A-3. Appendix Chapter 3: Transportation

Appendix A-3 supplements Chapter 3 and presents results from the analysis of impacts to the transportation system within the study area. Results for the No-Build Alternative are presented for the purpose of establishing a basis to compare Project alignment and design options. Topics covered include transit, pedestrian, bicycle, vehicle, vehicle parking, freight rail, and aviation. Potential operating-phase (long-term) and construction-phase (short-term) impacts are also evaluated, and potential avoidance, minimization, and mitigation measures are presented. Project alignment and design options evaluated in this chapter are illustrated and described in Appendix A-2 of Chapter 2 of this document. The Build Alternative carried forward for the Project is presented in Chapter 2 of this Supplemental Draft EIS.

Changes to This Appendix Since the Final EIS and ROD Were Published

This appendix updates the discussion in the Final EIS on the alternatives considered and includes the following sections:

- ***Section 3.1*** summarizes transit conditions, assessing how the Project would affect adjacent routes and the regional transit system.
- ***Section 3.2*** summarizes pedestrian conditions, assessing how the Project would affect pedestrian customer experience and facilities such as sidewalks, trails, pedestrian bridges, and crossings within the study area.
- ***Section 3.3*** summarizes bicycle conditions, assessing how the Project would affect bicycling customer experience and facilities, including existing and planned facilities.
- ***Section 3.4*** summarizes vehicle traffic conditions, assessing level of service at intersections throughout the Project area and changes to traffic signals.
- ***Section 3.5*** summarizes vehicle parking conditions, including where on-street and off-street parking would be impacted for each Project alignment and design option.
- ***Section 3.6*** summarizes freight rail conditions, including locations of where the Project and freight rail would interact and any impacts to freight rail for each Project alignment and design option.
- ***Section 3.7*** summarizes aviation conditions focusing on the Crystal Airport RPZ and Safety Zone A.

Table A3-1 provides an overview of the transportation modes analyzed in this appendix, 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.

Table A3-1 Defined Transportation Modes and Study Areas

Mode Evaluated	Study Area Defined	Basis for Study Area
Transit conditions	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
Pedestrian conditions	10-minute walkable area around LRT stations; ¼ mile on either side of Project Alignment	Captures generally walkable area around LRT stations and crossings
Bicycle conditions	½ mile around LRT station areas; ¼ mile on either side of Project Alignment	Captures generally bikeable area around LRT stations and crossings
Vehicle traffic	Existing signalized intersections, Project signalized intersections, and crossings controlled by gate arms along the Project Alignment	Intersections capture concentrated area of potential impacts and delay
Vehicle parking	Within Project LOD	Estimated area of construction around Project area

Mode Evaluated	Study Area Defined	Basis for Study Area
Freight rail	Intersections of BNSF and CPKC rights-of-way and the Project Alignment	Freight rail infrastructure and operations lie within the BNSF and CPKC rights-of-way
Aviation	Areas within LOD and RPZ and Runway 6L Safety Zone	Required study areas concerning Crystal Airport, the only aviation facility adjacent to the Project

3.1 Transit Conditions

This section describes existing and planned transit service in the study area, the operating characteristics of the proposed 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 STOPS to develop transit ridership forecasts for the Project. The ridership forecasting methodology issued by FTA during the 2023 Route Modification and Design Decision process was applied for the alignments and options evaluated in this Appendix. Socioeconomic data from 2018 were considered representative of a base year of 2019 and 2040 data were used to determine horizon year (2040) demand. FTA has recently issued new methodology in the FTA CIG reporting instructions for fiscal year 2025. The Council used the updated methodology and the most recent regional population and employment forecasts for the ridership forecasts generated for the Build Alternative, presented in Chapter 4. The Supplemental Draft EIS assumes that trains would operate at 10-minute frequencies for peak weekday operations. While Metro Transit has reduced service frequencies as of Spring 2024, the service frequencies are anticipated to return to the planned service levels by 2030, the Project's opening year.

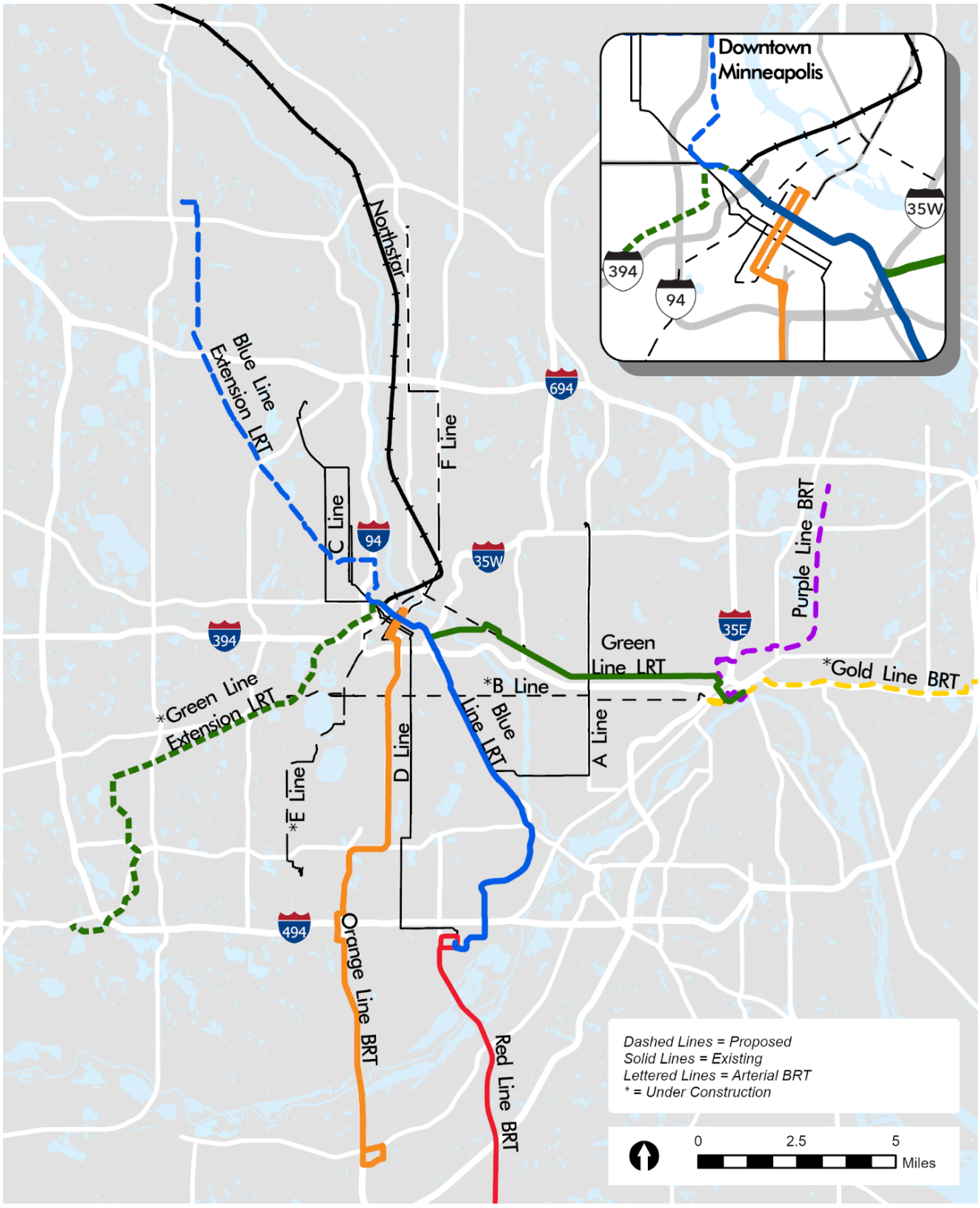
3.1.2 Study Area

The study area for public transit conditions is the Project alignment, plus any intersections or connections between the LRT 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 accounts for changes in the seven-county jurisdiction of the Council.

3.1.3 Affected Environment

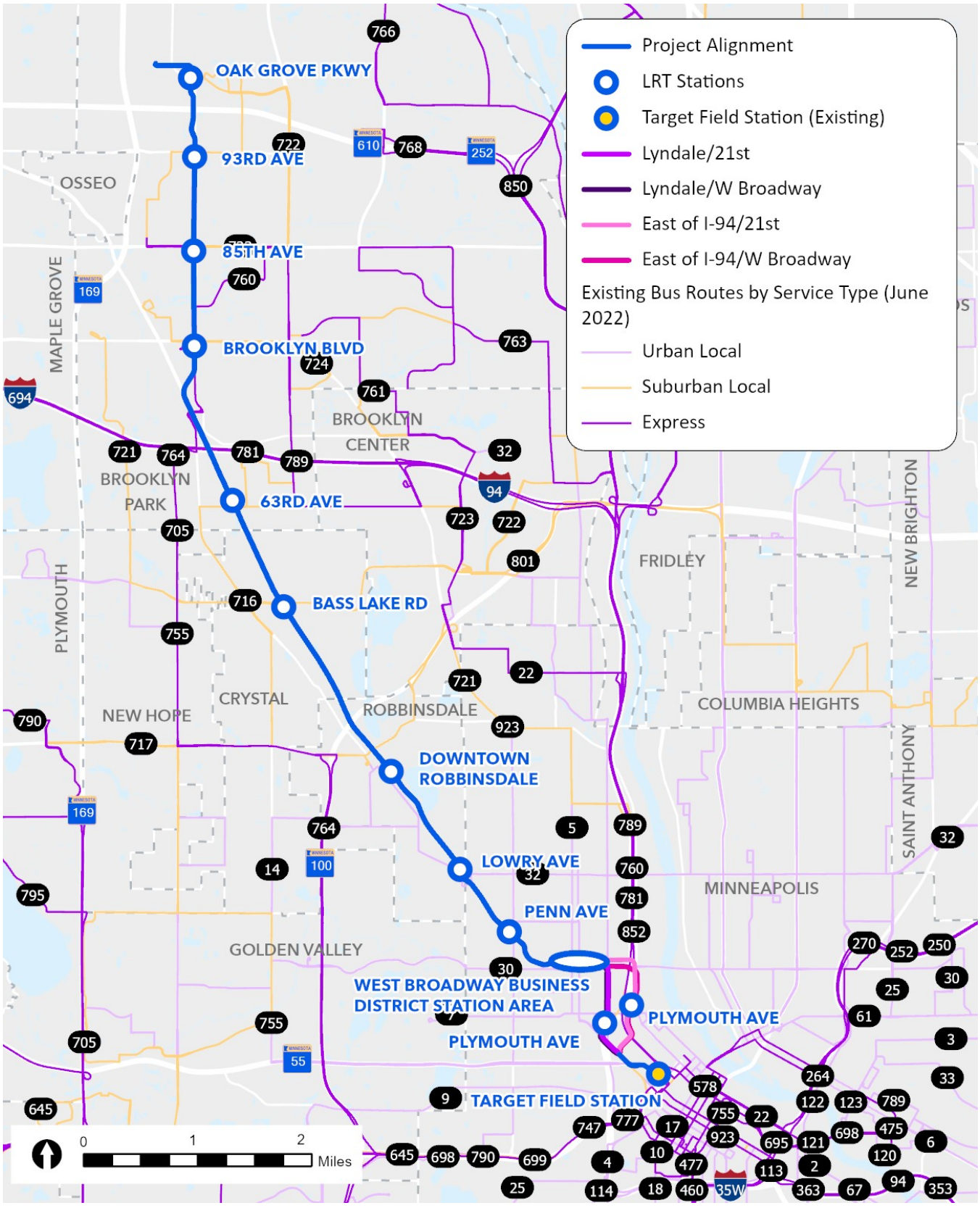
The transit service area for the Project is generally defined by the Mississippi River to the north and east, I-394 to the south, and US 169 to the west. The area is served by a network of urban and suburban local bus routes that make timed connections at three transit centers in the study area (Robbinsdale, Brooklyn Center, and Starlite transit centers) as well as Downtown Minneapolis (Target Field Station). 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. Existing transit service in the area is shown in Figure A3-1 and Figure A3-2.

Figure A3-1 Planned METRO System by Target Year of 2026 under Current Revenue Scenario



Source: Metropolitan Council *2040 Transportation Policy Plan*.

Figure A3-2 Existing Bus Transit Service as of June 2022



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 and bus lines would enable access and mobility beyond the study area and affected environment. The 2040 TPP[1] outlines plans for three connections to other METRO lines (Table A3-2). Depending on the Project alignment and design option, the Project would connect to between 18 and 20 existing local or express bus routes (Table A3-3). Additionally, the Project would include four park-and-ride facilities, one each at the Downtown Robbinsdale, Bass Lake Rd, 63rd Ave N, and Oak Grove Pkwy Stations (which are the same for all Project alignment and design options).

Table A3-2 Project Extension Connections to METRO Lines

LRT Station	Connecting METRO Line	Service to
Target Field	Green Line; C Line; Northstar	SouthWest Station (City of Eden Prairie) and Downtown St. Paul; Brooklyn Center Transit Station; Big Lake
Emerson–Fremont (one-station option)	D Line	Brooklyn Center Transit Center and Mall of America
Emerson–Fremont (two-station option)	D Line	Brooklyn Center Transit Center and Mall of America
Penn Ave	C Line	Brooklyn Center Transit Center and 7th St/Park Ave

Table A3-3 Station Amenities and Connections to Local and Express Bus Service

LRT Station	Park-and-ride	Transfer Routes (Lyndale/21st) (Lyndale/Broadway)	Transfer Routes (East of I-94/21st) (East of I-94/Broadway)
Target Field	No	14, 94, 355, 363	14, 94, 355, 363
Plymouth	No	5, 22	3, 7, 14
Emerson–Fremont Station area (one-station option)	No	5, 14, 30	5, 14, 30
Emerson–Fremont Station area (two-station option)	No	14, 22, 30, 28	14, 22, 30, 28
Penn Ave	No	14	14
Lowry Ave	No	14, 32	14, 32
Downtown Robbinsdale	Yes (up to 500 spaces)	14, 32, 716, 717	14, 32, 716, 717
Bass Lake Rd	Yes (up to 170 spaces)	716, 721	715, 721
63rd Ave N	Yes (up to 565 spaces)	716	716
Brooklyn Blvd	No	705, 723, 724, 764	705, 723, 724, 764
85th Ave N	No	723, 724, 760	723, 724, 760
93rd Ave N	No	724	724
Oak Grove Pkwy	Yes (up to 924 spaces)	722, 724	722, 724

3.1.4 Environmental Consequences

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

3.1.4.1 Operating-Phase (Long-Term) Impacts

The Project would 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. The combination of alignment options that would result in the highest ridership would be the East of I-94 flyover with two stations (between Penn and Plymouth) along either W Broadway or 21st Ave N. In 2040 based on the 2023 STOPS methodology, this alternative would result in 15,600 daily riders. The model found no significant difference between the W Broadway Ave and N 21st Ave options. Daily ridership for the alternatives that include Lyndale Ave would be similar, with daily ridership ranging from 15,300 to 15,500 depending on the combination of alignment options. The ridership model reflects high sensitivity to travel time. The East of I-94 at-grade alignment would be approximately 3 minutes slower the East of I-94 flyover option and would result in 13,900 daily riders. For all alignment options, an additional station would add between 34 and 40 seconds of travel time. While an additional station would result in a loss of ridership due to slower travel time, the loss would be offset by improved access to the LRT.

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

For the Lyndale Ave options, access to bus stops on southbound Route 22 between N 18th Ave and Plymouth Ave may be reduced.

3.1.4.2 Construction-Phase (Short-Term) Impacts

This section presents construction-phase (short-term) impacts to transit conditions based on environmental consequences.

No-Build Alternative. Under a No-Build Alternative, no construction-phase impacts would occur.

East of I-94 Option (W Broadway Ave or N 21st Ave). 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 A3-3 above for potentially impacted routes.

The Plymouth Ave overpass of the I-94 northbound on-ramp requires reconstruction, potentially impacting bus Route 7. Limited alternative roads exist to accommodate regular bus service and maintain connections to area destinations without adding resources for bus operations or curtailing routes and routing buses onto local roads that do not currently have bus service.

Lyndale Option (W Broadway Ave or N 21st Ave). The same general bus stop relocations and closures, route detours, and service suspensions would occur under the Lyndale option. The 7th St bridge over I-94 requires reconstruction, potentially impacting the D Line and bus Routes 5 and 22.

