guideway with exclusive and semi-exclusive right-of-way. The routes would primarily run at grade, with the exception of the LRT 3C alignment, which would require the construction of a shallow cut-and-cover tunnel between the Midtown Corridor and Franklin Avenue in Minneapolis. Additional information on the ratings and analysis methods are provided in the AA.

Table 2- Evaluation Results of the Southwest Transitway Alternatives Analysis

Alternatives	Tier 1 Goals		Results	Tier 2 Goals			Recommendation
	Goal 1: Improve Mobility	Goal 2: Provide a Cost-Effective, Efficient Travel Option		Goal 3: Protect the Environment	Goal 4: Preserve and Protect the Quality of Life in the Study Area and Region	Goal 5: Support Economic Development	
Enhanced Bus (Baseline)	Carry forward as Baseline alternative (Required)			Carry forward as Baseline alternative (Required)			Carry forward as Baseline Alternative
BRT 1 - Eden Prairie to Minneapolis, HCRRA	●	●	Does not meet Tier 1 Goals; Do not carry forward				
BRT 2¹ - Eden Prairie to Minneapolis, Golden Triangle/Opus/TH 169/HCRRA	●	●	Does not meet Tier 1 Goals; Do not carry forward				
LRT 1A - Eden Prairie to Minneapolis, HCRRA/ Kenilworth/ Royalston	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	◐	Carry forward for further analysis
LRT 2A¹ - Eden Prairie to Minneapolis, I-494/HCRRA /Kenilworth/Royalston	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	◐	Other alternatives better meet Tier 2 Goals. Do not carry
LRT 3A¹ - Eden Prairie to Minneapolis, Golden Triangle/ Opus/ HCRRA/ Kenilworth/ Royalston	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	○	Carry forward for further analysis
LRT 4A - Hopkins to Minneapolis, HCRRA/ Kenilworth/ Royalston	●	◐	Part of full alternative. Do not carry forward				
LRT 1C - Eden Prairie to Minneapolis, HCRRA/ Midtown/ Nicollet	◐	●	Does not meet Tier 1 Goals; Do not carry forward				
LRT 2C - Eden Prairie to Minneapolis, I-494/ HCRRA/ Midtown/ Nicollet	◐	●	Does not meet Tier 1 Goals; Do not carry forward				
LRT 3C - Eden Prairie to Minneapolis, Golden Triangle/ Opus/ HCRRA/ Midtown/ Nicollet	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	○	Carry forward for further analysis
LRT 4C¹ - Hopkins to Minneapolis, HCRRA/ Midtown/ Nicollet	●	●	Part of full alternative. Do not carry forward				
¹ Estimated not modeled							
Evaluation Breakpoints							
● Does not support goal				Supports goal on fewer than 4 of 6 measures	Supports goal on fewer than 7 of 10 measures	Supports goal on fewer than 3 of 4 measures	
◐ Supports goal				Supports goal on 4 of 6 measures	Supports goal on 7 of 10 measures	Supports goal on 3 of 4 measures	
○ Strongly supports goal				Supports goal on all measures	Supports goal on all measures	Supports goal on all measures	
¹ Estimated not Modeled							

Source: Southwest Transitway Alternatives Analysis Final Report, 2007.

1.2 NEPA/MEPA Scoping Process

Scoping is the first step in the NEPA process. Scoping is a two-way communication tool in which information about the proposed project is provided and input is requested from the public, interest groups, affected tribes, and government agencies. The Scoping process includes opportunities for public input through public meetings, stakeholder meetings, agency meetings, publication of notices and news articles, and acceptance and review of written and verbal comments.

The NEPA/MEPA Scoping process provides the public and government agencies with an opportunity to review and comment on the alternatives to be considered, provide comment on the purpose and need of the project, identify significant environmental issues, and suggest appropriate planning alternatives that address the purpose and need of the project. The Scoping process officially began with a notice published in Finance and Commerce on August 23, 2008, and the publication of the Notice of Intent (NOI) in the Minnesota Environmental Quality Board (EQB) Monitor on September 8, 2008 and the Federal Register on September 23, 2008. These notices announced the beginning of the Scoping comment period, which extended from September 8, 2008 to November 7, 2008. The Scoping process included three formal public meetings and one agency meeting where verbal comments were recorded and written comments received.

1.2.1 Alternatives Proposed

During the NEPA/MEPA Scoping period two additional alternatives were proposed. These new alternatives were referred to as the LRT 3E Alternative and the LRT 3C (11th/12th Sub-Alternative). The LRT 3E alignment was exclusive to the Minneapolis end-of-line, following a similar alignment path as the LRT 3C alternative down the Midtown Corridor. Instead of following the original LRT 3C alignment down Nicollet Mall, the LRT 3E alignment would travel further east and use Park Avenue and 10th Street South to access downtown Minneapolis.

Minneapolis Councilmember Remington proposed the LRT 3C (11th/12th Sub-Alternative), as an alternate to the LRT 3C alternative for the area between the Midtown Corridor and downtown Minneapolis. The LRT 3C (11th/12th Sub-Alternative) is also exclusive to downtown Minneapolis end-of-line, proposing an alternative route through downtown. The alignment was similar to the original LRT 3C alignment, following the Midtown Corridor to the vicinity of Nicollet Avenue. At this point, the alignment would travel under Nicollet Avenue, Blaisdell Avenue, or 1st Avenue in a tunnel between the Midtown Corridor and Franklin Avenue. North of Franklin Avenue, it would operate on-street to the vicinity of 11th/12th Street where it would turn west onto 11th Street operating as a one-way pair between Nicollet Mall and Royalston Avenue. At Royalston, the alternative would use the same routing as the LRT 1A and LRT 3A alternatives, which interline with the Hiawatha and/or Central LRT lines on 5th Street.

The LRT 3C (11th/12th Sub-Alternative) would operate on the same alignment as the original LRT 3C between the West Lake Station in Minneapolis and Eden Prairie. Refer to Appendix C for the Scoping Technical Memorandum 1: LRT 3C (11th/12th Sub-Alternative) and Appendix D for the Scoping Technical Memorandum 2: LRT 3E Alternative.

1.2.2 Evaluation of Alternatives

Federal regulations governing the preparation of Environmental Impact Statements dictate that "The draft EIS shall evaluate all reasonable alternatives to the action and discuss the reason

why other alternatives which may have been considered were eliminated from detailed study” (23 CFR 771.123). According to 40 CFR §1502.14 it “includes all reasonable alternatives which are rigorously explored and objectively evaluated, as well as those other alternatives, which are eliminated from detailed study with a brief discussion of the reasons for eliminating them” (See also 46 Fed. Reg. 18026, question 1a).

