3 Transportation

Table 3-1 is a summary of the changes to the impacts and mitigation between the 2016 Alignment and the Project Alignment.

Table 3-1 Comparison of Impacts and Mitigation – 2016 Alignment and Project Alignment

Resource	Did FEIS/ROD Identify an Impact and Mitigation?	Do the Proposed Modifications Change the Impacts to this Resource?	Do the Proposed Modifications Change the Mitigation Needed?	Section Where Additional Information can be Found
Transit conditions	Yes. Intermittent impacts to bus operations during construction including temporary stop relocations or closures and route detours to be mitigated through communication strategies.	No.	No.	3.1
Freight Rail Conditions	Yes. Relocation of BNSF track and potential for temporary service impacts during construction to be mitigated through a coordination plan and use of flaggers to reduce impact to freight rail operations.	Project avoids impact to freight rail right-of-way.	No mitigation required.	3.6
Vehicular Traffic	Yes. Increase in number of intersections operating at unacceptable levels of service and traffic disruption during construction including lane, intersection, and roadway closure and detours. Long-term impacts mitigated through intersection improvements and short-term impacts mitigated through Construction Mitigation Plan, Construction Communication Plan, and construction staging.	Yes. Increased number of intersections operating at unacceptable levels of service, vehicular access changes, roadway geometric changes, new LRT crossings.	Yes. Additional mitigation measures were identified in the 2024 Traffic Report to mitigate vehicle queueing and operations, signal timings, and safety. Specifically, modifications included a 9th Ave connection to mitigate traffic concerns and provide traffic mitigations at additional intersections to accommodate the design impacts. As design progresses, additional mitigation measures will be identified.	3.4

Resource	Did FEIS/ROD Identify an Impact and Mitigation?	Do the Proposed Modifications Change the Impacts to this Resource?	Do the Proposed Modifications Change the Mitigation Needed?	Section Where Additional Information can be Found
Pedestrians and Bicyclists	Yes. Temporary closures or detours during construction mitigated through improvements to crossings, connections and facilities and Construction Communication Plan.	Yes. Bicycle crossings of light rail tracks result in some safety concerns and reduction in bicycle connectivity.	Yes. Refinements to light rail track crossing and intersection design and signals will reduce impacts to safety and connectivity.	3.2/3.3
Parking	Yes. Loss of 92 on-street and 225 off-street parking spaces; potential "spill-over" parking in neighborhoods adjacent to LRT stations; and increased demand due to TOD. Loss of off-street parking compensated via the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act); loss of on-street parking to be mitigated by coordination with local jurisdictions to identify whether suitable replacement locations are necessary.	Yes. Increased number of total on-street parking losses to an estimated 1002 on-street parking spaces. Increased number of total off-street parking losses to an estimated 952 to 989 off-street parking spaces.	Yes. In addition to the mitigation measures listed in 2016 ROD, parking utilization studies have been completed to better understand parking impacts and identify locations where mitigation strategies may be needed.	3.5
Aviation	Yes. Construction of catenary in the Runway Protection Zone (RPZ) mitigated through an RPZ Alternatives Analysis.	Project avoids impact to the RPZ.	No mitigation required.	3.7

Chapter 3 presents the anticipated impacts of the Project to the transportation system. Results are presented for the No-Build Alternative for the purpose of establishing a basis to compare with the Build Alternative. Table 3-2 provides an overview of the transportation modes analyzed in this chapter, their defined study area, and rationale for the study area limits. Different modes have varying geographic extents of where there would be impacts or benefits from the Project. Only Project elements with impacts on resources are presented in the body of this chapter. Potential operating-phase (long-term) and construction-phase (short-term) impacts are evaluated, and potential avoidance, minimization, and mitigation measures are presented. The No-Build and Build Alternative evaluated in this chapter are illustrated and described in Chapter 2, and anticipated impacts from Project alignment and design options evaluated are in Appendix A-3 and include expanded discussion on regulatory context, methodology, study area, and affected environment.

Table 3-2 Defined Transportation Modes and Study Areas

Section/Topic	Resource Evaluated	Study Area Defined	Basis for Study Area
3.1 Transit	Describes existing and future transit conditions, including forecasted ridership for the Build Alternative	Project and all interactions with the existing regional transit system as defined in the Council Travel Demand Model	Estimated area where changes would occur to the regional transit system
3.2 Pedestrian	Describes existing and future pedestrian conditions, including changes to sidewalk facilities with the Build Alternative	10-minute walkable area around LRT stations; ¼ mile on either side of the Project Alignment	Captures generally walkable area around LRT stations and crossings
3.3 Bicycle	Describes existing and future bicycle conditions, including changes to bicycle facilities and networks with the Build Alternative	½ mile around LRT station areas; ¼ mile on either side of the Project Alignment	Captures generally bikeable area around LRT stations and crossings
3.4 Vehicle Traffic	Describes existing and future traffic conditions and changes to traffic signals and roadways with the Build Alternative	Signalized intersections and proposed signalized intersections along the Project Alignment	Intersections capture concentrated area of potential impacts and delay
3.5 Vehicle Parking	Describes existing and future parking locations for on-street and off-street parking with the Build Alternative	Within the Project's LOD	Estimated area of construction around the Project area
3.6 Freight Rail	Describes existing conditions where freight interacts with the Project area and changes to freight with the Build Alternative	Intersections of BNSF and Canadian Pacific Kansas City (CPKC) rights-of-way and Project Alignment	Freight rail infrastructure and operations lie within the BNSF and CPKC rights-of-way
3.7 Aviation	Describes existing conditions where aviation interacts with the Project area and changes to aviation facilities with the Build Alternative	Areas within the Project's LOD and Runway Protection Zone and Runway 6L Safety Zone of the Crystal Airport	Required study areas concerning Crystal Airport

3.1 Transit Conditions

This section documents the travel demand modeling and preparation ridership forecasts for the No-Build and Build Alternatives, as defined in this Supplemental Final EIS. This section also describes existing and planned transit service in the study area, the operating characteristics of the Project, and how the Project's operation and construction would affect adjacent routes and the regional transit system.

3.1.1 Regulatory Context and Methodology

The Council used FTA's Simplified Trips-on-Project Software (STOPS) to develop transit ridership forecasts for the Project. STOPS uses socioeconomic data to model increases from existing transit ridership derived from an on-board survey to forecast year levels. The model was updated in July 2024 for the Supplemental Final EIS evaluation using STOPS version 2.52, with factors applied based on the April 2024 *FTA Reporting Instructions*. Differences in modeling between the Supplemental Draft EIS and this document include:

- Only one model (base year 2023) as opposed to two (2019 and 2022 base years)
- Updated socioeconomic data forecasts provided by the Metropolitan Council in June 2024
- Updated existing transit network from 2019 and 2022 to 2023
- Revised the 2022 transit on-board survey to reflect 2023 conditions using updated route-level counts
- Adjusted park-and-ride catchment areas to reflect more closely the use of existing park-and-rides and the capacity of planned Project park-and-rides
- Refined the walk network in Project corridor

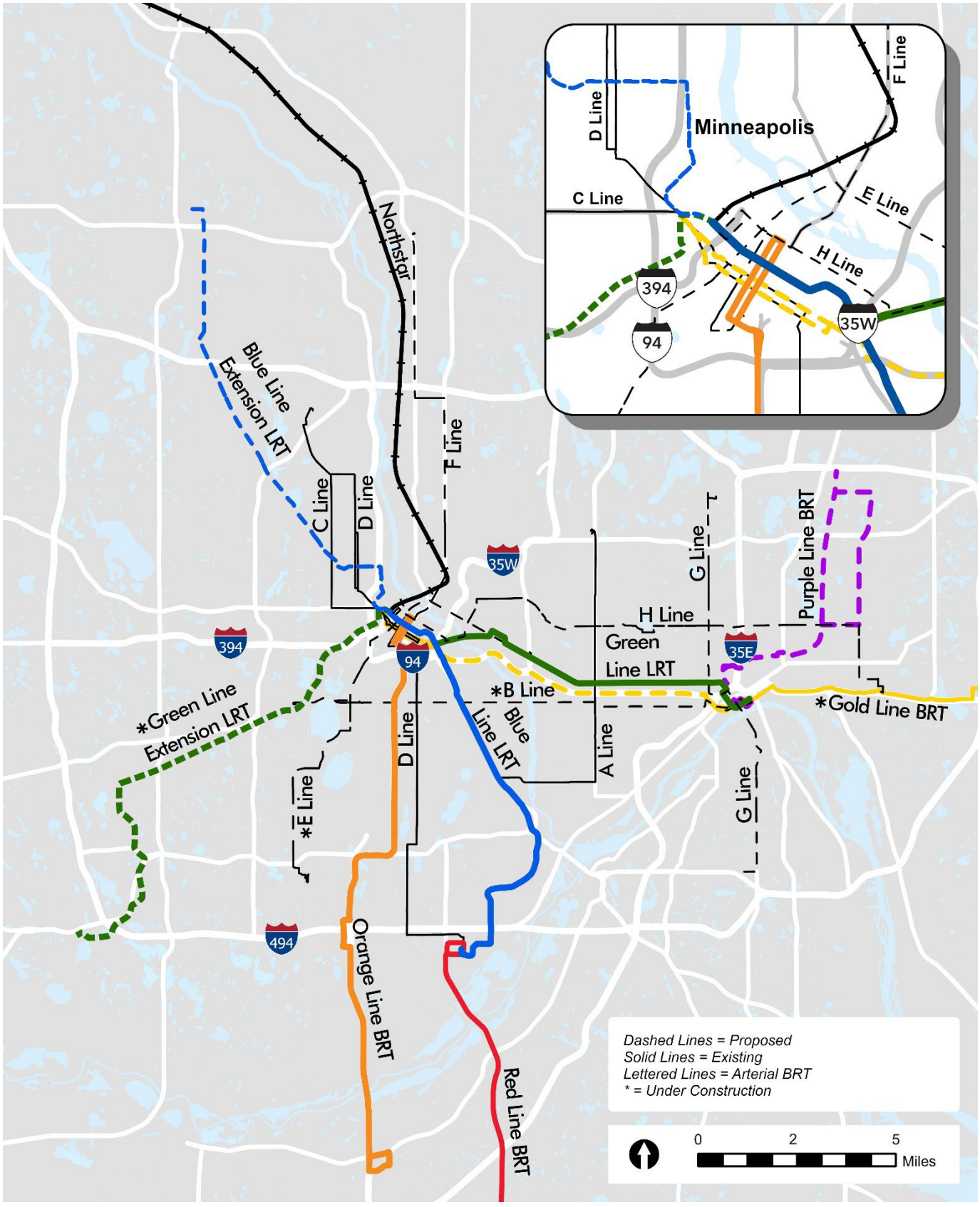
The Supplemental Final EIS evaluation is based on planned service levels of trains operating at 10-minute frequencies for peak weekday operations. While Metro Transit has reduced service frequencies as of Fall 2024, the service frequencies are anticipated to return to the planned service levels by 2030, the Project's opening year.

3.1.2 Study Area and Affected Environment

The study area for public transit conditions is the Project Alignment, plus intersections or connections between the Project and the current Metro Transit service area, as defined in the STOPS model. The model analyzes the effects of transportation modifications to the entire Twin Cities metropolitan area. The model considers changes within the seven-county jurisdiction of the Council.

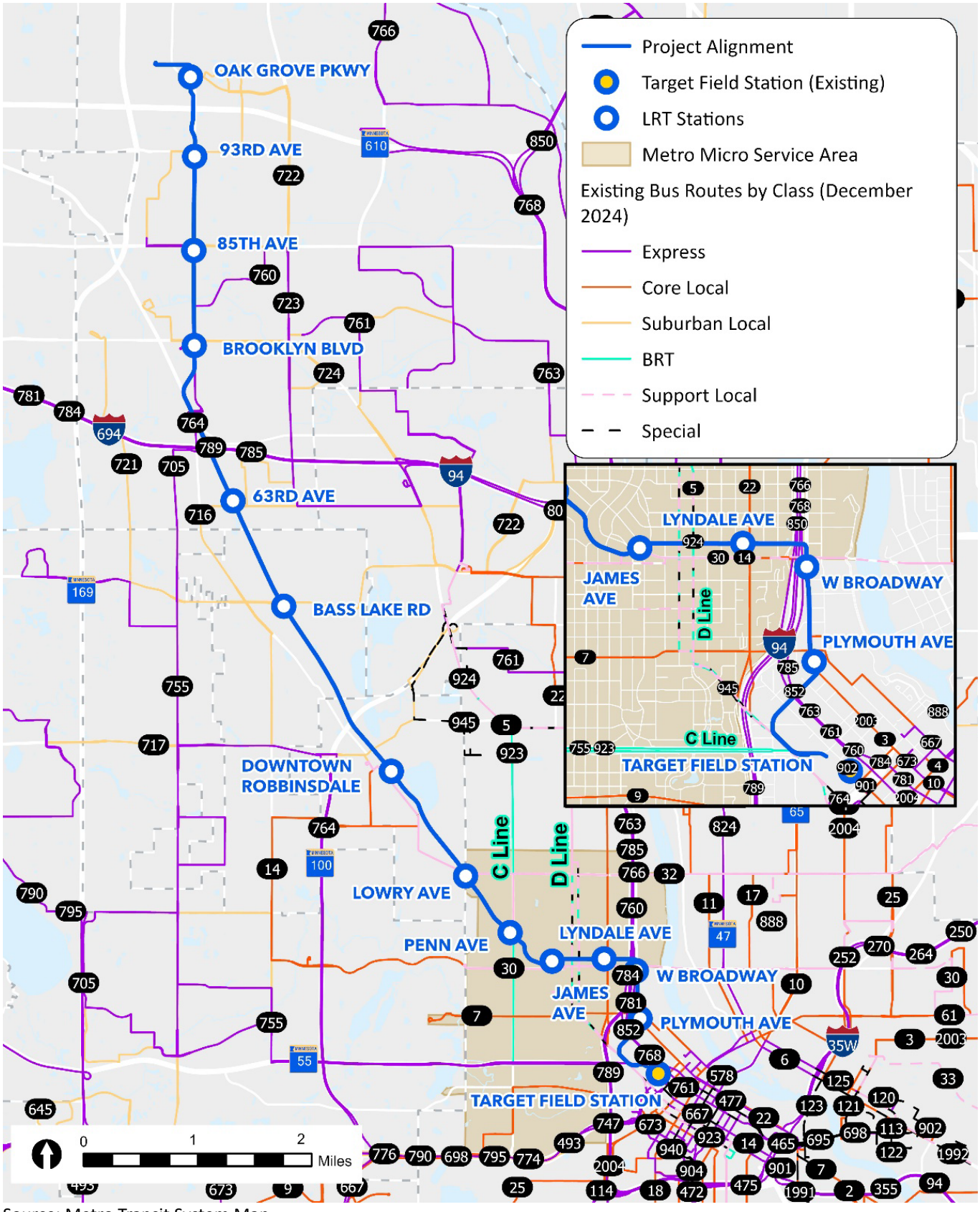
The Metro Transit service area for the Project is generally defined by the Mississippi River to the north and east, Interstate 394 (I-394) to the south, and US 169 to the west. The area is served by a network of urban local, suburban local, and arterial BRT routes that make timed connections at four transit centers in the study area: Starlite Transit Center, Robbinsdale Transit Center, Target Field Station, and Brooklyn Center Transit Center. The area is also served by express bus routes, most of which are oriented toward Downtown Minneapolis and serve the peak-period ("rush hour") commuter travel market and micro transit in North Minneapolis, which operates on-demand within a defined service boundary. The planned METRO network, and existing transit service in the area are shown in Figure 3-1 and Figure 3-2, respectively.

Figure 3-1 METRO Regional Transitway System and Planned METRO System (2030)



Source: Metropolitan Council *2040 Transportation Policy Plan.*

Figure 3-2 Existing Bus Transit Service as of June 2024



Source: Metro Transit System Map.

The Project would operate as part of the broader Twin Cities metropolitan area regional transit system. Connections to the Project route by METRO lines and bus lines would enable access and mobility beyond the study area and affected environment. The Project would connect to other METRO lines (Table 3-3) and existing local or express bus routes. Additionally, the Project would include four park-and-ride facilities at the Downtown Robbinsdale, Bass Lake Rd, 63rd Ave N, and Oak Grove Pkwy Stations.

Table 3-3 LRT Station Amenities and Connections to Local and Express Bus Service

Station	Park-and-ride	Transfer Routes	Connecting METRO Line
Oak Grove Pkwy	Yes (500 structured spaces)	722[d], 724[d], 729[c]	-
93rd Ave N	No	724[d]	-
85th Ave N	No	723[d], 724[d], 725[c]	-
Brooklyn Blvd	No	705[d], 720[c], 723[d], 724[d], 764[d]	-
63rd Ave N	Yes (565 existing structured spaces)	716[d], 719[c]	-
Bass Lake Rd	Yes (166 surface lot spaces)	721[c]	-
Downtown Robbinsdale	Yes (up to 300 structured spaces)	14[d], 30[c], 32[d], 712[c], 716[d], 817[c]	-
Lowry Ave	No	14[d], 32[d]	-
Penn Ave	No	14[d], 30[c]	C Line[b]
James Ave	No	14[d]	
Lyndale Ave	No	14[d], 22[d]	-
Plymouth Ave	No	3[d], 7[d], 14[d]	
Target Field	No	14[d], 94[d], 355[d], 363[d], Northstar[b]	Green Line[b]

[a] Planned METRO route
[b] Existing METRO route
c Planned bus route
d Existing bus route

3.1.3 Environmental Consequences

Impacts are described as operating-phase, meaning long-term impacts that are projected to be relevant after the Project has opened, and construction-phase, meaning short-term impacts relevant during the construction of the Project.

3.1.3.1 Operating-Phase (Long-Term) Impacts

The Project is expected to increase the number of transit trips and passenger miles across the Twin Cities metropolitan area transit network, which is overall one of the most important benefits of the Project. Based on the methodology presented in Section 3.1.1, the forecast generates approximately 12,000–13, 700 trips in the horizon year 2045 (Table 3-4). The No-Build Alternative would not meet the future demand for reliable transit service.

In the City of Robbinsdale, service at the current Robbinsdale Transit Center (4151 Hubbard Ave N) would be relocated to the proposed Downtown Robbinsdale Station Park-and-Ride.

Table 3-4 Projected Weekday Daily Boardings by LRT Station

Station	2023 Station Boardings	2045 Station Boardings
Oak Grove Pkwy	400	400
93rd Ave	75	75
85th Ave	150	175
Brooklyn Blvd	450	550
63rd Ave	800	950
Bass Lake Rd	350	375
Downtown Robbinsdale	700	650
Lowry Ave	575	625
Penn Ave	800	850
James Ave	575	725
Lyndale Ave	175	225
W Broadway	725	800
Plymouth Ave	325	350
Target Field Station	300	550

Source: Twin Cities Regional STOPS model and forecast July 25, 2024. Ridership estimates are factored based on FTA Reporting Instructions (April 2024).

3.1.3.2 Construction-Phase (Short-Term) Impacts

This section presents construction-phase (short-term) impacts to transit conditions. Under the No-Build Alternative, no construction-phase impacts would occur. Construction of the Project would have intermittent impacts to bus operations on routes within the construction area. These impacts could include temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets where the Project is being constructed. See Table 3-3 for potentially impacted routes.

3.1.4 Avoidance, Minimization, and Mitigation

No mitigation measures are anticipated for long-term impacts to transit because no long-term adverse impacts would occur. The addition of the Project is an overall benefit. However, the Project would affect fixed-route bus service as existing transit routes would be modified to directly serve the LRT stations, including the relocation of the Robbinsdale Transit Center. The Council would follow federal and local procedures for route modifications or suspension of transit service, which would include a Title VI analysis to ensure service changes do not result in discrimination on the basis of race, color, and national origin. Due to the nature of bus service planning, it is typical to conduct a Title VI analysis in advance of major service changes. Metro Transit has codified procedures consistent with federal rules for when a Title VI analysis is triggered, how the process is conducted, and how the results are shared with the public. This work would be done at such a point as a final service plan is developed, likely 12 to 18 months before the start of operations.

As of September 2024, Metro Transit's Network Now service planning includes proposed service changes in the City of Brooklyn Park, such as a proposed new microservice (on-demand service within a defined zone) and improved east-west connecting routes. Additional service planning and route adjustments will occur prior to Project operations, and coordination around bus infrastructure will continue into final design and construction. However, ridership estimates are based on existing known and approved service changes at the time the ridership projections are performed.

Specific mitigation measures for short-term impacts to bus service would be identified in the Construction Mitigation Plan, which includes a Construction Communication Plan and Construction Staging Plan for implementation by the Council and the contractor prior to and during construction.