3.1.5 Avoidance, Minimization, and Mitigation

Avoidance, minimization, and mitigation efforts are grouped into long-term effects and short-term effects.

3.1.5.1 Operating-Phase (Long-Term) Mitigation Measures

No mitigation measures are warranted for long-term impacts to transit because no long-term adverse impacts would occur to transit service because of the Project's expansion of transit service. 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. Service plans are developed approximately 12 to 18 months before new service begins. The Council would follow federal and local procedures for route modifications or suspension of transit service, which would include a Title VI analysis to determine how service changes would affect

low-income population and BIPOC communities. 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 prior to and during construction. More details regarding mitigation will be included in the Supplemental Final EIS.

3.1.5.2 Construction-Phase (Short-Term) Mitigation Measures

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 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:

- Issue construction updates and post them on the Project website
- Provide advance notice of roadway closures, driveway closures, and utility shutoffs
- Conduct public meetings
- Establish a 24-hour construction hotline
- Prepare materials with information about construction
- Address property access issues
- Assign staff to serve as liaisons between the public and contractors during construction
- Post information at bus stops and regional transit centers (Robbinsdale, Brooklyn Center, and Starlite transit centers) indicating temporary stop closures and/or detour details
- Publish 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 a Construction Staging Plan, which would be reviewed with the appropriate jurisdictions and railroads, and the contractor would be required to secure the necessary permits and follow the Construction Staging Plan, unless otherwise approved. Components of a Construction Staging Plan include traffic management plans and a detailed construction timeline.

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 Project. 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[2] 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.[3] Several transportation agencies[4,5,6,7] use PLTS during the planning and design process as a cost-effective metric to determine the essential characteristics of a transportation facility. 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[7] developed a 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.[8] The Oregon Department of Transportation guide was applied to this analysis to quantify pedestrian comfort across the typical cross-sections of facilities in the study area between a no-build condition and a build condition. 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.

PLTS is measured on a 4-point scale, where 4 is a high level of traffic stress and uncomfortable for most users, 3 is a moderate traffic stress and uncomfortable for most adults, 2 is a low traffic stress and comfortable for most adults, and 1 is separation from all except low-speed, low-volume traffic and comfortable for children.[9]

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 September 2023. 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.

3.2.2 Study Area

The study area for impacts to pedestrian facilities is a quarter-mile radius around the Project Alignment, plus the area that is accessible within a 10-minute walk (assuming a 3.1-mph walking speed) of each LRT station area along the existing pedestrian network—also known as a 10-minute walkshed (Figure A3-3 through Figure A3-6). The Council uses the 10-minute walk distance as a typical trip length that an average able-bodied person is willing to walk to an LRT station.[10] The size of the 10-minute walkshed varies, depending upon the availability of pedestrian-accessible routes. Around stations that have many connected pedestrian facilities, a person could travel on more routes in 10 minutes, so the boundary is larger. Around stations that have minimal crossings, sidewalks, and trails, the walkshed is smaller because there are fewer travel route options.

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 station areas. Stations toward the north terminus of the Project Alignment have smaller affected environments as fewer pedestrians and facilities exist close to the suburban station areas.

3.2.3 Affected Environment

The affected environment is illustrated in Figure A3-3 through Figure A3-6, showing walksheds around each LRT station area. Additionally, community amenities that generate walking trips are shown. These community amenities include medical facilities, religious places of worship, food shelves, and civic buildings, as well as businesses identified during public engagement events that attendees identified as having important community and cultural value. The Project may improve regional access to the community amenities located within walksheds around station areas.

Figure A3-3 Pedestrian Environment in the City of Brooklyn Park

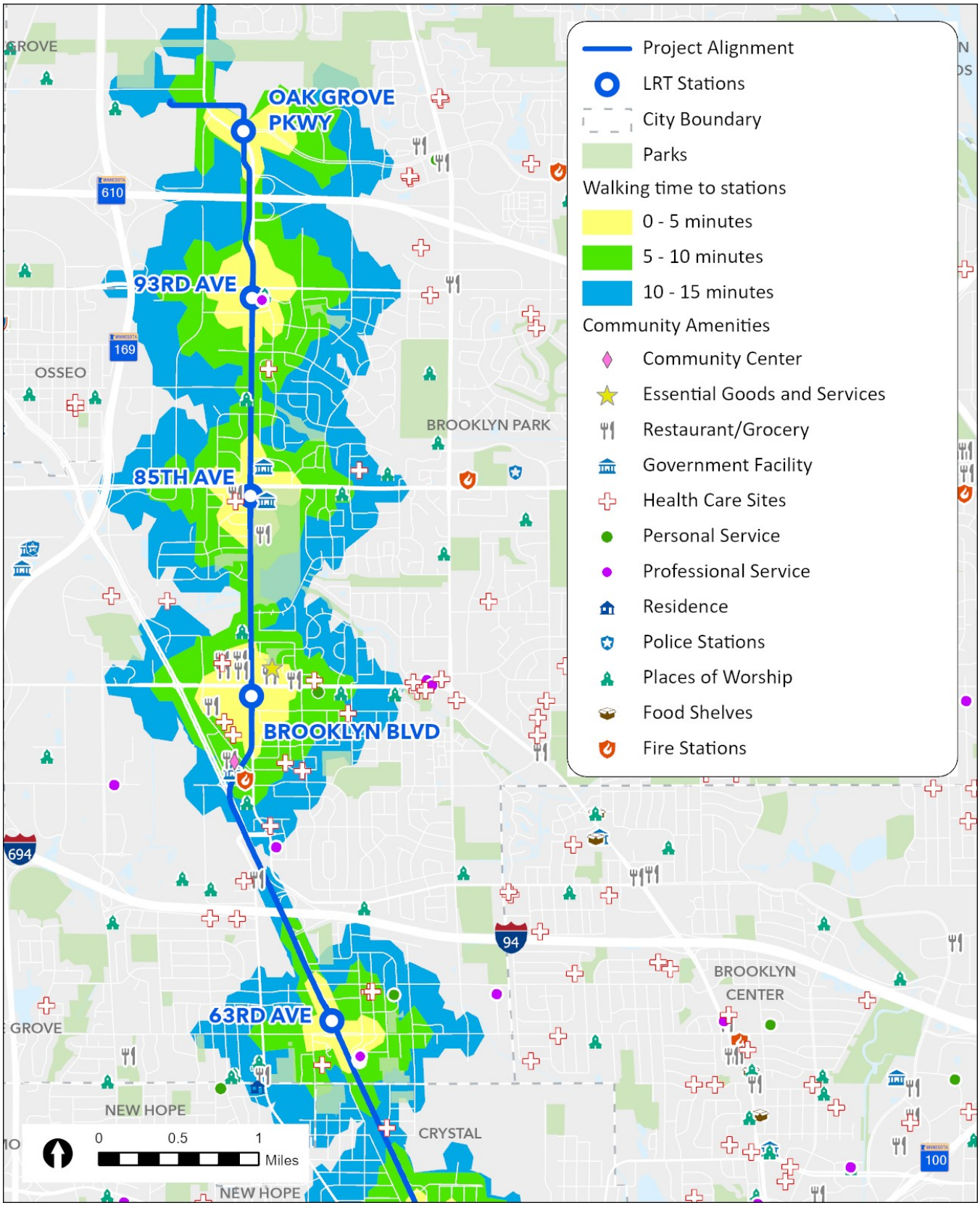


Figure A3-4 Pedestrian Environment in the City of Crystal

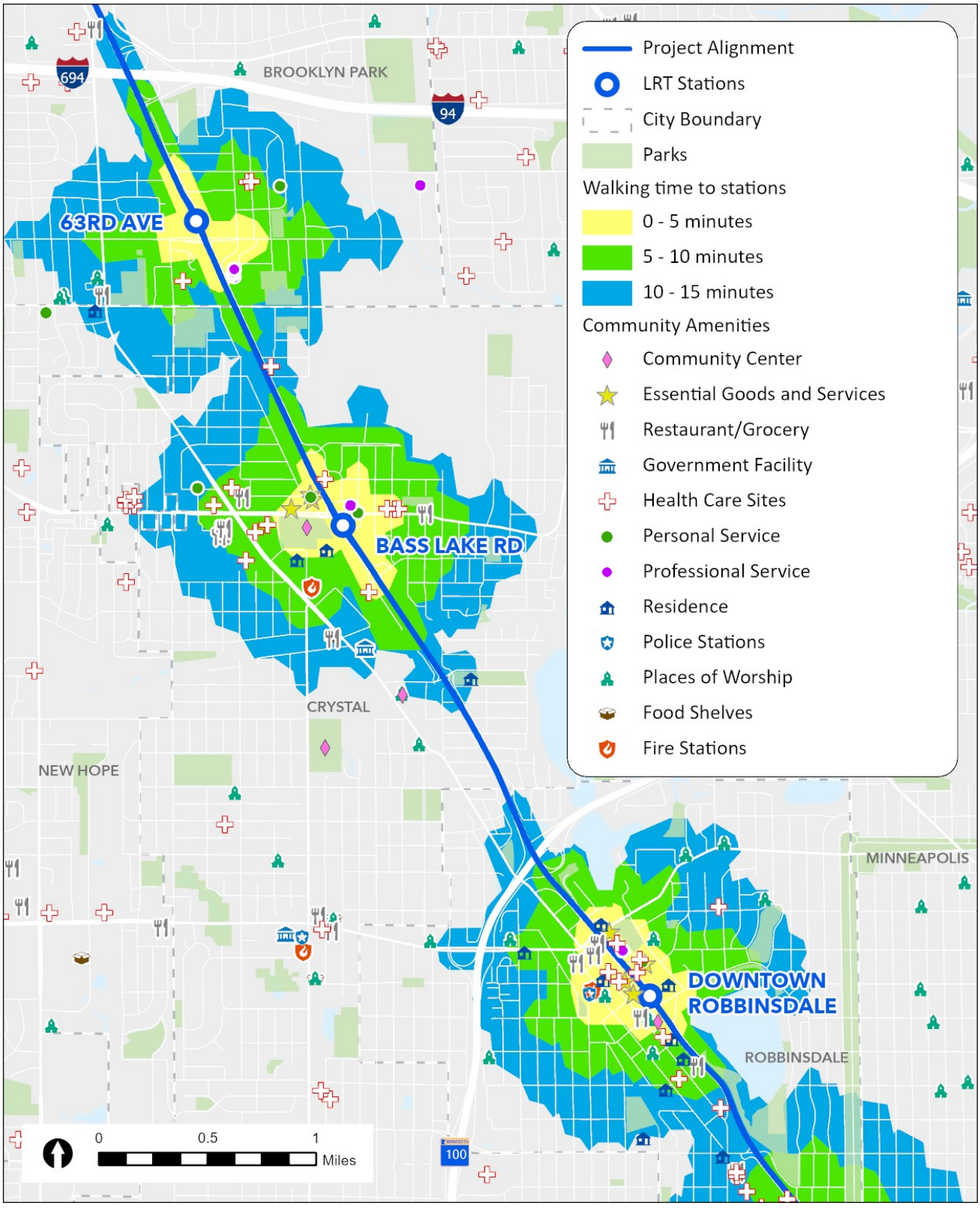


Figure A3-5 Pedestrian Environment in the City of Robbinsdale

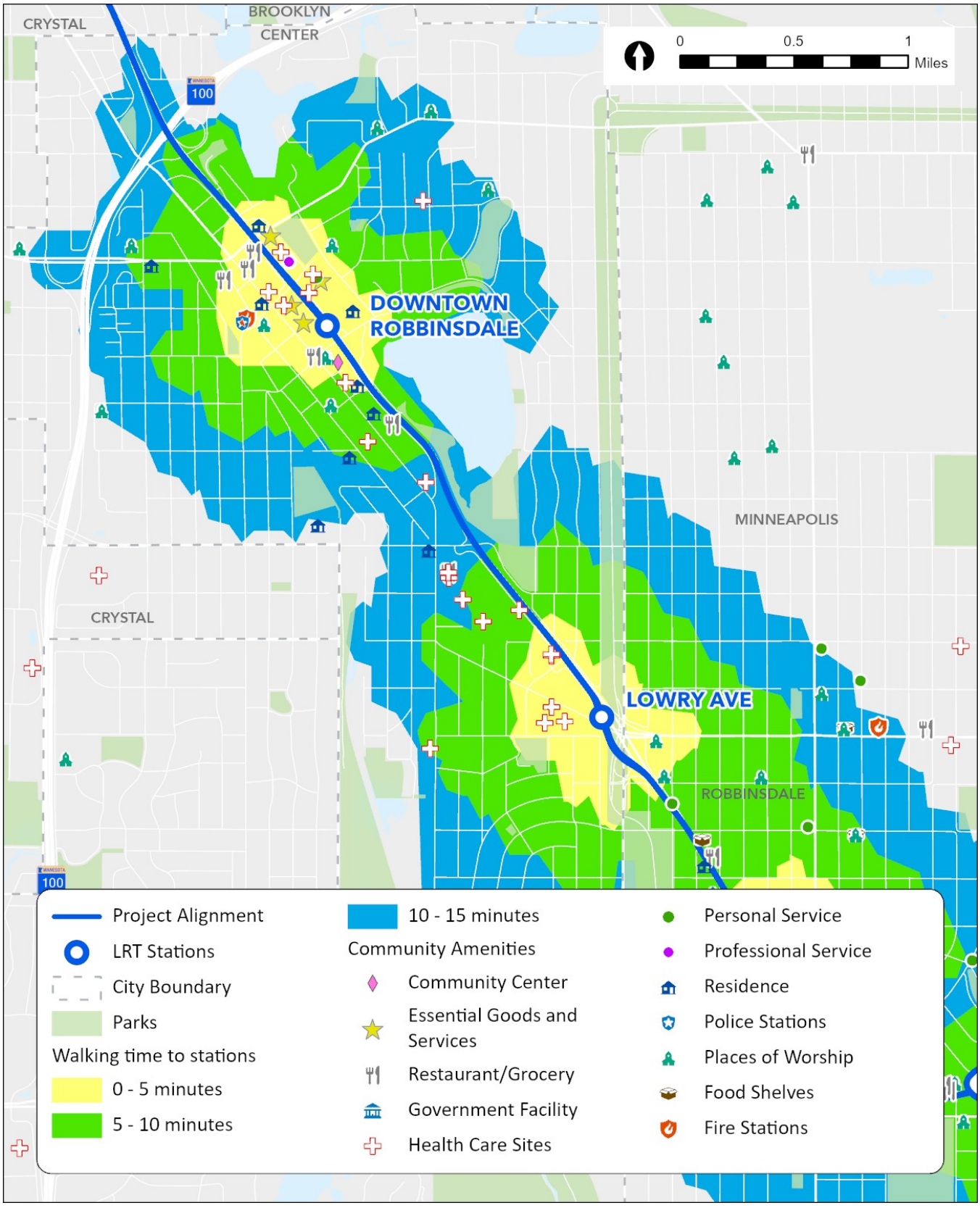
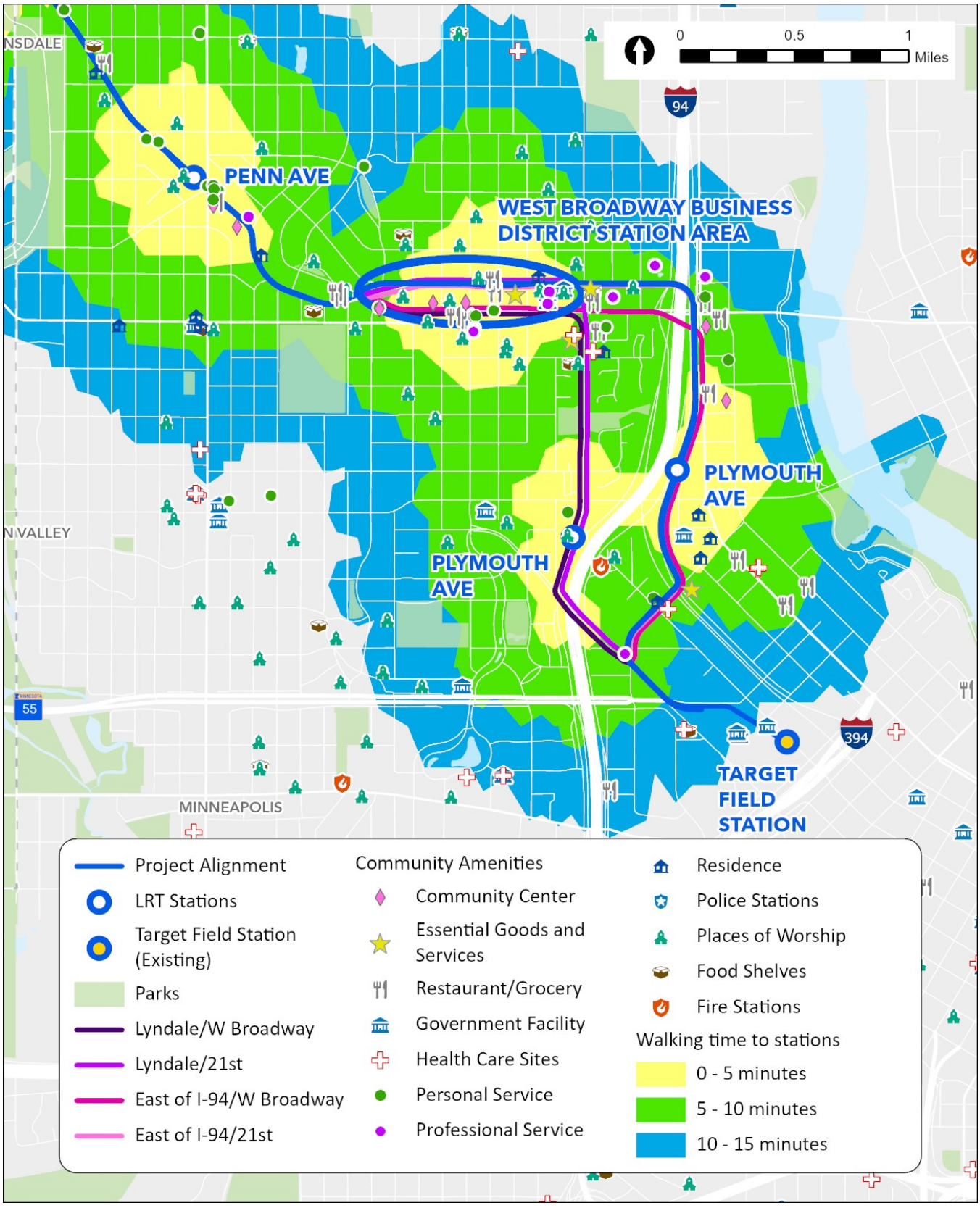


