6 Indirect Impacts and Cumulative Effects

Below is a summary comparing the impacts and mitigation in the 2016 Alignment with the Project Alignment.

Table 6-1 Comparison of Impacts and Mitigation – 2016 Alignment and Project Alignment

Resource	Did FEIS/ROD Identify an Impact and Mitigation?	Do the Proposed Modifications Change the Impacts to this Resource?	Do the Proposed Modifications Change the Mitigation?	Section Where Additional Information can be Found
Cumulative Effects	Yes, cumulative impacts of increased density could result in additional demand for transportation and services and diminish environmental and cultural resources to be mitigated or regulated through municipal codes.	No	No	6.3

This chapter updates the discussion in the 2016 Final EIS assessing the potential indirect impacts and cumulative effects of the Project. Past, present and reasonably foreseeable future actions were updated to be consistent with the modified Study Area and the changes that have occurred since 2016, and impacts were updated accordingly. Specifically, since the publication of the 2016 document:

- Major transportation investments in the region were completed including three METRO Arterial BRT lines that commenced service between 2019 and 2022 and the METRO Green Line Extension (Southwest Corridor LRT) is expected to be completed in 2027;
- In the City of Brooklyn Park, the TH 610 extension from Elm Creek Blvd to I-94, and the TH 169/101st Ave interchange, listed as present/future actions in the 2016 document, have been completed; and
- In the City of Crystal, Bottineau Blvd improvements were included in the 2016 FEIS as separate actions, which are either now complete or have been incorporated into the Project.

In the 2016 Final EIS, the three METRO Arterial BRT lines had not yet been planned and were not considered in either the indirect or cumulative impact analyses; these transit lines are now integrated into these analyses as appropriate. The TH 610 extension has been integrated into the baseline traffic and future scenario traffic analyses, as have the improvements to Bottineau Blvd. Indirect (secondary) impacts are those that are caused by the Project (in this case, the Build Alternative) but that occur later in time and/or proximity while being reasonably foreseeable. Indirect impacts can include growth-inducing effects and other effects related to induced changes in land use patterns, population density, or growth rate and related effects to air, water, and other natural systems and the built environment.

Cumulative effects result from “the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions, regardless of the agency (federal or non-federal) or person undertaking

them. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."[1] The purpose of a cumulative-effects analysis is "to ensure that federal decisions consider the full range of consequences of actions."[2] Cumulative effects could occur through the combination of a Build Alternative's direct and indirect impacts combined with other development that is not directly related to a Build Alternative.

6.1 Methodology

The indirect-impacts and cumulative-effects assessment follows the requirements of NEPA[2] and the following specific guidance documents:

- *Considering Cumulative Effects Under the National Environmental Policy Act*[3]
- *Consideration of Cumulative Impacts in EPA Review of NEPA Documents*[4]
- *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process*[5]
- *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis*[6]
- *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects* (National Cooperative Highway Research Program [NCHRP] Report 466[7])
- *Cumulative Impacts Addendum to EPA Legal Tools to Advance Environmental Justice*[8]

Guidance from FHWA specifies that "the document needs to present a reasonably complete and accurate picture of the probable consequences involved in implementation of a project, commensurate with the potential for adverse impacts…."[9] The FHWA guidance further specifies that the analysis must be of sufficient detail to be "useful to the decision maker in deciding whether, or how, to alter the program to lessen cumulative impacts."[9] The analysis and discussion in this chapter has been prepared with this guidance in mind.

The Council used a combination of analysis methodologies to fully assess and quantify cumulative effects using readily available information and data, including the following:

- ***Trends analysis:*** Trends analysis was used to identify effects occurring over time and to project the future context of land use and environmental resources of interest.
- ***Map overlays:*** The Council performed quantitative and qualitative analyses by layering maps showing land use and resource context over time. The patterns of past, existing, and future land use and the effects of development on resources of interest were analyzed to predict future trends.

Transportation projects in MnDOT's 10-Year Capital Highway and Investment Plan (CHIP) and State Transportation Improvement Program are considered part of the No-Build Alternative and are included in the assessment of direct impacts. The Council's primary data sources for this indirect-impacts and cumulative-effects analysis were the following:

- The Council's 2040 TPP
- Local capital improvement plans and community development data

Local land use plans were reviewed to help focus the identification of capital improvements and land use developments.