The test of “reasonableness” for alternatives is one that is determined with respect to purpose and need of project and Council on Environmental Quality (CEQ) regulations clearly state that “(w)hat constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in the case” (46 Fed. Reg. 18026, question 1b).

CEQ regulations further address reasonable alternatives as “those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant” (46 Fed. Reg. 18026, question 2b).

For purposes of analyzing the two proposed alignments, reasonable alternatives are those that:

- ◆ Are consistent with the Purpose and Need for the Southwest LRT
- ◆ Are consistent with regional and local planning
- ◆ Are based on sound engineering practices and are practical and feasible
- ◆ Perform as well or better than the LRT alternatives identified for inclusion in the Southwest LRT DEIS.

Based on technical analysis that was completed on the two additional proposed alternatives, the Southwest TAC met on January 15, 2009 and the PAC met on January 21, 2009 and unanimously voted and recommended the LRT 3E alternative should be excluded from further consideration and the LRT 3C (11th/12th Sub-Alternative) (excluding Blaisdell Avenue north of Franklin Avenue) warranted more analysis and therefore should be included in the DEIS as a candidate for selection as the LPA.

For analysis conducted during the following phases of the project, the original LRT 3C alignment is referred to as LRT 3C-1 (Nicollet Mall) and the Sub-alternative is referred to as LRT 3C-2 (11th/12th Street) and henceforth are known as such. As a result, the following build alternatives were included for consideration as the LPA for the Southwest LRT project: LRT 1A, LRT 3A, LRT 3C-1 (Nicollet Mall), and LRT 3C-2 (11th/12th Street).

1.3 Refined AA Conceptual Engineering Plans

Regional and local transportation plans were revised and refined as the input to the conceptual engineering plans for the three LRT alternatives from the Southwest Transitway AA. The engineering refinements included updating the alignments to the Central Corridor LRT design criteria, introduction of a vertical alignment to understand the trackway profile, slope limits, and updated definition of new structures, roadways, and other civil construction items. Additional engineering refinements will continue once the locally preferred alternative is chosen and the project moves into the preliminary engineering and final design phases.

1.3.1 LRT 1A

The consultant team recommended and the Southwest Technical Advisory Committee (TAC) concurred with the following refined conceptual engineering changes to LRT 1A.

1.3.1.1 Royalston Station to Van White Boulevard Station

According to the Southwest Transitway AA conceptual engineering plans the LRT line would cross the BNSF tracks east of the I-94 underpass and begin to climb out of the below grade HCRRA property just south of Glenwood Avenue. This design requires the reconstruction of Glenwood Avenue, which would be costly and made complicated by the newly reconstructed Royalston Avenue Bridge.

The consultant team recommended that the LRT cross the BNSF freight rail track just east of the Van White Boulevard Station. This design change does not require the reconstruction of the Glenwood Avenue Bridge.

1.3.1.2 21st Street Station to West Lake Street Station

According to the Southwest Transitway AA conceptual engineering plans the LRT line would cross at-grade Cedar Lake Parkway. In order to allow for more design flexibility in this sensitive area the consultant team recommended inclusion of a grade-separation at this location. Should traffic conditions and other factors allow, an at-grade crossing could be considered during preliminary engineering.

1.3.2 LRT 3A

The consultant team recommended and the Southwest Technical Advisory Committee (TAC) concurred with refined conceptual engineering changes to LRT 3A. The sections below highlight the conceptual engineering changes to segment 3 of LRT 3A. The changes noted in Section 1.3.1 (LRT 1A) also apply to LRT 3A, please refer to that section for more information.

1.3.2.1 Southwest Station to Golden Triangle Station

According to the conceptual engineering design included in the Southwest Transitway AA, the LRT 3A parallels TH 5 between Mitchell Road and Prairie Center Drive and turns south on Prairie Center Drive. The alignment turns east along the backside of the parcels between Technology Drive and Singletree Lane. The alignment then follows Eden Road where it turns north along Flying Cloud Drive and crosses over I-494.

To reduce the number of at-grade crossings at signalized intersections along Eden Road and avoid grade crossing conflicts at the I-494 ramps, the AA alignment has been modified to follow Technology Drive east of Prairie Center Drive. The alignment transitions onto a bridge structure over I-494 on the west side of Flying Cloud Drive. It then crosses over Flying Cloud Drive to the east side of the roadway, and descends to grade before reaching the intersection of Valley View Road.

According to the conceptual engineering design included in the Southwest Transitway AA, the LRT is grade-separated on a bridge over existing wetlands, Nine Mile Creek, and Flying Cloud Drive. The proposed LRT bridge is a 1,430 feet long curved structure, which is significant. Placing a bridge over areas classified as Waters of the U.S. requires a permit from the Army Corp of Engineers, which can be a difficult and lengthy process. The consultant team recommended that the LRT be rerouted to avoid the wetlands and Water of the U.S. this change requires the replacement of the Nine Mile Creek culvert, reconstruction of Flying Cloud Drive and construction of retaining walls adjacent to the wetlands.

1.3.2.2 Golden Triangle Station to City West Station

According to the conceptual engineering design included in the Southwest Transitway AA, the LRT would make two sharp turns, cross Shady Oak Road and Flying Cloud Drive at grade, and a complete property acquisition. The consultant team recommended that the LRT be placed in a

short tunnel under Shady Oak Road and Flying Cloud Drive. The grade-separated alignment will improve LRT design speeds, avoid potential traffic and safety issues at Shady Oak Road and Flying Cloud Drive by avoiding a skewed light rail grade crossing, and reduce private property acquisition.

1.3.2.3 Opus Station to Shady Oak Road Station

According to the conceptual engineering design included in the Southwest Transitway AA, the LRT would be located at-grade through existing ponds and in a short tunnel under the Canadian Pacific Railway (CPR) freight line. Due to the presence of floodplain, ponds and concerns over groundwater and landfill leaching, the consultant team recommended that the LRT be elevated on a long structure over the ponds and the CPR freight tracks. This engineering refinement will reduce potential construction and operational issues with flooring, landfill leaching, and freight rail operations.

According to the conceptual engineering design included in the Southwest Transitway AA, the LRT was routed through the Oak Woodland Preserve. The consultant team recommended straightening the alignment to increase LRT speed and move the tracks further away from residential housing to minimize any potential noise impacts.

According to the conceptual engineering design included in the Southwest Transitway AA, the LRT would be located in a tunnel under Feltl and Smetana roads. After further analysis, the consultant team concluded that it would be more efficient and cost-effective to reconfigure Feltl and Smetana roads to create a singular at-grade LRT crossing. This design change will result in reduced LRT construction costs without a significant reduction in LRT design speed. Refer to Appendix A - Alternatives Analysis Technical Memorandum 3: Definition of Alternatives for a detailed description of the alignment as developed during the Southwest Transitway AA and Appendix E for the refined conceptual engineering plans.