Figure A3-6 Pedestrian Environment in the City of Minneapolis



3.2.4 Environmental Consequences

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

3.2.4.1 Operating-Phase (Long-Term) Impacts

This section presents operating-phase (long-term) impacts to pedestrian conditions.

No-Build Alternative

Under a No-Build Alternative, no operating-phase impacts would occur to pedestrian facilities.

Project Alignment and Design Options

The Project would provide several long-term improvements to pedestrian safety, comfort, and accessibility. Station platforms would be pedestrian-accessible from existing sidewalks, and several station designs propose to modify or add new sidewalks, plazas, and crossings of roadways. Impacts are discussed by Project city.

A sample of sidewalk segments along the Project Alignment were analyzed for PLTS and results are shown in Table A3-4. Most options show an improvement in PLTS or maintaining a level of comfort and safety for most customers. A few exceptions to this include the Project alignment and design options with a score of 3 or higher (five sample locations), indicating that the pedestrian environment would be uncomfortable for most customers. With the Project, segments with high PLTS will undergo further design coordination with the intent to improve pedestrian conditions and results, including any mitigation warranted, will be presented in the Final EIS. PLTS is scored from 1 to 4, with 1 being the most comfortable pedestrian experience, and 4 being the least comfortable.

Table A3-4 Current and Project Pedestrian Level of Traffic Stress at Analyzed Segments

Segment	Alignment and Design Options Applicable	Existing PLTS	Project PLTS[a]	Build Alternative Improvement Result
Oak Grove Pkwy at W Broadway Ave	All	1	2	Minimal change, comfortable for most users
W Broadway Ave at 85th Ave N	All	4	2	Improved, comfortable for most users
85th Ave N at W Broadway Ave	All	4	3	Improved, but uncomfortable for most users
W Broadway Ave at Brooklyn Blvd	All	4	2	Improved, comfortable for most users
Brooklyn Blvd at W Broadway Ave	All	4	2	Improved, comfortable for most users
CR 81 between Bass Lake Rd and 63rd Ave N	All	3	3	No change, uncomfortable for most users
CR 81 between 47th Ave N and Corvallis Ave	All	2	2	No change, comfortable for most users
CR 81 through Downtown Robbinsdale	All	3	2	Improved, comfortable for most users
W Broadway Ave between Ilion Ave and Logan Ave	All	4	3	Improved, but uncomfortable for most users

Segment	Alignment and Design Options Applicable	Existing PLTS	Project PLTS[a]	Build Alternative Improvement Result
W Broadway Ave between Lyndale Ave and Bryant Ave	W Broadway Ave options	4	3	Improved, but uncomfortable for most users
W Broadway Ave between 4th St and Lyndale Ave	W Broadway Ave options	3	3	No change, uncomfortable for most users
W Broadway Ave between Washington Ave and 4th St	W Broadway Ave/east of I-94	4	4	No change, very uncomfortable for all users
Lyndale Ave between W Broadway Ave and N 21st Ave	Lyndale Ave/N 21st Ave	2	2	No change, comfortable for most users
Lyndale Ave between N 14th Ave and N 18th Ave	Lyndale Ave options	2	2	No change, comfortable for most users
N 10th Ave between N 5th St and N 4th St	East of I-94 options	3	2	Improved, comfortable for most users
10th Ave between N 8th Ave and N 5th St	East of I-94 options	3	2	Improved, comfortable for most users
Oak Lake Ave between 7th St and N 8th Ave	East of I-94 options	3	2	Improved, comfortable for most users
N 7th St between N 6th Ave and Oak Lake Ave	All	3	2	Improved, comfortable for most users

[a] PLTS is based on preliminary designs and subject to change.

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 A3-5 provides an overview of the changes at stations.

Table A3-5 Summary of Pedestrian Service Changes at the City of Brooklyn Park LRT Stations

LRT Station	Pedestrian Service Changes
Oak Grove Pkwy	Sidewalks, multi-use paths, and plaza to be added to 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 signaled crossings.
93rd Ave N	Marked and signaled crossings to be added on 93rd Ave N, 92nd Ave N, and W Broadway Ave. Curb radii to be adjusted, reducing crossing length.
85th Ave N	Vehicle slip 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.
Brooklyn Blvd	Dedicated right-turn lanes eliminated at intersection of Brooklyn Blvd and W Broadway Ave and crossing lengths reduced. Mid-block crossing to be added between Brooklyn Blvd and 76th Ave N. Sidewalks widened along W Broadway Ave and Brooklyn Blvd.
63rd Ave N	Elevated pedestrian bridge between station platform and 63rd Ave N park-and-ride. Intersection improvements to narrow traffic lanes, widen crosswalks, adding advanced ped/bike signage at free right turns, and tightening curb radii (NE/SW).

General Pedestrian Changes

Throughout the City of Brooklyn Park, the Project includes reconstruction of 33 existing intersections with ADA-compliant pedestrian facilities. Nine new ADA-compliant intersections would be added, mostly in the Oak Grove Pkwy Station area. Three new pedestrian roadway crossings would be installed where no crossing currently exists. Pedestrian access changes would occur at the following nine locations:

- New sidewalk and crossings along Xylon Ave and Oak Grove Pkwy
- New intersection at Rhode Island Dr at Oak Grove Pkwy
- New intersection at W Broadway Ave and 99th Ave N
- New intersection at Rhode Island Dr and 99th Ave N
- New walking facilities at Oak Grove Station
- New crossing south of 99th Ave N west of W Broadway Ave
- New sidewalk north side of 93rd Ave N
- New sidewalk east side of Nevada Ave near Maplebrook Terr
- Pedestrian bridge at the 63rd Ave N Station

The results of the PLTS analysis show an improved and acceptable level for pedestrians for the Build Alternative except for 85th Ave N at W Broadway Ave.

Oak Grove Pkwy Station

W Broadway Ave and Oak Grove Pkwy roadways would be altered, making room for a large median area to be installed between northbound and southbound lanes of W Broadway Ave. Sidewalks would be added to both sides of W Broadway Ave and Oak Grove Pkwy. Pedestrian crossings would be added to all intersections, with median pedestrian crossing refuges on Oak Grove Pkwy crossings. Curbs at intersections would extend the sidewalks farther into the intersection and reduce pedestrian crossing distance. Park-and-ride customers would access the platform using newly installed crosswalks.

W Broadway Ave Stations (Brooklyn Blvd, 85th Ave N, 93rd Ave N)

The Project would make improvements to pedestrian comfort in the vicinity of the three stations along W Broadway Ave. The intersections of Brooklyn Blvd, 85th Ave N, and 93rd Ave N would each have their curbs extended, reducing pedestrian crossing distance. The dedicated right-turn lanes at these three intersections would also be eliminated, reducing the number of vehicle lanes that pedestrians must navigate. Pedestrian crossing refuges would be added at new medians on 93rd Ave N, 85th Ave N, and Brooklyn Blvd. Trees and curbside vegetation would be added between the street and sidewalks. Sidewalks would be added to both sides of W Broadway Ave where none exist currently, and existing sidewalks would be widened at intersections and station areas.

63rd Ave N Station

Pedestrian connectivity to the 63rd Ave N Station would be possible from the existing sidewalks, crosswalks, and multi-use trails along CR 81 and 63rd Ave N. A pedestrian bridge over southbound lanes on CR 81 and the railroad would also connect the north end of the station platform to the 63rd Ave N park-and-ride facility.

City of Crystal

In the City of Crystal, the Project would include changes to the pedestrian environment around stations and adjacent to the Project Alignment. Table A3-6 provides an overview of the changes at stations.

Table A3-6 Summary of Pedestrian Service Changes at the City of Crystal Stations

LRT Station	Pedestrian Service Changes
Bass Lake Rd (interchange option)	Walkway under the road interchange to access south end of station platform
Bass Lake Rd (intersection option)	Pedestrian bridge to access south end of station platform

General Pedestrian Changes

Citywide, the Project would include reconstruction of seven existing intersections with ADA-compliant pedestrian facilities. Pedestrian access changes would occur at the following three locations:

- Pedestrian bridge south of Bass Lake Rd (applicable only to the intersection option)
- Multi-use path southwest of Bass Lake Rd (applicable only to the interchange option)

The results of the PLTS analysis at sample locations show no change in pedestrian conditions. CR 81 between Bass Lake Rd and 63rd Ave N would continue to be uncomfortable for most customers, while CR 81 between 47th Ave N and Corvallis Ave would remain comfortable for most customers.

Bass Lake Rd Station

Two design options are under consideration at the Bass Lake Rd Station: a highway interchange or an at-grade intersection. See Chapter 2 for a full description and visualizations of the options.

The interchange option 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 station platform.

The at-grade intersection option would enable at-grade access to the station platform at the north end at the crossing of CR 81, and an elevated pedestrian bridge at the south end of the platform would provide access from both sides of CR 81. Park-and-ride customers would access the station platform from the elevated pedestrian bridge. Stairs and an elevator would connect pedestrians between the station platform and pedestrian bridge.

City of Robbinsdale

In the City of Robbinsdale, the Project would include changes to the pedestrian environment around stations and adjacent to the Project Alignment. Three LRT station design option locations are under consideration in Downtown Robbinsdale: north of 41st Ave N, south of 41st Ave N, or south of 40th Ave N. See Chapter 2 for a map showing the stations and park-and-ride locations under consideration. Table A3-7 provides an overview of the changes at stations in the City of Robbinsdale.

Table A3-7 Summary of Pedestrian Service Changes at Downtown Robbinsdale and Lowry Ave Stations

LRT Station	Pedestrian Service Changes
Downtown Robbinsdale (north of 41st Ave N option)	Intersection plazas at 41st Ave N removed. Pedestrian bridge over CR 81 provides access to north end of station platform.
Downtown Robbinsdale (south of 41st Ave N option)	Intersection plazas at 41st Ave N removed. Mid-block crosswalk across northbound lanes of CR 81 provides access to south end of station platform.
Downtown Robbinsdale (south of 40th Ave N option)	Mid-block crosswalk across southbound lanes of CR 81 provides access to south end of station platform.
Lowry Ave	Vertical access to the elevated station would be ADA compliant.

General Pedestrian Changes

Citywide, the Project would include reconstruction of 13 existing intersections with ADA-compliant pedestrian facilities. Pedestrian access changes would occur at the following three locations:

- Pedestrian bridge over CR 81 at Robbinsdale Station (applicable only to north of 41st Ave N Station)
- Pedestrian bridge over southbound CR 81 lanes at Robbinsdale Station (applicable only to south of 40th Ave N Station)
- Vertical circulation at Lowry Ave Station

Three major City of Robbinsdale station design option locations are under consideration. Pedestrian impacts differ slightly for each option. See Chapter 2 for a full discussion of each City of Robbinsdale option.

Downtown Robbinsdale Station: North of 41st Ave N Design Option

A Robbinsdale Station located just north of 41st Ave N would have pedestrian access from the 41st Ave N and 42nd Ave N crosswalks, and from a pedestrian bridge to both sides of CR 81. The east side of the bridge would connect directly to the park-and-ride structure.

Downtown Robbinsdale Station: South of 41st Ave N Design Option

A Robbinsdale Station located just south of 41st Ave N would have pedestrian access from the 41st Ave N crosswalks and a mid-block crossing between 40th Ave N and 41st Ave N to the east side of CR 81. Seating areas at the 41st Ave N intersection would be removed to accommodate a new park-and-ride structure. Park-and-ride customers would navigate to the station platform using the sidewalk and newly installed crosswalks.

Downtown Robbinsdale Station: South of 40th Ave N Design Option

A Robbinsdale Station located just south of 40th Ave N would have pedestrian access from the 40th Ave N crosswalks, and from a pedestrian bridge over the southbound lanes of CR 81. The bridge may connect directly to the park-and-ride structure.

Lowry Ave Station

Pedestrian access to the elevated Lowry Ave Station platform would be ADA accessible.

City of Minneapolis

Table A3-8 provides a summary of pedestrian service changes at each LRT station in the City of Minneapolis. Impacts at Penn Ave Station are identical for all Project alignment and design options. However, there are differences between the four Project alignment and design options and the West Broadway Business District Station Area design options. The following discussion includes eight variations of these options to consider impacts. See Chapter 2 for a full description and maps showing the different Project alignment and design options under consideration.

Table A3-8 Summary of Pedestrian Service Changes at the City of Minneapolis Stations

LRT Station	Pedestrian Service Changes	Result
Penn Ave	Free right-turn lane eliminated at N 26th Ave. Crosswalk at Queen Ave provides access to north end of station platform. McNair Ave eliminated from W Broadway Ave/Penn Ave intersection. Mid-block crosswalk added near Newton Ave.	Neutral changes
West Broadway Business District Area (one-station option)	W Broadway Ave option: Crossing of W Broadway Ave at Aldrich Ave and DuPont Ave would provide access to east end of station platform. N 21st Ave option: Crossing of N 21st Ave at Aldrich Ave and DuPont Ave eliminated.	Impact resulting from access closures
West Broadway Business District Area (two-station option)	W Broadway Ave option: Crossing of W Broadway Ave at Irving Ave eliminated. Crossing of W Broadway Ave at James Ave provides access to west end of station platform. N 21st Ave option: Crossing of N 21st Ave at Aldrich Ave and DuPont Ave eliminated.	Impact resulting from access closures
Plymouth Ave (Lyndale Ave option)	Sidewalks along Lyndale Ave widened to incorporate a multi-use trail on east side.	Access improvement
Plymouth Ave (East of I-94 option)	Mid-block crossing of 3rd St would provide access to station platform.	Access improvement
Target Field Station	Sidewalks on 7th St widened.	Access improvement

Penn Ave Station

The southbound free right-turn lane from W Broadway Ave onto N 26th Ave would be eliminated, eliminating a roadway conflict for pedestrians. McNair Ave access to the intersection of W Broadway Ave and N Penn Ave would be pedestrian-only. A pedestrian crossing of W Broadway Ave would be added at N Newton Ave. Access to the Penn Ave Station platform would be possible from crosswalks at N Penn Ave and N Queen Ave.