The Council used the following process (steps) to determine whether implementing the Project would result in indirect impacts and/or cumulative effects:

1. ***Identify resources of interest:*** The Council identified resources of interest that would be directly affected by the Project. Because these resources would be directly affected, they might also experience indirect impacts

and/or cumulative effects. These resources include transportation facilities, community and social facilities, physical and environmental features, EJ, parklands, and open space.

2. ***Analyze existing conditions:*** The Council reviewed and analyzed the existing condition of each resource of interest as described in this Supplemental Draft EIS. The Council's review focused on understanding the status, viability, and historical context of each resource to determine the relative vulnerability of the resource to indirect impacts and cumulative effects. The analysis of existing conditions also helped the Council understand the condition of the resources over a broader geographic area, which is critical for assessing the potential for indirect impacts and cumulative effects, because these effects can be separated from a project's direct impacts in both space and time. The Council used quantitative and qualitative methods for the existing-conditions analysis depending on the approach that was used for each resource in each relevant section of this Supplemental Draft EIS.
3. ***Analyze direct Project impacts:*** The Council reviewed and analyzed the direct impacts of the Project on each resource, as described in this Supplemental Draft EIS. To anticipate how the Project might result in indirect impacts and/or cumulative effects, this review focuses on outcomes for resources with the Project constructed. The Council used its understanding of Project impacts, combined with its understanding of existing conditions and past trends, to characterize the state of each resource of interest and its vulnerability to impacts from other present or reasonably foreseeable future actions.
4. ***Identify and analyze impacts of other actions:*** The Council identified other present actions and reasonably foreseeable future actions and their possible impacts to each resource of interest. These actions and the process used to identify them are discussed in Sections 6.1.2 and 6.1.3. The Council identified the potential impacts of each action using a checklist to consider each Project area resource in relation to each action. For example, many of the reasonably foreseeable future actions are residential or commercial development projects. The Council used the information from the analysis of existing conditions (step 2) along with its knowledge of the types of impacts that typically result from land development to perform a qualitative analysis of the resources of interest that likely would be affected by other actions. The result was a list of the resources of interest that could be affected by these other actions.
5. ***Assess indirect impacts:*** The Council identified potential indirect impacts and estimated their magnitude using the information from the existing-conditions analysis (step 2) and information about trends and Project impacts (step 3). The Council's indirect-impacts analysis used its qualitative understanding of the causal nature of impacts to the built and natural environments that are likely to result from development, drawing on analyses for similar projects locally and elsewhere. This approach included a checklist and review of each resource area described in the Supplemental Draft EIS for potential physical, spatial, and ecological (system) interactions. As a result, this chapter's descriptions of potential indirect impacts are qualitative and focus on potentially affected resources and estimating the potential magnitude of effects.
6. ***Assess cumulative effects:*** The Council identified potential cumulative effects on each resource of interest by considering the combination of existing conditions (step 2) and trends, Project impacts (step 3), and the impacts of other present actions and other reasonably foreseeable future actions (step 4). As with the other steps, the Council used a checklist so that all potentially affected resources were considered. The Council used its professional judgment to reach conclusions regarding the potential cumulative effects, considering the frequency, duration, magnitude, and extent of past, present, and future effects. The results of the analysis (Section 6.3) are generally qualitative, reflecting the general lack of available data regarding other present and future actions.

6.1.1 Select Resources of Interest

The Council selected resources of interest for this analysis that are particularly susceptible to indirect impacts and cumulative effects and that would be affected directly or indirectly by the Project as well as by one or more other projects over time that, in aggregate, would result in indirect impacts or cumulative effects.

The resources of interest addressed in this indirect-impacts and cumulative-effects analysis are:

- Transportation
- Land use
- Community character, connections, barriers, and facilities
- Displacement of residences and businesses
- Cultural resources
- Visual and aesthetic resources
- Parklands and open space
- Economic effects, including construction-phase impacts to businesses
- Safety and security
- EJ
- Public utilities
- Hydrology and floodplains
- Wetlands
- Geology, soils, and topography
- Hazardous materials contamination
- Noise
- Vibration
- Habitat and endangered species
- Water quality and stormwater
- Air quality/GHGs
- Energy

6.1.2 Establish Geographic and Temporal Boundaries

The following section describes the extent of the analysis in terms of a geographic study area boundary and time frames for past, present, and reasonably foreseeable future actions that could contribute to Project effects.