The purpose of the Construction Communication Plan would be to prepare Metro Transit customers, Project area residents, businesses, and commuters for what to expect during construction (including temporary stop relocations or closures, route detours, or suspensions of service on segments of routes operating on streets), listen to their concerns, and develop plans to minimize disruptive effects. Strategies could include:

- Issuing construction updates and posting them on the Project website
- Providing advance notice of roadway closures, driveway closures, and utility shutoffs
- Conducting public meetings
- Establishing a 24-hour construction hotline
- Preparing materials with information about construction
- Addressing property access issues
- Assigning staff to serve as liaisons between the public and contractors during construction
- Posting information at bus stops and regional transit centers (Robbinsdale, Brooklyn Center, and Starlite transit centers) indicating temporary stop closures and/or detour details
- Publishing information in advance of bus detours on Metro Transit's website and in its on-board information brochure

In addition, the Council would develop and implement construction phasing requirements and require the contractor to develop a Construction Staging Plan. Components of a Construction Staging Plan include traffic management plans and a detailed construction timeline. The plan would be reviewed with the appropriate jurisdictions, and the contractor would be required to secure the necessary permits and follow the Construction Staging Plan, unless otherwise approved.

3.2 Pedestrian Conditions

This section discusses facilities and travel conditions for pedestrians, or people walking and using personal mobility devices, in the study area. It describes pedestrian conditions as they exist and the expected impacts of the Build Alternative. It also describes expected changes for the No-Build Alternative.

3.2.1 Regulatory Context and Methodology

Pedestrian facilities include sidewalks, trails, crosswalks, and pedestrian bridges. Existing and planned facilities were identified from the *2040 TPP*[1] and by reviewing existing transportation plans, trail and street maps, and aerial photographs.

A Pedestrian Level of Traffic Stress (PLTS) analysis was conducted to compare differences in impacts and benefits between the No-Build and Build Alternatives. Level of Traffic Stress (LTS) is a metric developed by the Mineta Transportation Institute at San José State University to quantify the comfort level of a roadway for both pedestrians and bicycles (see Section 3.3) based on roadway design and vehicle traffic characteristics.[2] Several transportation agencies[3,4,5,6] use PLTS during the planning and design process as a cost-effective metric to determine the essential characteristics of a transportation facility. PLTS is based on the sidewalk width, sidewalk surface condition, type and width of buffer between sidewalk and roadway, prevailing speed of vehicle traffic and number of vehicle travel lanes on adjacent roadway, and general land use of the area. These characteristics serve as a proxy for pedestrian comfort, which cannot be directly measured. This analysis assumes that pedestrian comfort is a critical impact to the complete transportation environment. Given the level of design available for the Project Alignment, Council determined that the PLTS methodology would be the best measure of pedestrian comfort while the specifics of final facility designs were yet to be determined. The Oregon Department of Transportation[6] developed a PLTS methodology intended to "create a high-level walkability/connectivity rating of pedestrian facilities in a community." A similar and complementary methodology was employed in Section 3.3 to analyze bicycle facilities. The National Cooperative Highway Research Program recommends the Oregon Department of Transportation methodology to analyze quality of service on pedestrian facilities[7]. The Oregon Department of Transportation methodology was

applied to this analysis to quantify pedestrian comfort across the typical cross-sections of facilities in the Study Area between a No-Build and a Build Alternative.

PLTS is measured on a 4-point scale, where 4 is a high level of traffic stress and uncomfortable for almost all users, 3 is a moderate traffic stress and uncomfortable for most users, 2 is a low traffic stress and comfortable for most users (excluding children), and 1 is separation from all except low-speed, low-volume traffic and comfortable for almost all users (including children).[8] In an effort to use plain language, PLTS is also referred to as traffic stress in following sections.

In addition to the PLTS analysis, proposed changes to pedestrian conditions in the Build Alternative were analyzed and are documented in this section based on the engineering information available in November 2024. This includes changes in pedestrian access, roadway crossings, and removed or added pedestrian facilities. An important factor in evaluating pedestrian facilities and service is adherence to ADA requirements. Greater preference is given to alternatives that exceed ADA requirements, extending pedestrian accessibility beyond the minimum.

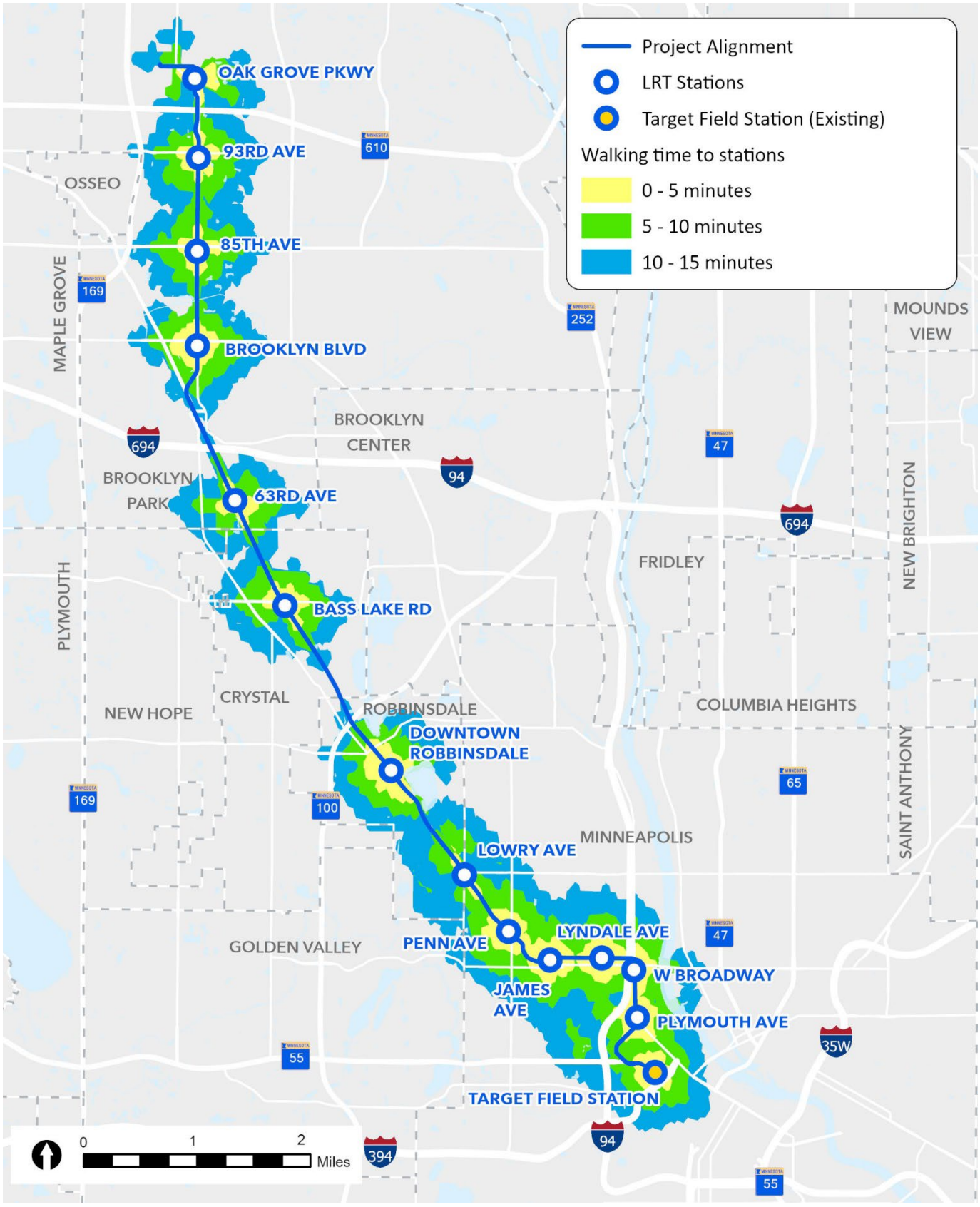
An origin-destination analysis measures the travel time and distance required to travel between theoretical trip origins, such as residential neighborhoods, and common destinations, such as commercial or institutional locations. Origin-destination analyses were completed throughout the Study Area to understand the impact on travel times for pedestrians in the Build Alternative. The walking and biking routes analyzed included grocery stores, health clinics, and parks to evaluate potential changes in travel distance and travel time caused by the Project to key community destinations.

3.2.2 Study Area and Affected Environment

The study area for impacts to pedestrian facilities is a quarter mile around the Project Alignment, plus the area that is accessible within a 10-minute walk (assuming a 3.1-mile per hour [mph] walking speed) of each LRT station area along the existing pedestrian network—also known as a 10-minute walkshed. Figure 3-3 illustrates the 10-minute walkshed along with an additional 15-minute walkshed for perspective. The Council uses the 10-minute walk distance as a typical trip length that an average able-bodied person is willing to walk to a transit station.[9] LRT stations closer to Downtown Minneapolis and other city centers along the Project Alignment generally have a larger affected environment, as a greater number of pedestrians and facilities exist in these denser urban LRT station areas. LRT stations toward the northern terminus of the Project Alignment have smaller affected environments because fewer pedestrians and facilities exist close to the suburban station areas.

The affected environment is illustrated in Figure 3-3, showing walksheds around each station area. Additionally, community amenities that generate walking trips were incorporated into the analysis and are shown in Appendix A-3. These community amenities include medical facilities, religious places of worship, food shelves, and civic buildings, as well as businesses that attendees identified as having important community and cultural value during public engagement events.

Figure 3-3 Pedestrian Study Area



3.2.3 Environmental Consequences

Impacts are described as operating-phase, meaning long-term impacts that are projected to be relevant after the Project has opened, and construction-phase, meaning short-term impacts relevant during the construction of the Project.

3.2.3.1 Operating-Phase (Long-Term) Impacts

Under the No-Build Alternative, no operating-phase impacts would occur to pedestrian facilities. The Project would provide several long-term improvements to pedestrian safety, comfort, and accessibility. LRT station platforms would be pedestrian accessible from existing sidewalks, and several LRT station designs propose to modify or add new sidewalks, plazas, and road crossings. Additionally, the Project would reconstruct sidewalks, providing improvements to surface quality and boulevards between sidewalks and vehicle travel lanes when feasible to improve comfort. The Project would also add new and modified signalized intersections to allow for safer, dedicated crossing locations.

Intersection and segment PLTS analysis is summarized for each City. Overall, the segments would experience a decrease in traffic stress or no change in the Build Alternative. Across the Project corridor, decreases in traffic stress are due to new pedestrian facilities being vertically separated from vehicle traffic, increased horizontal buffer widths between sidewalks and vehicle lanes, and the reduction in the number of vehicle lanes. Increases in travel stress are due to reduced horizontal buffer widths.

Similarly, intersections experience a decrease in traffic stress or no change in the Build condition. Across the Project corridor, decreases in traffic stress are due to traffic signals being installed, reduced corner radii, and reduction in the number of vehicle lanes being crossed by a pedestrian. Rationale for increases in traffic stress are provided in the tables for each City and are due to roadway geometry changes that obscure sightlines and downsizing or eliminating median pedestrian refuges.

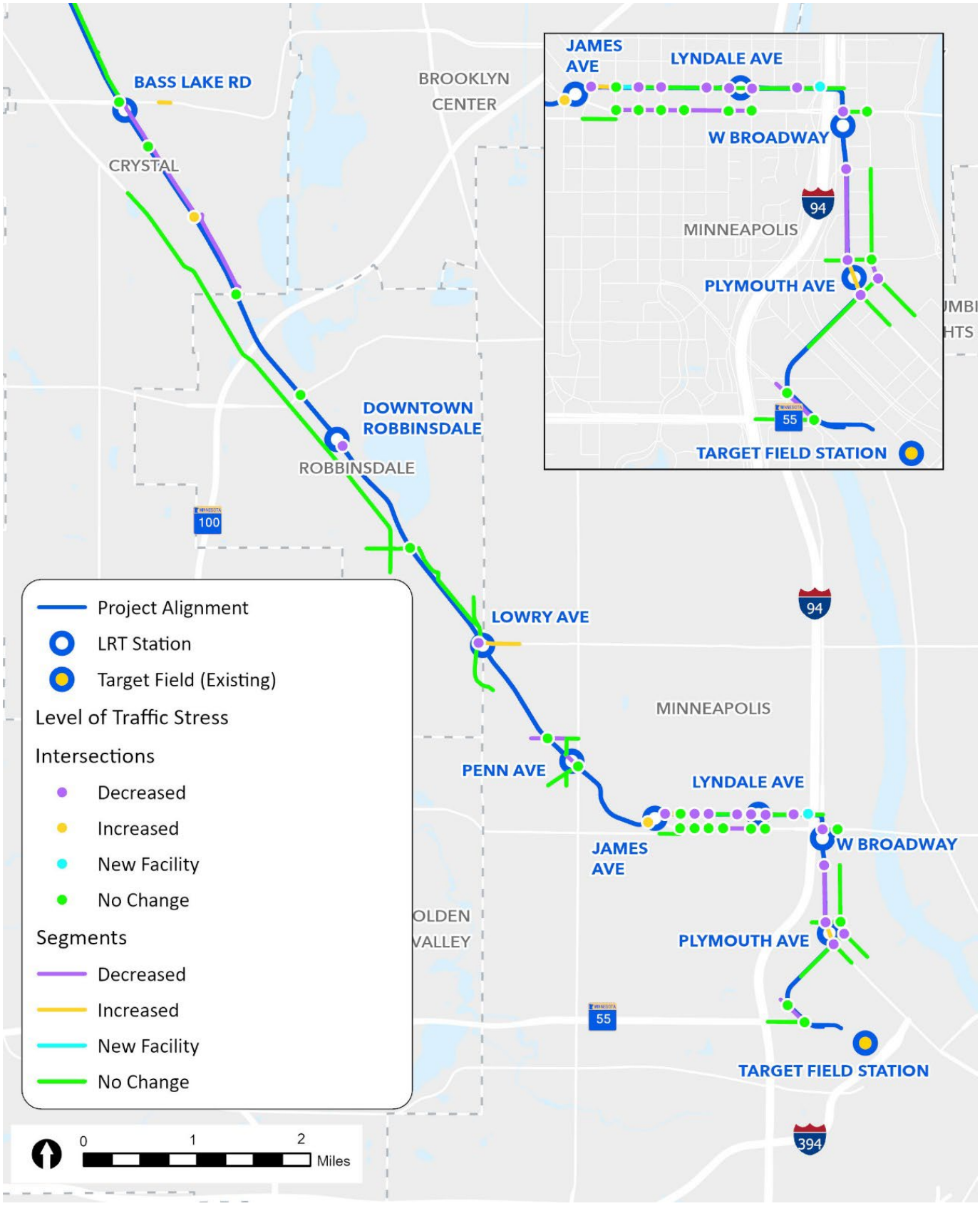
Locations where no change in traffic stress occurs are because existing conditions are not changing as part of the Project or a combination of positive or negative changes that cancel out one another.

The origin-destination analysis of walking routes shows that travel times range from less than 5 seconds to approximately 5 minutes, with the highest increases along the 10th Ave corridor due to the concentration of new signals.

Overall, the Build Alternative lowers or maintains PLTS in most locations. In six locations, PLTS is increased (more traffic stress), mainly due to reductions in median islands or to accommodate other design elements.

Figure 3-4 Pedestrian Level of Traffic Stress in the Cities of Brooklyn Park and Crystal

Figure 3-5 Pedestrian Level of Traffic Stress in the Cities of Crystal, Robbinsdale, and Minneapolis



City of Brooklyn Park

In the City of Brooklyn Park, the Project would include changes to the pedestrian environment around LRT stations and adjacent to the Project Alignment. Table 3-5 provides an overview of the changes at LRT stations. Three new pedestrian roadway crossings would be installed where no crossing currently exists.

Table 3-5 Summary of Pedestrian Service Changes at the City of Brooklyn Park LRT Stations

Station	Proposed Changes	Result
Oak Grove Pkwy	Sidewalks, multiuse paths, and a plaza to be added to the station area. Median space to be added between traffic on W Broadway Ave. Realigned Oak Grove Pkwy and new Rhode Island Dr to receive marked and signalized crossings.	Improvement
93rd Ave N	Marked and signalized crossings to be added on 93rd Ave N, 92nd Ave N, and W Broadway Ave. Curb radii to be adjusted, reducing crossing length.	Improvement
85th Ave N	Dedicated right-turn lanes eliminated at intersection of 85th Ave N and W Broadway Ave and crossing lengths reduced. Mid-block crossing to be added between 85th Ave N and Rhode Island Dr. Sidewalks added along W Broadway Ave, widened along 85th Ave N. Sidewalk connection to North Hennepin Community College.	Improvement
Brooklyn Blvd	Dedicated right-turn lanes eliminated at intersection of Brooklyn Blvd and W Broadway Ave and crossing lengths reduced. Sidewalks widened along W Broadway Ave and Brooklyn Blvd.	Improvement
63rd Ave N	Elevated pedestrian bridge between LRT station platform and 63rd Ave N park-and-ride. Traffic lanes narrowed and added advance bike/pedestrian signage at free right turns, tightening curb radii so vehicles would need to slow down when making turns.	Improvement

The results of the PLTS analysis show an improved and overall acceptable level for pedestrians for the Build Alternative. Segments such as on 63rd Ave, W Broadway Ave between 68th Ave and Bottineau Blvd, and W Broadway Ave at 71st Ave do not show a change in PLTS and may remain uncomfortable for pedestrians because these segments are not included in the Project area and/or Build Alternative. Therefore, the existing conditions were used in the analysis. A summary of the segment PLTS analysis for the City is shown in Table 3-6.

Table 3-6 Summary of PLTS Segment Analysis for the City of Brooklyn Park

Segment Name	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change	Reason for Increase
63rd Ave (Lakeland to Florida)	2	2	No Change	0	N/A
63rd Ave N (Louisiana to Bottineau)	4	4	No Change	0	N/A
W Broadway Ave (68th to Bottineau)	3	3	No Change	0	N/A
68th Ave/Lakeland Ave (Jersey Ave to 71st Ave)	3	3	No Change	0	N/A
W Broadway Ave (at 71st Ave)	4	4	No Change	0	N/A
W Broadway Ave (71st Ave to TH 610)	3	3	No Change	0	N/A
Brooklyn Blvd (Jolly Ln to Kentucky Ave)	4	3	Decreased	-1	N/A

Segment Name	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change	Reason for Increase
85th Ave (College Pkwy to Maplebrook Pkwy)	3	3	No Change	0	N/A
93rd Ave (Winnetka Ave to Louisiana Ave)	4	3	Decreased	-1	N/A
W Broadway Ave (TH 610 to Oak Grove Pkwy)	4	2	Decreased	-2	N/A
W Broadway Ave (Oak Grove Pkwy to Winnetka Ave)	4	2	Decreased	-2	N/A
Oak Grove Pkwy (Target driveway to Winnetka Ave)	3	2	No Change	-1	N/A

The results of the PLTS intersection analysis show either no change or improvements for all locations analyzed and an improved and overall acceptable PLTS for pedestrians for the Build Alternative. Most improvements are due to buffers between sidewalks and vehicle travel lanes, improved sidewalk facility conditions, and improved crossing control (e.g., signalized intersection). A summary of the intersection PLTS analysis for the City is shown in Table 3-7.

Table 3-7 Summary of PLTS Intersection Analysis for the City of Brooklyn Park

Intersection	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change	Reason for Increase
Bottineau Blvd/63rd Ave	3	3	No Change	0	N/A
Bottineau Blvd/I-94 Ramp	1	1	No Change	0	N/A
Bottineau Blvd/71st Ave	3	1	Decreased	-2	N/A
W Broadway Ave/71st Ave	2	2	No Change	0	N/A
W Broadway Ave/73rd Ave	2	2	No Change	0	N/A
W Broadway Ave/75th Ave	4	3	Decreased	-1	N/A
W Broadway Ave/76th Ave	3	1	Decreased	-2	N/A
W Broadway Ave/Brooklyn Blvd	3	1	Decreased	-2	N/A
W Broadway Ave/Candlewood Dr	2	1	Decreased	-1	N/A
W Broadway Ave/College Park Dr	4	3	Decreased	-1	N/A
W Broadway Ave/85th Ave	3	1	Decreased	-2	N/A
W Broadway Ave/Maplebrook Pkwy	4	3	Decreased	-1	N/A
W Broadway Ave/Setzler Pkwy	4	1	Decreased	-3	N/A
W Broadway Ave/93rd Ave	3	1	Decreased	-2	N/A
W Broadway Ave/94th Ave	4	2	Decreased	-2	N/A
W Broadway Ave/Oak Grove Pkwy	3	1	Decreased	-2	N/A

The origin-destination analysis between key community destinations shows no change in the distances and a change in travel time of less than 2 minutes. In most cases, the travel times increase between 30 and 40 seconds due to modified signal timings at intersections. Table 3-8 summarizes this analysis.