Lyndale Ave N/W Broadway Ave/West Broadway Business District One-Station Alignment and Design Options

Under the Lyndale Ave N/W Broadway Ave alignment option, the Project would include reconstruction of 36 existing intersections with ADA-compliant facilities. Three new pedestrian roadway crossings would be added where no crossing exists currently. The crossing of W Broadway Ave at Thomas Ave would be closed.

Lyndale Ave N/W Broadway Ave/West Broadway Business District Two-Station Alignment and Design Options

Under the Lyndale Ave N/W Broadway Ave alignment option, the Project would include reconstruction of 36 existing intersections. Four new pedestrian roadway crossings would be installed where no crossing exists currently. Pedestrian access changes when intersections are converted to right-in, right-out. At these intersections,

pedestrians would not be permitted to cross the guideway to cross W Broadway Ave additionally when roadways are closed including the following three locations:

- W Broadway Ave at Thomas Ave closed
- W Broadway Ave at Irving Ave closed
- W Broadway Ave at DuPont Ave closed

Lyndale Ave N/N 21st Ave/West Broadway Business District One-Station Alignment and Design Options

Under the Lyndale Ave N/21st Ave N alignment option, the Project would include reconstruction of 37 existing intersections with ADA-compliant facilities. Three new pedestrian roadway crossings would be installed where no crossing exists currently. Pedestrian access changes would occur at the following three locations:

- W Broadway Ave at Thomas Ave closed
- N 21st Ave at Dupont Ave closed
- N 21st Ave at Aldrich Ave closed

Lyndale Ave N/N 21st Ave/West Broadway Business District Two-Station Alignment and Design Options

Pedestrian impacts would be similar to the Lyndale Ave N/N 21st Ave/one-station option.

East of I-94/W Broadway Ave/West Broadway Business District One-Station Alignment and Design Options

Under the east of I-94/W Broadway Ave alignment option, the Project would include reconstruction of 34 existing intersections with ADA-compliant facilities. Three new pedestrian roadway crossings would be installed where no crossing exists currently. The crossing of W Broadway Ave at Thomas Ave would be eliminated.

East of I-94/W Broadway Ave/West Broadway Business District Two-Station Alignment and Design Options

Under the east of I-94/W Broadway Ave alignment option, the Project would include reconstruction of 34 intersections with ADA-compliant facilities. Four new pedestrian roadway crossings would be installed where no crossing exists currently. Pedestrian access changes would occur at the following three locations:

- W Broadway Ave at Thomas Ave closed
- W Broadway Ave at Irving Ave closed
- W Broadway Ave at DuPont Ave closed

East of I-94/N 21st Ave/West Broadway Business District One-Station Alignment and Design Options

Under the east of I-94/N 21st Ave alignment option, the Project would include reconstruction of 33 existing intersections with ADA-compliant facilities. Three new pedestrian roadway crossings would be installed where no crossing exists currently. Pedestrian access changes would occur at the following four locations:

- W Broadway Ave at Thomas Ave closed
- N 21st Ave at Dupont Ave closed
- N 21st Ave at Aldrich Ave closed
- N 21st Ave at N 6th St closed

East of I-94/N 21st Ave/West Broadway Business District Two-Station Alignment and Design Options

Pedestrian impacts would be similar to the east of I-94/N 21st Ave/one-station design option.

Plymouth Station (Lyndale Alignment Option)

A bicycle facility would be constructed along the east side of Lyndale Ave. Sidewalks would be altered for pedestrian traffic to prevent conflict between pedestrians and bicycles.

Plymouth Station (East of I-94 Alignment Option)

A new pedestrian crossing of N 3rd St would provide access to the station platform.

Target Field Station

Sidewalks on N 7th St would be widened to make space for sidewalk-grade bike lanes and prevent conflicts between bicycles and pedestrians.

3.2.4.2 Construction-Phase (Short-Term) Impacts

All Project alignment and design options would involve some temporary sidewalk closures throughout the Project area. Under both Lyndale options (N 21st Ave or W Broadway Ave), the pedestrian bridge over Lyndale Ave at Hall Park may require temporary closure for renovation.

3.2.5 Avoidance, Minimization, and Mitigation

This section describes potential mitigation options for long- and short-term pedestrian network impacts.

3.2.5.1 Operating-Phase (Long-term) Mitigation Measures

No long-term mitigation is anticipated as the Project is expected to improve pedestrian access and comfort compared to existing conditions and the No-Build Alternative. However, pedestrian conditions will continue to be studied as design progresses. Any mitigation commitments will be documented in the Final EIS. In general, there would be a slight reduction in number of legal pedestrian crossings over the Project Alignment, but crossings would remain nearby the removed crossings and any existing or new pedestrian crossings would be more comfortable for users compared to the No-Build Alternative.

The W Broadway Ave options would increase pedestrian comfort on what is currently a very uncomfortable pedestrian environment. The N 21st Ave options would make it more difficult for pedestrians to cross N 21st Ave from what is currently a very comfortable pedestrian environment because of a few access closures and the introduction of LRT.

The pedestrian environment in the area surrounding I-94 remains a major pedestrian barrier under both No-Build and Build Alternatives.

3.2.5.2 Construction-Phase (Short-Term) Mitigation Measures

Where longer-term closures of sidewalks or trails are required, detour routes would generally be provided. During short-term closures of sidewalks or trails (typically up to about 3 to 5 days), detour routes or facilities might not be provided. 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

3.3 Bicycle Conditions

This section discusses facilities and travel conditions for bicyclists in the study area. It describes bicycle conditions as they exist 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[11] 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 between the Project alignment and design options. BLTS is a metric developed by the Mineta Traffic Institute at San José State University to quantify the comfort level of a roadway for cyclists based on roadway design and vehicle traffic characteristics.[3] A methodology guide published by Oregon Department of Transportation[7] was applied to this analysis for a high-level way to quantify the comfort level of a roadway for bicyclists. BLTS is based on the bike facility width, width of buffer between bicycle and vehicle traffic, vehicle traffic volumes, prevailing speed of automobiles, and whether bicycles must mix with vehicle traffic.

Researchers at Northeastern University[9] define BLTS as measured on a 4-point scale, where 4 is a high level of traffic stress and uncomfortable for most users, 3 is a moderate traffic stress and uncomfortable for most adults, 2 is a low traffic stress and comfortable for most adults, 1 is separation from all except low speed, low volume traffic and comfortable for children.

Segments described as “comfortable” are generally suitable for most adult cyclists and some children, while segments described as “uncomfortable” would be avoided by most adult cyclists.

A sample of roadway segments along the Project Alignment were analyzed for BLTS and results are shown in Table A3-4 above.

In addition to the BLTS analysis, changes to bicycling conditions in the Project alignment and design options were analyzed and are documented in this section based upon the engineering information. This includes changes in bicycling access, roadway crossings, and removed or added bicycle facilities.

3.3.2 Study Area

The study area for bicycling impacts is one-half mile surrounding station areas and a quarter mile on either side of the Project Alignment. Figure A3-7 depicts the bicycle network in the study area.

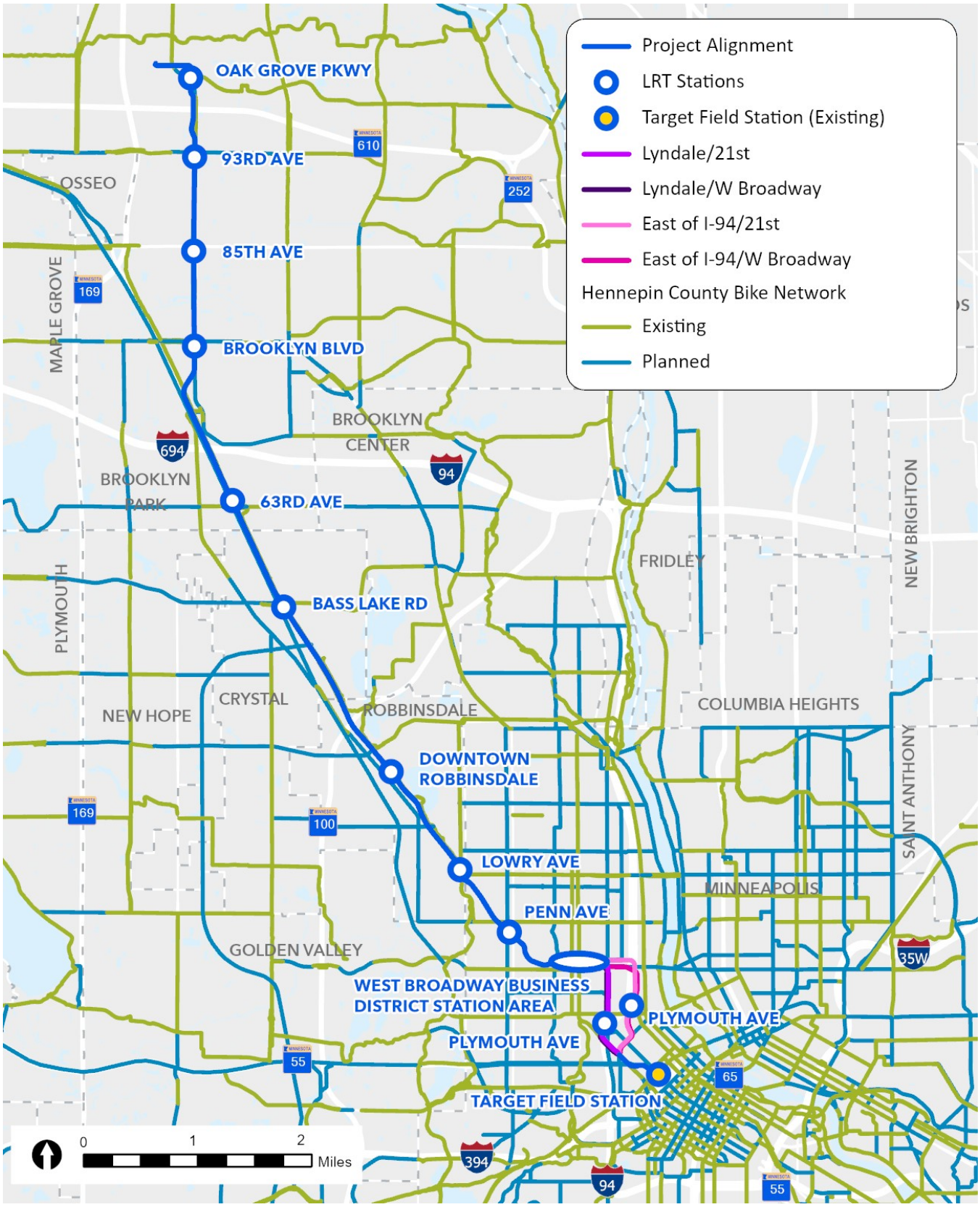
3.3.3 Affected Environment

LRT stations closer to Downtown Minneapolis and other city centers along the Project Alignment would likely have a larger affected environment, as a greater number of cycling facilities exist in these denser urban station areas. Stations toward the north terminus of the Project Alignment would likely have smaller affected environments as fewer cycling facilities exist close to the suburban station areas.

3.3.4 Environmental Consequences

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

Figure A3-7 Bicycle Network in the Project Area



3.3.4.1 Operating-Phase (Long-Term) Impacts

This section presents operating-phase (long-term) impacts to bicycle conditions based on environmental consequences.

No-Build Alternative

Under a No-Build Alternative, no operating-phase impacts would occur to bicycle facilities.

Project Alignment and Design Options

The Project would provide several long-term improvements to cyclist safety, comfort, and accessibility. Several station areas and street corridors along the Project Alignment would be reconstructed to include sidewalk-grade cycling lanes. Bicycle parking would be added at many station areas. Rail cars would accommodate customers bringing bicycles into the train car, allowing cyclists to link trips between cycling and transit modes.

The Project would intersect existing and planned future designated low-stress bikeways at the locations listed in Table A3-9 and Table A3-10, and bicycle access would be maintained at all existing locations, though some surface and routing modifications would be required. Future bicycle facilities could function at all locations, except for the W Broadway Ave options, which would be incompatible with planned bicycle facilities along W Broadway Ave between N Ilion Ave and I-94. However, designs for W Broadway Ave reconstruction under an LRT on the N 21st Ave option are still in development. Additional information about the design of W Broadway Ave under one of the N 21st Ave Alignment options will be available in the Final EIS.

Table A3-9 Project Alignment Interactions with Hennepin County Bicycle Facilities Network (Excluding the City of Minneapolis)

Location	Project City	Planned or Existing?	Operating-Phase Impacts
Oak Grove Pkwy between W Broadway Ave and Target Pkwy	Brooklyn Park	Existing	Modified, but access maintained
W Broadway Ave at Oak Grove Pkwy	Brooklyn Park	Planned	Remains feasible
W Broadway Ave between 93rd Ave N and TH 610	Brooklyn Park	Existing	Modified, but access maintained
Facility at 93rd Ave N and W Broadway Ave	Brooklyn Park	Planned	Remains feasible
Multi-use trail along W Broadway Ave between 85th Ave N and College Pkwy	Brooklyn Park	Existing	Access maintained
Facility at Brooklyn Blvd and W Broadway Ave	Brooklyn Park	Planned	Remains feasible
Facility at W Broadway Ave and CR 81	Brooklyn Park	Planned	Remains feasible
Facility at 63rd Ave N and CR 81	Brooklyn Park	Planned	Remains feasible
Facility at Bass Lake Rd and CR 81	Crystal	Planned	Remains feasible
Facility at Soo Line Trail and CR 81	Crystal	Planned	Remains feasible
Bikeway along CR 81 between 51st Ave N and W Broadway Ave	Crystal/Brooklyn Park	Existing	Access maintained

Location	Project City	Planned or Existing?	Operating-Phase Impacts
Multi-use trail along CR 81 between 47th Ave N and Corvallis Ave	Crystal	Existing	Access maintained
Facility at N 42nd Ave N/Lake Dr and CR 81	Robbinsdale	Planned	Remains feasible
Facility at 36th Ave N and CR 81	Robbinsdale	Planned	Remains feasible

Table A3-10 Impacted City of Minneapolis Bicycle Facilities Network Within Study Area

Location	Existing or Planned	Operating-Phase Impacts	Lyndale/ W Broadway Applies?	Lyndale/ 21st Ave Applies?	E of I-94/ W Broadway Applies?	E of I-94/ 21st Ave Applies?
Multi-use trail at Theodore Wirth Pkwy and W Broadway Ave	Existing	Access maintained	Yes	Yes	Yes	Yes
Bikeway at N 26th Ave and W Broadway Ave	Existing	Access maintained	Yes	Yes	Yes	Yes
Facility at N Queen Ave and W Broadway Ave	Planned	Remains feasible	Yes	Yes	Yes	Yes
Facility at N Irving Ave and W Broadway Ave	Planned	Remains feasible	Yes	Yes	Yes	Yes
Bike lanes at N Fremont Ave and W Broadway Ave/N 21st Ave	Existing	Access maintained	Yes	Yes	Yes	Yes
Bike lanes at N Emerson Ave and W Broadway Ave/N 21st Ave	Existing	Access maintained	Yes	Yes	Yes	Yes
Facility on W Broadway Ave between Washington Ave and Irving Ave	Planned	Not feasible with LRT on W Broadway Ave	Yes	Yes	Yes	Yes
Bike lanes on N 21st Ave between 4th St and Lyndale Ave	Planned	Remains feasible	N/A	N/A	Yes	Yes
Bike lanes on W Lyndale Ave	Existing	Lanes on west side of street eliminated. Two-	Yes	Yes	N/A	N/A

Location	Existing or Planned	Operating-Phase Impacts	Lyndale/ W Broadway Applies?	Lyndale/ 21st Ave Applies?	E of I-94/ W Broadway Applies?	E of I-94/ 21st Ave Applies?
between Plymouth Ave and N 21st Ave		way sidewalk-grade bikeway added on east side of street.				
Bike lanes at Plymouth Ave and 3rd St	Existing	Access maintained	N/A	N/A	Yes	Yes
Bike lanes at W Lyndale Ave and Plymouth Ave N	Existing	Access maintained	Yes	Yes	N/A	N/A
Facility at 10th St and 5th St	Planned	Remains feasible	N/A	N/A	Yes	Yes
Bike lanes on 10th St	Existing	Existing lanes elevated to sidewalk grade; access maintained	N/A	N/A	Yes	Yes
Facility at 7th St and E Lyndale Ave	Planned	Remains feasible	Yes	Yes	N/A	N/A
Bike lanes on 7th St	Existing	Access maintained	Yes	Yes	Yes	Yes

Sample roadway or bikeway segments were selected for analysis of their BLTS. The BLTS values are found in Table A3-11. All segments either retain the same level of BLTS or are improved. Segments along W Broadway Ave in the City of Brooklyn Park and along N 7th St in the City of Minneapolis show the largest improvements in BLTS results. Under an east of I-94/N 21st Ave Build Alternative, bicycle access is removed from N 21st Ave. Segments with high BLTS under the Build Alternative will undergo further design coordination with the intent to improve bicycling conditions and results, including any mitigation warranted, will be presented in the Final EIS.