1.3.3 LRT 3C-1 (Nicollet Mall)

All of the refined conceptual engineering changes listed above under the LRT 3A alternative also apply to the LRT 3C-1 (Nicollet Mall) alternative.

In addition, City of Minneapolis staff informed the consultant team after the NEPA/MEPA Scoping period that the reopening of Nicollet Avenue is included in their Capital Improvement Program (CIP) and should be assumed for the purpose of designing the Southwest LRT alternatives. During the Southwest Transitway AA, Nicollet Avenue was not assumed to be reopened.

The reopening of Nicollet Avenue will result in higher traffic volumes on Nicollet Avenue and complicates the original design for the LRT 3C-1 (Nicollet Mall) alternative. Due to the reopening of Nicollet Avenue, the consultant team recommended that the stations at 28th Street and Franklin Avenue be changed to underground rather than open air stations.

2.0 DEFINITION OF ALTERNATIVES

2.1 2030 No-Build Alternative

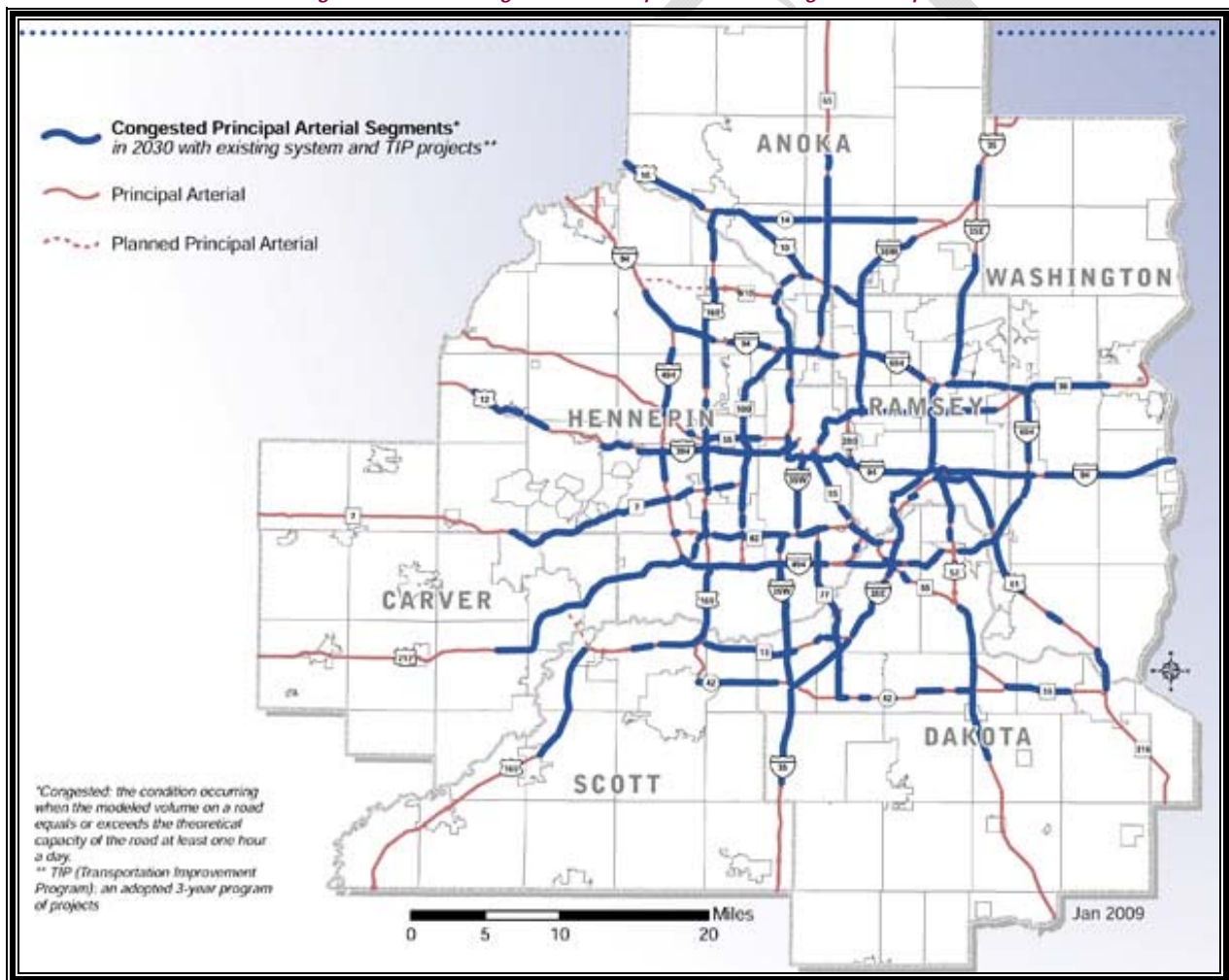
The No-Build Alternative includes all existing and committed transportation infrastructure, facilities and services contained in the region's fiscally constrained and federally-approved transportation plan, the Twin Cities 2030 Transportation Policy Plan (TPP). A No-Build

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 Alternative is also used in the environmental analysis phase of project development—in this case a DEIS—to compare the environmental impacts of the project to projected conditions without the proposed alternatives.

2.1.1 Highway/Roadway Network

The Metropolitan Council's *2030 Transportation Policy Plan (TPP)* (2008) provides a comprehensive inventory of the transportation infrastructure and needs for the seven-county Twin Cities metropolitan region. The regional highway and roadway system is composed of interstate and federal highways, state and county highways, toll roads, arterial roadways and city streets. To address deteriorating levels of service on area roadways, the TPP has programmed improvements intended to expand the capacity of the regional highway and roadway systems. Refer to Figure 2 for a map of the regional Congested Principal Arterial Segments.

Figure 2 - TPP Congested Principal Arterial Segment Map



Source: *The Metropolitan Council 2030 Transportation Policy Plan (TPP)*, January 2009.

Alternative is intended to be a lower cost transportation solution that addresses the mobility issues defined in the Project's Purpose and Need statement. This alternative serves as the basis of comparison between each of the build alternatives, and helps to calculate the cost effectiveness of each alternative to demonstrate whether a greater level of investment in a Build Alternative is justified. It is designed as the "best that can be done" alternative to improve transit service and mobility within the Southwest LRT Study Area without major capital investments.