6.1.2.1 Geographic Study Areas

Indirect-Impact Analysis

The analysis for indirect impacts focuses on a half-mile radius around LRT stations (Figure 6-1). This approach is supported by NCHRP's Report 466: *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects*,[10] which states that "development effects are most often found up to one-half mile around a transit station." The indirect-impacts study area focuses on the Project Alignment because potential induced effects, such as effects on the built environment (businesses, EJ populations, traffic, and historic properties) typically occur within the half-mile buffer around a LRT project.

The indirect impacts (such as induced development) from the Project are most likely to occur around the LRT stations because the new transit service would improve access to these areas. Beyond one-half mile, new development induced by the Project is less likely. However, secondary development impacts are possible beyond a half-mile radius from the LRT stations. For example, new development in a station area could cause natural-resource impacts that follow the extent of the resource itself rather than stopping at the half-mile boundary. To address this, the Council analyzed potential impacts on natural resources by following the boundaries of those resources (e.g., wetland complexes, waterways, floodplains, and habitat).

Cumulative Effects Analysis

The primary study area for the analysis of cumulative effects is 1 mile on each side of the Project Alignment (Figure 6-1). The cumulative-effects study area is a larger geographic area than the indirect-impacts study area because it encompasses primarily natural resources that could be affected by multiple projects considered in

aggregate. For example, the Council examined the effects of multiple projects on floodplains on a watershed-wide basis to determine how those projects taken together could affect the capacity of existing floodplains (acreage of available floodplains) to provide flood control.

The Council selected this study area based on guidance documents and the resource-specific study areas used in this Supplemental Draft EIS. However, the boundary of the cumulative-effects study area varies by the resource being considered. For example, effects on air, water resources (stormwater, floodplains, and wetlands), and habitat could be greater depending on the location of the resource and the degree of effect. For this reason, the Council considered the potential degree of spatial effect for each resource within this basic framework.

6.1.2.2 Temporal Boundaries and Present Definitions

The time frames established for the indirect-impacts and cumulative-effects analyses include a past time frame of 1960 to the present (2024) and a future time frame of the present to 2040. Present actions are those defined to occur between 2024 and the anticipated construction period (four construction seasons) for the Project.