Table A3-11 Current and Project Bicycle Level of Traffic Stress at Analyzed Segments

Segment	Applicable Alignment options	Existing BLTS	Project BLTS[a]	Improvement
W Broadway Ave at Oak Grove Pkwy	All	4	3	Improved, but remains uncomfortable for most users
Oak Grove Pkwy at W Broadway Ave	All	2	2	No improvement, comfortable for most users
W Broadway Ave at 85th Ave N	All	2	2	No improvement, comfortable for most users
W Broadway Ave at Brooklyn Blvd	All	4	3	Improved, but remains uncomfortable for most users
Brooklyn Blvd at W Broadway Ave	All	4	3	Improved, but remains uncomfortable for most users
CR 81 between Corvallis Ave and Bass Lake Rd	All	1	1	No improvement, comfortable for all users

Segment	Applicable Alignment options	Existing BLTS	Project BLTS[a]	Improvement
CR 81 between 47th Ave N and Corvallis Ave	All	1	1	No improvement, comfortable for all users
N 21st Ave between 4th St and Lyndale Ave	East of I-94/N 21st Ave	2	No access	Bicycle access removed
W Broadway Ave between Lyndale Ave and Bryant Ave	W Broadway Ave options	4	3	Improved, but remains uncomfortable for most users
W Broadway Ave between 4th St and Lyndale Ave	East of I-94/W Broadway Ave	4	4	No improvement, uncomfortable for all users
W Broadway Ave between Washington Ave and 4th St	East of I-94/W Broadway Ave	4	4	No improvement, uncomfortable for all users
Lyndale Ave between W Broadway Ave and N 21st Ave	Lyndale Ave/N 21st Ave	2	2	No improvement, but remains comfortable for most users
Lyndale Ave between N 14th Ave and N 18th Ave	Lyndale Ave options	2	2	No improvement, but remains comfortable for most users
10th Ave between 5th St and 4th St	East of I-94 options	3	2	No improvement, but remains comfortable for most users
10th Ave between 8th St and 5th St	East of I-94 options	2	2	No improvement, but remains comfortable for most users
Oak Lake Ave between 7th St and 8th Ave	East of I-94 options	3	2	Improved, comfortable for most users
7th St between 6th Ave and E Lyndale Ave	All	4	2	Improved, comfortable for most users

[a] BLTS is based on preliminary designs and subject to change.
Station area bicycle impacts are presented by city.

City of Brooklyn Park

Table A3-12 presents a summary of bicycle service changes in the City of Brooklyn Park station areas, and Table A3-13 presents a summary of bicycle service changes by station.

Table A3-12 Summary of Bicycle Service Changes in the City of Brooklyn Park Station Areas

LRT Station	Bicycle Service Changes
Oak Grove Pkwy	Multi-use paths and plaza to be added to station area. W Broadway Ave to be realigned. Realigned Oak Grove Pkwy and new Rhode Island Dr to receive marked and signaled crossings.
93rd Ave N	Crossing lengths reduced.
85th Ave N	Vehicle slip lanes eliminated at intersection of 85th Ave N and W Broadway Ave; crossing lengths reduced.
Brooklyn Blvd	Conflict with vehicle free right-turn lanes eliminated at intersection of Brooklyn Blvd and W Broadway Ave.
63rd Ave N	No changes.

Table A3-13 Summary of Bicycle Service Changes by Station

LRT Station	Project Changes
Bass Lake Rd	Bike facility added between Bass Lake Rd and Yates Ave N

City of Crystal

At the Bass Lake Rd Station, a bicycle facility 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 station. BLTS results in the City of Crystal with the existing trail along CR 81 are comfortable for all users in both the existing and with the addition of the Project.

City of Robbinsdale

No operating-phase bicycle impacts would occur at the Downtown Robbinsdale Station.

City of Minneapolis

Bicycle facilities, connections to stations, and connections to the bikeway network would be improved with the Project. A new bicycle facility would be added on 21st Ave N between James Ave N and Washington Ave N as part of a new multimodal bridge crossing of I-94. The facility would be a two-way bikeway located on the north side of the street from James Ave N to Washington Ave N. Additionally, a transit mall along 10th Ave N would include a new off-street bike facility and closure of access points would reduce conflicts between drivers and bicyclists. A new bikeway on 7th St N would also provide bicycle enhancements with the Project. Table A3-14 presents a summary of bicycle service changes by station.

Table A3-14 Summary of Bicycle Service Changes by Station

LRT Station	Project Changes
Lowry Ave	No changes.
Penn Ave	Conflict with vehicle-free right-turn lane eliminated at N 26th Ave. McNair Ave eliminated from W Broadway Ave/Penn Ave intersection. Mid-block crosswalk added near Newton Ave.
West Broadway Business District Area (one-station option)	W Broadway Ave option: Crossing of W Broadway Ave at DuPont Ave eliminated. N 21st Ave option: Crossing of N 21st Ave at Aldrich Ave and DuPont Ave eliminated. Through traffic on N 21st Ave eliminated.

LRT Station	Project Changes
West Broadway Business District Area (two-station option)	W Broadway Ave option: Crossing of W Broadway Ave at DuPont Ave and Irving Ave eliminated. N 21st Ave option: Crossing of 21st Ave at Aldrich Ave and DuPont Ave eliminated. Through traffic on N 21st Ave eliminated.
Plymouth Ave (Lyndale options)	Conflict with vehicle free right-turn lane eliminated at 7th St.
Plymouth Ave (East of I-94 options)	No changes.
Target Field Station	Bike lanes on N 7th St raised to sidewalk-grade.

3.3.5 Avoidance, Minimization, and Mitigation

This section describes potential mitigation to expected bicycle network impacts in the Project area. However, bicycle conditions will continue to be studied as design progresses. Any mitigation commitments will be documented in the Final EIS.

3.3.5.1 Operating-Phase (Long-Term) Mitigation Measures

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

3.3.5.2 Construction-Phase (Short-Term) Mitigation Measures

Where longer-term closures of trails, on-street bike facilities, or shared streets are required, detour routes would generally be provided. During short-term closures of sidewalks or trails (typically up to about 3 to 5 days), detour routes or facilities might not be provided. 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 modifies many of the street segments and intersections where the LRT tracks would be constructed to accommodate LRT infrastructure.

The Council analyzed projected traffic conditions in a series of Traffic Operations Technical Memoranda included in Appendix A-3.

3.4.1 Regulatory Context and Methodology

Turning movement counts and signal timing data were collected at intersections within the study area. Included were signalized intersections for which an LRT crossing would be located 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. Additional intersections were analyzed based on their potential for interaction with an LRT crossing or park-and-ride facility.

The year 2040 was selected as the year for which traffic projections were made, consistent with the 2016 Final EIS[12] and county and municipal comprehensive planning cycles, including the Council's 2040 TPP[13].

3.4.2 Study Area

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

- CR 103 from Oak Grove Pkwy to CR 81
- CR 81 from CR 103 to TH 100
- CR 81 from TH 100 to Lowry Ave N
- CR 81 from Lowry Ave N to Washington Ave
- Lyndale Ave from CR 81 to Target Field Station
- Washington Ave, N 10th Ave, N 7th St, and N 6th Ave from CR 81 to Target Field Station

Intersections in those segments that are projected to interact with LRT infrastructure or park-and-ride facilities were analyzed.

3.4.3 Affected Environment

The regional highway system consists of principal and minor arterials (roads that have a primary purpose of moving traffic efficiently, with less emphasis on access to adjacent land). Several adjacent roadways to the Project would undergo modifications as a part of the Project and those 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 once the Project has opened, and construction-phase, meaning short-term impacts relevant during the construction of the Project.

3.4.4.1 Operating-Phase (Long-Term) Impacts

This section presents operating-phase (long-term) impacts to vehicle traffic based on environmental consequences.

No-Build Alternative

Analysis of the No-Build Alternative is based on 2040 traffic volumes under the scenario that current roadway configurations, rail crossing locations and treatments, and signal operations still exist.

The results of the 2040 No-Build Alternative were based on existing roadway geometrics. The 2040 forecast peak hour traffic volumes were developed based on the methodology described in the *METRO BLRT Traffic Operations Technical Memorandum* dated Sept. 15, 2022. Based on the 2040 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 A3-15.

Table A3-15 Intersections Exceeding Capacities under No-Build Alternative

Intersection	Lyndale Option	East of I-94 Option	Morning Peak Hour Capacity	Afternoon Peak Hour Capacity
W Broadway Ave/101st Ave N[a]	Yes	Yes	Under capacity	Over capacity
W Broadway Ave/Winnetka Ave N[a]	Yes	Yes	Under capacity	Over capacity
W Broadway Ave/93rd Ave N	Yes	Yes	Under capacity	Over capacity
W Broadway Ave/85th Ave N	Yes	Yes	Under capacity	Over capacity

[a] Side street stop-controlled intersection.

Project Alignment and Design Options

The Project alignment and design options assume an operation year of 2040 in which the Project has been built. Assumptions related to the Build Alternative are described in the *BLRT Traffic Operations E of I-94 Memorandum* in Appendix A-3.

City of Brooklyn Park

Through the City of Brooklyn Park, construction would include 12 roadway access changes, mostly conversions of full-access intersections to right-in/right-out intersections. Ten new traffic signals would be installed, and 14 signals would be modified. Seventeen new LRT crossings would be added. Specific changes are detailed in Table A3-16.

Table A3-16 Traffic-Related Improvements Included in the Project: City of Brooklyn Park

Improvement Purpose	Improvement Description
Create space for development at station area	W Broadway Ave realigned north of TH 610. 99th Ave N created to intersect with W Broadway Ave. Oak Grove Pkwy realigned. Signals added to intersection of Oak Grove Pkwy and W Broadway Ave. Rhode Island Ave created to intersect with Oak Grove Pkwy and new 99th Ave N. Xylon Ave created to intersect with realigned Oak Grove Pkwy.
Manage traffic conflicts	Signal added to intersection of W Broadway Ave and driveway immediately north of 93rd Ave N.
Increase traffic capacity	Lane added to CR 30 between Wyoming Ave and Louisiana Ave.
Reduce traffic conflicts	Intersection of 92nd Ave N and W Broadway Ave changed to right-in, right-out only.
Reduce traffic conflicts	Intersection of 89th Ave N and W Broadway Ave changed to right-in, right-out only.
Reduce traffic conflicts	Left-turn lanes added to intersection of W Broadway Ave and Maplebrook Pkwy.
Reduce traffic conflicts	Intersection of College Pkwy Ave N and W Broadway Ave changed to right-in, right-out only.
Reduce traffic conflicts	Intersection of 84th Ave N and W Broadway Ave changed to right-in, right-out only.
Reduce traffic conflicts	Intersection of 83rd Ave N and W Broadway Ave changed to right-in, right-out only.
Maintain access to Hennepin Community College	Intersection of College Park Dr N and W Broadway Ave signalized, left-turn lanes added.
Reduce traffic conflicts	Intersection of 82nd Ave N and W Broadway Ave changed to right-in, right-out only.

Improvement Purpose	Improvement Description
Reduce traffic conflicts	Intersection of 78th Ave N and W Broadway Ave changed to right-in, right-out only.
Reduce traffic conflicts	Access to private driveways along W Broadway changed to right-in, right-out only.
Increase station platform access for customers	Free right-turn lanes W Broadway Ave and Brooklyn Blvd eliminated.
Separate LRT and vehicle traffic	Jolly Lane access to W Broadway Ave realigned to new signal at 75th Ave N and W Broadway Ave.
Create space for LRT tracks	One lane each direction on CR 81 between 63rd Ave N and 73rd Ave N eliminated.

Figure A3-8 depicts anticipated afternoon peak hour impacts to intersections under the future conditions with the Project. The results of the morning and afternoon peak hour analysis showed that all City of Brooklyn Park intersections are expected to operate under capacity with Project operations, except for the intersections listed in Table A3-17.

Table A3-17 City of Brooklyn Park Intersections Exceeding Capacities under Build Alternative

Intersection	Morning Peak Hour Capacity	Afternoon Peak Hour Capacity
Oak Grove Pkwy/Xylon Ave[a]	Over capacity	Over capacity
W Broadway Ave/93rd Ave N[b]	Over capacity	Over capacity
W Broadway Ave/85th Ave N[b]	Over capacity	Over capacity
CR 81/63rd Ave N	Under capacity	Over capacity

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

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 Alternative. Oak Grove Pkwy and Xylon Ave is a newly built intersection. Adjustments to improve traffic operations could be made as design and engineering advances. CR 81 and 63rd Ave N would also require design adjustments as engineering concepts advance.

Figure A3-8 Anticipated Afternoon Peak Hour Impacts to Intersections with Project Alignment and Design Options

City of Crystal

Through the City of Crystal, no roadway access changes would occur. Four traffic signals would be modified, and four new LRT crossings would be constructed. Specific impacts are detailed in Table A3-18.

Table A3-18 Traffic-Related Improvements Included in the Project: City of Crystal

Improvement Purpose	Improvement Description	Bass Lake Rd Grade-Separated Option	Bass Lake Rd At-Grade Option
Grade-separate LRT and vehicle traffic	Through lanes on CR 81 at Bass Lake Rd bypass intersection	Yes	No
Create space for elevated highway structure	One left-turn lane each direction on CR 81 at Bass Lake Rd eliminated	Yes	No
Create space for LRT tracks	One eastbound lane on CR 81 between 63rd Ave N and 51st Ave N eliminated	Yes	No
Create space for LRT tracks	One westbound lane on CR 81 eliminated	Yes	Yes

Intersection Option

The intersection design option at the Bass Lake Rd Station 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. The CR 81/Bass Lake Rd intersection would be an at-grade intersection.

The results of the morning and afternoon peak hour analysis showed that all intersections are expected to operate under capacity during the 2040 Build Alternative conditions, except for the intersections of CR 81/Bass Lake Rd and CR 81/Wilshire Blvd, which are expected to operate at capacity during the afternoon peak hour. The intersection results are summarized in Table A3-19.

Table A3-19 City of Crystal Intersection Capacities under Bass Lake Rd Intersection Option

Intersection	Morning Peak Capacity	Afternoon Peak Capacity
CR 81/Bass Lake Rd	Under capacity	At capacity
CR 81/Wilshire Blvd	Under capacity	At capacity
CR 81/Corvallis Ave	Under capacity	Under capacity
CR 81/47th Ave N	Under capacity	Under capacity
CR 81/TH 100 southbound ramp	Under capacity	Under capacity

Interchange Option

The interchange design option 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. A southbound auxiliary lane on CR 81 may be provided from Bass Lake Rd to the eastbound TH 100 on-ramp. CR 81 would be routed on an elevated structure over Bass Lake Rd.

The results of the morning and afternoon peak hour analysis showed that all intersections are expected to operate under capacity during the 2040 Build Alternative peak hour scenarios. The intersection results are summarized in Table A3-20.