Table 3-8 Summary of Travel Time (Origin-Destination) Analysis for the City of Brooklyn Park

From	To	No-Build Walk Distance (miles)	Build Walk Distance (miles)	Amount of Change (miles)	Walk Change (minutes)
Lakeland Park	Striefel Park	1.6	1.6	0	1.1
7100 73rd Ave N	Panda Garden	0.8	0.8	0	1.6
7708 Kentucky Ave N	Panda Garden	0.6	0.6	0	-0.1
8100 81st Ave N	Brooklyn Park Library	1.1	1.1	0	0.4
7900 83rd Ct N	North Hennepin Community College	0.5	0.5	0	0.1

City of Crystal

In the City of Crystal, the Project would include changes to the pedestrian environment around the LRT station and adjacent to the Project Alignment. At the Bass Lake Rd Station, the introduction of an interchange would enable at-grade access to the Bass Lake Rd Station platform from either the crossing of CR 81 at the north end or a walkway under the road interchange at the south end. Park-and-ride customers would use the sidewalk and crosswalk to access the LRT station platform. The Project would realign the section of the Crystal Lake Regional Trail currently located along Bottineau Blvd near the Crystal Airport. The new alignment will connect to the Bass Lake Road Station Area along Lakeland Ave N, Colorado Ave N, and Brunswick Avenue N. The realigned facility would remain a sidewalk-level, 10-foot-wide multiuse path, but the realignment will place the trail next to local streets with lower vehicle speeds and volumes, increasing safety and comfort for pedestrians in this location.

Citywide, the Project would include reconstruction of seven existing intersections with ADA-compliant pedestrian facilities. The results of the PLTS analysis at sample locations show no change in existing pedestrian conditions. CR 81 between Bass Lake Rd and 63rd Ave N would continue to be uncomfortable for most users, while CR 81 between 47th Ave N and Corvallis Ave would remain comfortable for most users (Appendix A-3).

The results of the segment PLTS analysis show varying results. Most locations do not indicate a change in PLTS because the Project does not include changes in those locations; therefore, the existing conditions were used in both the No-Build and Build Alternatives. The Crystal Lake Regional Trail will experience improvements with the Project, resulting in a more comfortable experience for pedestrians. Along Bass Lake Rd, a new multiuse trail will connect the station area to the bike lanes east of Xenia Avenue. The trail will replace the existing sidewalk and reduce the buffer space between pedestrians and vehicle traffic, resulting in greater traffic stress. A summary of the segment PLTS analysis for the City is shown in Table 3-9.

Table 3-9 Summary of PLTS Segment Analysis for the City of Crystal

Segment Name	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change
W Broadway Ave (42nd Ave to Lakeland Ave)	1	1	No Change	0
W Broadway Ave (Lakeland Ave to Welcome Ave)	4	4	No Change	0
W Broadway Ave (Welcome Ave to 51st Ave/Soo Railroad)	3	3	No Change	0
Crystal Lake Regional Trail (47th Ave to Bass Lake Rd)	3	2	Decreased	-1
Crystal Lake Regional Trail (Bass Lake Rd to 71st Ave)	2	2	No Change	0
Bass Lake Rd (Yates Ave to Xenia Ave)	2	3	Increased	1

The results of the PLTS intersection analysis show no change or an increase in the PLTS for the locations analyzed. The increase is noted at the intersection of Bottineau Blvd and 51st Ave due to median refuge widths being reduced in the Build Alternative. A summary of the intersection PLTS analysis for the City is shown in Table 3-10.

Table 3-10 Summary of PLTS Intersection Analysis for the City of Crystal

Intersection	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change	Reason for Increase
Bottineau Blvd/47th Ave	3	3	No Change	0	N/A
Bottineau Blvd/51st Ave	2	3	Increased	1	Median refuges width reduced
Bottineau Blvd/Wilshire Blvd	3	3	No Change	0	N/A
Bottineau Blvd/Bass Lake Rd	3	3	No Change	0	N/A

The origin-destination analysis between key community destinations shows no change in the distances and a nominal change in travel time. Table 3-11 summarizes this analysis.

Table 3-11 Summary of Travel Time (Origin-Destination) Analysis for the City of Crystal

From	To	No-Build Walk Distance (miles)	Build Walk Distance (miles)	Amount of Change (miles)	Walk Change (minutes)
5700 56th Ave N	Becker Park	0.5	0.5	0	0.1

City of Robbinsdale

In the City of Robbinsdale, the Project would include changes to the pedestrian environment around LRT stations and adjacent to the Project Alignment. The Downtown Robbinsdale Station would be located north of 40th Ave N. Citywide, the Project would include reconstruction of several existing intersections with ADA-compliant pedestrian facilities. Table 3-12 provides an overview of the changes at the LRT station.

Table 3-12 Summary of Pedestrian Changes at the Downtown Robbinsdale Station

Station	Proposed Changes	Result
Downtown Robbinsdale	Mid-block crosswalk across southbound lanes of CR 81 between 40th Ave N and 39th Ave N provides access to south end of LRT station platform, which is located south of 40th Ave N.	Improvement
Lowry Ave (Serves both City of Robbinsdale and City of Minneapolis)	Multiuse paths would provide access to the station platform from 30th Ave N, Oakdale Ave N, Lowry Ave, Theodore Wirth Pkwy/Victory Memorial Dr, the Grand Rounds Trail, Xerxes Ave, Washburn Ave, and Vincent Ave. Multiuse trails and sidewalks would enhance access between the LRT station, the park, North Memorial Hospital, and the surrounding residential neighborhoods.	Improvement

The results of the segment PLTS analysis show an increase in the PLTS score at the Lowry Ave segment between W Broadway Ave and Upton Ave, and no changes along the other segments. The increase in PLTS for the Lowry Ave segment is due to the buffer width being reduced with the Build Alternative. The other segments are not included in the Build Alternative, so the existing conditions were used for both the No-Build and Build Alternatives. A summary of the segment PLTS analysis for the City is shown in Table 3-13.

Table 3-13 Summary of PLTS Segment Analysis for the City of Robbinsdale

Segment Name	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change
Lowry Ave (W Broadway Ave to Upton Ave)	1	3	Increased	2
Lakeland Ave (Grand Rounds to 35th Ave)	3	3	No Change	0
Lakeland Ave (35th Ave to Lakeview Terrace Park)	2	2	No Change	0
36th Ave N (Bottineau Blvd to France Ave)	4	4	No Change	0
36th Ave N (France Ave N to Halifax Ave)	3	3	No Change	0
France Ave N (35th Ave to 36th Ave)	2	2	No Change	0
France Ave N (36th Ave to 37th Ave)	2	2	No Change	0
W Broadway Ave (37th Ave to 42nd Ave)	1	1	No Change	0

The results of the PLTS intersection analysis show no change at the Bottineau Blvd/36th Ave and Bottineau Blvd/42nd Ave intersections, and an improvement in the LTS at the Bottineau Blvd/40th Ave intersection. The Project would remove the intersection of Lowry Ave/Theodore Wirth Pkwy, allowing pedestrians to navigate the Grand Rounds Trail system without conflict from vehicles or LRT traffic. A summary of the intersection PLTS analysis for the City is shown in Table 3-14.

Table 3-14 Summary of PLTS Intersection Analysis for the City of Robbinsdale

Intersection	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change	Reason for Increase
Lowry Ave/Theodore Wirth Pkwy	2	N/A	Decreased	N/A	Removal of intersection reduces traffic stress
Bottineau Blvd/36th Ave	3	3	No Change	0	N/A
Bottineau Blvd/40th Ave	2	1	Decreased	-1	N/A
Bottineau Blvd/42nd Ave	1	1	No Change	0	N/A

The origin-destination analysis between key community destinations shows no change in the distances and a nominal change in travel time. Table 3-15 summarizes this analysis.

Table 3-15 Summary of Travel Time (Origin-Destination) Analysis for the City of Robbinsdale

From	To	No-Build Walk Distance (miles)	Build Walk Distance (miles)	Amount of Change (miles)	Walk Change (minutes)
4300 46th Ave N	Clear Lakes Dental	1.05	1.05	0	0.0
5200 Scott Trail	Lakeview Terrace Park	1.6	1.6	0	0.2
4000 Shoreline Dr	Northside Asian Market & Deli	1.1	1.1	0	0.0

City of Minneapolis

The results of the PLTS analysis at sample locations in the City of Minneapolis show improvements compared to existing conditions, with a few exceptions. The multiuse trails along Theodore Wirth Pkwy and Victory Memorial Dr would be realigned to connect to the Lowry Ave Station, providing direct access to a park facility from the Project. The intersection of Lowry Ave with Theodore Wirth Pkwy would be removed, allowing pedestrians to navigate the Grand Rounds Trail system without conflict from vehicles or LRT traffic. The addition of multiple mid-block crossings of W Broadway Ave at Thomas Ave N and Ilion Ave N, a new bridge crossing of N 21st Ave over I-94 that includes pedestrian accommodation, a transit mall on 10th Ave N, and widened sidewalks on 7th St N contribute to improving pedestrian comfort, safety, and access. An additional connection on 9th Ave N between 5th St N and 4th St N would also provide pedestrian accommodations under I-94 between the Plymouth Ave and Target Field Stations. Minor improvements on W Broadway Ave west of Logan Ave N and Washington Ave N between W Broadway Ave and Plymouth Ave would include sidewalk upgrades and ADA ramps to provide more comfortable facilities. Table 3-16 provides a summary of pedestrian service changes at each LRT station in the City of Minneapolis.

Table 3-16 Summary of Pedestrian Service Changes at the City of Minneapolis LRT Stations

Station	Proposed Changes	Result
Lowry Ave (serves both City of Minneapolis and City of Robbinsdale)	Multiuse paths would provide access to the station platform from 30th Ave N, Oakdale Ave N, Lowry Ave, Theodore Wirth Pkwy/Victory Memorial Dr, the Grand Rounds Trail, Xerxes Ave, Washburn Ave, and Vincent Ave. Multiuse trails and sidewalks would enhance access between the LRT station, the park, North Memorial Hospital, and the surrounding residential neighborhoods.	Improvement
Penn Ave	Free right-turn lane eliminated at N 26th Ave. Controlled crosswalk at Queen Ave provides access to the north end of LRT station platform. McNair Ave eliminated from W Broadway Ave/Penn Ave intersection; includes sidewalk access to the LRT station platform. Mid-block crossings provided at Thomas Ave and Ilion Ave.	Improvement
W Broadway	Two-stage crossing of Washington Ave on the north and south approaches; reduced the number of lanes to cross on the north and south legs; reduced lanes to cross on the west leg (from 6 to 5); and a new crosswalk on the north leg of Washington and 17th Ave N.	Improvement
James Ave	New sidewalk along south side of LRT station connecting to Irving Ave N and James Ave N, with new traffic signals. Mid-block crossing provided at Knox Ave. New signals at Irving Ave and Hillside Ave, N 21st Ave at Girard Ave N, N 21st Ave at Fremont Ave N, and N 21st Ave and Emerson Ave N. Improved sidewalk facilities provided to ensure connectivity and comfort improvements.	Improvement

Station	Proposed Changes	Result
Lyndale Ave	New traffic signals at N 21st Ave at Bryant Ave N, N 21st Ave at Aldrich Ave N, and N 21st Ave at Lyndale Ave N. Crossing of N 21st Ave at Dupont Ave N eliminated; includes sidewalk access to the LRT station platform and improved sidewalk facilities to ensure connectivity and comfort. Controlled signalized intersections improve the safety and level of comfort for pedestrians along the Project corridor.	Improvement
Plymouth Ave	Crossing of Washington Ave N to access the LRT station at Plymouth Ave N and 10th Ave N. New traffic signals at 10th Ave N at 3rd St N, 10th Ave N at 4th St N, 10th Ave N/Oak Lake Ave at 8th Ave N. Additional sidewalk connection on both sides of new 9th Ave N connection between 4th St N and 5th St N. New street connection on the north approach of 10th Ave N and 3rd St N intersection will connect with new street realignment through the Twin Cities International School campus (3rd St N to 12th Ave N extension route). Sidewalk amenities are planned to be on both sides of this extension route between 3rd St N and 12th Ave N. Additionally, 12th Ave N and 3rd St N will be reconstructed between Washington Ave and I-94 and will include sidewalk facilities and ADA-compliant curb ramps on both sides of the streets. The proposed 10th Ave N extension between Washington Ave N and 2nd St N will include sidewalk facilities on both sides of the roadway.	Improvement
Target Field Station	None. Connecting to existing LRT station.	Neutral change

Most segments do not yield a change in PLTS or improve the PLTS, with some segments experiencing an increase in LTS along Washington Ave N (between 10th Ave N and Plymouth Ave) and along N 21st Ave (between Girard Ave and Irving Ave). The segment along Washington Ave N between 8th Ave N and 10th Ave N scored a favorable PLTS 1 score due to the significant street furniture (benches, etc.) that exists and would be retained. Segments that experienced no change are mostly due to the changes as part of the Build Alternative; therefore, the existing conditions were applied for the No-Build and Build Alternatives analysis. A summary of the segment PLTS analysis for the City is shown in Table 3-17.

Table 3-17 shows PLTS reductions to N 7th St and W Broadway Avenue. These are the result of roadway design improvements intended to increase pedestrian safety along two roadways that are included in the City of Minneapolis Vision Zero High Injury Streets Network. These improvements advance the City of Minneapolis' goal to reduce traffic-related fatalities and serious injuries.

Table 3-17 Summary of PLTS Segment Analysis for the City of Minneapolis

Segment Name	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change
N 7th St (Olson Memorial Hwy to Oak Lake Ave)	4	3	Decreased	-1
Olson Memorial Hwy (7th St to I-94)	4	4	No Change	0
10th Ave N	2	2	No Change	0
Washington Ave N (8th Ave to 10th Ave)	1	1	No Change	0
Washington Ave N (10th Ave to Plymouth Ave)	1	2	Increased	1
Washington Ave N (Plymouth Ave to 17th Ave)	3	2	Decreased	-1
2nd St N (8th Ave to 10th Ave)	1	1	No Change	0
2nd St N (10th Ave to Plymouth Ave)	4	2	Decreased	-2
2nd St N (Plymouth to 17th)	2	2	No Change	0
Plymouth Ave (2nd St to 3rd St)	2	2	No Change	0
W Broadway Ave (2nd St to Washington Ave)	4	4	No Change	0
W Broadway Ave (Lyndale Ave to Fremont Ave)	3	2	Decreased	-1
W Broadway Ave (Fremont Ave to Girard Ave)	3	2	Decreased	-1
Golden Valley Rd (Girard Ave to Irving Ave)	2	2	No Change	0
N 21st Ave (Washington Ave to 4th St)	3	3	No Change	0
N 21st Ave (4th St to Fremont Ave)	2	2	No Change	0
N 21st Ave (Fremont Ave to Girard Ave)	N/A	2	New Facility	N/A
N 21st Ave (Girard Ave to Irving Ave)	1	2	Increase	1
Queen Ave N (N 21st Ave to 23rd Ave)	1	1	No Change	0
McNair Ave N (23rd Ave to W Broadway Ave)	2	2	No Change	0
W Broadway Ave (Penn Ave to Queen Ave)	4	2	Decreased	-2
Queen Ave (W Broadway Ave to 26th Ave)	3	3	No Change	0
26th Ave N (Penn Ave to Queen Ave)	1	1	No Change	0
26th Ave N (Queen Ave to W Broadway Ave)	2	1	Decreased	-1
26th Ave N (W Broadway Ave to Thomas Ave)	2	1	Decreased	-1
Grand Rounds Trail	1	1	No Change	0
Theodore Wirth Pkwy (Parkview to Lowry Ave)	1	1	No Change	0
Victory Memorial Dr (Lowry Ave to 34th Ave)	1	1	No Change	0
Lowry Ave (W Broadway Ave to Upton Ave)	1	3	Increased	2

The results of the PLTS intersection analysis show an increase in LTS at the Oak Lake Ave/7th St intersection and W Broadway Ave/James Ave intersection. All other intersections experienced either no change or an improvement to the LTS score. A summary of the intersection PLTS analysis and reasoning for the increased LTS for the City is shown in Table 3-18.

Table 3-18 Summary of PLTS Intersection Analysis for the City of Minneapolis

Intersection	No-Build PLTS	Build PLTS	Increased, Decreased, or No Change?	Amount of Change	Reason for Increase
6th Ave/7th St/Olson Memorial Hwy	3	3	No Change	0	N/A
Oak Lake Ave/7th St	2	2	No Change	0	N/A
10th Ave/Washington Ave N	2	1	Decreased	-1	N/A
10th Ave/2nd St	3	2	Decreased	-1	N/A
Plymouth Ave/Washington Ave N	2	1	Decreased	-1	N/A
Plymouth Ave/2nd St	2	2	No Change	0	N/A
Washington Ave N/17th Ave	2	1	Decreased	-1	N/A
W Broadway Ave/2nd St	3	3	No Change	0	N/A
Washington Ave N/W Broadway Ave	2	1	Decreased	-1	N/A
W Broadway Ave/Lyndale Ave	2	2	No Change	0	N/A
W Broadway Ave/Aldrich Ave	2	2	No Change	0	N/A
W Broadway Ave/Dupont Ave	2	2	No Change	0	N/A
W Broadway Ave/Emerson Ave	2	2	No Change	0	N/A
W Broadway Ave/Fremont Ave	2	2	No Change	0	N/A
W Broadway Ave/Girard Ave	2	2	No Change	0	N/A
W Broadway Ave/James Ave	2	1	Decreased	-1	N/A
N 21st Ave/4th St	3	1	Decreased	-2	N/A
N 21st Ave/I-94 Ramp	N/A	1	New Facility	N/A	N/A
N 21st Ave/Lyndale Ave	3	1	Decreased	-2	N/A
N 21st Ave/Aldrich Ave	3	1	Decreased	-2	N/A
N 21st Ave/Bryant Ave	3	1	Decreased	-2	N/A
N 21st Ave/Emerson Ave	3	1	Decreased	-2	N/A
N 21st Ave/Fremont Ave	3	1	Decreased	-2	N/A
N 21st Ave/Girard Ave	1	1	No Change	0	N/A
N 21st Ave/Irving Ave	3	1	Decreased	-2	N/A
Penn Ave/W Broadway Ave	3	3	No Change	0	N/A
W Broadway Ave/26th Ave	3	3	No Change	0	N/A
Lowry Ave/Theodore Wirth Pkwy	2	N/A	Decreased	N/A	Removal of intersection decreases traffic stress

The origin-destination analysis between key community destinations shows either no change or a reduction in the distances and varying travel time changes between 0 and 6 minutes. The Project increases the travel time on Oak Lake Avenue, between 7th Street and 8th Street, due to the elimination of the roadway and sidewalks on Oak Lake Avenue. Additionally, the Project introduces a concentration of new signals along Oak Lake Ave and 10th Ave, which contributes to the increase in pedestrian travel time compared to the existing conditions. However, signals do enhance safety by providing controlled crossings that reduce the risk of crashes, manage vehicular and pedestrian flow, and improve visibility. Table 3-19 summarizes this analysis.

Table 3-19 Summary of Travel Time (Origin-Destination) Analysis for the City of Minneapolis

From	To	No-Build Walk Distance (miles)	Build Walk Distance (miles)	Amount of Change (miles)	Walk Change (minutes)
1000 N Aldrich Ave	North Loop Clinic and Pharmacy	1.1	1	-0.1	0.3
729 N 3rd St	Farmer's market	0.8	0.9	0.1	4.6
Boom Island Park	Sharing and Caring Hands	1.5	1.6	0.1	6.4
500 N 2nd St	Douglas Chapel	0.9	0.9	0	1.9
2700 N Colfax Ave	Cub Pharmacy	0.8	0.8	0	0.8
North Commons Park	Jerry Gamble Boys and Girls Club	0.6	0.6	0	0.7
3100 N Lyndale Ave	Hall Park	1.3	1.3	0	0.7
Nellie Stone Johnson School	Harold Mezile YMCA	1.2	1.2	0	0.7
1900 24th Ave	Harold Mezile YMCA	0.6	0.6	0	0.0
1700 N 25th Ave	North Memorial Hospital	1.4	1.4	0	1.2
3500 Xerxes Ave N	Valley View Park	1.1	1.1	0	0.0
3500 Halifax Ave N	Parkway United Church of Christ	1.3	1.3	0	0.0

3.2.3.2 Construction-Phase (Short-Term) Impacts

The Project would involve some temporary sidewalk and trail closures with detours throughout the Project area during construction. The No-Build Alternative would have no short-term impacts.