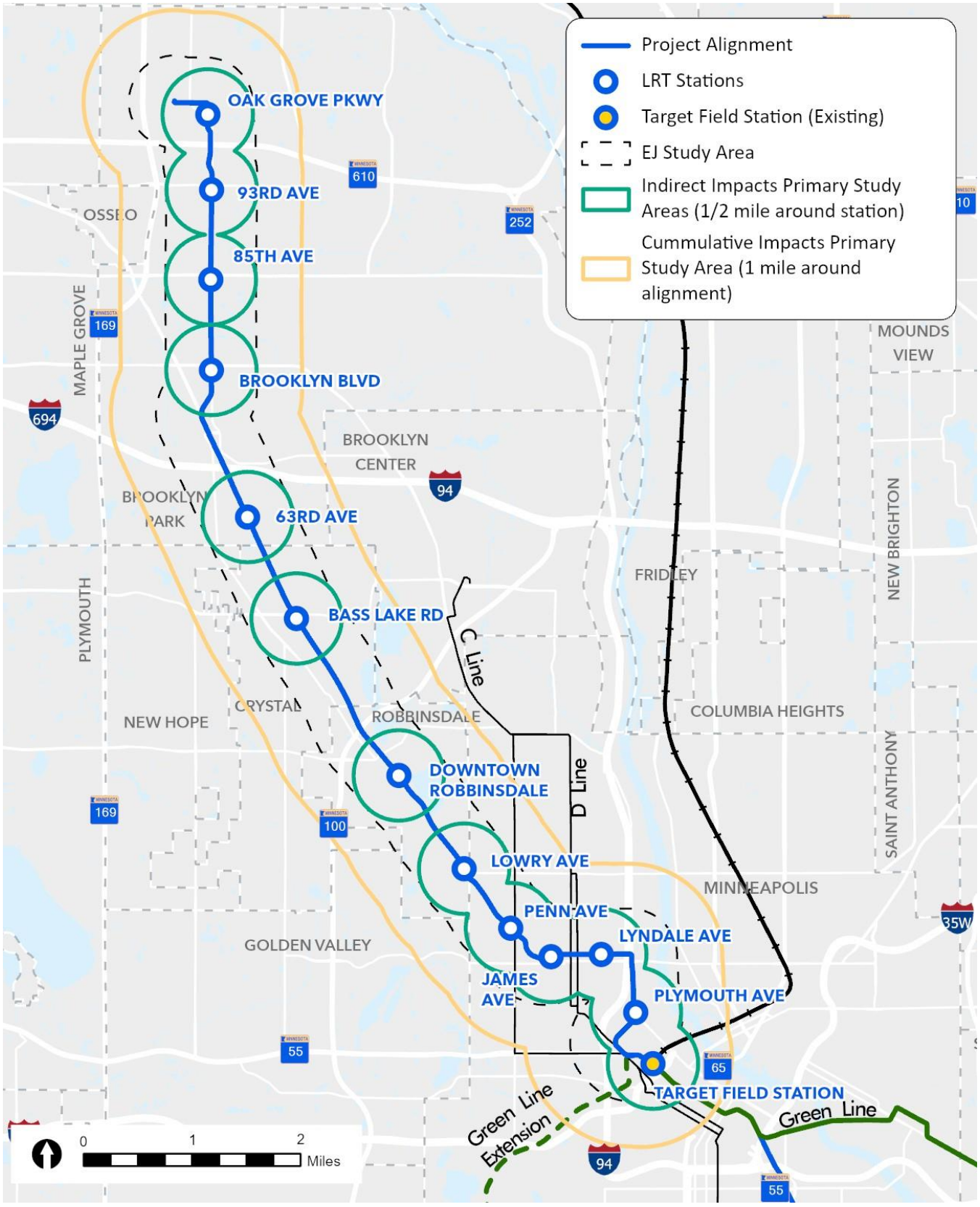
The Council determined the past cumulative effects time frame by examining population trends and previous key events of influence on land use and transportation in the cumulative-effects study area. Beginning with the period of interstate highway construction in the 1960s and 1970s, the Twin Cities metropolitan area has experienced strong population growth between 1960 and 2020. At the end of the first period of interstate highway construction (1970), during which the most miles of interstate highway were constructed, the region's population was 2.1 million. By 2020, it had increased to 3.7 million.[11] This growth has influenced the land use patterns of the region since that time. Table 6-2 shows the population trends for Minnesota and Hennepin County[12] from 1960 through 2020.

Table 6-2 Population of Minnesota and Hennepin County (1960–2020)

Year	Minnesota	Hennepin County
1960	3,413,864	842,854
1970	3,806,103	960,080
1980	4,075,970	941,411
1990	4,375,099	1,032,431
2000	4,919,479	1,116,200
2010	5,303,925	1,152,425
2020	5,706,494	1,281,565
Percent change, 1960–2020	67%	52%
Average annual growth rate	0.8%	0.7%

Source: U.S. Census Bureau 2023.

Figure 6-1 Primary Study Areas for Indirect Impacts and Cumulative Effects



The future cumulative-effects time frame extends to the same year as the Council's long-range regional plan, *Thrive MSP 2040*.[13] Over the 20 years from 2020 to 2040, continued growth is projected for the overall Project area. The 2020 (existing) population of the Project area is 121,197 as shown in Table 6-3. In 2040, the population of the Project area is expected to increase to 141,514, an increase of 17 percent from 2020.

Within the cumulative-effects study area, population is projected to increase by about 23 percent between 2020 and 2040, and employment is projected to increase by 29 percent (Table 6-3).

Table 6-3 Population and Employment Projections for the Cumulative-Effects Study Area (2010–2040)

City	2020 Population	2040 Population Forecast	Population Percent Change	2020 Employment	2040 Employment Estimate	Employment Percent Change
Minneapolis	435,723	484,747	21.91%	281,732	356,000	26.26%
Robbinsdale	15,361	16,047	9.65%	6,858	7,600	10.82%
Crystal	26,935	28,950	5.19%	3,929	5,500	39.98%
Brooklyn Park	83,948	98,875	26.02%	24,084	42,000	74.39%
Project area total[a]	**121,197**	**141,514**	**21.36%**	**349,797**	**452,600**	**29.39%**

Source: Metropolitan Council Annual Population Estimates as of Jan. 1, 2023.