Table A3-20 City of Crystal Intersection Capacities under Bass Lake Rd Interchange Option

Intersection	Morning Peak Capacity	Afternoon Peak Capacity
CR 81/CR 10	Under capacity	Under capacity
CR 81/Wilshire Blvd	Under capacity	Under capacity
CR 81/Corvallis Ave	Under capacity	Under capacity
CR 81/47th Ave N	Under capacity	Under capacity
CR 81/TH 100 southbound ramp	Under capacity	Under capacity

City of Robbinsdale

Through the City of Robbinsdale, construction would cause three roadway access changes, would modify eight traffic signals, and would add seven new LRT crossings. Specific impacts are detailed in Table A3-21.

Table A3-21 Traffic-Related Improvements Included in the Project: City of Robbinsdale

Improvement Purpose	Improvement Description
Create space for LRT tracks	One westbound lane on CR 81 between TH 100 and 47th Ave N eliminated
Reduce traffic conflicts	Unsignalized eastbound left turn from CR 81 onto Lakeland Ave at 43rd Ave N eliminated
Create space for LRT tracks	One westbound left-turn lane from CR 81 to 42nd Ave N 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	Unsignalized eastbound left turn from CR 81 into Lakeview Terrace Park eliminated

The results of the morning and afternoon peak hour analysis showed that all City of Robbinsdale intersections are expected to operate under capacity.

City of Minneapolis

All Project alignment options will run through several City of Minneapolis intersections. The peak hour analysis results show that all intersections are expected to operate under capacity during the 2040 Build Alternative peak hour scenarios except for the intersections listed in Table A3-22.

Table A3-22 City of Minneapolis Intersections Exceeding Capacity under all Alignment Options

Intersection	Morning Peak Capacity	Afternoon Peak Capacity
W Broadway Ave/Penn Ave N	At capacity	At capacity
W Broadway Ave/Knox Ave N	Over capacity	Over capacity
W Broadway Ave/Irving Ave N	At capacity	At capacity
W Broadway Ave/Girard Ave N	Under capacity	At capacity
W Broadway Ave/Emerson Ave N	Under capacity	At capacity

Vehicle access impacts shared by all City of Minneapolis alignment options are described in Table A3-23.

Table A3-23 Vehicle Access Improvements Shared by All City of Minneapolis Alignment Options

Improvement Purpose	Improvement Description
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 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
Reduce traffic conflicts	Through lanes of Sheridan Ave at W Broadway Ave eliminated
Create space for LRT tracks	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	Left-turn lane at W Broadway Ave and Logan Ave eliminated
Create space for LRT tracks	Left turns into alleys and private driveways along W Broadway Ave between Lyndale Ave and N 29th Ave eliminated
Create space for LRT tracks	One lane in each direction on W Broadway Ave between N 29th Ave and James Ave eliminated
Create space for LRT tracks	N 7th St undergoes a 4:3 lane conversion

East of I-94 Alignment Options

The East of I-94/W Broadway Ave options include center-running LRT on W Broadway Ave or N 21st Ave from Irving Ave N to Washington Ave N with a bridge over I-94. The LRT runs parallel on the west side of Washington Ave N and is then center-running on 10th Ave N to north side of N 7th St.

East of I-94/1 Station on W Broadway Ave

Under this option, construction would create 14 roadway access changes, two new traffic signals, nine modified traffic signals, and 10 new LRT crossings. Specific impacts are detailed in Table A3-23 and Table A3-24.

East of I-94/2 Stations on W Broadway Ave

Under this option, construction would create 15 roadway access changes, two new traffic signals, nine modified traffic signals, and 10 new LRT crossings. Specific impacts are detailed in Table A3-23 and Table A3-24.

Table A3-24 Vehicle Access Impacts Included in the East of I-94/W Broadway Ave Options: City of Minneapolis

Impact Purpose	Impact Description
Create space for LRT tracks	Westbound left turn from W Broadway Ave to 5th St eliminated
Create space for LRT tracks	One lane in each direction on W Broadway Ave between N James Ave and Lyndale Ave eliminated
Create space for LRT tracks	One westbound lane on W Broadway Ave between N 4th St and Lyndale Ave eliminated
Create space for elevated structure	One eastbound lane on W Broadway Ave between N 4th St and I-94 eliminated
Create space for LRT tracks	Left-turn lane on Oak Lake Ave eliminated

East of I-94/One or Two Stations on N 21st Ave

Under this option, the construction would create 17 roadway access changes, two new traffic signals, six modified traffic signals, and 11 new LRT crossings. Specific impacts are detailed in Table A3-25.

Table A3-25 Vehicle Access Impacts Included in the East of I-94/N 21st Ave Options: City of Minneapolis

Impact Purpose	Impact Description
Reduce traffic conflicts	Crossing of N 21st Ave at DuPont Ave and Aldrich Ave eliminated
Create space for LRT tracks	All lanes on N 21st Ave between Lyndale Ave and 4th Ave eliminated (alley access maintained)
Create space for LRT tracks	All lanes on N 21st Ave between Fremont Ave and Lyndale Ave eliminated (alley access maintained)
Create space for LRT tracks	Left-turn lane on Oak Lake Ave eliminated

Peak hour traffic analysis results show that all intersections are expected to operate under capacity during the 2040 Build Alternative peak hour scenarios except for the intersections listed in Table A3-26.

Table A3-26 City of Minneapolis Intersections Exceeding Capacity under East of I-94 Options

Intersection	Morning Peak Capacity	Afternoon Peak Capacity
W Broadway Ave/N Lyndale Ave	Under capacity	Over capacity
N 7th St/Oak Lake Ave	At capacity	Under capacity
Olson Memorial Hwy/N 7th St/N 6th Ave	Under capacity	Over capacity

Lyndale/W Broadway Ave Options

The Lyndale Ave N/W Broadway Ave option includes center-running LRT on W Broadway Ave or N 21st Ave from Irving Ave N to Lyndale Ave N. The LRT turns onto Lyndale Ave N and runs along the west side of Lyndale Ave N and then to the north side of N 7th St.

Lyndale Ave/One Station on W Broadway Ave

Under this option, construction would create 13 roadway access changes, two new traffic signals, 17 modified traffic signals, and 19 new LRT crossings. Specific impacts are detailed in Table A3-27.

Lyndale Ave/Two Stations on W Broadway Ave

Under this option, construction would create 14 roadway access changes, two new traffic signals, 16 modified traffic signals, and 18 new LRT crossings. Specific impacts are detailed in Table A3-23 and Table A3-27.

Table A3-27 Vehicle Access Impacts Included in the Lyndale Ave/W Broadway Ave Options: City of Minneapolis

Impact Purpose	Impact Description
Create space for LRT tracks	One lane in each direction on W Broadway Ave between N James Ave and Lyndale Ave eliminated
Create space for station platform	One lane on N Lyndale Ave between Plymouth Ave and 7th St eliminated
Reduce traffic conflicts	Free right turn at N Lyndale Ave and N 7th St eliminated

Lyndale Ave/One or Two Stations on N 21st Ave

Under this option, construction would create 16 roadway access changes, seven new traffic signals, 12 modified traffic signals, and 18 new LRT crossings. Specific impacts are detailed in Table A3-28.

Table A3-28 Vehicle Access Impacts Included in the Lyndale Ave/N 21st Ave Options: City of Minneapolis

Impact Purpose	Impact Description
Reduce traffic conflicts	Crossing of N 21st Ave at DuPont Ave and Aldrich Ave eliminated
Create space for LRT tracks	All lanes on N 21st Ave between Fremont Ave and Lyndale Ave eliminated (alley access maintained)
Create space for station platform	One lane on N Lyndale Ave between Plymouth Ave and 7th St eliminated
Reduce traffic conflicts	Free right turn at N Lyndale Ave and N 7th St eliminated

The peak hour traffic analysis results show that all intersections are expected to operate under capacity during the 2040 Build Alternative peak hour scenarios except for the intersections listed in Table A3-29.

Table A3-29 City of Minneapolis Intersections Exceeding Capacity under Lyndale Ave Options

Intersection	Morning Peak Capacity	Afternoon Peak Capacity
W Broadway Ave/N Lyndale Ave	At capacity	Over capacity
N Lyndale Ave/Plymouth Ave N	At capacity	Under capacity
N 7th St/W Lyndale Ave	Over capacity	Under capacity
N 7th St/Oak Lake Ave	At capacity	Under capacity
Olson Memorial Hwy/N 7th St/N 6th Ave	Under capacity	Over capacity

In the morning peak hour, significant traffic volume is expected to head into Downtown Minneapolis from the I-94 eastbound off-ramp. The reduction in traffic lanes on N 7th St results in queues that extend upstream along N 7th St.

During the afternoon peak hour, significant traffic volume is expected in the opposite direction as previously described, away from Downtown Minneapolis. The reduction in traffic lanes on N 7th St from Lyndale Ave to TH 55 (Olson Memorial Hwy) results in queues that block upstream intersections and add to the capacity issue at TH 55 (Olson Memorial Hwy)/N 7th St/N 6th Ave.

The number of through lanes in the peak direction on W Broadway Ave decreases from two in the 2040 No-Build Alternative to one in the 2040 Build Alternative to accommodate the center-running LRT on CR 81. As a result, all movements at the intersection of W Broadway Ave at N Lyndale Ave experience delays and queue spillbacks through upstream intersections.

N 21st Ave Options

Non-local traffic would be eliminated from N 21st Ave. As a result, LRT on N 21st Ave is not expected to have impacts on surrounding intersection peak hour capacities. Similarly, the one-station and two-station options in the West Broadway Business District Station Area are not expected to have large differences in intersection peak hour capacities.

3.4.5 Avoidance, Minimization, and Mitigation

All alignment options would result in vehicle access changes throughout the Project area. All options would also result in some additional intersections exceeding traffic capacity over the No-Build Alternative. As design development progresses, traffic-related improvements will be considered and evaluated further in the Supplemental Final EIS.

Intersections at W Broadway Ave/N Lyndale Ave and TH 55 (Olson Memorial Hwy)/N 7th St/N 6th Ave are expected to be over capacity. The Olson Memorial Hwy/N 7th St/N 6th Ave intersection would necessitate reconstruction with

a different traffic pattern to maintain acceptable level of service operations for all options. 7th St would need to be widened to construct a second exclusive northbound left-turn lane and a southbound left-turn lane, which would provide additional capacity and improve the signal phasing. The overall roadway width would be increased by less than 10 feet and would allow the northbound and southbound pedestrian phases to operate together rather than split phased. These improvements will be considered as design and engineering refinements are made and published in the Supplemental Final EIS.

3.5 Vehicle Parking

This section describes the loss of parking in the study area because of the Project. The construction of LRT 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. The Council reviewed the existing parking supply in the Project area, which 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. The Council has identified dedicated park-and-ride facilities as part of the Project. All new park-and-ride facilities are described in Appendix Chapter 2 and are not addressed as part of this impact assessment of existing parking conditions.

3.5.2 Study Area

The study area for parking is defined as the Project LOD.

3.5.3 Affected Environment

Vehicle parking in the study area is a combination of on-street parking and off-street parking (surface parking lots). Local jurisdictions have the authority to regulate parking, including introducing permit parking or other parking restrictions. Almost all on-street parking is available to the public as either metered or unmetered spaces.

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-related businesses.

3.5.4 Environmental Consequences

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

3.5.4.1 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.

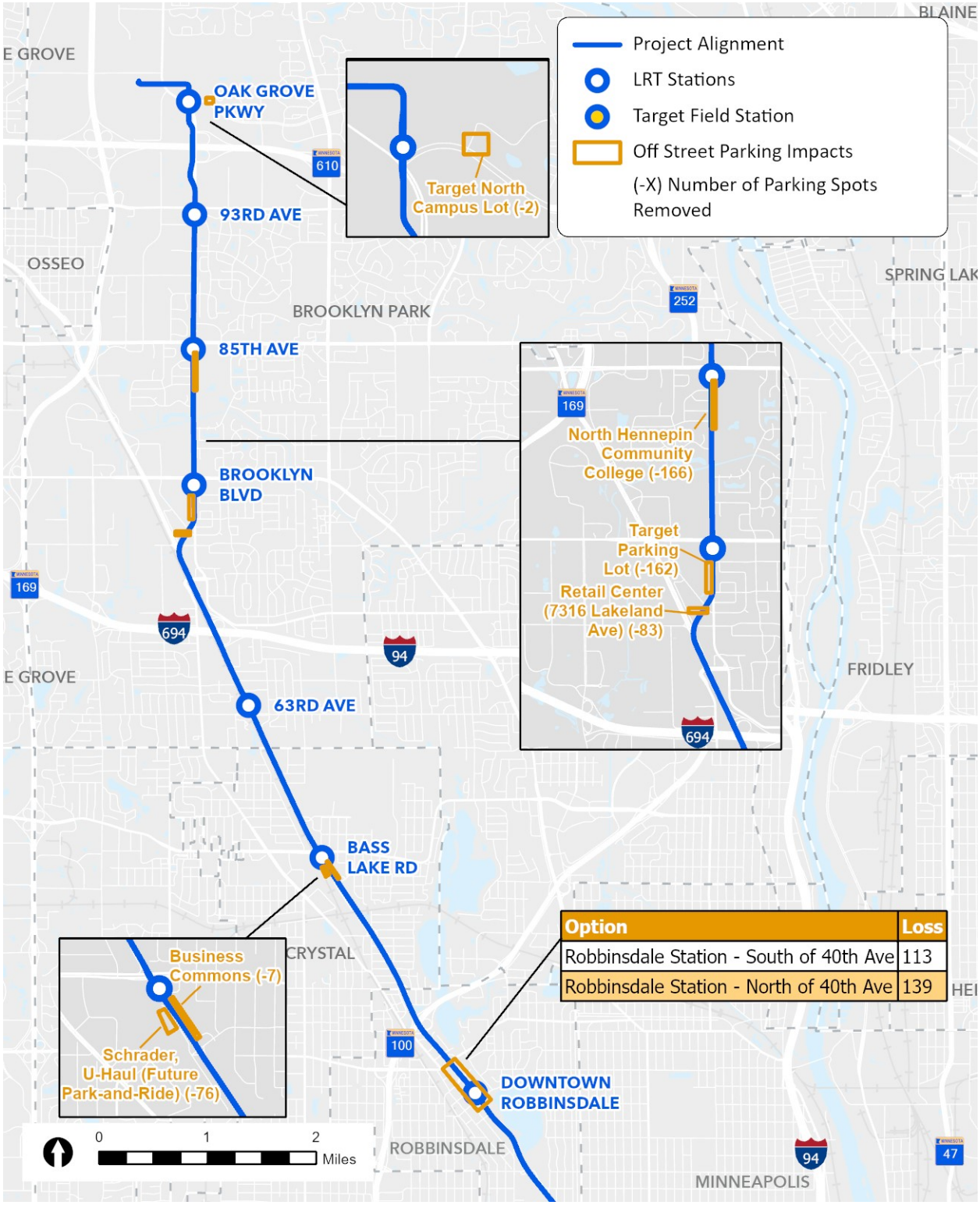
No-Build Alternative

No operating-phase parking impacts would occur under the No-Build Alternative.

Project Alignment and Design Options

The following section describes parking impacts by station area from north to south through the study area and includes impacts from the design options under evaluation. The results of the analysis are shown in Figure A3-9 and Figure A3-10.

Figure A3-9 Parking Impacts in the Cities of Brooklyn Park, Crystal, and Robbinsdale



Cities of Brooklyn Park and Crystal

In the Cities of Brooklyn Park and Crystal, there is only one option under consideration and the parking impacts are described in Table A3-30. All impacts would be to off-street private parking lots.

Table A3-30 Parking Impacts in the Cities of Brooklyn Park and Crystal

Municipality	Affected Location or Business(es)	Loss of Off-Street Spaces	Reason for Impact
City of Brooklyn Park	Target North Campus	Reconfiguration of off-street lot. No net loss in parking.	Realignment of Oak Grove Pkwy
City of Brooklyn Park	North Hennepin Community College	Loss of 166 off-street spaces in west parking lots (7% loss of campus parking)	The South parking lot reconfiguration with a new entrance/exit and turn lanes on W Broadway Ave
City of Brooklyn Park	Target	Loss of 162 off-street spaces in parking lot (12% loss)	Reconstructed southbound lanes of W Broadway Ave and multi-use trail
City of Brooklyn Park	Retail center	Loss of 83 off-street spaces in parking lot (32% loss)	To accommodate LRT as it transitions from CR 81 to W Broadway Ave.
City of Crystal	Business Commons	Loss of 7 off-street spaces in parking lot	The northbound ramp encroaches into a corner of the parking lot
City of Crystal	Schrader, U-Haul	Loss of 76 off-street spaces in parking lot	To accommodate the Bass Lake Rd Park-and-Ride facility

City of Robbinsdale

There are three Project design option locations for the Robbinsdale Station and associated park-and-ride facility. The station is located on CR 81 south of 40th Ave N, south of 41st Ave N, or north of 41st Ave N. Table A3-31 summarizes the parking impacts by station and park-and-ride design option locations, with the South of 40th Ave N Option having the highest number of parking space losses because of affecting the Elim Lutheran Church parking lot. All impacts would be to off-street private parking lots.