3.2.4 Avoidance, Minimization, and Mitigation

No long-term mitigation is anticipated because the Project is expected to be overall neutral or improve pedestrian access and comfort compared to existing conditions and the No-Build Alternative. Pedestrian conditions have continued to be studied and refined as design progresses. Currently there are 153 pedestrian crossings along the Project Alignment, and 93 of these are unmarked crossings. The Project would reduce the number of opportunities to cross the Project Alignment from 153 to 124 but would add ten new crossings and convert the preserved crossing locations to be safer and more comfortable.

During short-term closures of sidewalks or trails (typically 3 to 5 days), detour routes with accessible accommodations would be provided to the extent feasible. When longer-term closures of sidewalks or trails are required, detours and other short-term mitigation measures would be applied. Specific mitigation measures for short-term impacts to facilities would be identified in a Construction Mitigation Plan, which includes a Construction Communication Plan and Construction Staging Plan for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare Project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize disruptive effects. Strategies include:

- Issuing and distributing regular construction updates
- Providing advance notice of roadway closures, driveway closures, and utility shutoffs
- Conducting public meetings
- Establishing a 24-hour construction hotline
- Preparing materials with information about construction
- Addressing property access issues
- Assigning staff to serve as liaisons between the public and contractors during construction

3.3 Bicycle Conditions

This section discusses facilities and travel conditions for bicyclists in the study area. It describes existing bicycle conditions and the expected impacts of the Project. It also describes expected changes for the No-Build Alternative.

3.3.1 Regulatory Context and Methodology

Bicycle facilities include trails, on-street and off-street bike lanes, and shared traffic streets. Facilities were identified from the *2040 TPP*[10] and by reviewing existing transportation plans, trail and street maps, and aerial photographs.

A Bicycle Level of Traffic Stress (BLTS) analysis was conducted to compare differences in impacts and benefits of the Project. BLTS is a metric developed by the Mineta Transportation Institute at San José State University to quantify the comfort level of a roadway for bicyclists based on roadway design and vehicle traffic characteristics.[2] Methodology guides published by the Oregon Department of Transportation[6] and the City of Ottawa, Ontario[11] were applied to this analysis as a high-level way to quantify the comfort level of a roadway for bicyclists. A similar and complementary methodology was employed in Section 3.2 to analyze pedestrian facilities. BLTS is based on the bike facility width, width of buffer between bicycle and vehicle traffic, vehicle traffic volumes, prevailing speed of automobiles, lane geometry and corner radius of intersections, and whether bicycles must mix with vehicle traffic.

BLTS is measured on a 4-point scale, where 4 is a high level of traffic stress and uncomfortable for almost all users, 3 is a moderate traffic stress and uncomfortable for most users, 2 is a low traffic stress and comfortable for most users (excluding children), and 1 is separation from all except low-speed, low-volume traffic and comfortable for almost all users (including children).[8] In an effort to use plain language, BLTS is sometimes referred to as traffic stress in following sections.

Segments described in this document as “comfortable” are graded 1 or 2 and generally suitable for most adult cyclists and some children, while segments described as “uncomfortable” are graded 3 or 4 and would be avoided by most adult cyclists. Proposed changes to bicycling access, roadway crossings, and removed or added bicycle facilities were also evaluated.

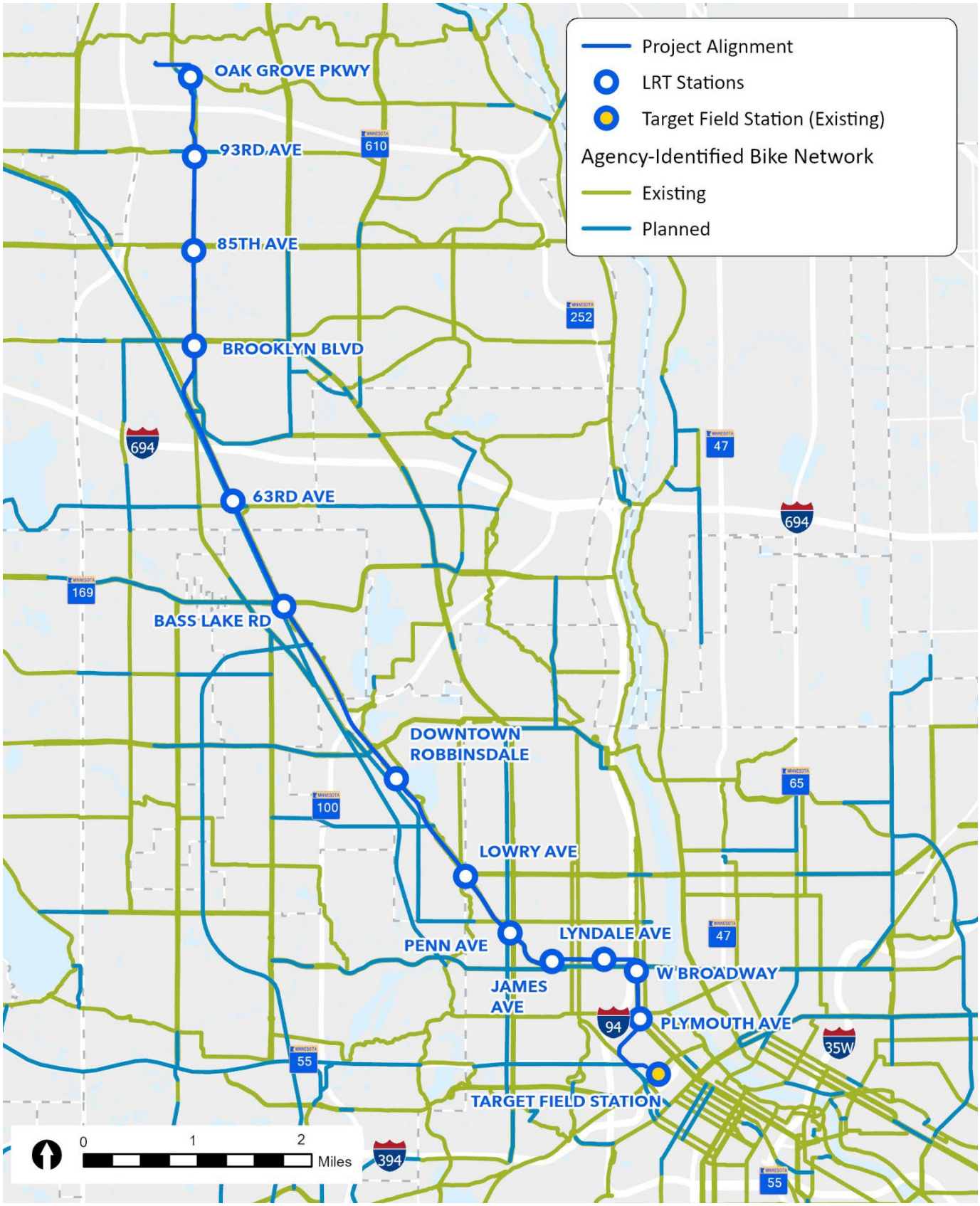
Roadway and bikeway segments identified in the *2040 TPP* in the study area were selected for BLTS analysis. New facility designs used to calculate BLTS are presented in Appendix A-E.

To capture the effect of the Project on bicycle trips crossing the corridor, signalized intersections on the same segments were also analyzed for BLTS. In addition, an origin-destination analysis was conducted for bicycling trips that would cross the Project corridor. The analysis of walking and biking routes included grocery stores, health clinics, and parks to evaluate potential changes in travel distance and travel time caused by the Project to key community destinations.

3.3.2 Study Area and Affected Environment

The study area for bicycling impacts is one-half mile surrounding the station areas and one-quarter mile on either side of the Project Alignment. Figure 3-6 depicts the bicycle network in the study area. LRT stations closer to Downtown Minneapolis and other city centers along the Project Alignment generally have a greater number of cycling facilities in these denser urban LRT station areas. LRT stations toward the northern terminus of the Project generally have fewer cycling facilities near the suburban LRT station areas.

Figure 3-6 Bicycle Network in the Project Area



3.3.3 Environmental Consequences

Impacts are described as operating-phase, meaning long-term impacts that are projected to be relevant after the Project has opened, and construction-phase, meaning short-term impacts relevant during the construction of the Project.

3.3.3.1 Operating-Phase (Long-Term) Impacts

Under a No-Build Alternative, no operating-phase impacts would occur to bicycle facilities. The Build Alternative would provide several long-term improvements to cyclist safety, comfort, and accessibility. Several LRT station areas and street corridors along the Project Alignment would be reconstructed to include new bicycle facilities for all ages and abilities. Bicycle parking would be added at all LRT stations in accordance with Metro Transit station design criteria. LRT vehicles would accommodate customers bringing bicycles into the train car, allowing bicyclists to link trips between bicycling and transit modes.

The Project would intersect existing and planned future designated low-stress bikeways in the study area, and bicycle access would be maintained at all existing locations, though some surface and routing modifications would be required. A permanent route modification will occur to the Crystal Lake Regional Trail near the Bass Lake Road Station. The trail will be realigned from its current location on the east side of Bottineau Blvd between Bass Lake Rd and Lakeland Ave. The new alignment will put the trail at sidewalk-grade along Brunswick Ave until it resumes its current alignment on Lakeland Ave. The new alignment places users next to local streets with lower vehicle speeds and volumes, resulting in a less stressful experience for bicyclists. This realignment is to accommodate the interchange at Bass Lake Rd and Bottineau Blvd.

The Project would also be compatible with planned bicycle routes in the study area or would provide reasonable alternatives parallel to the planned routes. Planned facilities that will be partially constructed by the Project are listed in Table 3-20.

Table 3-20 Planned Bike Facilities to be Partially Constructed by the Project

Route Segment	Facility	City
93rd Ave N	Multiuse trails	Brooklyn Park
Brooklyn Blvd	Multiuse trails	Brooklyn Park
W Broadway Ave (CR 130)	Multiuse trails	Brooklyn Park
63rd Ave N	Multiuse trail	Brooklyn Park
42nd Ave N	Multiuse trail	Robbinsdale
Queen Ave bike boulevard	Sidewalk-level cycle track	Minneapolis
Northside Greenway (James Ave N and Irving Ave N)	Sidewalk-level cycle track	Minneapolis
N 21st Ave (in lieu of W Broadway Ave)	Sidewalk-level cycle track	Minneapolis
10th Ave N	Sidewalk-level cycle track	Minneapolis
5th St N	Sidewalk-level cycle tracks	Minneapolis

The analysis of biking routes included grocery stores, health clinics, and parks to evaluate potential changes in travel distance and travel time caused by the Project to key community destinations. The analysis found minor changes to travel distance due to restrictions of crossing the LRT tracks, with differences of less than one-tenth mile.

The Project would add new signals and crossing restrictions to safely accommodate LRT operations. Signals enhance safety by providing controlled crossings that reduce the risk of accidents, manage vehicular and pedestrian flow along the Project corridor, improve pedestrian visibility, and reduce conflict points between travel modes, making the conditions safer and more comfortable. Signals would increase the travel times for walking and biking due to the wait required for crossing at the signals.

Travel time increases range from less than 5 seconds to approximately 5 minutes, with the highest increases along the 10th Ave corridor due to the concentration of new signals. As the Project design progresses, the timings of signals will be considered in order to balance travel times across modes.

All segments would either retain the same level of BLTS or would be improved with Project implementation (see Figure 3-7 and Figure 3-8). Segments along N 21st Ave, 10th Ave N, and N 7th St in the City of Minneapolis show the greatest improvements in BLTS results.

Figure 3-7 Bicycle Level of Traffic Stress in the Cities of Brooklyn Park and Crystal

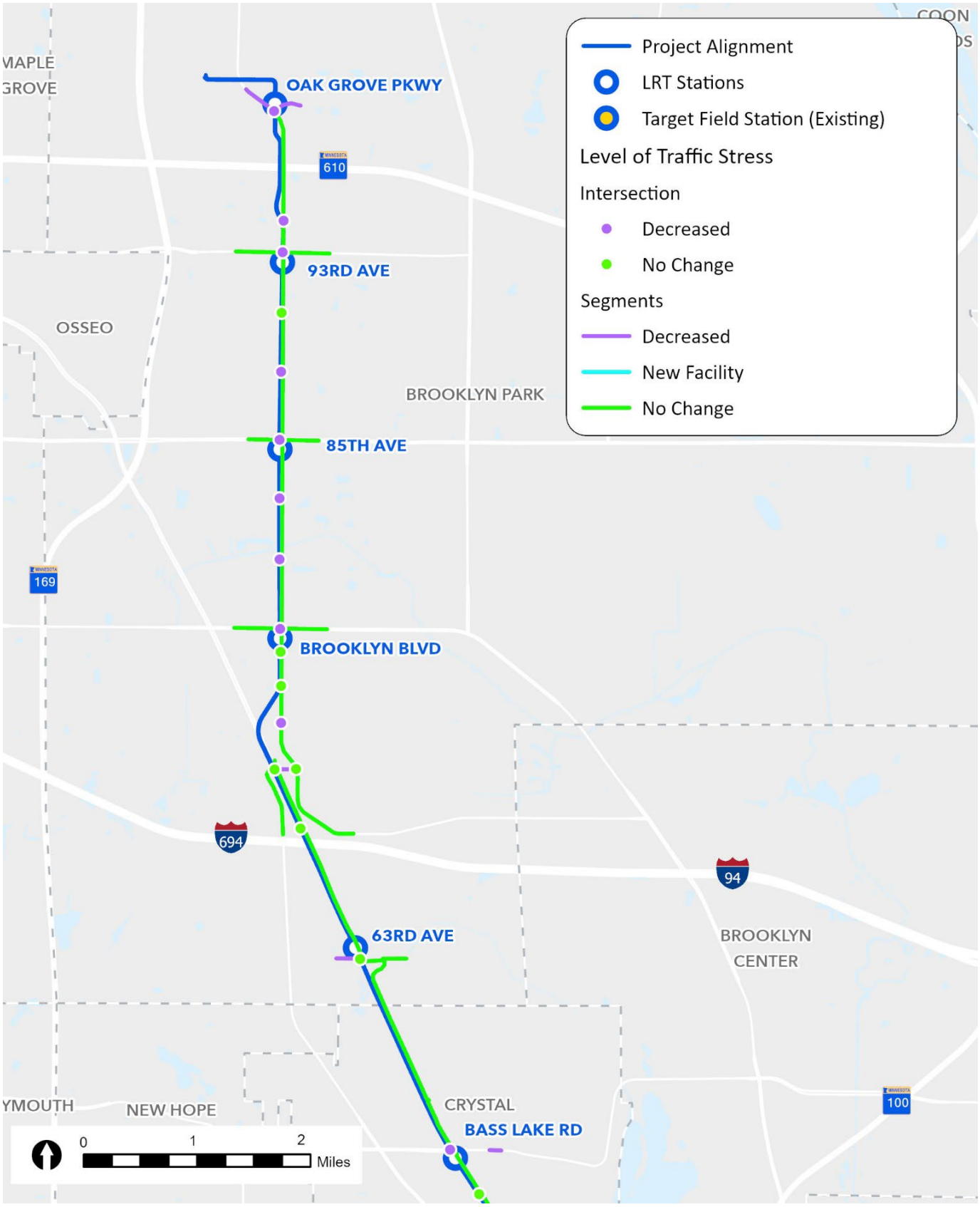
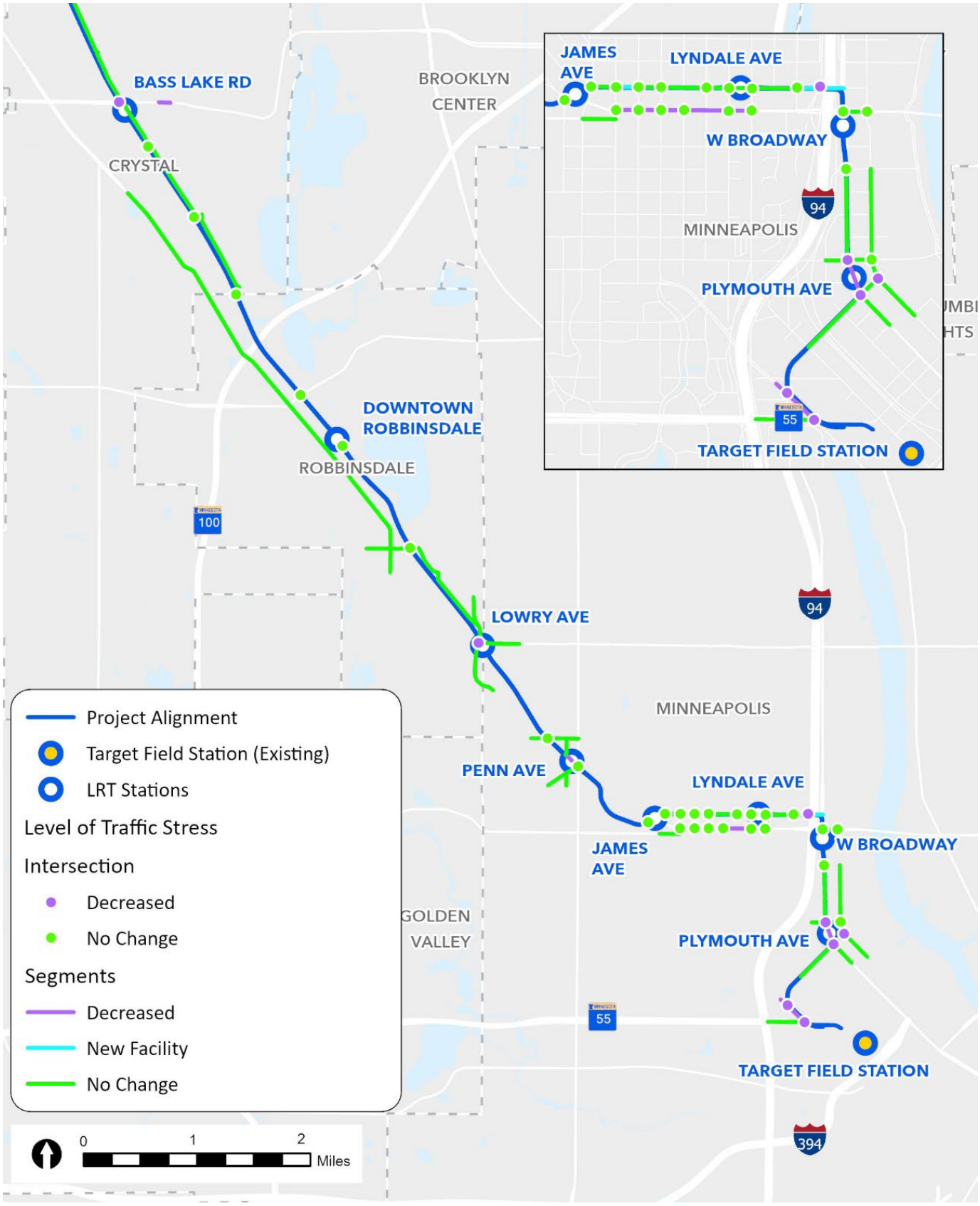


Figure 3-8 Bicycle Level of Traffic Stress in the Cities of Crystal, Robbinsdale, and Minneapolis



City of Brooklyn Park

Table 3-21 shows the change in BLTS along segments in the City of Brooklyn Park. All locations experience a decrease in traffic stress or no change under the Build Alternative. Decreases in traffic stress are due to new bicycle sidewalk-level facilities being vertically separated from vehicle traffic, increased horizontal buffer widths between bike lanes and vehicle lanes, and the reduction in the number of vehicle lanes being crossed. Locations where no change in traffic stress occurs may be due to either few modifications as a result of the Project or a combination of positive and negative changes that cancel out one another.

Table 3-21 Summary of BLTS Segment Analysis in the City of Brooklyn Park

Segment	No-Build BLTS	Build BLTS	Change as result of Project	Description
Oak Grove Pkwy	1	1	No change in stress level	Comfortable for most users
W Broadway Ave (Oak Grove Pkwy to Winnetka Ave N)	2	2	No change in stress level	Comfortable for most users, except children
W Broadway Ave (Oak Grove Pkwy to TH 610)	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave (TH 610 to 71st Ave N)	4	1	Decreased stress level	Comfortable for most users
93rd Ave (Winnetka Ave N to Louisiana Ave N)	4	1	Decreased stress level	Comfortable for most users
85th Ave (College Pkwy to Maplebrook Pkwy N)	4	1	Decreased stress level	Comfortable for most users
Brooklyn Blvd (Jolly Ln N to Kentucky Ave N)	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave (Bottineau Blvd to Lakeland Ave N)	1	1	No change in stress level	Comfortable for most users
68th Ave N/Lakeland Ave N (Jersey Ave N to 71st Ave N)	3	3	No change in stress level	Uncomfortable for many users
Crystal Lake Regional Trail (71st to 62nd Ave N)	1	1	No change in stress level	Comfortable for most users
W Broadway Ave (Bottineau Blvd to 68th Ave N)	3	3	No change in stress level	Uncomfortable for many users
63rd Ave N (Louisiana Ave N to Bottineau Blvd)	1	1	No change in stress level	Comfortable for most users
63rd Ave N (Lakeland Ave N to Florida Ave N)	1	1	No change in stress level	Comfortable for most users

Table 3-22 shows the change in BLTS at intersections in the City of Brooklyn Park. All locations experience a decrease in traffic stress or no change under the Build Alternative. Decreases in traffic stress are due to new sidewalk-level bicycle facilities being vertically separated from vehicle traffic, traffic signals being installed, reduced corner radii at intersections, and the reduction in the number of vehicle lanes being crossed. Locations where no change in traffic stress occurs may be due to either few modifications as a result of the Project or a combination of positive and negative changes that cancel out one another.