Unlike the No-Build Alternative, the Baseline Alternative includes low capital cost infrastructure improvements intended to improve or modify operating efficiencies, and for certain rider amenities such as improvements to transit terminals or park and ride lots. Acceptable FTA baseline alternatives include traffic engineering actions, bus route restructuring, reserved bus lanes, and express services along with other minor roadway modifications. Other low capital cost infrastructure and bus transit improvements include intelligent transportation systems (ITS) technologies, travel demand management (TDM) strategies and other system improvements. Bus operation strategies that build upon existing transit services and facilities provide connectivity within the project study area. ITS deploys the latest technology for more effectively managing transportation systems, and TDM strategies help reduce congestion by encouraging the use of alternative modes of transportation rather than driving alone.

The Baseline Alternative is not considered a Build Alternative for discussion in the DEIS. It is solely intended to comply with FTA regulatory requirements as outlined in the FTA 5309 New Starts Report. For a detailed description of the Enhanced Bus Alternative, please refer to Appendix A - Highway/Roadway Network

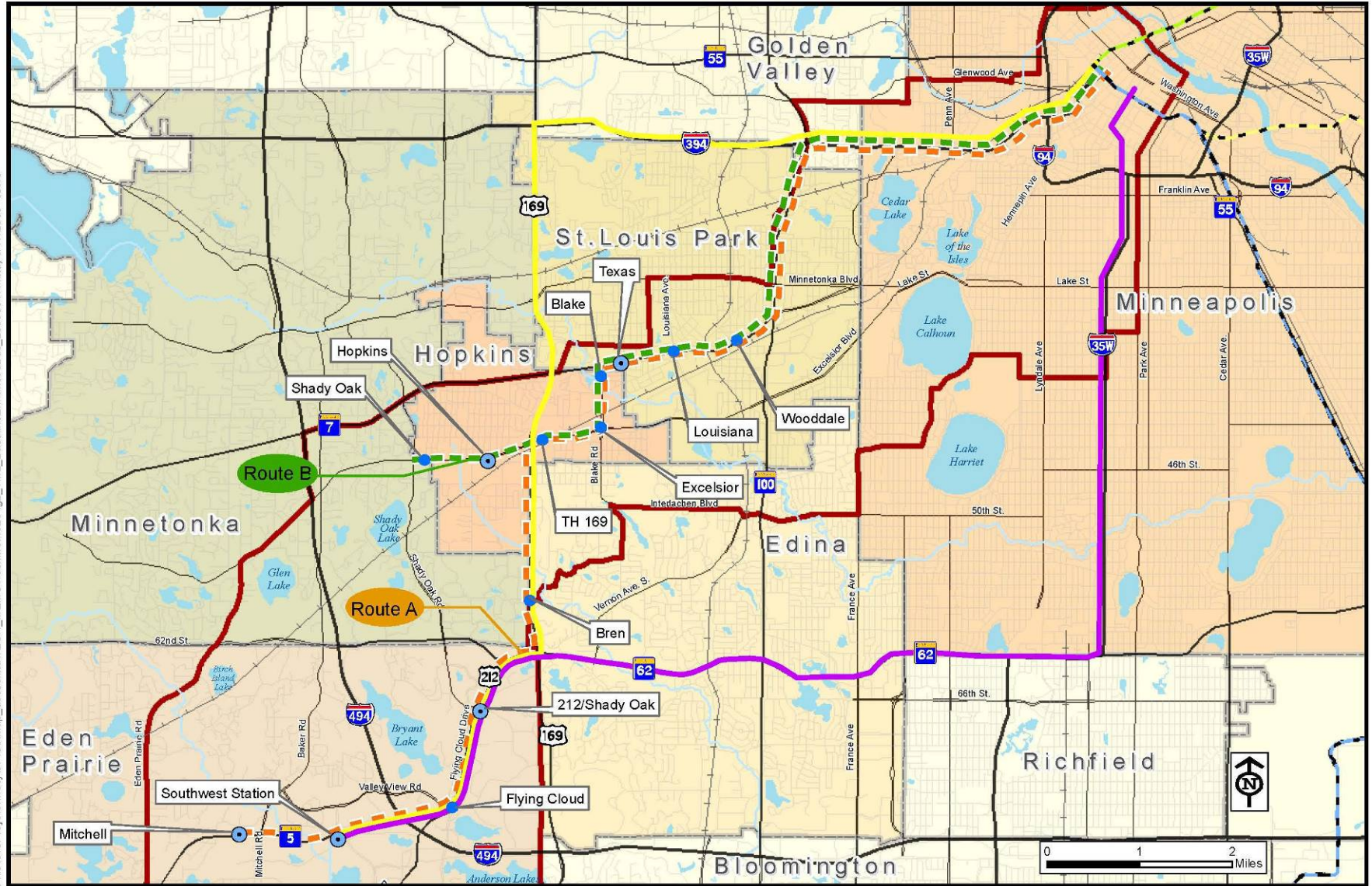
The Baseline Alternative includes the same highway and roadway network improvements contained in the No-Build Alternative. The Baseline Alternative is not anticipated to result in any modifications to the existing highway or roadway infrastructure in the Study Area. Both the new express and current bus routes would use the existing infrastructure, including the HOV/HOT lanes on highways and expressways, and implement regional transportation policies such as bus-only shoulder lanes to provide service to the region.

2.2.1 Enhanced Bus Alternative Description

The Enhanced Bus Alternative includes two new express bus routes providing bi-directional service between Eden Prairie and downtown Minneapolis, with stops in Minnetonka, Hopkins, and St. Louis Park. The alternative also includes minor modifications to the existing express bus service along with increased service frequencies and restructured local service to provide access to stops along the new express routes. The new limited-stop routes are referred to as Limited Stop Route "A" and Limited Stop Route "B," and are represented along with the existing express bus routes provided by SouthWest Transit using I-394 and I-35W from Eden Prairie to downtown Minneapolis in Figure 4. For a detailed description of the Enhanced Bus Alternative, please refer to Appendix A.

Figure 4 - Baseline Alternative

Baseline Alternative: Enhanced Bus Alternative



Map Document: (m:\spe-gis-file\GISProj\HennCity\87130\map_docs\mxd\TECH_MEMO\TechMemo2\Fig2_TM2_BaselineEnhancedBus_20090817.mxd) 8/17/2009 cusers

<p>LPA Report</p>	Legend		
	<ul style="list-style-type: none"> Study Area ● Bus Stop Location ⊙ Bus Stop with Park & Ride 	<ul style="list-style-type: none"> — Route A Limited Stop (New) — Route B Limited Stop (New) — SouthWest Express Bus via I-394 (Existing) — SouthWest Express Bus via I-35W (Existing) 	<ul style="list-style-type: none"> — Hiawatha Light Rail — Northstar Commuter Rail — Central Corridor Light Rail

2.3 Build Alternatives

The following section includes detailed descriptions and maps for the build alternatives defined as LRT 1A, LRT 3A, LRT 3C-1 (Nicollet Mall), and LRT 3C-2 (11th/12th Street). The detailed conceptual engineering plans are included in Appendix E.