Table A3-31 Parking Impacts in the City of Robbinsdale

	Public Impacted	Private Impacted	Public Replaced	Private Replaced	Net	Notes
South of 41st (U.S. Bank)	25	158	0	43	**140**	Does not include any park-and-ride stalls. **Impacts to McDonalds, CVS, Upper and Lower Robin Center, and Town Center lots.**
N 41st (Upper Robin Center)	25	143	0	32	**136**	Does not include any park-and-ride stalls. **Impacts to McDonalds, CVS, Upper and Lower Robin Center, and Town Center lots.**
South of 40th (Elim Church parking lot)	22	244	8	56	**202**	Does not include any park-and-ride stalls. **Impacts to McDonalds, CVS, Upper and Lower Robin Center, and Elim Church lots.**

City of Minneapolis

For all Project alignment and design options, on-street parking along W Broadway Ave from N 29th Ave to Irving Ave N would be eliminated, resulting in the loss of 364 parking spaces (Table A3-32). Additionally, there is a minor reduction in off-street parking near the Penn Ave Station.

Table A3-32. Parking Impacts in the City of Minneapolis (For All Project Alignment and Design Options)

Municipality	Affected Location or Business(es)	Loss of On-Street Spaces	Loss of Off-Street Spaces	Reason for Impact
City of Minneapolis	W Broadway Ave from N 29th Ave to Irving Ave N	364	0	Accommodate Project Alignment
City of Minneapolis	Broadway Flats	0	2	Accommodate Penn Ave Station

For design option locations in the City of Minneapolis, the parking impacts vary, but both include impacts to on-street and off-street parking spaces (Table A3-33, Figure A3-10, Figure A3-11). The following section describes impacts to parking by each alignment and design option in the City of Minneapolis. The East of I-94/N 21st Ave design option has the most on-street parking losses of all the options with 600 spaces anticipated to be eliminated. This is due to the loss of 215 on-street parking spaces on N 21st Ave from Irving Ave N to I-94 to accommodate LRT.

Table A3-33 Parking Impacts in the City of Minneapolis (by Alignment and Design Option)

Alignment and Design Option	Loss of On-Street Spaces	Loss of Off-Street Spaces	Total Spaces
No-Build Alternative	0	0	0
Lyndale Ave N/N 21st Ave Option	525	87–106	612–631
Lyndale Ave N/W Broadway Ave Option	485	47	532
East of I-94/N 21st Ave Option	600	129–148	729–748
East of I-94/W Broadway Ave Option	515	160	675

Subject to change as engineering design is refined.

Figure A3-10 Off-Street Parking Impacts in the City of Minneapolis

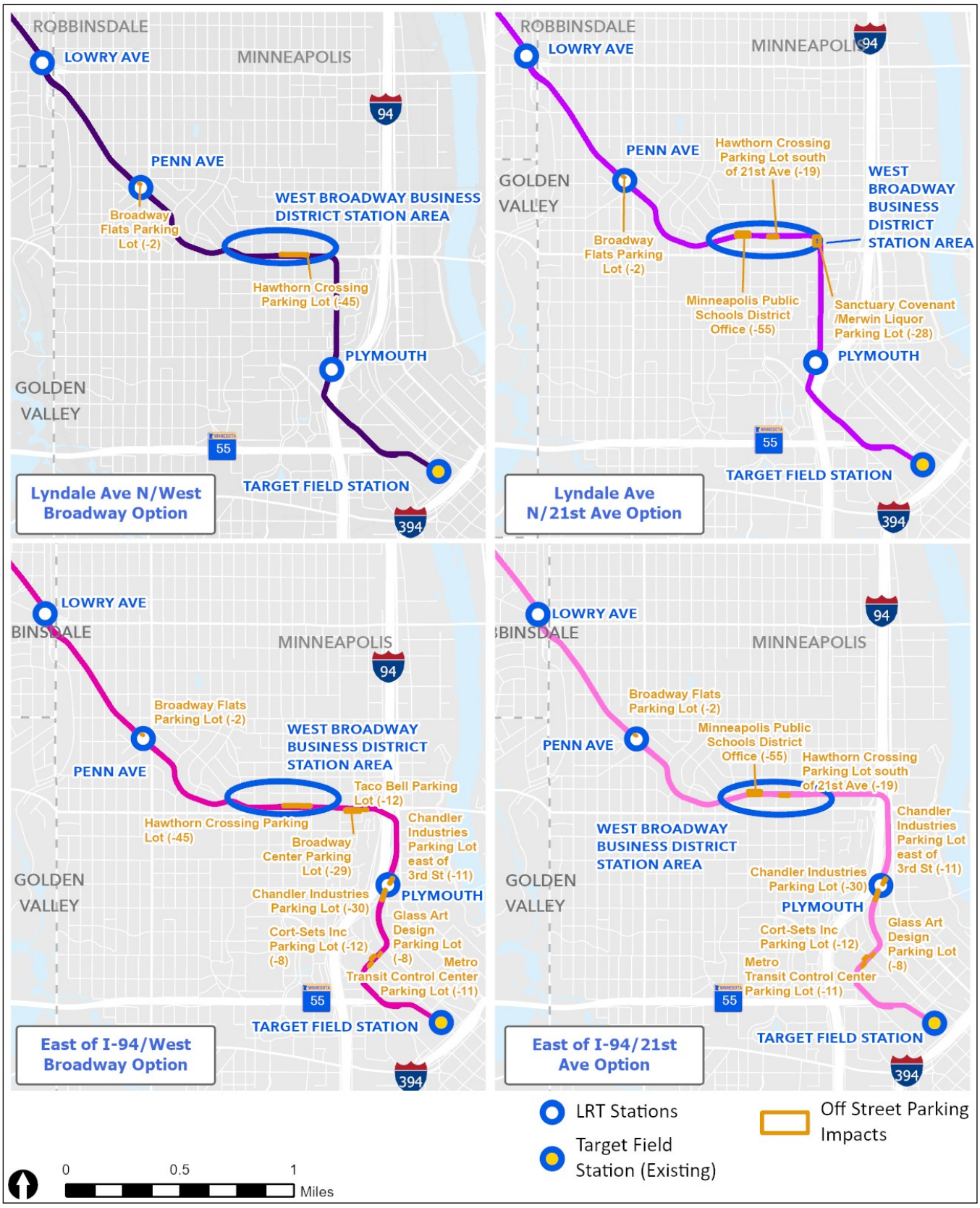
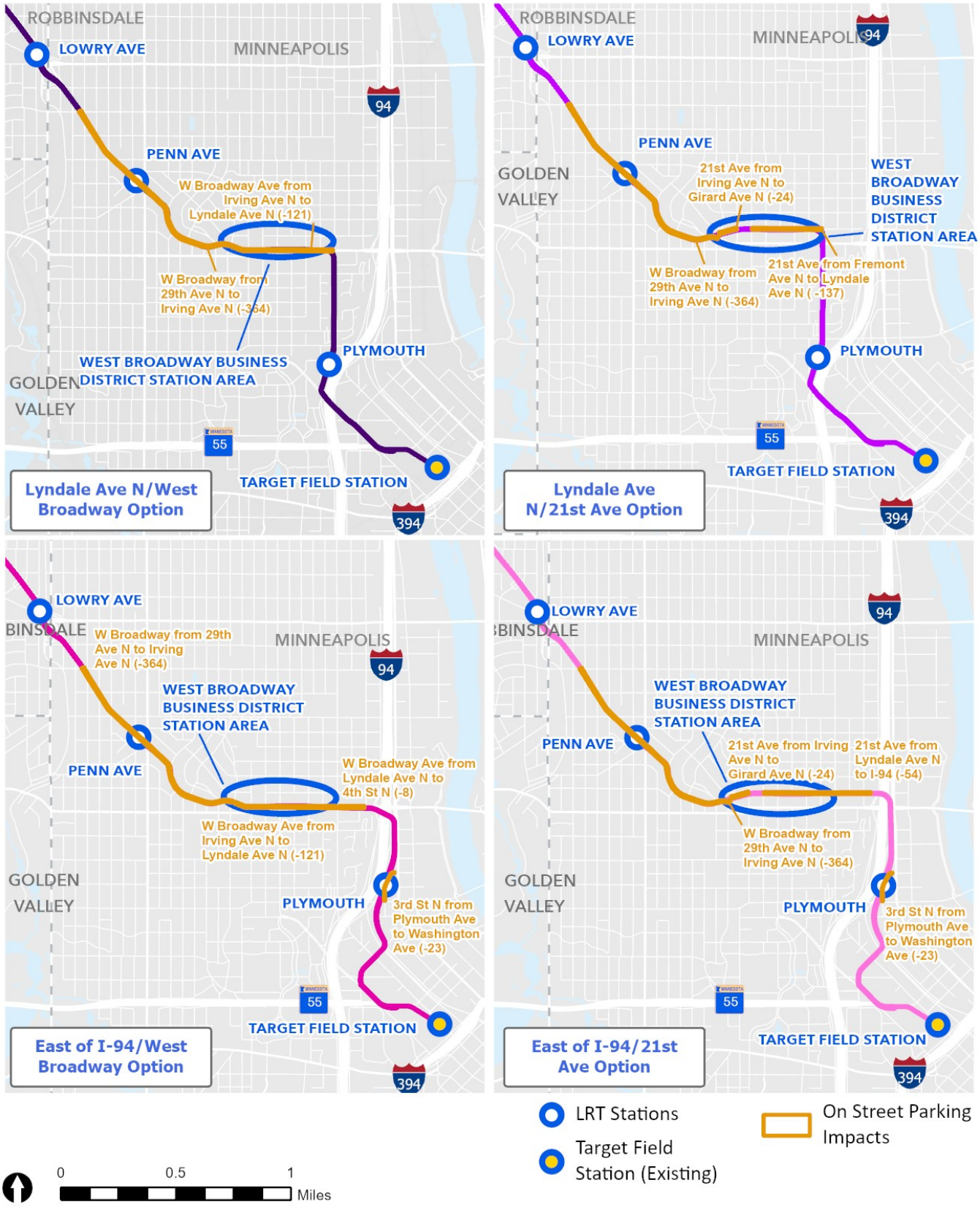


Figure A3-11. On-Street Parking Impacts in the City of Minneapolis



Lyndale Ave/W Broadway Ave Alignment Option

If the Lyndale Ave N/W Broadway Ave alignment option is selected, on-street parking along W Broadway Ave would be eliminated from Irving Ave N to Lyndale Ave N. This area of W Broadway Ave includes several businesses with limited or no existing off-street customer parking. Business owners have expressed concerns through public engagement about permanent loss of on-street parking in front of their businesses. Parking impacts as they relate to EJ can be found in Chapter 7. Additionally, there would be off-street parking impacts to parking lots adjacent to the Project Alignment. Specific impacts include:

- Approximately 121 spaces of on-street parking along W Broadway Ave from Irving Ave N to Lyndale Ave would be eliminated. A total of six blocks would have any existing on-street parking eliminated.
- Approximately 45 spaces of off-street parking would be eliminated from the Hawthorn Crossings parking lot located north of W Broadway Ave between Emerson Ave N and Bryant Ave N.

Lyndale Ave/N 21st Ave Alignment Option

If the Lyndale Ave N/N 21st Ave alignment option is selected, on-street parking along N 21st Ave would be eliminated from Irving Ave N to Lyndale Ave N. This area of 21st Ave includes mostly residential on-street parking. Parking impacts as they relate to EJ can be found in Chapter 7. Additionally, there would be off-street parking impacts to parking lots adjacent to the Project Alignment. Specific impacts include:

- Approximately 161 spaces of on-street parking along N 21st Ave from Irving Ave to Girard Ave, and from Fremont Ave to Lyndale Ave, would be affected. A total of six blocks of on-street residential parking would be lost.
- The City of Minneapolis Public Schools district office parking lot located between Girard Ave and Fremont Ave would be affected. Approximately 55 parking spaces would be eliminated.
- Approximately 19 off-street parking spaces on the south side of N 21st Ave between Emerson Ave N and Bryant Ave N would be removed only under a one-station option.
- Approximately 28 off-street parking spaces would be eliminated from the Sanctuary Covenant Church Resource Center/Merwin Liquors parking lots. The building on this lot is anticipated to be removed if this alignment option is chosen. Additional parking may be impacted here as design advances and exact location of drainage/water resources features can be located.

East of I-94/W Broadway Ave Alignment Option

If the East of I-94/W Broadway Ave alignment option is selected, on-street parking along W Broadway Ave would be eliminated from Irving Ave N to N 4th St. This area of W Broadway Ave includes several businesses with limited or no existing off-street customer parking. Business owners have expressed concerns through public engagement about permanent loss of on-street parking in front of their businesses. Parking impacts as they relate to EJ can be found in Chapter 7. Additionally, there would be off-street parking impacts to parking lots adjacent to the Project Alignment. Specific impacts are summarized below.

On-Street Parking Impacts

- Approximately 129 spaces of on-street parking along W Broadway Ave from Irving Ave N to N 4th St would be eliminated. A total of seven blocks would have any existing on-street parking eliminated.
- Approximately 23 spaces of on-street parking on 3rd St N would be eliminated as part of the realignment of 3rd St N to accommodate the Project Alignment.

Off-Street Parking Impacts

- Approximately 45 spaces of off-street parking would be eliminated from the Hawthorn Crossings parking lot located north of W Broadway Ave between Emerson Ave N and Bryant Ave N.

- Approximately 29 off-street parking spaces would be eliminated from the Broadway Center parking lot located east of Lyndale Ave N and south of W Broadway Ave.
- Approximately 12 off-street parking spaces would be eliminated from the Taco Bell parking lot located east of 5th St N and south of W Broadway Ave.
- Approximately 11 spaces of off-street parking would be eliminated from the Chandler Industries parking lot east of 3rd St N as part of a realignment of 3rd St N to accommodate the Project Alignment.
- Approximately 30 spaces of off-street parking would be eliminated from the Chandler Industries parking lot west of 3rd St N and north of Plymouth Ave to accommodate the Plymouth Ave Station.
- Approximately 8 spaces of off-street parking would be eliminated from the Glass Art Design parking lot located south of 10th Ave N and east of 5th Ave N.
- Approximately 12 spaces of off-street parking would be eliminated from the Cord-Sets Inc. parking lot located north of 10th Ave N and west of 5th St N.
- Approximately 11 spaces of off-street parking would be eliminated from the Metro Transit Control Center parking lot located east of 10th Ave N and north of 8th Ave N.

East of I-94/N 21st Ave Alignment Option

If the East of I-94/N 21st Ave alignment option is selected, on-street parking along N 21st Ave would be eliminated from Irving Ave N to I-94 and on 3rd St N. This area of 21st Ave includes mostly residential on-street parking. Parking impacts as they relate to EJ can be found in Chapter 7. Additionally, there would be off-street parking impacts to parking lots adjacent to the Project Alignment. Specific impacts are summarized below.

On-Street Parking Impacts

- Approximately 215 spaces of on-street parking along N 21st Ave from Irving Ave to Girard Ave, and from Fremont Ave to I-94, would be affected. A total of nine blocks of on-street residential parking would be lost.
- Approximately 23 spaces of on-street parking on 3rd St N would be eliminated as part of the realignment of 3rd St N to accommodate the Project Alignment.