Table 3-22 Summary of BLTS Intersection Analysis in the City of Brooklyn Park

Intersection	No-Build BLTS	Build BLTS	Change as result of Project	Description
W Broadway Ave/Oak Grove Pkwy	3	1	Decreased stress level	Comfortable for most users
W Broadway Ave/94th Ave N	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave/93rd Ave N	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave/Setzler Pkwy	4	4	No change in stress level	Uncomfortable for most users
W Broadway Ave/Maplebrook Pkwy N	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave/85th Ave N	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave/N College Park Dr	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave/Brooklyn Blvd	4	1	Decreased stress level	Comfortable for most users
W Broadway Ave/76th Ave N	4	4	No change in stress level	Uncomfortable for most users
W Broadway Ave/75th Ave N	4	4	No change in stress level	Uncomfortable for most users
W Broadway Ave/73rd Ave N	4	2	Decreased stress level	Comfortable for most users, except children
W Broadway Ave/71st Ave N	4	4	No change in stress level	Uncomfortable for most users
Bottineau Blvd/71st Ave N	4	4	No change in stress level	Uncomfortable for most users
Bottineau Blvd/I-94 Ramp	1	1	No change in stress level	Comfortable for most users
Bottineau Blvd/63rd Ave N	1	1	No change in stress level	Comfortable for most users

The origin-destination analysis between key community destinations shows no change in the distances and a change in travel time of less than 2 minutes. In most cases, the travel times increase between 30 and 60 seconds. Table 3-23 summarizes this analysis.

Table 3-23 Summary of Travel Time (Origin-Destination) Analysis for the City of Brooklyn Park

Origin	Destination	Distance Change (miles)	Total Time Change (minutes)	Reason for Change
Lakeland Park	Striefel Park	0	1.1	Modified signal phase timing
7416 Brunswick Ave N	Panda Garden	0	-0.1	Modified signal phase timing
8100 81st Ave N	Brooklyn Park Library	0	0.6	Modified signal phase timing
501 Central Ave	North Hennepin Community College	0	0.5	Bike trail on W Broadway Ave; Modified signal phase timing
6615 83rd Ct N	Walmart (CSAH 81)	0	0.9	Modified signal phase timing

Table 3-24 presents a summary of bicycle service changes by LRT station in the City of Brooklyn Park.

Table 3-24 Summary of Bicycle Service Changes in the City of Brooklyn Park Station Areas

Station	Proposed Changes	Result
Oak Grove Pkwy	Multiuse paths and plaza to be added to the station area. W Broadway Ave to be realigned. Realigned Oak Grove Pkwy (with existing bike facility) and new Rhode Island Dr to receive marked and signaled crossings. Multiuse trail installed along reconstructed W Broadway Ave.	Improvement to safety and connectivity
93rd Ave N	Crossing lengths reduced. Multiuse trail installed along 93rd Ave N. Multiuse trail installed along W Broadway Ave.	Improvement to safety and connectivity
85th Ave N	Vehicle channelized right-turn lanes eliminated at intersection of 85th Ave N (existing bike facility) and W Broadway Ave; crossing lengths reduced. Multiuse trail installed along W Broadway Ave.	Improvement to safety and connectivity
Brooklyn Blvd	Conflict with vehicle channelized right-turn lanes eliminated at intersection of Brooklyn Blvd and W Broadway Ave. Multiuse trail installed along Brooklyn Blvd. Multiuse trail installed along W Broadway Ave.	Improvement to safety and connectivity
63rd Ave N	Traffic lanes narrowed and added advance bike/pedestrian signage at free right turns, tightening curb radii so vehicles would need to slow down when making turns.	Improvement to safety

City of Crystal

Table 3-25 shows the change in BLTS along segments in the City of Crystal. All locations experience no change in traffic stress under the Build Alternative; this may be due to either few modifications as a result of the Project or a combination of positive and negative changes that cancel out one another.

Table 3-25 Summary of BLTS Segment Analysis for the City of Crystal

Segment	No-Build BLTS	Build BLTS	Change as result of Project	Description
Crystal Lake Regional Trail (62nd Ave N to 47th Ave N)	1	1	No change in stress level	Comfortable for most users
Bass Lake Rd (Yates Ave N to Xenia Ave N)	3	3	No change in stress level	Uncomfortable for many users
W Broadway Ave (51st Ave N to Welcome Ave N)	3	3	No change in stress level	Uncomfortable for many users
W Broadway Ave (Welcome Ave N to Lakeland Ave N)	3	3	No change in stress level	Uncomfortable for many users

Table 3-26 shows the change in BLTS at intersections in the City of Crystal. All locations experience a decrease in traffic stress or no change under the Build Alternative. Decreases in traffic stress are due to new sidewalk-level bicycle facilities being vertically separated from vehicle traffic, traffic signals being installed, reduced corner radii at intersections, and the reduction in the number of vehicle lanes being crossed. Locations where no change in traffic stress occurs may be due to either few modifications as a result of the Project or a combination of positive and negative changes that cancel one another.

Table 3-26 Summary of BLTS Intersection Analysis for the City of Crystal

Intersection	No-Build BLTS	Build BLTS	Change as result of Project	Description
Bottineau Blvd/Bass Lake Rd	4	1	Decrease in stress level	Comfortable for most users
Bottineau Blvd/Wilshire Blvd	4	4	No change in stress level	Uncomfortable for most users
Bottineau Blvd/51st Ave N	4	4	No change in stress level	Uncomfortable for most users
Bottineau Blvd/47th Ave N	1	1	No change in stress level	Comfortable for most users

The origin-destination analysis between key community destinations shows no change in the distance and a change in travel time of less than 30 seconds. Table 3-27 summarizes this analysis.

Table 3-27. Summary of Travel Time (Origin-Destination) Analysis for the City of Crystal

Origin	Destination	Distance Change (miles)	Total Time Change (minutes)	Reason for Change
5700 56th Ave N	Becker Park	0	0.4	Modified signal phase timing

At the Bass Lake Rd Station, a multiuse trail would be added between Bass Lake Rd and Yates Ave N, resulting in an improvement to bicycle comfort and safety with the Project. Grade separation with an interchange at Bass Lake Rd and CR 81 would reduce conflicts for bicyclists crossing CR 81 and accessing the LRT station. The Crystal Lake Regional Trail would be realigned from its current location on the east side of Bottineau Blvd between Bass Lake Rd and Lakeland Ave. The new route would put the trail at sidewalk-grade along Lakeland Ave N, Colorado Ave N, and Brunswick Ave N. This rerouting is to accommodate the interchange at Bass Lake Rd and Bottineau Blvd. The new trail routing places the facility along local streets with lower vehicle speeds and volumes in this location, increasing comfort for people biking.

City of Robbinsdale

Table 3-28 shows the change in BLTS along segments in the City of Robbinsdale. All locations experience no change in stress level under the Build Alternative; this may be due to either few modifications as a result of the Project or a combination of positive and negative changes that cancel out one another.

Table 3-28 Summary of BLTS Segment Analysis for the City of Robbinsdale

Segment	No-Build BLTS	Build BLTS	Change as result of Project	Description
W Broadway Ave (Lakeland Ave N to 42nd Ave N)	3	3	No change in stress level	Uncomfortable for many users
W Broadway Ave (42nd Ave N to 37th Ave N)	3	3	No change in stress level	Uncomfortable for many users
France Ave N (37th Ave N to 36th Ave N)	3	3	No change in stress level	Uncomfortable for many users
France Ave N (36th Ave N to 35th Ave N)	2	2	No change in stress level	Comfortable for most users, except children
36th Ave N (France Ave N to Halifax Ave N)	3	3	No change in stress level	Uncomfortable for many users
36th Ave N (Bottineau Blvd to France Ave N)	3	3	No change in stress level	Uncomfortable for many users
Lakeland Ave N (Lakeview Terrace Park to 35th Ave N)	1	1	No change in stress level	Comfortable for most users

Segment	No-Build BLTS	Build BLTS	Change as result of Project	Description
Lakeland Ave N (35th Ave N to Grand Rounds Trail)	1	1	No change in stress level	Comfortable for most users
Victory Memorial Dr (Oakdale Ave N to 34th Ave N)	1	1	No change in stress level	Comfortable for most users
Theodore Wirth Pkwy (Parkview Blvd to Oakdale Ave N)	1	1	No change in stress level	Comfortable for most users
Grand Rounds Trail	1	1	No change in stress level	Comfortable for most users

Table 3-29 shows the change in BLTS at intersections in the City of Robbinsdale. All locations experience a decrease in traffic stress or no change under the Build Alternative. Decreases in traffic stress are due to new sidewalk-level bicycle facilities being vertically separated from vehicle traffic, traffic signals being installed, reduced corner radii at intersections, and the reduction in the number of vehicle lanes being crossed. At Oakdale Ave N/Theodore Wirth Pkwy, the decrease is due to the intersection being removed. Locations where no change in traffic stress occurs may be due to either few modifications as a result of the Project or a combination of positive and negative changes that cancel out one another.

Table 3-29 Summary of BLTS Intersection Analysis for the City of Robbinsdale

Intersection	No-Build BLTS	Build BLTS	Change as result of Project	Description
Bottineau Blvd/42nd Ave N	4	4	No change in stress level	Uncomfortable for most users
Bottineau Blvd/40th Ave N	4	4	No change in stress level	Uncomfortable for most users
Bottineau Blvd/36th Ave N	1	1	No change in stress level	Comfortable for most users
Oakdale Ave N/Theodore Wirth Pkwy	1	N/A	Decrease in stress level	Comfortable for most users

The origin-destination analysis between key community destinations shows no change in the distances and a difference in travel time of 1 second. Table 3-30 summarizes this analysis.

Table 3-30 Summary of Travel Time (Origin-Destination) Analysis for the City of Robbinsdale

Origin	Destination	Distance Change (miles)	Total Time Change (minutes)	Reason for change
4300 46th Ave N	Clear Lakes Dental	0	0.0	N/A
5200 Scott Trail	Lakeview Terrace Park	0	-1	Modified signal phase timing
4000 Shoreline Dr	Northside Asian Market & Deli	0	-1	Modified signal phase timing

Multiuse trails would be installed along 42nd Ave N and 40th Ave N near the Downtown Robbinsdale Station. The Lowry Ave Station would be situated at the intersection of the Grand Rounds Trail and Oakdale Avenue N. The existing multiuse path that makes up the Grand Rounds Trail would be rerouted to provide access to the Lowry Ave Station platform. The intersection of Lowry Ave with Theodore Wirth Pkwy would be removed, allowing cyclists to navigate the Grand Rounds Trail system without conflict from vehicles or LRT traffic.

City of Minneapolis

Table 3-31 shows the change in BLTS along segments in the City of Minneapolis. Generally, locations experience a decrease in traffic stress or no change in the Build Alternative. Across the Project corridor, decreases in traffic stress are due to new bicycle facilities being vertically separated from vehicle traffic, traffic signals being installed, increased horizontal buffer widths between bike lanes and vehicle lanes, reduced corner radii at intersections, and the reduction in the number of vehicle lanes being crossed. Locations where no change in traffic stress occurs may be due to either few modifications as a result of the Project, or a combination of positive and negative changes that cancel one another.

Table 3-31 Summary of BLTS Segment Analysis for the City of Minneapolis

Segment	No-Build BLTS	Build BLTS	Change as result of Project	Description
Lowry Ave (W Broadway Ave to Upton Ave)	3	3	No change in stress level	Uncomfortable for many users
Theodore Wirth Pkwy (29th Ave N to Lowry Ave)	1	1	No change in stress level	Comfortable for most users
Grand Rounds Trail	1	1	No change in stress level	Comfortable for most users
26th Ave N (W Broadway Ave to Thomas Ave N)	1	1	No change in stress level	Comfortable for most users
26th Ave N (W Broadway Ave to Queen Ave N)	1	1	No change in stress level	Comfortable for most users
26th Ave N (N Penn Ave to Queen Ave N)	1	1	No change in stress level	Comfortable for most users
Queen Ave (W Broadway Ave to 26th Ave N)	1	1	No change in stress level	Comfortable for most users
W Broadway Ave (Queen Ave N to N Penn Ave)	4	2	Decrease in stress level	Comfortable for most users, except children
McNair Ave (W Broadway Ave to 23rd Ave N)	1	1	No change in stress level	Comfortable for most users
Queen Ave N (McNair Ave to 23rd Ave N)	1	1	No change in stress level	Comfortable for most users
N 21st Ave (Irving Ave N to N Girard Ave)	1	1	No change in stress level	Comfortable for most users
N 21st Ave (N Girard Ave to Fremont Ave N)	N/A	1	New Facility	Comfortable for most users
N 21st Ave (Fremont Ave N to N 4th St)	1	1	No change in stress level	Comfortable for most users
N 21st Ave (N 4th St to Washington Ave N)	N/A	1	New Facility	Comfortable for most users
Golden Valley Rd (N Girard Ave to Irving Ave N)	3	3	No change in stress level	Uncomfortable for many users
W Broadway Ave (N Girard Ave to Fremont Ave N)	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave (Fremont Ave N to N Lyndale Ave)	4	3	Decrease in stress level	Uncomfortable for many users

Segment	No-Build BLTS	Build BLTS	Change as result of Project	Description
W Broadway Ave (Washington Ave N to N 2nd St)	4	4	No change in stress level	Uncomfortable for most users
Plymouth Ave N (N 2nd St to N 3rd St)	1	1	No change in stress level	Comfortable for most users
N 2nd St (17th Ave N to Plymouth Ave N)	1	1	No change in stress level	Comfortable for most users
N 2nd St (Plymouth Ave N to N 10th Ave)	1	1	No change in stress level	Comfortable for most users
N 2nd St (N 10th Ave to N 8th Ave)	1	1	No change in stress level	Comfortable for most users
Washington Ave N (17th Ave N to Plymouth Ave N)	4	4	No change in stress level	Uncomfortable for most users
Washington Ave N (Plymouth Ave N to N 10th Ave)	3	1	Decrease in stress level	Comfortable for most users
Washington Ave N (N 10th Ave to N 8th Ave)	3	3	No change in stress level	Uncomfortable for many users
10th Ave N	1	1	No change in stress level	Comfortable for most users
Olson Memorial Hwy	4	4	No change in stress level	Uncomfortable for most users
N 7th St	3	1	Decrease in stress level	Comfortable for most users

Table 3-32 shows the change in BLTS at intersections in the City of Minneapolis. All locations experience a decrease in traffic stress or no change under the Build Alternative. Decreases in traffic stress are due to new sidewalk-level bicycle facilities being vertically separated from vehicle traffic, traffic signals being installed, reduced corner radii at intersections, and the reduction in the number of vehicle lanes being crossed. At Lowry Ave/Theodore Wirth Pkwy, the decrease is due to the intersection being removed.

Table 3-32 Summary of BLTS Intersection Analysis for the City of Minneapolis

Intersection	No-Build BLTS	Build BLTS	Change as result of Project	Description
Lowry Ave/Theodore Wirth Pkwy	1	N/A	Decrease in stress level	Comfortable for most users
W Broadway Ave/26th Ave N	4	4	No change in stress level	Uncomfortable for most users
N Penn Ave/W Broadway Ave	4	4	No change in stress level	Uncomfortable for most users
N 21st Ave/N Irving Ave	2	2	No change in stress level	Comfortable for most users, except children
N 21st Ave/N Girard Ave	2	2	No change in stress level	Comfortable for most users, except children

Intersection	No-Build BLTS	Build BLTS	Change as result of Project	Description
N 21st Ave/Fremont Ave N	2	2	No change in stress level	Comfortable for most users, except children
N 21st Ave/N Emerson Ave	2	2	No change in stress level	Comfortable for most users, except children
N 21st Ave/N Bryant Ave	2	2	No change in stress level	Comfortable for most users, except children
N 21st Ave/N Aldrich Ave	2	2	No change in stress level	Comfortable for most users, except children
N 21st Ave/N Lyndale Ave	2	2	No change in stress level	Comfortable for most users, except children
N 21st Ave/SB I-94 Ramp	2	1	Decrease in stress level	Comfortable for most users
N 21st Ave/N 4th St	2	2	No change in stress level	Comfortable for most users, except children
W Broadway Ave/N James Ave	4	3	Decrease in stress level	Uncomfortable for many users, except children
W Broadway Ave/N Girard Ave	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave/Fremont Ave N	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave/N Emerson Ave	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave/Dupont Ave N	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave/N Bryant Ave	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave/N Aldrich Ave	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave/N Lyndale Ave	4	3	Decrease in stress level	Uncomfortable for many users
W Broadway Ave/Washington Ave N	4	4	No change in stress level	Uncomfortable for most users
W Broadway Ave/N 2nd St	4	4	No change in stress level	Uncomfortable for most users
Washington Ave N/17th Ave N	4	4	No change in stress level	Uncomfortable for most users
Plymouth Ave N/N 2nd St	2	2	No change in stress level	Comfortable for most users, except children

Intersection	No-Build BLTS	Build BLTS	Change as result of Project	Description
Plymouth Ave N/Washington Ave N	4	3	Decrease in stress level	Uncomfortable for many users
10th Ave N/N 2nd St	3	2	Decrease in stress level	Comfortable for most users, except children
10th Ave N/ Washington Ave N	4	1	Decrease in stress level	Comfortable for most users
Oak Lake Ave/N 7th St	3	1	Decrease in stress level	Comfortable for most users
N 6th Ave/N 7th St/Olson Memorial Hwy	4	2	Decrease in stress level	Comfortable for most users, except children

The origin-destination analysis between key community destinations shows changes in distances of one-tenth mile and a change in travel time of between 0 and 8 minutes. The largest trip time changes occur along the 10th Avenue N corridor where a high concentration of new traffic signals would be added. Table 3-33 summarizes this analysis.

Table 3-33 Summary of Travel Time (Origin-Destination) Analysis for the City of Minneapolis

Origin	Destination	Distance Change (miles)	Total Time Change (minutes)	Reason for change
1000 N Aldrich Ave	North Loop Clinic and Pharmacy	-0.1	1.7	Added signalized intersections; modified signal phase length
729 N 3rd St	Farmer's market	+0.05	6.2	Added signalized intersections; modified signal phase length; Additional east-west crossing at Olson Memorial Hwy/Oak Lake Ave
Boom Island Park	Sharing and Caring Hands	+0.05	8.3	Added signalized intersections; modified signal phase length; Extra east-west crossing at Olson Memorial Hwy/Oak Lake Ave
500 N 2nd St	Douglas Chapel	0	2.4	Added signalized intersections; modified signal phase length; Extra south-north crossing at 10th Ave/5th St
2700 N Colfax Ave	Cub Pharmacy	0	0.8	Added signalized intersections; modified signal phase length
North Commons Park	Jerry Gamble Boys and Girls Club	0	0.7	Added signalized intersections; modified signal phase length
3100 N Lyndale Ave	Hall Park	0	0.7	Added signalized intersections; modified signal phase length
Nellie Stone Johnson School	Harold Mezile YMCA	0	0.7	Added signalized intersections; modified signal phase length
1900 24th Ave	Harold Mezile YMCA	+0.1	2.3	Need alternate route, +.1 mile; signal phase timing modified

Origin	Destination	Distance Change (miles)	Total Time Change (minutes)	Reason for change
1700 N 25th Ave	North Memorial Hospital	0	0.1	Modified signal phase timing
3500 Xerxes Ave N	Valley View Park	0	0	No change in time or distance
3500 Halifax Ave N	Parkway United Church of Christ	0	0.0	Modified signal phase timing
3500 Xerxes Ave N	Valley View Park	+0.05	0.8	Added signalized intersection
3500 Halifax Ave N	Parkway United Church of Christ	0	0.0	Modified signal phase timing

The Project would create new bicycle facilities in the Project corridor and provide direct connections between stations and bikeways. Lowry Ave Station would be accessible from multiuse paths that connect to the Grand Rounds Trail. The intersection of Lowry Ave with Theodore Wirth Pkwy would be removed, allowing cyclists to navigate the Grand Rounds Trail system without conflict from vehicles or LRT traffic. A new bicycle facility would be added on N 21st Ave between James Ave N and Washington Ave N, crossing over I-94 on a new N 21st Ave bridge, which would include a vertically separated sidewalk-level bikeway. A transit mall along 10th Ave N would include a vertically separated sidewalk-level bikeway, and closure of vehicle access points would reduce bike-vehicle conflicts. An off-street bikeway on 7th St N would also provide bicycle enhancements with the Project. Table 3-34 presents a summary of bicycle service changes by LRT station.