2.3.1 LRT 1A (HCRRA – Kenilworth)

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

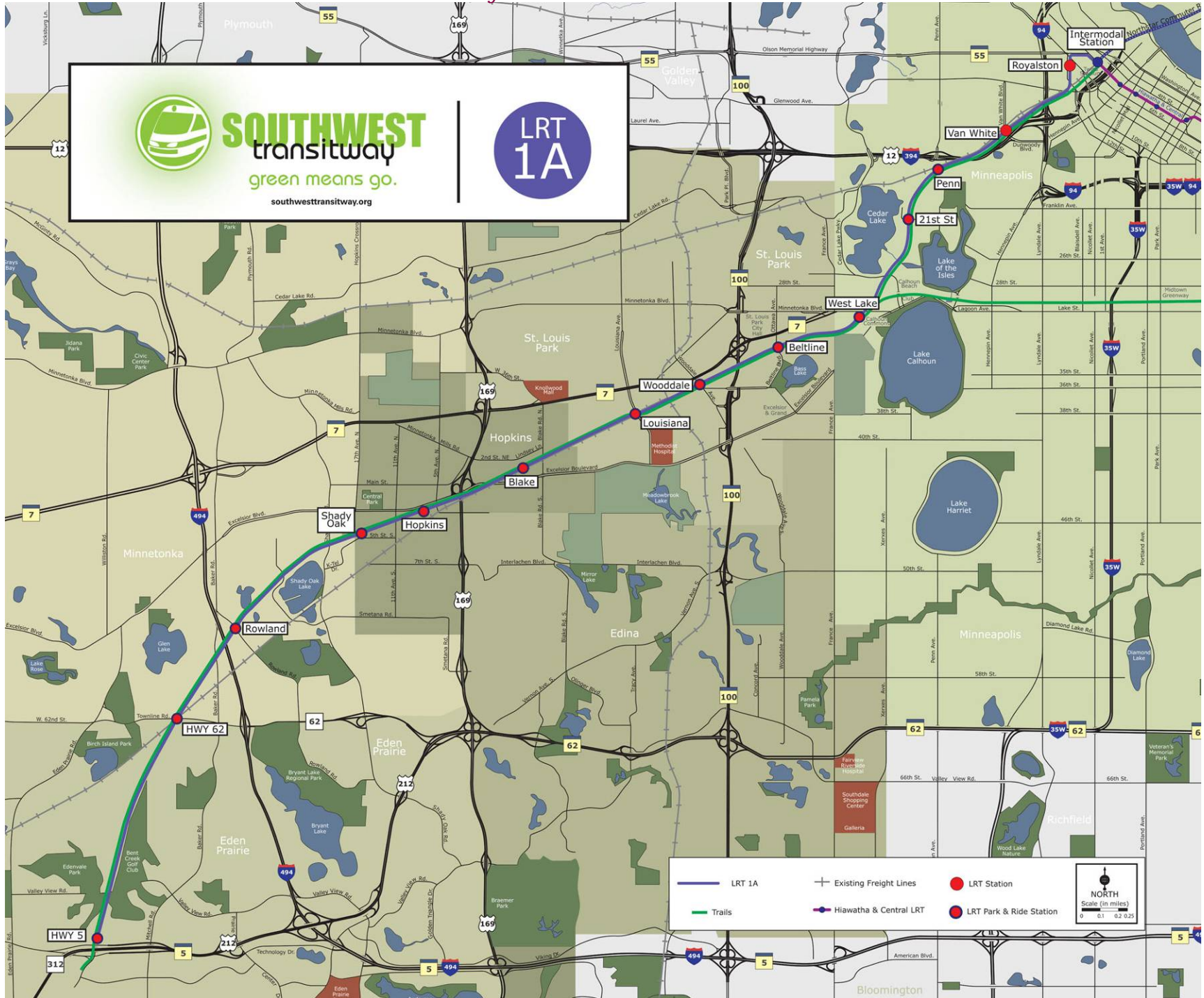
This alternative would operate from downtown Minneapolis to Eden Prairie (TH 5) via an extension of the Hiawatha LRT tracks on 5th Street, past the downtown Minneapolis Intermodal Station to Royalston Avenue, to the Kenilworth Corridor through Minneapolis and the Hennepin County Regional Railroad Authority (HCRRA) property through St. Louis Park, Hopkins, Minnetonka and Eden Prairie terminating at TH 5 and the HCRRA's property.

Stations are proposed at Royalston Avenue, Van White Boulevard, Penn Avenue, 21st Street, West Lake Street, Beltline Boulevard, Wooddale Avenue, Louisiana Avenue, Blake Road, downtown Hopkins, Shady Oak Road, Rowland Road, TH 62, and TH 5.

Proposed at-grade crossings include Edenvale Boulevard, West 62nd Street, Baker Road, Rowland Road, Dominick Drive, 16th Avenue (proposed extension), 11th Avenue, 8th Avenue (proposed extension), 5th Avenue, Blake Road, Wooddale Avenue, Beltline Boulevard, 21st Street, Glenwood Avenue, and the Hennepin County Energy Recovery Center (HERC) entrance.

Build alternative LRT 1A is shown in Figure 5.