Off-Street Parking Impacts

- The City of Minneapolis Public Schools district office parking lot located between Girard Ave and Fremont Ave would be affected. Approximately 55 parking spaces would be eliminated.
- Approximately 19 off-street parking spaces on the south side of N 21st Ave between Emerson Ave N and Bryant Ave N would be removed only under a one-station option.
- Approximately 11 spaces of off-street parking would be eliminated from the Chandler Industries parking lot east of 3rd St N as part of a realignment of 3rd St N to accommodate the Project Alignment.
- Approximately 30 spaces of off-street parking would be eliminated from the Chandler Industries parking lot west of 3rd St N and north of Plymouth Ave to accommodate the Plymouth Ave Station.
- Approximately 8 spaces of off-street parking would be eliminated from the Glass Art Design parking lot located south of 10th Ave N and east of 5th Ave N.
- Approximately 12 spaces of off-street parking would be eliminated from the Cord-Sets Inc. parking lot located north of 10th Ave N and west of 5th St N.
- Approximately 11 spaces of off-street parking would be eliminated from the Metro Transit Control Center parking lot located east of 10th Ave N and north of 8th Ave N.

3.5.4.2 Construction-Phase (Short-Term) Impacts

This section presents construction-phase (short-term) impacts to vehicle parking based on environmental consequences.

No-Build Alternative

No construction-phase parking impacts would occur under the No-Build Alternative.

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).

3.5.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that would be implemented to mitigate the long-term and short-term parking impacts from the Project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures would address.

3.5.5.1 Operating-Phase (Long-Term) 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, including potential associated losses in business revenues. The Council would compensate property owners based on the terms of the purchase agreement between the Council and the property owner in accordance with the Uniform Act.

The Council would coordinate mitigation for the loss of on-street parking spaces with local jurisdictions (the Cities of Minneapolis and Robbinsdale) to identify whether suitable replacement locations are necessary and/or feasible. In the City of Minneapolis, the character of the Project Alignment has been designed to facilitate multimodal transportation options with greater emphasis on transit, bicycle, and pedestrian modes. Furthermore, parking would remain on nearby streets and at off-street parking lots associated with the adjacent buildings. As a result, mitigating lost on-street parking spaces might not be necessary. Similarly, the City of Robbinsdale is exploring transit-oriented development in the Robbinsdale Station area. This could change the need for parking mitigation or provide the opportunity for parking that is better integrated into planned development.

3.5.5.2 Operating-Phase (Short-Term) Mitigation Measures

Temporary impacts to on-street parking required to facilitate truck movements or loading during construction would be identified as part of a Construction Staging Plan prior to construction. At the Council's direction, 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 spaces lost during construction would be lost for only part of the construction phase.

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

The Council used the Project engineering drawings to identify the physical impacts of the Project to freight rail infrastructure. Potential impacts to freight rail lines were identified. 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 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 revised Project Alignment has moved out of the BNSF right-of-way (see Chapter 2), there are no longer any shared connections with freight rail.

3.6.2 Study Area

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 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 Affected Environment

Within the study area, the Project Alignment is generally within existing street right-of-way, thus minimizing any impacts to the freight railroads.

3.6.4 Environmental Consequences

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

3.6.4.1 Operating-Phase (Long-Term) Impacts

This section presents operating-phase (long-term) impacts to freight rail conditions based on environmental consequences.

No-Build Alternative

No operating-phase impacts to the freight rail right-of-way would occur under the No-Build Alternative.

Build Alternative

All potential impacts to freight rail resources would occur in the Cities of Brooklyn Park, Crystal, and Robbinsdale; therefore, there would be no impacts to any of the four Project alignment and design options in the City of Minneapolis. Similarly, there would be no impacts to the design options in the City of Minneapolis (i.e., one station or two stations in the West Broadway Business District Area).

The Project includes a pedestrian bridge over the BNSF tracks near 63rd Ave N; a bridge crossing over the CPKC tracks with CR 81; and construction of at-grade crossings at W Broadway Ave, 63rd Ave N, and Bass Lake Rd. Each crossing 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 quiet zone–ready elements such as channelized lanes and four-quadrant gates.

Required Freight Rail Modifications

The bridge crossing with CR 81 would require coordination, design reviews, permits, and agreements with CPKC, but would not result in any long-term operating impacts.

The construction work at the three at-grade road crossings and the pedestrian bridge would require coordination, design, review, and construction activities by BNSF. Agreements, permits, flagging, and coordination may be required before and during the construction. These at-grade 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 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.

3.6.4.2 Construction-Phase (Short-Term) Impacts

This section presents construction-phase (short-term) impacts to freight rail conditions based on environmental consequences.

No-Build Alternative

No construction-phase impacts to freight rail would occur under the No-Build Alternative.

Build Alternative

Permits, agreements, and flagging would be needed for temporary work within the railroad right-of-way.

3.6.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that would be implemented to mitigate the long-term and short-term impacts on freight transportation from the Project. For each mitigation measure or set of associated mitigation measures, this section generally notes the anticipated impact or associated impacts that the mitigation measures would address.

3.6.5.1 Operating-Phase (Long-Term) Mitigation Measures

There are no long-term impacts of the Project on freight rail requiring implementation of mitigation measures.

3.6.5.2 Construction-Phase (Short-Term) Mitigation Measures

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.

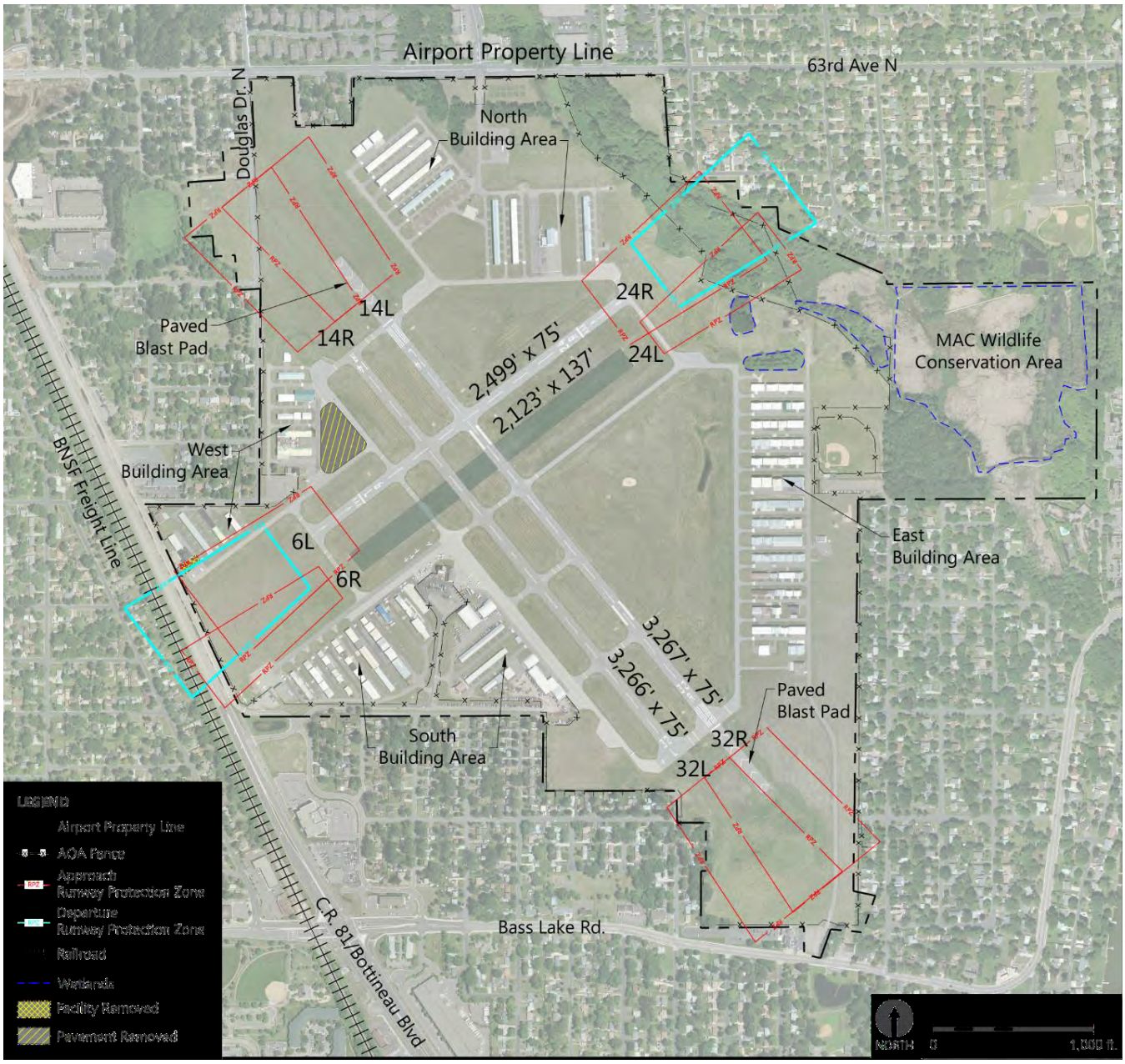
3.7 Aviation

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

3.7.1 Study Area

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).

Figure A3-12 Crystal Airport Runway Protection Zones



3.7.2 Regulatory Context and Methodology

According to FAA's *Advisory Circular 150/5300-13B*,[14] an 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 of Minnesota Statutes and Rules require additional State Safety Zones implemented through airport overlay zoning ordinances. The MAC also adopted an airport zoning ordinance in 1952 which regulates the use of property near Crystal Airport.

The Council coordinated with FAA and MAC in 2022 and 2023 ultimately providing an update to the 2014 RPZ AA for the Project, which is included in Appendix A-3. 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 structures and the RPZ approach and departure surface.

3.7.3 Affected Environment

Crystal Airport hosted approximately 47,000 flight operations in 2022. CR 81 and BNSF intersect the existing Runway 24R Departure RPZ. Residential land uses currently occupy a portion of State Safety Zone A beyond Crystal Airport's property boundary.

3.7.4 Environmental Consequences

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

3.7.4.1 Operating-Phase (Long-Term) Impacts

This section presents operating-phase (long-term) impacts to aviation based on environmental consequences.

No-Build Alternative

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.

Project Alignment and Design Options

The Project Alignment (shared for all options within this area) 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 10-15 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 A3-12 above), 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.

3.7.4.2 Construction-Phase (Short-Term) Impacts

This section presents construction-phase (short-term) impacts to aviation based on environmental consequences.

No-Build Alternative

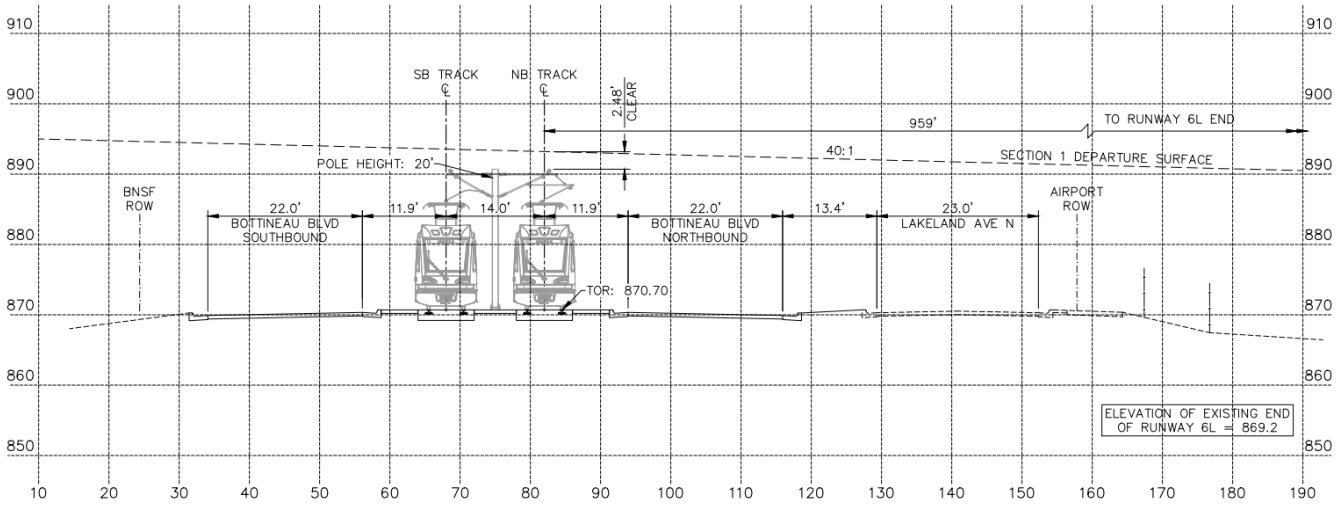
The No-Build Alternative would not involve any improvements within the RPZ; therefore, no construction-phase impacts on aviation would occur under the No-Build Alternative.

Build Alternative

Construction of the Project, including the OCS, would occur within the Runway 24 Departure RPZ (Figure A3-13). 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 complete FAA's *Form 7460-1, Notice of Proposed Construction or Alteration,*[15] during final design. The Council would consider the FAA *Form 7460-1* process complete if FAA were to issue a statement of no objection to the proposed activity.

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.

Figure A3-13 Crystal Airport Runway Protection Zone and State Safety Zone Effects



3.7.5 Avoidance, Minimization, and/or Mitigation Measures

This section describes the measures that could mitigate long-term and short-term aviation impacts from the Project.

As discussed in Section 3.7.2, an 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 that a Transitway within the CR 81 median as the preferred alternative.

FAA conditionally approved the Crystal Airport Layout Plan on May 26, 2020. Based on the decisions rendered by FAA through the RPZ AA and confirmed through 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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[1] Metropolitan Council, *2040 Transportation Policy Plan* (Saint Paul: Metropolitan Council 2020), https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/The-Adopted-2040-TPP-(1).aspx.

[2] Metropolitan Council, *2040 Transportation Policy Plan* (Saint Paul: Metropolitan Council 2020), https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/The-Adopted-2040-TPP-(1).aspx.

[3] Mekuria, Maaza C, Peter G Furth, and Hilary Nixon, *Low-Stress Bicycling and Network Connectivity* (San Jose: Mineta Transportation Institute 2012), https://transweb.sjsu.edu/research/Low-Stress-Bicycling-and-Network-Connectivity.

[4] Florida Local Technical Assistance Program Center, *Using Pedestrian and Bicycle Level of Traffic Stress in Practice*, https://floridaltap.org/using-pedestrian-and-bicycle-level-of-traffic-stress-in-practice/, Accessed 9 May 2024.

[5] Washington State Department of Transportation, *Design Bulletin: Designing for Level of Traffic Stress* (Olympia, WA: Washington State Department of Transportation 2022), https://wsdot.wa.gov/sites/default/files/2022-06/DesignBulletin2022-01.pdf

[6] Montgomery County Planning Department, *The Bicycle Master Plan* (Wheaton, MD: Montgomery County Planning Department 2018), https://montgomeryplanning.org/planning/transportation/bicycle-planning/bicycle-master-plan/

[7] Oregon Department of Transportation, *Analysis Procedures Manual Version 2* (Salem, OR: Oregon Department of Transportation 2020), https://www.oregon.gov/ODOT/Planning/Pages/APM.aspx.

[8] National Academies of Sciences, Engineering, and Medicine, *Guide to Pedestrian Analysis* (Washington D.C., The National Academies Press 2022), https://doi.org/10.17226/26518

[9] Furth, Peter G, *LTS Criteria Tables* (Boston: Northeastern University 2014), https://peterfurth.sites.northeastern.edu/level-of-traffic-stress/.

[10] 3.1 mph may not be average walking speed for people using mobility aids.

[11] Metropolitan Council, *2040 Transportation Policy Plan* (Saint Paul: Metropolitan Council 2020), https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/The-Adopted-2040-TPP-(1).aspx.

[12] Metropolitan Council, METRO Blue Line Extension Final Environmental Impact Statement (Saint Paul: Metropolitan Council 2016), https://metrocouncil.org/Transportation/Projects/Light-Rail-Projects/METRO-Blue-Line-Extension/Environmental/Final-EIS.aspx.

[13] Metropolitan Council, Thrive MSP 2040 Transportation Policy Plan (Saint Paul: Metropolitan Council 2015), https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/The-Adopted-2040-TPP-(1).aspx.

[14] Federal Aviation Administration, *Advisory Circular 150/5300-13B, Airport Design* (FAA 2022c) https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5300-13B-Airport-Design.pdf.

[15] Federal Aviation Administration, *Form 7460-1, Notice of Proposed Construction or Alteration* (FAA 2012a).