Table 3-34 Summary of Bicycle Service Changes by LRT Station

Station	Proposed Changes	
Lowry Ave	The Grand Rounds Trail would be rerouted to provide access to the Lowry Ave Station platform and to create perpendicular trail crossings of the LRT guideway. This rerouting would lengthen the Grand Rounds Trail by one-tenth mile. Trail crossings of LRT tracks would be fitted with rubberized panels in wheel flange channels, bells, and lights to prevent conflicts between bicycles and trains. The Intersection of Grand Rounds Trail and Lowry Ave would be signalized to reduce cyclist-vehicle conflicts.	Improvement to safety; reduction in connectivity when trains are present
Penn Ave	Conflict with vehicle channelized right-turn lane eliminated at N 26th Ave. Vehicle traffic on McNair Ave eliminated from W Broadway Ave/Penn Ave intersection; cycle track maintains access for bicycles along route of Queen Ave N bike boulevard.	Improvement to safety and connectivity
James Ave	New cycle track along LRT station connecting Irving Ave N and James Ave N, with new traffic signals. This facility provides a route for the planned Northside Greenway to cross W Broadway Ave near North Commons Park.	Improvement to safety and connectivity
Lyndale Ave	New traffic signals at N 21st Ave/Aldrich Ave N and N 21st Ave/Lyndale Ave N. New bike facility along N 21st Ave to provide separation from LRT and cross I-94 on new multimodal bridge, ultimately connecting to N 2nd St bike facilities. Crossing of N 21st Ave at Dupont Ave eliminated.	Improvements to safety and connectivity; some reductions in connectivity

Station	Proposed Changes	
West Broadway	New N 21st Ave bikeway provides a more comfortable route across I-94 and connects to existing bicycle facilities on 2nd St N.	Improvement to safety and connectivity
Plymouth Ave	Separated cycle tracks along 10th Ave N and Washington Ave N. Protected intersections at Washington Ave N/Plymouth Ave, Washington Ave N/10th Ave N, and Plymouth Ave N/N 2nd St. A combination of sidewalk-level and curb-separated cycle tracks along N 2nd Ave between Plymouth Ave N and N 8th Ave.	Improvement to safety and connectivity
Target Field Station	Bike lanes on N 7th St raised to sidewalk-grade.	Improvement to safety

3.3.4 Avoidance, Minimization, and Mitigation

No long-term mitigation measures are anticipated because no long-term impacts notably degrade the bicycling network within the study area.

The Project would involve some temporary bicycle facility closures throughout the Project area during construction. Where closures of trails, on-street bike facilities, or shared streets are required during construction, detour routes would be provided. Specific mitigation measures for short-term impacts to facilities would be identified in the Construction Mitigation Plan, which includes a Construction Communication Plan and Construction Staging Plan for implementation by the Council prior to and during construction. The No-Build Alternative would have no short-term impacts.

The Council will identify mitigation strategies to be taken in the event of temporary closures in the Construction Communication Plan, which will include a Construction Staging Plan for implementation by the Council prior to and during construction. The purpose of the Construction Communication Plan is to prepare Project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize disruptive effects. Strategies could include:

- Issuing and distributing regular construction updates
- Providing advance notice of roadway closures, driveway closures, and utility shutoffs
- Conducting public meetings
- Establishing a 24-hour construction hotline
- Preparing materials with information about construction
- Addressing property access issues
- Assigning staff to serve as liaisons between the public and contractors during construction

3.4 Vehicle Traffic

The addition of the Project into the existing transportation network would affect the flow of vehicular traffic in the study area. The Project would modify roadway alignments on many street segments and intersections to accommodate LRT infrastructure. The Council analyzed projected traffic conditions in a series of *Traffic Operations Technical Report* (Appendix A-3).

The Project will complete the Interstate Access Modification Request (IAMR) process and receive authorization from FHWA to modify vehicle access to and from the interstate system.

3.4.1 Regulatory Context and Methodology

Turning movement counts and signal timing data were collected at intersections within the study area, including. signalized intersections for which an LRT crossing is proposed in the intersection, unsignalized intersections that may have a change in intersection control, and intersections that provide access to an LRT station park-and-ride facility.

The year 2050 was selected as the forecast year to reflect 20 years after the Project is in operation. The 2050 future traffic forecasts are based on historic annual average daily traffic (AADT) volumes in the area, 2040 forecast traffic volumes documented in the county and municipal comprehensive plans, 2040 socioeconomic data developed by the Council and local communities, and 2050 draft socioeconomic data developed by the Council. Due to this methodology, each street segment was designated a unique growth rate. Overall, the comparison between the existing daily traffic volumes and the 2050 forecasted traffic volumes show an average annualized growth rate in Minneapolis of approximately 0.25%. Some individual street segments had higher growth rates, while others showed negative growth rates.

3.4.2 Study Area and Affected Environment

The study area was divided into six segments for traffic analysis, which includes the existing and proposed signalized intersections along the Project Alignment:

- CR 103 from the OMF to CR 81
- CR 81 from 73rd Ave N to TH 100
- CR 81 from TH 100 to Lowry Ave
- CR 81 from Lowry Ave to N James Ave
- CR 81/N 21st Ave from N James Ave to W River Rd
- Washington Ave N/N 10th Ave from N 21st Ave to N 7th St/Target Field Station; N 10th Ave from N Washington Ave to N 5th St; and from N 5th St to Target Field Station

3.4.3 Affected Environment

The regional highway system consists of principal and minor arterials that are roads that have a primary purpose of moving traffic efficiently, with less emphasis on access to adjacent land. Several adjacent and connecting roadways to the Build Alternative also include collector and local roadways, which provide access to property. Several roadways, including arterials, connectors, and local roadways, would undergo modifications as a part of the Project, and are described in detail in Chapter 2.

3.4.4 Environmental Consequences

Impacts are described as operating-phase, meaning long-term impacts that are projected to be relevant after the Project has opened, and construction-phase, meaning short-term impacts relevant during the construction of the Project.

Improved traffic and roadway safety is a Project benefit. Traffic safety is a major concern in Hennepin County, which has the highest number of crashes resulting in injury or fatality of any county in the State.[12] In the City of Minneapolis, 9 percent of the streets accounted for 66 percent of the fatal and severe-injury crashes that occurred between 2017 and 2021. Within the study area in the City of Minneapolis, eight intersections are designated high-injury intersections, and the following are designated high-injury streets: N Lowry Ave, W Broadway Ave, N Lyndale Ave, N Washington Ave, N 7th St, TH 55, N 2nd Ave, and N 1st Ave. Additionally, N Penn Ave, N Fremont Ave, and N Emerson Ave were identified as corridors to monitor.[13]

Public transportation is one of the safest mobility options. There were 134 times more fatalities on highways than on transit in the United States in 2021.[14] Public transportation investment and supportive policies increase traffic safety in several ways, including reduced crash risk to travelers who shift from automobile to transit, community-wide crash

reductions because of less total auto VMT, and safer traffic speeds. The American Public Transportation Association (APTA) reports, in The Hidden Traffic Safety Solution,[15] that transit-oriented communities are five times safer because they have about one-fifth the per capita traffic casualty rate (fatalities and injuries) as automobile-oriented communities. Public transit investment cuts a community's crash risk in half even for those who do not use transit, including children. Transit spurs compact development, which reduces auto VMT and tends to calm traffic.

3.4.4.1 Operating-Phase (Long-Term) Impacts

This section presents operating-phase (long-term) impacts to vehicle traffic.

No-Build Alternative

Analysis of the No-Build Alternative is based on 2050 traffic volumes with current roadway configurations, existing rail crossing locations and treatments, and signal operations.

The results of the 2050 No-Build conditions were based on existing roadway geometrics. The 2050 forecast peak hour traffic volumes were developed based on the methodology described in the *Traffic Operations Technical Report* November 26, 2024, included in Appendix A-3. Based on the 2050 results of the morning and afternoon peak hour analyses, all intersections are expected to operate under capacity for the No-Build peak hour scenarios except for the intersections listed in Table 3-35.

Table 3-35 Intersections at and Exceeding Capacities Under 2050 No-Build Condition

City	Intersection	Morning Peak Hour Capacity	Afternoon Peak Hour Capacity
Brooklyn Park	W Broadway Ave/101st Ave N	Under capacity	Over capacity
Brooklyn Park	W Broadway Ave/Winnetka Ave N	Under capacity	Over capacity
Brooklyn Park	W Broadway Ave/94th Ave N	Over capacity	Under capacity
Brooklyn Park	W Broadway Ave/93rd Ave N	Over capacity	Over capacity
Brooklyn Park	W Broadway Ave/92nd Ave N	At capacity	Over capacity
Brooklyn Park	W Broadway Ave/Setzler Pkwy	Over capacity	Over capacity
Brooklyn Park	W Broadway Ave/89th Ave N	Over capacity	Over capacity
Brooklyn Park	W Broadway Ave/Maplebrook Pkwy	At capacity	Over capacity
Brooklyn Park	W Broadway Ave/85th Ave N	Under capacity	Over capacity
Minneapolis	W Broadway Ave/Penn Ave N	Under capacity	At capacity
Minneapolis	N Lyndale Ave/N Plymouth Ave	Under capacity	At capacity
Minneapolis	N Washington Ave/N Plymouth Ave	At capacity	At capacity
Minneapolis	N Plymouth Ave/N 2nd St	Over capacity	At capacity
Minneapolis	N 7th St/W Lyndale Ave	Over capacity	Under capacity
Minneapolis	N 7th St/E Lyndale Ave	At capacity	Under capacity
Minneapolis	N 7th St/N Oak Lake Ave	At capacity	Under capacity
Minneapolis	TH 55/N 7th St/N 6th Ave	Under capacity	At capacity

Build Alternative

The Project assumes a forecasted operation year of 2050. Assumptions related to the build condition analysis are provided in Appendix A-3. Alignments previously analyzed are presented in the Supplemental Draft EIS and hence not presented in this Supplemental Final EIS.

City of Brooklyn Park

In the City of Brooklyn Park, the Project would include several roadway access changes, mostly conversions of full-access intersections to right-in/right-out intersections along W Broadway Ave to reduce conflicts between vehicle and LRT traffic. Additionally, there would be a reduction of lanes on CR 81 between 63rd Ave N and 73rd Ave N to accommodate the Project. Thirteen new traffic signals would be installed, and 17 signals would be modified. Specific changes proposed are detailed in Appendix A-3.

Figure 3-9 depicts anticipated afternoon peak hour impacts to intersections under the Build Alternative. The results of the morning and afternoon peak hour analysis showed that all the City of Brooklyn Park intersections are expected to operate under capacity with Project operations, except for the intersections listed in Table 3-36. Two of the four intersections predicted to operate over capacity, at 93rd Ave N and 85th Ave N, are also expected to be over capacity under a No-Build scenario. Oak Grove Pkwy and Xylon Ave is a recently constructed intersection, and a traffic signal is recommended (as a separate project by others) as development traffic warrants. Poor operations experienced at 93rd Ave and 85th Ave are due to high demand in addition to safety improvements made at the intersections (e.g., removal of channelized right turns at 85th Ave N). Queueing from these intersections extends beyond adjacent signals in all directions. There are no proposed mitigations at these intersections, but Hennepin County would consider dual left-turn lanes for eastbound/westbound in the future if space allows and vehicle demands require it. Poor operations at Brooklyn Blvd are due to increased eastbound left-turn demand due to access management changes at adjacent intersections. Queueing extends beyond the adjacent signal to the west. No additional mitigations to reduce these queue lengths are recommended.

Figure 3-9 2050 Afternoon Peak Hour Impacts to Intersections

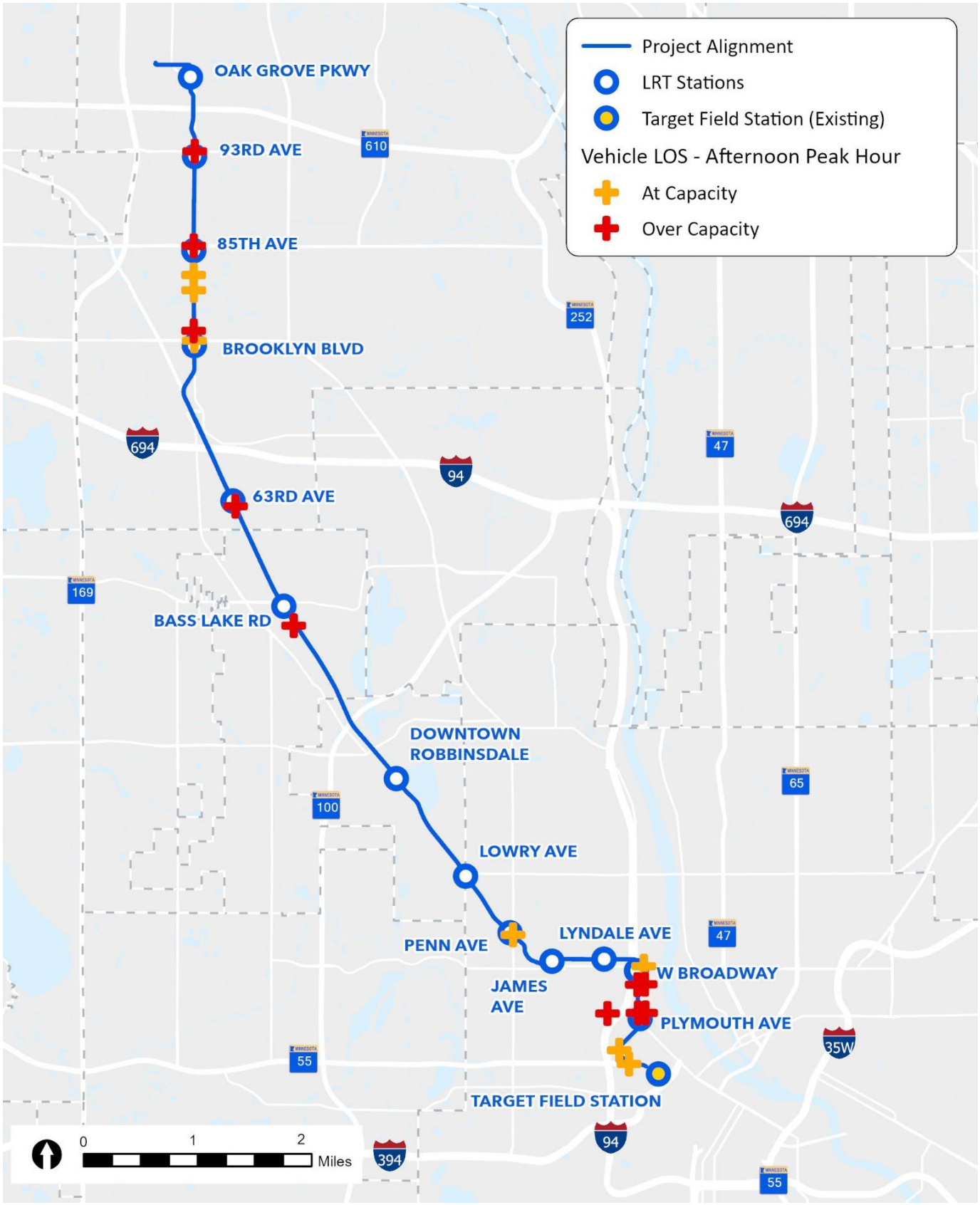


Table 3-36 City of Brooklyn Park Intersections at and Exceeding Capacity Under Build Alternative

Intersection	Morning Peak Hour Capacity	Afternoon Peak Hour Capacity
W Broadway Ave/93rd Ave N[b]	Over capacity	Over capacity
W Broadway Ave/85th Ave N[b]	Under capacity	Over capacity
W Broadway Ave/College Park Dr	Under capacity	At capacity
W Broadway Ave/82nd Ave N[a]	Under capacity	At capacity
W Broadway Ave/Brooklyn Blvd	Under capacity	At capacity
Brooklyn Blvd/Shopping Center Access	Under capacity	Over capacity
CR 81/63rd Ave N	At capacity	Over capacity
Wilshire Blvd/Lakeland Ave N[a]	Under capacity	Over capacity

[a] Side street stop-controlled intersection.
[b] Also at or over capacity in a No-Build scenario.

The intersection of the westbound I-94/I-694 ramp with CR 81 requires FHWA to approve an IAMR due to traffic modifications to and from the interstate. Appendix A-3 provides the IAMR information. Full operations results can be found in Appendix A-3.

City of Crystal

In the City of Crystal, a new interchange would be added to grade-separate the intersection of CR 81 and Bass Lake Rd. Three traffic signals would be modified, and new LRT crossings would be constructed. The interchange design would have four through lanes and center-running LRT on CR 81 from north of the CR 81 and 73rd Ave N intersection to the TH 100 interchange. Specific changes proposed are detailed in Appendix A-3 and summarized in Table 3-37. The results of the morning and afternoon peak hour analysis show that all intersections are expected to operate under capacity during the 2050 build conditions peak hour scenarios.

Table 3-37 Traffic-Related Changes Included in the City of Crystal

Purpose	Description
Grade-separate LRT and vehicle traffic	Through lanes on CR 81 at Bass Lake Rd bypass intersection
Create space for elevated highway structure	One left-turn lane eliminated in the southbound direction on CR 81 and two dedicated left-turn lanes eliminated in the northbound direction on CR 81 at Bass Lake Rd
Create space for LRT tracks	One southbound lane on CR 81 eliminated
Create space for LRT tracks	One northbound lane on CR 81 eliminated

City of Robbinsdale

In the City of Robbinsdale, the Project would include roadway access changes, traffic signal modifications, and new LRT crossings. Three new traffic signals would be installed, and 10 signals would be modified. Specific changes proposed are detailed in Appendix A-3 and summarized in Table 3-38. The results of the morning and afternoon peak hour analysis showed that all City of Robbinsdale intersections are expected to operate under capacity.

Table 3-38 Traffic-Related Changes Included in the City of Robbinsdale

Purpose	Description
Create space for LRT tracks	One northbound lane on CR 81 between TH 100 and 47th Ave N eliminated.
Reduce traffic conflicts	Southbound left turn from CR 81 onto Lakeland Ave at 43rd Ave N signalized.
Create space for LRT tracks	One northbound left-turn lane and one northbound dedicated right-turn lane from CR 81 to 42nd Ave N eliminated; one southbound dedicated right-turn lane from CR 81 to Lake Dr eliminated.
Reduce traffic conflicts	Left turns into alleys and private driveways along CR 81 between 40th Ave N and 47th Ave N eliminated.
Reduce traffic conflicts	Southbound left turn from CR 81 into Lakeview Terrace Park signalized.
Reduce impacts on Grand Rounds Trail System	Intersection of Oakdale Ave N/Lowry Ave/Theodore Wirth Pkwy/Victory Memorial Dr eliminated. Oakdale Ave N will intersect with Bottineau Blvd at a new signalized intersection.

To limit conflicts between LRT, vehicles, pedestrians, and cyclists, and to maintain the function of the Grand Rounds Trail System as a recreational and park space, the Project would remove access to Theodore Wirth Pkwy/Victory Memorial Dr at Oakdale Ave N/Lowry Ave.

City of Minneapolis

In the City of Minneapolis, the Project would include roadway lane changes, access changes, traffic signal changes, and new LRT crossings. Eighteen new traffic signals would be installed, and 20 signals would be modified. Notable changes would include the removal of vehicle access to Theodore Wirth Pkwy/Victory Memorial Dr at Oakdale Ave N/Lowry Ave, and along N 21st Ave and 10th Ave N as well as lane reductions throughout to accommodate the Project. Most new traffic signals are along N 21st Ave and would provide safe LRT crossings for vehicles, pedestrians, and bicyclists and along 10th Ave to maintain neighborhood access. Specific changes are described in Table-39.
W Broadway Ave would also be reconstructed generally between Irving Ave N and N Lyndale Ave and include accommodations for people walking and bicycling. Details regarding the roadway changes to W Broadway Ave are presented in Appendix A-3. This area would require FHWA to approve an IAMR at the I-94 ramp with Washington Ave N/17th Ave N and the I-94 ramp with N 21st Ave due to traffic modifications to and from I-94. Traffic and crash data were developed for the IAMR and summarized in Appendix A-3. Specific changes to traffic patterns are described in Table 3-39.