Figure 5 - Build Alternative LRT 1A



2.3.2 LRT 3A (Opus/Golden Triangle – Kenilworth)

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

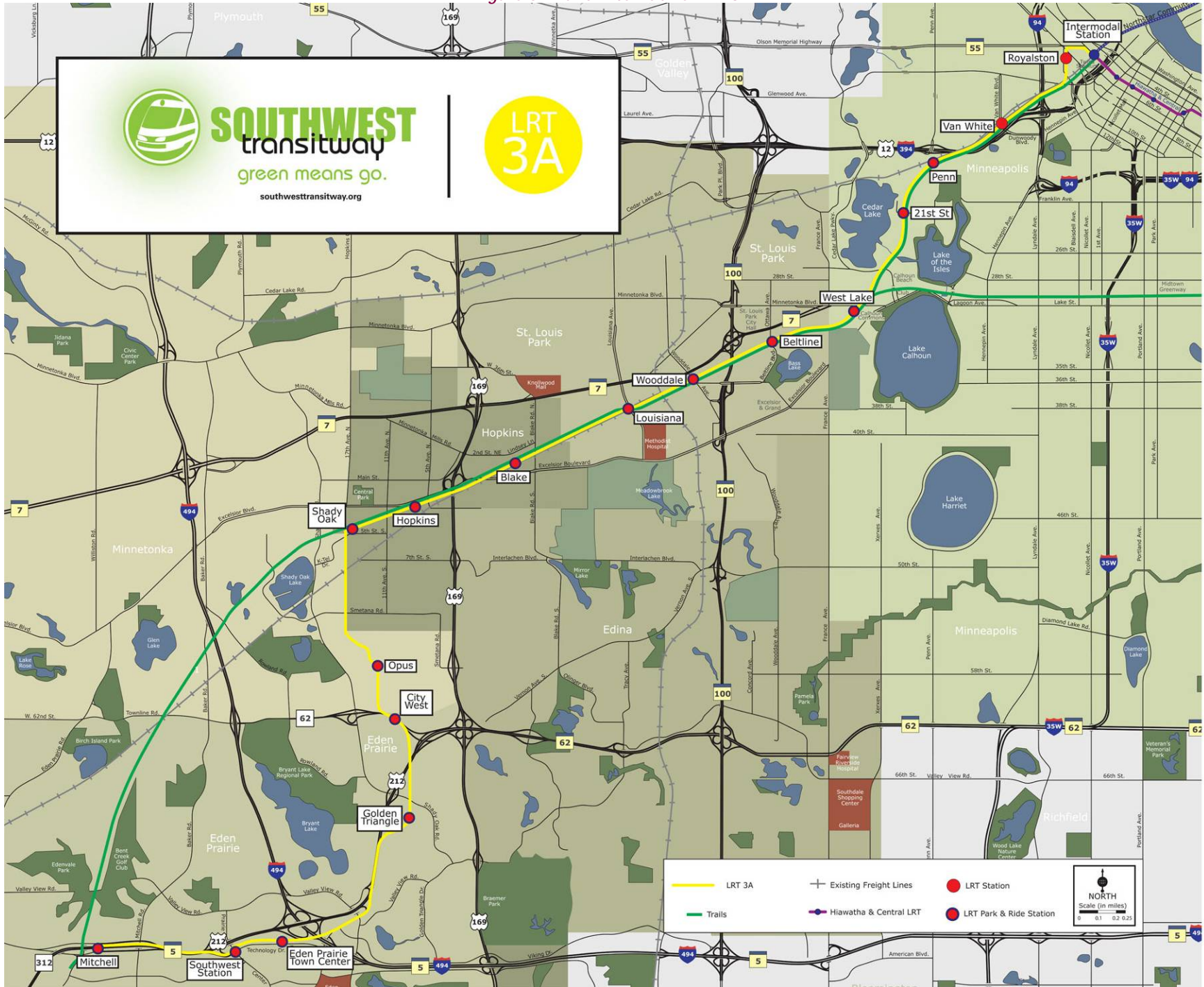
This alternative would operate from downtown Minneapolis to Eden Prairie (Mitchell Road/TH 5) via an extension of the Hiawatha LRT tracks on 5th Street, past the downtown Minneapolis Intermodal Station to Royalston Avenue, to the Kenilworth Corridor through Minneapolis and the HCRRA property through St. Louis Park and Hopkins to a new right-of-way through the Opus/Golden Triangle areas, along Technology Drive and TH5 terminating at Mitchell Road..

Stations are proposed at Royalston Avenue, Van White Boulevard, Penn Avenue, 21st Street, West Lake Street, Beltline Boulevard, Wooddale Avenue, Louisiana Avenue, Blake Road, downtown Hopkins, Shady Oak Road, Opus, City West, Golden Triangle, Eden Prairie Town Center, Southwest Station, and Mitchell Road.

Proposed at-grade crossings include Mitchell Road, the bus only ramps to/from TH5, Technology Drive, commercial property access along Technology Drive, Valley View Road, Flying Cloud Drive, West 70th Street, Bren Road East, Bren Road West, combined Feltl and Smetana Road intersection, K-Tel Drive, 16th Avenue (proposed extension), 11th Avenue, 8th Avenue (proposed extension), 5th Avenue, Blake Road, Wooddale Avenue, Beltline Boulevard, 21st Street, Glenwood Avenue, and the HERC entrance.

LRT 3A is shown in Figure 6.

Figure 6 - Build Alternative LRT 3A



2.3.3 LRT 3C-1 (Nicollet Mall) (Opus/Golden Triangle – Midtown/Nicollet Mall)

LRT 3C-1 travels between Mitchell Road in Eden Prairie and downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, Edina, St. Louis Park, and Minneapolis.

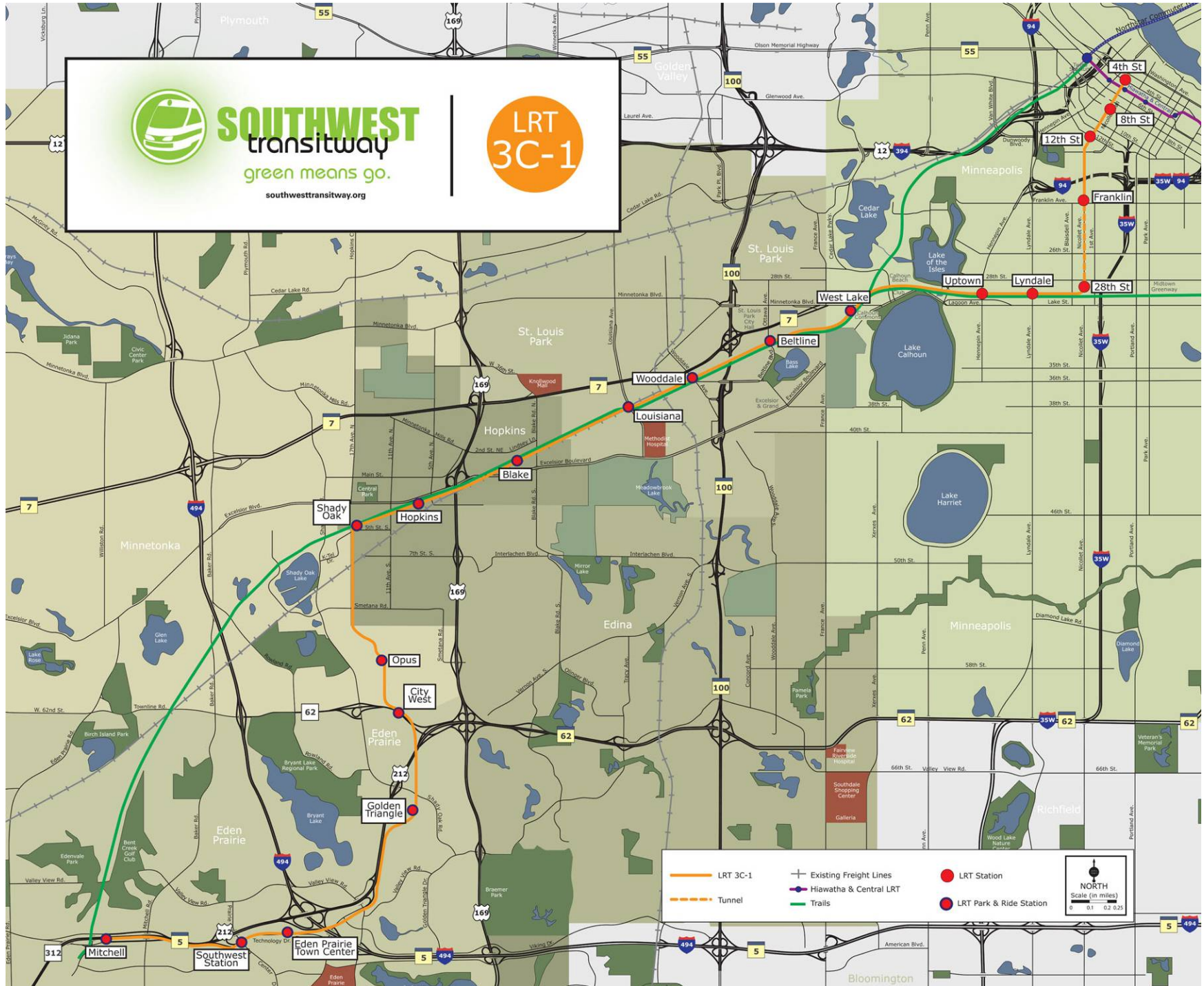
This alternative would operate between downtown Minneapolis to Eden Prairie (Mitchell Road/TH 5) via Nicollet Mall to Nicollet Avenue (tunnel from Franklin Avenue to 28th Street), the Midtown corridor through Minneapolis, the HCRRA property in St. Louis Park and Hopkins, to new right-of-way through the Opus/Golden Triangle areas, along Technology Drive and TH5 terminating at Mitchell Road.