Table 3-39 Traffic-Related Changes in the City of Minneapolis

Purpose	Description
Reduce impacts on Grand Rounds Trail System	Intersection of Lowry Ave/Oakdale Ave N/Theodore Wirth Pkwy/Victory Memorial Dr eliminated. Lowry Ave/Oakdale Ave N will intersect with Bottineau Blvd at a new signalized intersection.
Create space for LRT tracks	W Broadway Ave reduced from four lanes to two lanes (one lane in each direction) between N 29th Ave and James Ave to accommodate the LRT guideway. East of James Ave, West Broadway will accommodate 2 lanes of through traffic with a center left-turn lane.
Create space for LRT tracks	Upton Ave at W Broadway Ave changed to right-in, right-out only
Create space for LRT tracks	N 27th Ave at W Broadway Ave changed to right-in, right-out only
Reduce traffic conflicts	Thomas Ave access to W Broadway Ave on north side of W Broadway Ave eliminated; Thomas Ave would connect only to N 27th Ave
Create space for LRT tracks	Thomas Ave at W Broadway Ave changed to right-in, right-out only on the south side of W Broadway Ave

Purpose	Description
Reduce traffic conflicts	Through lanes of Sheridan Ave at W Broadway Ave eliminated; connection to W Broadway on 26th Ave
Create space for LRT tracks and accommodate Penn Ave Station	Queen Ave at W Broadway Ave changed to right-in, right-out only
Create space for LRT tracks	N 24th Ave at W Broadway Ave changed to right-in, right-out only
Reduce traffic conflicts	McNair Ave access to intersection of W Broadway Ave and Penn Ave eliminated; McNair dead ended between Ferrant Pl and W Broadway Ave
Create space for LRT tracks	Westbound left-turn lane at W Broadway Ave and intersections at Knox Ave, Logan Ave, Morgan Ave, and N Ilion Ave
Accommodate James Ave Station platform	N James Ave at W Broadway Ave converted to one way north of W Broadway Ave
Create space for LRT tracks	Vehicle access removed along N 21st Ave between N James Ave and N 4th St including access to alleys and private driveways from N 21st Ave
Create space for LRT tracks	New bridge on N 21st Ave crossing I-94 carries two-way vehicle traffic, LRT, bicycle facility, and sidewalks
Accommodate new LRT bridge at N 21st Ave	Eastbound I-94 exit ramp shifted west, terminating at-grade at the intersection with N 21st Ave. Road continues past N 21st Ave to connect with W Broadway Ave with a left-turn lane. A right-turn lane and driveway access to property on the west side of this segment (between N 21st Ave and W Broadway Ave) are located north of W Broadway Ave.
Create space for LRT tracks	N Washington Ave between W Broadway Ave and N Plymouth Ave reduced to one through lane in each direction, with additional turn lanes at intersections to accommodate the center LRT guideway.
Create space for LRT tracks	Left turns eliminated to and from Washington Ave intersections with 16th Ave, 14th Ave, and 12th Ave
Create space for LRT tracks	Vehicle access removed along N 10th Ave between N Washington Ave and N 5th St, including access to alleys and private driveways from N 10th Ave. Emergency vehicle access will be maintained with design of N 10th Ave.
Accommodate neighborhood access on N 9th Ave	Construction of a new roadway connection on N 9th Ave between N 5th St and N 4th St to maintain neighborhood access
Create space for LRT tracks	N 7th St reduced to one lane in each direction, with a center turn lane

Peak hour traffic analysis results show that all intersections are expected to operate under capacity during the 2050 build conditions peak hour scenarios except for the four intersections listed in Table 3-40. The intersections with afternoon capacity issues are a result of the high volume of northbound users of N Washington Ave and changes in left-turn signal timing to protected left turns only. Traffic and safety analysis has been completed specific to the IAMR process and is described in Chapter 9 and in more detail in Appendix A-3.

Table 3-40 City of Minneapolis Intersections at and Exceeding Capacity

Intersection	Morning Peak Capacity	Afternoon Peak Capacity
CR 81 (W Broadway)/Penn Ave N[b]	Under capacity	At capacity
CR 81 (W Broadway)/N 2nd St/CR 152 (N Washington Ave)	Under capacity	At capacity
CR 152 (N Washington Ave)/N 17th Ave	Under capacity	Over capacity
N 17th Ave/N 2nd St[a]	Under capacity	Over capacity
Lyndale Ave/N Plymouth Ave	Under capacity	Over capacity
CR 152 (N Washington Ave)/N Plymouth Ave	Over capacity	Over capacity
N Plymouth Ave/N 2nd St[b]	At capacity	Over capacity
N 8th Ave/N Oak Lake Ave	Under capacity	At capacity
N 7th St/W Lyndale Ave[b]	Over capacity	Under capacity
N 7th St/E Lyndale Ave[b]	At capacity	Under capacity
TH 55/N 7th St/N 6th Ave[b]	At capacity	At capacity
TH 55/N Oak Lake Ave/Border Ave	Over capacity	Under capacity

[a] Side street stop-controlled intersection.
[b] Also at or over capacity in a No-Build scenario.

The Lowry Ave Station straddles the borders of the Cities of Minneapolis and Robbinsdale. The traffic analysis and updated geometric configurations are discussed in the City of Robbinsdale section.

3.4.4.2 Construction-Phase (Short-Term) Impacts

The Council expects construction of the Project to cause temporary disruption to traffic operations, including lane closures, short-term intersection and roadway closures, detours, and increased truck trips related to construction that would cause localized increases in congestion. Maintenance-of-traffic (MOT) plans will be developed during final design or construction and submitted for approval to the roadway authorities. The Project team will notify area residents of activities in advance, as possible. The No-Build Alternative would have no short-term impacts.

3.4.5 Avoidance, Minimization, and Mitigation Measures

The Project would result in permanent vehicle access changes, roadway geometric changes, traffic signal changes, and new LRT crossings, which would result in additional traffic capacity issues within the study area at five intersections in the City of Brooklyn Park and six intersections in the City of Minneapolis. MOT plans will be developed during final design or construction and submitted for approval to the roadway authorities. The MOT plans will address construction phasing, MOT, traffic signal operations, access through the construction work zone, road closures, and any traffic detours.

Where the 2050 Build analysis showed a traffic impact due to the Project, mitigation strategies have been identified and are documented in *Traffic Operations Technical Report* (Appendix A-3). Mitigation strategies include lengthened dedicated turn lanes to reduce queueing impacts, changes to intersection control, and signal timings updates to improve operations.

3.5 Vehicle Parking

This section describes changes in vehicle parking because of the Project. The construction of the Project and associated modifications to roadway geometry would alter the supply of on-street and off-street parking. These changes could, in turn, reduce convenient access to businesses and residences.

3.5.1 Regulatory Context and Methodology

The analysis in this section focuses on the impacts of the Project on existing on-street and off-street parking. Local jurisdictions have the authority to regulate parking, including introducing parking permits or other parking restrictions. Almost all on-street parking is available to the public as either metered or unmetered spaces. Methods to inventory the existing parking supply in the Project area included reviewing aerial photographs and Project engineering drawings, as well as conducting field visits, to assess the potential effects of changes in the parking supply. All new park-and-ride facilities as a part of the Project are described in Chapter 2 and are not addressed as part of this impact assessment of existing parking conditions.

In order to better characterize and understand the relative impact the Project will have on parking supply, parking occupancy data was collected at off-street parking lots throughout the Project corridor at targeted locations based on land use or where the Project would remove 20% or more parking spaces. At each location, parking occupancy counts were collected during a single peak hour based on expected peak activity of the associated land use. Data collection hours varied across multiple hours during both a weekday and weekend.

3.5.2 Study Area and Affected Environment

The study area for parking is defined as the Project's LOD. Vehicle parking in the study area is a combination of on-street and off-street parking (surface parking lots). Off-street parking consists of a mix of public and private lots. Private off-street parking is restricted to authorized users. Off-street public parking spaces are available for commercial and retail businesses, as well as parking areas and facilities such as public parks. Other off-street parking facilities include parking lots for restaurants, churches, schools, and medical facilities.

3.5.3 Environmental Consequences

Impacts are described as operating-phase, meaning long-term impacts that are projected to be experienced after the Project has opened, and construction-phase, meaning short-term impacts experienced during the construction of the Project.

3.5.3.1 Operating-Phase (Long-Term) Impacts

This section presents operating-phase (long-term) impacts to vehicle parking based on the Project options as compared to the No-Build Alternative. No operating-phase parking impacts would occur under the No Build Alternative. The results of the analysis for the Build Alternative are shown in figures in the sections below.

Cities of Brooklyn Park and Crystal

Parking impacts in the Cities of Brooklyn Park and Crystal are described in Table 3-41 and shown in Figure 3-10. All impacts would be to off-street private parking lots.

Table 3-41 Parking Impacts in the Cities of Brooklyn Park and Crystal

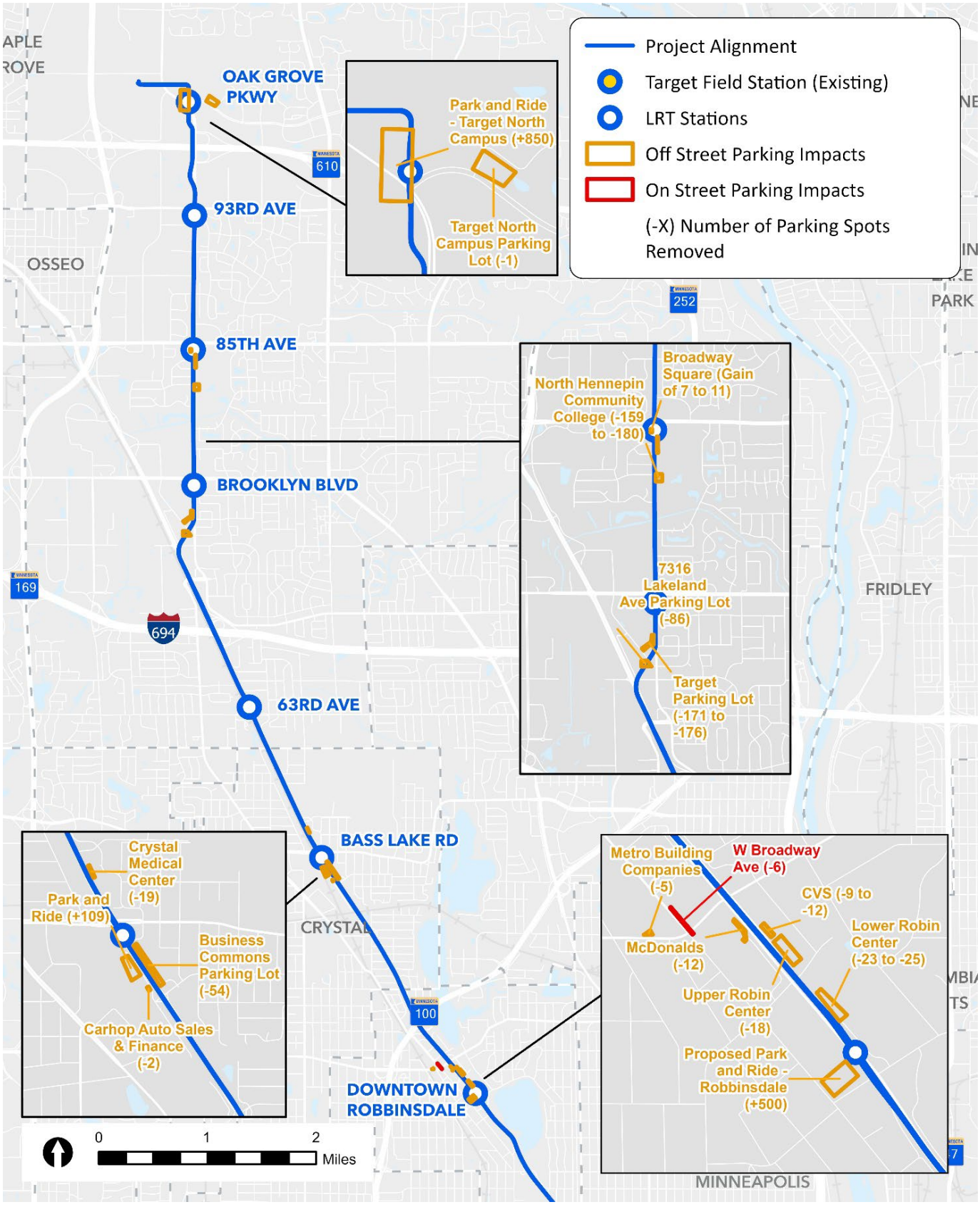
City	Affected Location or Business(es)	Loss of Off-Street Spaces	Reason for Impact
Brooklyn Park	Target North Campus Lot	Loss of 1 off-street space in parking lot (less than 1% loss)	Realignment of Oak Grove Pkwy; reconfiguration of off-street lot
Brooklyn Park	Broadway Square	Net Gain of 11 off-street spaces	Gain in off-street spaces due to parking lot reconfiguration
Brooklyn Park	North Hennepin Community College	Loss of 159 to 180 off-street spaces in west parking lots (15–17% loss of campus parking)[c]	Expansion of W Broadway Ave to accommodate LRT guideway. New parking lot access/signalized intersection at College Park Dr. Parking supply expected to be acceptable.
Brooklyn Park	Target Parking Lot	Loss of 171 to 176 off-street spaces in parking lot (13% loss)[c]	Expansion of W Broadway Ave to accommodate LRT guideway and multiuse trails; retention pond
Brooklyn Park	Retail center	Loss of 86 off-street spaces in parking lot (31% loss)	To accommodate LRT as it transitions from CR 81 to W Broadway Ave
Crystal	Crystal Medical Center	Loss of 19 off-street spaces in parking lot (9% loss)[c]	To accommodate multiuse trails. Parking supply expected to be acceptable.
Crystal	Business Commons	Loss of 54 off-street spaces in parking lot (22% loss)	Bass Lake Rd station and introduction of interchange at CR 81 and Bass Lake Rd. Parking supply expected to be acceptable.
Crystal	Schrader, U-Haul	Loss of 76 off-street spaces in parking lot (100% loss)[a]	To accommodate the Bass Lake Rd park-and-ride facility
Crystal	Carhop Auto Sales	Loss of 2 off-street spaces in parking lot (3% loss)	Realignment of Lakeland Ave to accommodate LRT
Total		**481 to 507[b]**	

[a] The properties affected by the loss of this parking are full property acquisitions. Currently, parking in these lots is restricted to employees and customers only. Under Project implementation, the businesses would no longer be located here.

[b] This total excludes the loss of parking due to full property acquisitions.

[c] Final parking lot configurations are yet to be confirmed. Ranges are provided to approximate final parking supply changes.

Figure 3-10 On-Street and Off-Street Parking Impacts in the Cities of Brooklyn Park, Crystal, and Robbinsdale



City of Robbinsdale

The Downtown Robbinsdale Station is proposed to be on CR 81 north of 40th Ave N, with an associated park-and-ride facility located north of 40th Ave on the property currently occupied by US Bank. Table 3-42 summarizes the parking impacts, the majority of which involve off-street parking except for a small loss of on-street parking associated with geometric changes to the W Broadway Ave at 42nd Ave N intersection.

Table 3-42 Parking Impacts at City of Robbinsdale Stations

City	Affected Location or Business(es)	Loss of On-Street Spaces	Loss of Off-Street Parking Spaces	Reason for Impact
Robbinsdale	Metro Building Companies	0	5 (63% loss)	To accommodate multiuse trail on the north side of 42nd Ave
Robbinsdale	W Broadway Ave	6	0	Geometric changes to W Broadway Ave at 42nd Ave N intersection
Robbinsdale South of 40th Ave N	McDonalds	0	12 (24% loss)	To accommodate expansion of CR 81 for LRT, realignment of frontage road south of McDonalds. Parking supply expected to be acceptable.
Robbinsdale	CVS	0	9 to 12 (15–20% loss)[c]	To accommodate expansion of CR 81 for LRT. Parking supply expected to be acceptable.
Robbinsdale	Upper Robin Center	0	18 (37% loss)	To accommodate expansion of CR 81 for LRT. Parking demand expected to approach capacity.
Robbinsdale	Lower Robin Center	0	23 to 25 (7–10% loss)[c]	To accommodate expansion of CR 81 for LRT. Parking supply expected to be acceptable.
Robbinsdale	US Bank	0	107 (100% loss)[a]	To accommodate the Downtown Robbinsdale park-and-ride facility.
Total		**6**	**67 to 72[b]**	

[a] The properties affected by the loss of this parking are full property acquisitions. Currently, parking in these lots is restricted to employees and customers only. Under Project implementation, the businesses would no longer be located here.

[b] This total excludes the loss of parking due to full property acquisitions.

[c] Final parking lot configurations are yet to be confirmed. Ranges are provided to approximate final supply changes.

City of Minneapolis

In the City of Minneapolis, on-street parking along W Broadway Ave from N 29th Ave to Irving Ave N would be eliminated. Along N 21st Ave between Irving Ave N to N 4th St, the street would be closed to vehicle traffic and on-street parking would be eliminated. There would be minor reductions in off-street parking near the Plymouth Ave, Lyndale Ave, James Ave, and Penn Ave Stations. On-street parking would be eliminated on 10th Ave N from N Washington Ave to N 5th St. Additional on- and off-street parking impacts would occur due to new roadway connections of 8th Ave, 9th Ave, and 3rd/4th St near the 10th Ave transit mall. Community members and business have raised concerns about loss of parking. Table 3-43, Figure 3-11, and Figure 3-12 detail the on- and off-street parking impacts.

Table 3-43 Parking Impacts in the City of Minneapolis

City	Affected Location or Business(es)	Loss of On-Street Spaces	Loss of Off-Street Spaces	Reason for Impact
Minneapolis	Washburn Ave at 30th Ave curve	18	0	To accommodate changes to W Broadway Ave at Lowry Ave interchange
Minneapolis	Washburn Ave from W Broadway Ave to Lowry Ave	62	0	To accommodate multiuse shared path
Minneapolis	W Broadway Ave from N 29th Ave to Irving Ave N	330	0	To accommodate LRT tracks
Minneapolis	Lao America	0	3 (20% loss)	To accommodate LRT tracks
Minneapolis	24th Ave at W Broadway Ave	7	0	Realignment to accommodate Penn Ave Station
Minneapolis	Broadway Flats (residential)	0	2 to 4 (3–6% loss)[c]	To accommodate Penn Ave Station
Minneapolis	Capri Theater Parking Lot	0	22 (28% loss)	To accommodate LRT tracks. Parking supply expected to be acceptable. Mitigation via additional off-street spaces in the area is possible.
Minneapolis	YMCA Parking lot	0	4 to 6 (6–10% loss)[c]	To accommodate LRT tracks. Parking supply expected to be acceptable.
Minneapolis	James Ave, Irving Ave, Hillside Ave, Girard Ave at N 21st Ave	58	0	To accommodate LRT intersections, bike lanes
Minneapolis	Minneapolis Public School District Parking Lot	0	66 (14% loss)	To accommodate LRT tracks
Minneapolis	N 21st Ave from N Irving Ave to N 4th St	215	0	N 21st Ave closed to vehicle traffic

City	Affected Location or Business(es)	Loss of On-Street Spaces	Loss of Off-Street Spaces	Reason for Impact
Minneapolis	W Broadway Ave from N Irving Ave to Lyndale Ave	13	0	Four-lane to three-lane conversion on W Broadway Ave
Minneapolis	Fremont Ave, Emerson Ave, Dupont Ave	16	0	To accommodate LRT Intersections
Minneapolis	Hawthorne Crossings	0	-8 (net gain)	To access closures resulting in additional off-street parking spaces
Minneapolis	801 N 21st Ave	0	2 (14% loss)	To accommodate Lyndale Ave Station. Parking supply expected to be acceptable.
Minneapolis	Sanctuary Church	0	15 (83% loss)	To accommodate Lyndale Ave Station. Parking supply expected to be acceptable.
Minneapolis	6th St, 4th St at N 21st Ave	6	0	To accommodate LRT intersection, cul-de-sac
Minneapolis	314 N 21st Ave Parking Lot	0	8 (10% loss)	To accommodate LRT tracks
Minneapolis	N 21st Ave from 2nd Ave to Washington Ave	9	0	To accommodate Washington Ave at N 21st Ave intersection
Minneapolis	18th Ave east of N Washington Ave	1	0	To accommodate curb extension
Minneapolis	N Washington Ave from N 10th Ave to N 22nd Ave	157	0	To accommodate LRT tracks
Minneapolis	2nd St from 10th Ave to 14th Ave	13	0	To accommodate two-way bikeway
Minneapolis	Basset Creek Business Center	0	41 (38% loss)	To accommodate 8th Ave connection. Parking supply expected to be acceptable.
Minneapolis	The Cameron	0	22 (67% loss)	To accommodate 8th Ave connection. Parking demand expected to exceed supply.
Minneapolis	Minneapolis Adult Rehab Center	0	12 (67% loss)	To accommodate 8th Ave connection. Parking demand expected to exceed supply.
Minneapolis	Parking under I-94 at 8th Ave and 9th Ave	0	48 (12% loss)	To accommodate 8th Ave and 9th Ave connection

City	Affected Location or Business(es)	Loss of On-Street Spaces	Loss of Off-Street Spaces	Reason for Impact
Minneapolis	800 5th St Parking Lot	0	65 (45% loss)	To accommodate 8th Ave connection. Parking demand expected to be near capacity under build condition.
Minneapolis	8th Ave Connections, 4th St, 5th St	-3 (net gain)	0	To accommodate 8th Ave connection; on-street parking added to new connection
Minneapolis	XO Communications	0	39 to 41 (42–44% loss)[c]	To accommodate Plymouth Ave Station. Parking supply expected to be acceptable.
Minneapolis	N 10th Ave from N 2nd St to N 5th St	52	0	To accommodate transit mall, two-way bikeway
Minneapolis	Washington Ave N south of N 10th Ave	14	0	To accommodate bikeways, curb extensions
Minneapolis	Minneapolis Public Housing Authority	0	52 (45% loss)[c]	To accommodate 3rd St connection. Parking demand expected to exceed supply by 35 vehicles.
Minneapolis	3rd St	1	0	To accommodate curb extension
Minneapolis	4th St	8	0	Roadway narrowing for 4th St at 10th Ave intersection
Minneapolis	9th Ave Connection	-16 (net gain)	0	On-street parking on new 9th Ave connection
Minneapolis	5th St	14	0	To accommodate 9th Ave connection, and curb extensions
Minneapolis	Cord-sets Inc	0	11 (33% loss)	To accommodate LRT tracks. Parking
Minneapolis	Cord-sets Inc	0	11 (33% loss)	To accommodate LRT tracks. Parking
Total		**996**	**404 to 410**	

[c] Final parking lot configurations are yet to be confirmed. Ranges are provided to approximate final supply changes.