Stations are proposed at 4th Street, 8th Street, 12th Street, Franklin Avenue, 28th Street, Lyndale Avenue, Hennepin Avenue (Uptown), West Lake Street, Beltline Boulevard, Wooddale Avenue, Louisiana Avenue, Blake Road, downtown Hopkins, Shady Oak Road, Opus, City West, Golden Triangle, Eden Prairie Town Center, Southwest Station, and Mitchell Road.

Proposed at-grade crossings include Mitchell Road, the bus only ramps to/from TH5, Technology Drive, commercial property access along Technology Drive, Valley View Road, Flying Cloud Drive, West 70th Street, Bren Road East, Bren Road West, combined Feltl and Smetana Road intersection, K-Tel Drive, 16th Avenue (proposed extension), 11th Avenue, 8th Avenue (proposed extension), 5th Avenue, Blake Road, Wooddale Avenue, Beltline Boulevard, James Avenue, Irving Avenue, Humboldt Avenue, Franklin Avenue, Groveland Avenue, 18th Street, 15th Street, 14th Street, Grant Street, 13th Street, 12th Street, 11th Street, 10th Street, 9th Street, 8th Street, 7th Street, 6th Street, 5th Street, 4th Street, and 3rd Street.

Build Alternative LRT 3C is shown in Figure 7.

Figure 7 - LRT 3C-1 (Nicollet Mall)





SOUTHWEST
transitway
green means go.
southwesttransitway.org



2.3.4 LRT 3C-2 (11th/12th Street) (Opus/Golden Triangle – Midtown/11th/12th Street)

LRT 3C-2 (11th/12th Street) travels between Mitchell Road in Eden Prairie and downtown Minneapolis, providing service to Eden Prairie, Minnetonka, Hopkins, Edina, St. Louis Park, and Minneapolis.

LRT 3C-2 (11th/12th Street) would operate on the same alignment as LRT 3C-1 (Nicollet Mall) between the West Lake Station in Minneapolis and Eden Prairie. At the Midtown Corridor in the vicinity of Nicollet Avenue, the alignment would travel either under Nicollet Avenue, Blaisdell Avenue, or 1st Avenue in a tunnel between the Midtown Corridor and Franklin Avenue. Generally, north of Franklin Avenue, it would operate on-street to the vicinity of 11th/12th Street where it would turn west onto 11th Street operating as a one-way pair between Nicollet Mall and Royalston Avenue. At Royalston, the alternative would use the same routing as the LRT 1A and LRT 3A alternatives, which interline with the Hiawatha and/or Central LRT lines on 5th Street.

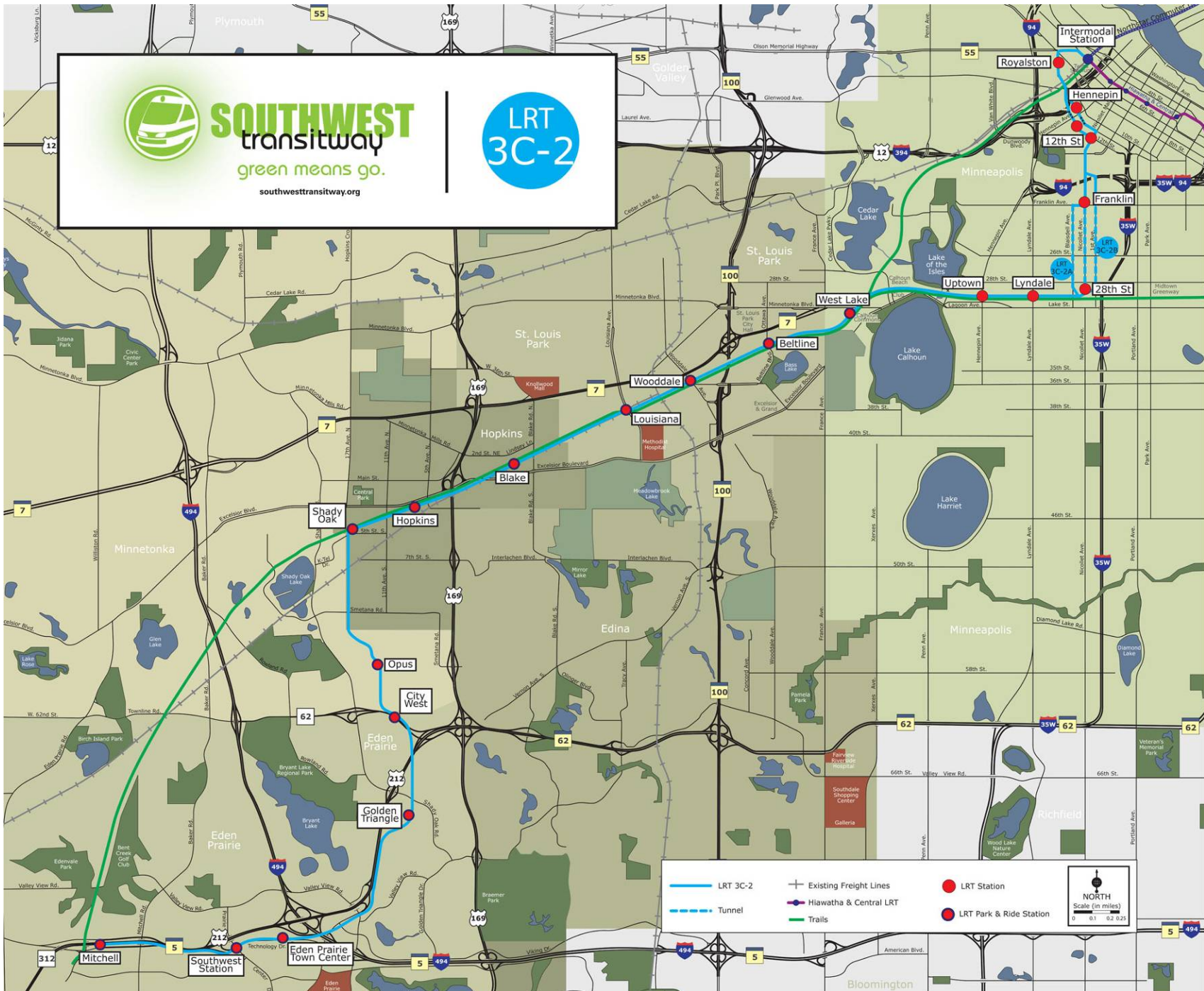
Stations are proposed at Royalston Avenue, 11th Street/Hennepin Avenue, 12th Street/Hawthorne Avenue, 12th Street/Nicollet Mall, Franklin Avenue and either Blaisdell Avenue or 1st Avenue, and 28th Street and either Blaisdell Avenue or 1st Avenue. And similar to LRT 3C-1 (Nicollet Mall), Lyndale Avenue, Uptown, West Lake Street, Beltline Boulevard, Wooddale Avenue, Louisiana Avenue, Blake Road, downtown Hopkins, Shady Oak Road, Opus, City West, Golden Triangle, Eden Prairie Town Center, Southwest Station, and Mitchell Road.