Figure 3-11 On-Street Parking Impacts in the City of Minneapolis

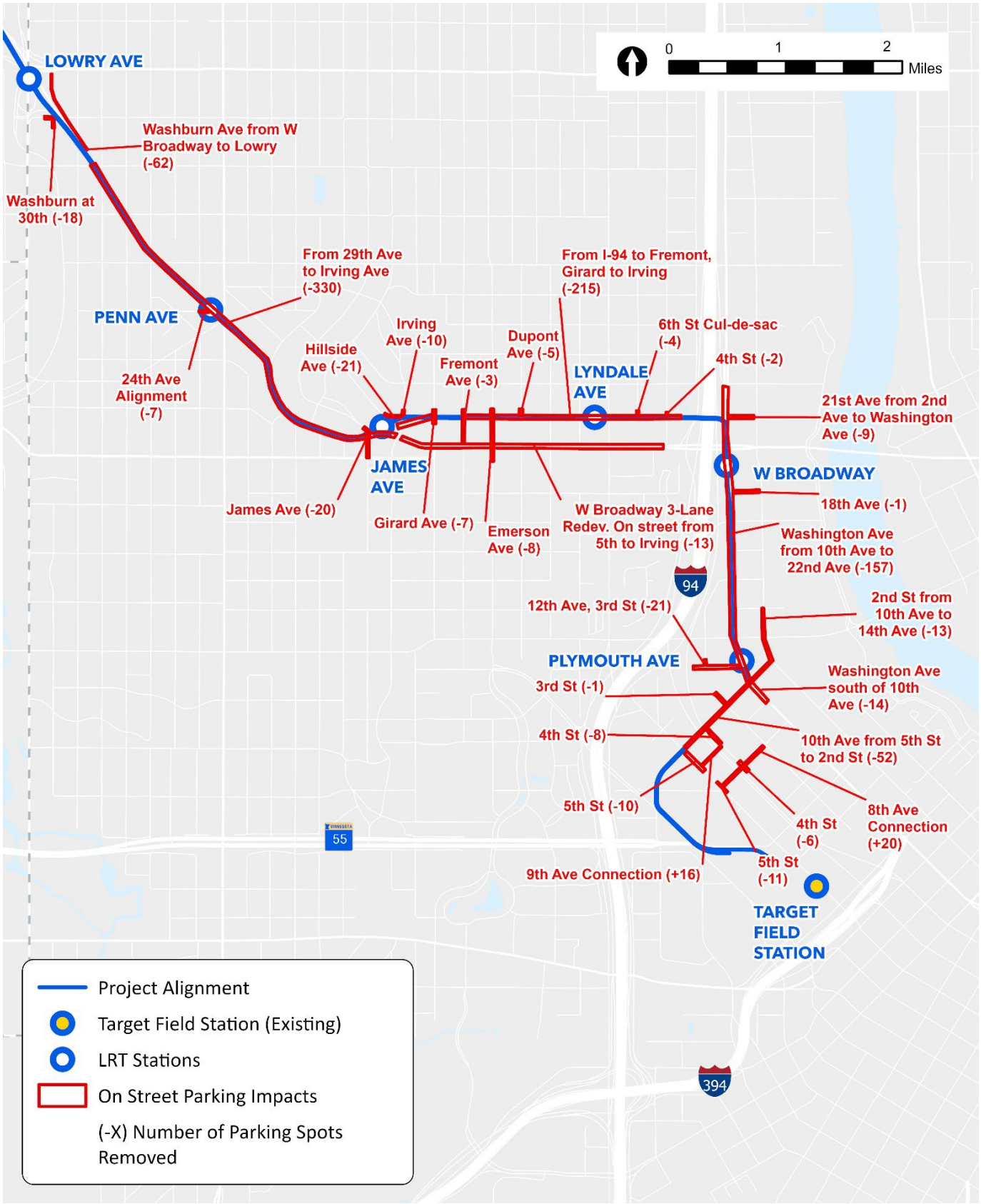


Figure 3-12 Off-Street Parking Impacts in the City of Minneapolis

3.5.3.2 Construction-Phase (Short-Term) Impacts

With the Project, on-street parking spaces could be temporarily removed at locations to facilitate construction of the Project (for example, to facilitate truck movements or to provide a temporary truck loading zone). The No-Build Alternative would have no short-term impacts.

3.5.4 Avoidance, Minimization, and/or Mitigation Measures

The Council has engaged with potentially affected business owners on parking impacts through surveys, door knocking, and meetings. General concerns from business owners are how a loss of parking spaces (on- or off-street) would negatively impact their business by making it more difficult for customers to access their business by car. Where off-street parking spaces would be lost but buildings and businesses remain, the Council plans to compensate business owners for the loss of off-street parking spaces. The Council would compensate property owners through the property acquisition process, consistent with state and federal law, which includes the Uniform Act. See Chapter 4, Section 4.3 for additional information regarding the Uniform Act.

In the City of Minneapolis, the Project area has been designed to facilitate multimodal transportation options with greater emphasis on transit, bicycle, and pedestrian modes. The City of Minneapolis has a Complete Streets policy supporting the prioritization of street space for people walking, bicycling, and using transit over vehicles. Furthermore, parking would remain on nearby streets and at off-street parking lots associated with the adjacent buildings. The Council will continue to refine the street design of the blocks surrounding the Penn Ave/W Broadway Ave intersection to lessen parking impacts. Adjustments will focus on making space for on-street parking, which will include accessible parking stalls that allow people using wheelchairs and other mobility devices to better navigate from vehicles to the sidewalk.

At Penn/W Broadway, a private parking lot currently in use for a commercial property will be acquired by the Project and converted to public parking to mitigate for the reduction in off-street parking at an adjacent public lot.

Opportunities for TOD in the City of Robbinsdale could provide parking that is better integrated into planned development.

Temporary impacts to on-street parking required to facilitate truck movements or loading during construction would be identified as part of construction staging requirements for contractors. The construction contractor would develop a Construction Mitigation Plan to address temporary parking loss during construction of the Project. Construction activities would be phased; therefore, many of the parking spaces lost during construction would be unavailable for only part of the construction-phase.

The Council will identify mitigation strategies for temporary closures in the Construction Communication Plan, which will include construction staging requirements during construction. The purpose of the Construction Communication Plan is to prepare Project-area residents, businesses, and commuters for construction; listen to their concerns; and develop plans to minimize disruptive effects. Strategies could include:

- Issuing and distributing regular construction updates
- Providing advance notice of roadway closures, driveway closures, and utility shutoffs
- Conducting public meetings
- Establishing a 24-hour construction hotline
- Preparing materials with information about construction
- Addressing property access issues
- Assigning staff to serve as liaisons between the public and contractors during construction
- Identify temporary parking during construction

3.6 Freight Rail Conditions

This section discusses impacts that the Project would have on the existing freight rail infrastructure in the Project area.

3.6.1 Regulatory Context and Methodology

Project engineering drawings were referenced to identify the physical impacts of the Project to freight rail infrastructure. The Council reviewed the requirements of Minn. Stat. § 219.46, BNSF, CPKC, the American Railway Engineering and Maintenance-of-Way Association, and MnDOT to confirm vertical clearance requirements for the freight rail track. Additional vertical clearance requirements are presented in Minn. Stat. § 219.46; the Project design is being developed in accordance with these requirements.

The Federal Railroad Administration (FRA) is the federal agency with jurisdictional authority over railroad safety, except "rapid transit operations in an urban area that are not connected to the general railroad system of transportation" (49 United States Code [USC] § 103, 49 USC § 20102). In September 2013, FRA provided a preliminary jurisdiction determination for the Project that concluded that the Project would be an urban rapid transit operation, and therefore, FRA would not exercise its safety jurisdiction over the Project, except to the extent that it is necessary to ensure railroad safety at any limited shared connections between the Project and freight rail. Because the Project Alignment has moved out of the BNSF right-of-way (see Chapter 2), there are no longer any shared uses of freight rail rights-of-way.

3.6.2 Study Area and Affected Environment

The Project Alignment generally runs within existing street right-of-way from the Target North Campus in the City of Brooklyn Park to Target Field in the City of Minneapolis. Unlike the 2016 Alignment for the Project that was within the BNSF right-of-way, there is minimal interaction between the Project Alignment and the existing freight railroads. There is a pedestrian bridge crossing of the BNSF at the 63rd Ave N park-and-ride and one LRT-and-roadway bridge crossing (CR 81) of CPKC. Three at-grade crossings of the Project are parallel to the BNSF at-grade crossings (W Broadway Ave [in the City of Brooklyn Park about one-quarter mile south of 73rd Ave N], 63rd Ave N, and Bass Lake Rd). These crossings may require signal timing coordination.

3.6.3 Environmental Consequences

Impacts are described as operating-phase, meaning long-term impacts that are projected to be experienced after the Project has opened, and construction-phase, meaning short-term impacts experienced during the construction of the Project.

3.6.3.1 Operating-Phase (Long-Term) Impacts

For the Project, all potential impacts to freight rail resources would occur in the Cities of Brooklyn Park, Crystal, and Robbinsdale. There would be no impacts in the City of Minneapolis.

The Project includes a pedestrian bridge over the BNSF tracks near 63rd Ave N, an LRT bridge crossing over the CPKC tracks with CR 81, and the addition of LRT running at-grade and parallel to the existing freight tracks at intersections with W Broadway Ave, 63rd Ave N, and Bass Lake Rd. Each intersection would require modifications of the existing street signal system, which in turn would require coordination with BNSF's railroad signal preemption. The reconstruction of 42nd Ave N in the City of Robbinsdale west of CR 81 could include reconstruction west of the BNSF right-of-way and may include elements such as channelized lanes that could support a future quiet zone. No operating-phase impacts to freight rail would occur under the No-Build Alternative.

The bridge crossing with CR 81 would not result in any long-term operating impacts.

The three at-grade road crossings would not result in any long-term impacts as there are existing at-grade crossings in these locations already. The pedestrian bridge would have a minimal long-term impact on BNSF as the abutments for the bridge would be located outside BNSF right-of-way and would not impact BNSF's ability to operate (and expand) the railroad.

3.6.3.2 Construction-Phase (Short-Term) Impacts

No construction-phase impacts to freight rail would occur under the No-Build Alternative. Permits, agreements, flagging, and coordination would be needed for temporary work within the railroad right-of-way for the Project.

3.6.4 Avoidance, Minimization, and/or Mitigation Measures

Freight rail operation coordination plans will be developed to manage coordination with affected freight railroads during construction. Minimal short-term impacts to freight rail operations because of construction activities for the Project could occur along the BNSF right-of-way during the interconnection of new CR 81 signal systems at W Broadway Ave, 63rd Ave N, and Bass Lake Rd with the adjacent BNSF active grade crossing systems. Moderate short-term impacts are expected to occur where the CR 81 bridge over the CPKC right-of-way would be reconstructed to accommodate the Project.

To mitigate short-term impacts to freight rail operations related to construction activities, the Council would develop and implement freight rail operation coordination plans. The purpose of these plans is to facilitate coordination between the Council and the affected freight railroads during construction activities affecting freight rail operations. As part of this effort, Council staff would also work with affected freight rail owners and operators to provide provisions in the construction contract to identify how the contractor would communicate with the affected railroads. Further, Council staff would work with affected freight rail owners and operators to sequence construction to reduce effects on freight movements. Dates and times for all stoppages would be determined through coordination with the railroad owners and operators.

During construction activities, flaggers would be used to allow freight rail operations to continue. The use of flaggers would require construction activities adjacent to active freight rail to halt while freight trains traverse the construction area.

No long-term mitigation measures are anticipated.

3.7 Aviation

The only aviation facility within the Project area is Crystal Airport, a regional airport owned and operated by the Metropolitan Airports Commission (MAC). This section discusses Project impacts to the Crystal Airport facility.

3.7.1 Regulatory Context and Methodology

According to the Federal Aviation Administration's (FAA's) *Advisory Circular 150/5300-13B*,[16] a RPZ is a clear zone located at the end of each airport runway intended for the protection of people and property on the ground. The State Statutes and Rules require additional State Safety Zones, implemented through airport overlay zoning ordinances. The MAC also adopted an airport zoning ordinance in 1952 that regulates the use of property near Crystal Airport.

The Council coordinated with FAA and MAC in 2022 and 2023 to update the 2014 RPZ AA.

The update included background, a summary of changes since the 2014 RPZ AA, a review of alternatives, and a recommended preferred alternative. Several alternatives were explored to avoid conflicts between Project structures and the RPZ approach and departure surface. A concurrence letter from FAA to the Council dated July 19, 2023, and additional exhibits are included in Appendix A-3.

3.7.2 Study Area and Affected Environment

The study area for aviation is defined as the area where the LOD of the Project overlaps the Runway 24R Departure RPZ and the Runway 6L State Safety Zone A (see green dashed shape in MIC 2023 RPZ AA Approved LRT Alternative.pdf and MnDOT Safety Zones and Clear Zones.pdf in Appendix A-3). Crystal Airport hosted approximately 47,000 flight operations in 2022. CR 81 and BNSF right-of-way intersect the Runway 24R Departure RPZ. Residential land uses currently occupy a portion of State Safety Zone A beyond Crystal Airport's property boundary.

3.7.3 Environmental Consequences

Impacts are described as operating-phase, meaning long-term impacts that are projected to be relevant after the Project has opened, and construction-phase, meaning short-term impacts relevant during the construction of the Project.

3.7.3.1 Operating-Phase (Long-Term) Impacts

The Project is within the median of CR 81 and is an at-grade transitway with 16-foot-tall LRT vehicles and a 23-foot-tall OCS to supply power. During operation, LRT trains would occupy the Runway 24R Departure RPZ for about 5.1 seconds per pass. The Council anticipates that passes would occur about every 5 to 7.5 minutes throughout the day.

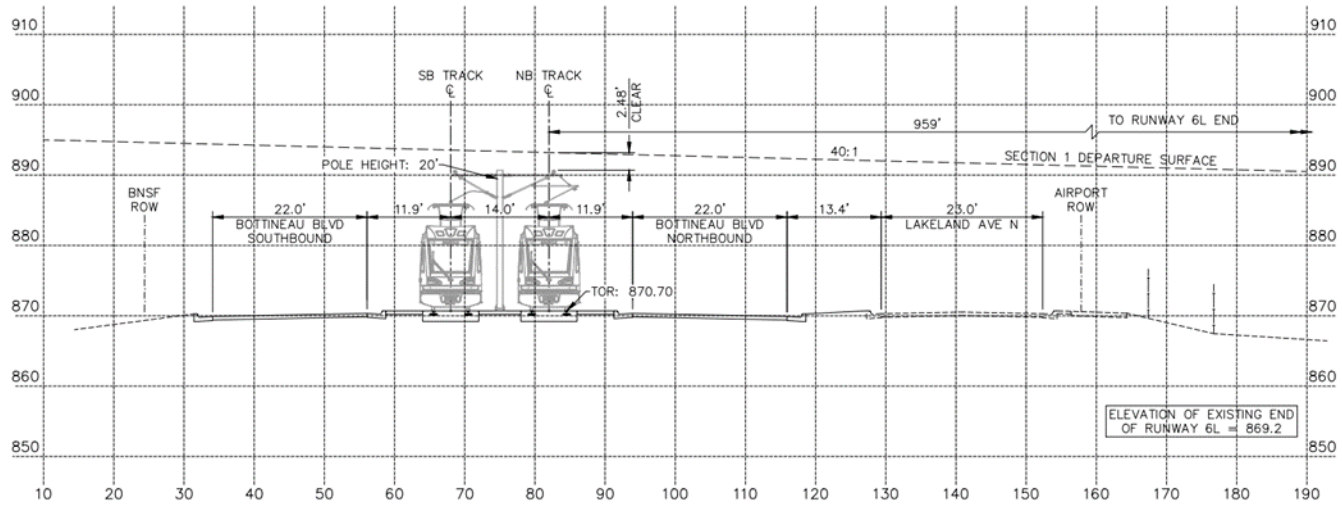
Approximately two to three OCS poles are anticipated in the Runway 24R Departure RPZ. After considering several alternatives to reduce conflict between LRT infrastructure and the RPZ surfaces, the Council determined that the OCS poles in the median of CR 81 would not encroach on the RPZ surface (see Figure 3-13) and would also be located as far from the RPZ centerline as possible. Final OCS pole spacing and locations would be determined during the final design of the Project. The No-Build Alternative would not include any improvements within the RPZ; therefore, no operating-phase aviation impacts would occur under the No-Build Alternative.

3.7.3.2 Construction-Phase (Short-Term) Impacts

Construction of the Project, including the OCS, would occur within the Runway 24 Departure RPZ. Construction operations and phasing in the RPZ would be coordinated with MAC and FAA during the Project's final design phase to mitigate these impacts. The Council would consider the FAA *Form 7460-1* process complete if the FAA were to issue a statement of no objection to the proposed activity. On July 19, 2023, the FAA issued a letter indicating concurrence on the conclusion of the updated 2023 Crystal Airport RPZ AA for revisions to the Project. A copy of the letter regarding the Crystal Airport (MIC) RPZ AA is included in Appendix A-3.

Construction equipment height would be restricted within the runway approach surface. To discourage bird nesting, no open water would be allowed within the RPZ during construction. The No-Build Alternative would not involve any improvements within the RPZ; therefore, no construction-phase impacts on aviation would occur under the No-Build Alternative.

Figure 3-13 Crystal Airport Runway Protection Zone and State Safety Zone Effects



3.7.4 Avoidance, Minimization, and/or Mitigation Measures

The RPZ AA identified the full range of alternatives that could avoid and/or minimize the effects of the Project on the land use within the RPZ, as well as mitigate the risks to people and property on the ground. The recommendation identified in the RPZ AA was a transitway within the CR 81 median as the preferred alternative. FAA reviewed the findings and recommendations of the RPZ AA and stated in a letter dated July 19, 2023, that it concurred with the RPZ AA findings (see Appendix A-3).

The FAA conditionally approved the Crystal Airport Layout Plan on May 26, 2020. The Crystal Airport Layout Plan includes integration of LRT infrastructure and operations in the CR 81 median. Based on the decisions rendered by the FAA through the RPZ AA and confirmed through the FAA's issuance of a letter of no objection (Form 7460-1 application), the Project will be included in the next update of the Crystal Airport Layout Plan.

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