The LRT 3C-2 (11th/12th Street) alternative proposes to use either a tunnel under Nicollet Avenue with optional routes under Blaisdell or 1st Avenue between the Midtown Corridor and Franklin Avenue. For the Blaisdell Avenue option, the LRT would exit the tunnel at Blaisdell and Franklin and then transition across the Plymouth Congregational Church property to enter center running operations on Nicollet Avenue. The LRT would operate in the center of Nicollet Avenue to 12th Street. For the 1st Avenue option, the LRT would exit the tunnel north of Franklin and operate center running on 1st Avenue to 16th Street where it would transition diagonally across the City of Minneapolis meter farm entering Nicollet Avenue at 15th Street for center running operations to 12th Street. At 12th Street under all options the LRT would as a one-way couplet on 11th and 12th Street rejoining as a two-way configuration on 12th Street at Glenwood, then operating on Royalston Avenue with a short tunnel under 7th Street and through-routing on the Hiawatha/Central LRT tracks on 5th Street in downtown Minneapolis.

Proposed at-grade crossings include Mitchell Road, the bus only ramps to/from TH 5, Technology Drive, commercial property access along Technology Drive, Valley View Road, Flying Cloud Drive, West 70th Street, Bren Road East, Bren Road West, combined Feltl and Smetana Road intersection, K-Tel Drive, 16th Avenue (proposed extension), 11th Avenue, 8th Avenue (proposed extension), 5th Avenue, Blake Road, Wooddale Avenue Beltline Boulevard, James Avenue, Irving Avenue, Humboldt Avenue, Franklin Avenue, Groveland Avenue, 18th Street, 15th Street, 14th Street, Grant Street, 13th Street, 12th Street, 11th Street, LaSalle Avenue, Harmon Place, Hennepin Avenue, Hawthorne Avenue, I-394 Interchange at 12th Street, Glenwood Avenue, and 7th Street.

LRT 3C-2 (11th/12th Street) is shown in Figure 8.

Figure 8 -LRT 3C-2 (11th/12th Street)



2.3.5 Transit Service Assumptions

2.3.5.1 Enhanced Bus Alternative

Current operating plans for Limited-Stop Routes “A” and “B” indicate that bus service would be provided from approximately 4:00 AM to 2:00 AM, Monday through Friday, with no weekend or holiday service. Fares for service would be consistent with the Metropolitan Council’s fare structure policy. The Baseline Alternative assumes that parking at park and ride facilities would be free of charge.

Bus headways would be 15 minutes during peak periods and 20 minutes in off-peak periods. Where the two lines would share a similar route (between downtown Minneapolis and Shady Oak Road in Minnetonka), the combined headways would be increased to 7.5 minutes during peak hour periods and 10 minutes in off-peak periods.

Table 3- Enhanced Bus Service Plan Operation Hours and Frequency (in minutes)

	Early Morning (4:00-6:00AM)	AM Peak (4:00-9:00AM)	Mid-Day (9:00AM- 3:00PM)	PM Peak (3:00-6:00PM)	Evening (6:00PM- 2:00AM)
Weekday					
Route “A”	20	15	20	15	30
Route “B”	20	15	20	15	30
Composite “A” & “B”	10	7.5	10	7.5	15
Weekend	No Service				
Holiday	No Service				

Source: Southwest Transitway Alternatives Analysis Final Report, 2007.

After reviewing the bus feeder plans developed during the Southwest Transitway AA and discussions with Metro Transit and SouthWest Transit staff, the consultant team did not recommend any changes to the bus feeder networks developed during the Southwest Transitway AA. Refer to Appendix A for the detailed bus feeder network plans for the alternatives included in the Southwest Transitway AA. In addition, the consultant team did not recommend any changes to the existing and planned bus network in the geographic area of Minneapolis affected by the LRT 3C-2 (11th/12th Street) alternative.

2.3.5.2 LRT Alternatives

Southwest LRT would provide high frequency service (7.5 minute peak), bidirectional, line-haul, limited stop, seven days per week. The service operation hours would be from 5:00 AM to 1:00 AM on weekdays and 5:00 AM to 1:00 AM on weekends and holidays. Stations would be located ¼ to ½ mile apart in the downtown, ½ to 1 mile apart in the first ring and 1 to 2 miles apart in the second ring of service. Fares collection would be proof of payment. Stations would be high amenity with park-and-ride facilities where appropriate.

The operating plan is the same as described for all the build alternatives, with trains operating at 7.5 minute headways during the peak periods, 10 minute headways during the mid-day hours, and 15-30 minute headways in the off-peak AM and PM hours.

DRAFT