[a] For resident population and demographics information, Project area is defined as the Transportation Analysis Zones within one-half mile of the rail alignment.

6.1.3 Identify Past, Present, and Reasonably Foreseeable Future Actions

The following section describes the projects that contribute to indirect and cumulative effects from the past, present, and reasonably foreseeable future.

6.1.3.1 Past Projects

The passage of the Federal Aid Highway Act of 1956 and the start of interstate construction the same year strongly influenced the pace and location of growth that transformed the Twin Cities metropolitan area. The period of interstate construction in the Twin Cities Metropolitan Area extended from 1956 to 1996. According to *Politics and Freeways: Building the Twin Cities Interstate System*, the years of interstate construction can be grouped into three periods: megaprojects (from 1956 to the late 1960s), the era of expanding the debate (from 1970 to 1990), and the era of falling behind (1990s).[14] Accompanying the expansion of the interstate system in the Twin Cities Metropolitan Area was the expansion of U.S. highways and THs that provided access to the interstate system. The beginning of the past actions period is 1960, and the end of the period is 2022.

The construction of I-94, which extends through the Project area, became a barrier between North Minneapolis neighborhoods and the rest of the City of Minneapolis. Bridges across I-94 are located at Lowry Ave, W Broadway Ave, and Plymouth Ave.

Past land use changes including increased industrial uses and the infrastructure that physically divides the community have caused damage to the same communities that would be impacted by the Project. Land immediately west of the Mississippi River in North Minneapolis has long contained industrial uses, but the footprint of industrial activities expanded west throughout the 1900s.[15] Residents have voiced concerns over air and water pollution from these industrial uses since at least the late 1800s.[16] Recently, mounting concerns from residents have uncovered behavior from industrial operators in the Project area that violates pollution regulation, leading some industrial

operations to be reduced or closed in the Project area[17] and the community has called for exploring land use changes that encourage residential and commercial development.

The following major transportation projects, land use policies, and events contributed to the changes in land use patterns and resource context in the Twin Cities metropolitan area since 1956:

- ***1956:*** passage of the Federal Aid Highway Act
- ***1966:*** I-35W/Highway 62 (Crosstown Commons) completed
- ***1968:*** I-94 completed
- ***1973:*** Interstate 35E (I-35E) completed
- ***1991:*** I-394 completed
- ***2004:*** METRO Blue Line (Hiawatha LRT) completed
- ***2009:*** Northstar Commuter Rail Line completed
- ***2014:***
    - METRO Green Line (Central Corridor LRT) completed
    - *Thrive MSP 2040*: major land use policies (https://metrocouncil.org/Planning/Thrive-2040.aspx)
- ***2019:*** METRO C Line BRT completed
- ***2021:*** METRO Orange Line Highway BRT completed
- ***2022:*** METRO D Line BRT completed
- ***2027:*** METRO Green Line Extension (Southwest Corridor LRT) expected completion

Harms Associated with Past Projects

Transportation projects in the Project area, and in the Twin Cities metropolitan area more broadly, have an unfortunate history of displacing residents. The construction of I-94 through the City of Minneapolis demolished hundreds of homes in the late 1970s and early 1980s. I-94 also serves as a major community barrier, severely reducing transportation options between residential neighborhoods and the Mississippi River. I-94 also serves as a barrier between residential neighborhoods and Downtown Minneapolis, especially for people traveling by modes other than private vehicle.

6.1.3.2 Present Actions and Reasonably Foreseeable Future Actions

The Council identified present projects as well as other public actions planned and programmed to be completed by 2040 in the indirect-impacts and cumulative-effects study areas. Table 6-4 lists the public and private projects by Project city included in the indirect-impacts and cumulative-effects study areas and considered in the Council's analysis of both indirect impacts and cumulative effects.

Table 6-4 identifies plans and developments currently listed in state and local plans, known private development actions, and planned and funded roadway and other infrastructure projects generally within the indirect-impacts and cumulative-effects study areas. The Council identified these actions by coordinating with the local agency partners serving on the Project TPAC. The members of the TPAC included the Cities of Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park; Hennepin County; the MnDOT; and the Council/Metro Transit.

Future actions described in Table 6-4 are independent of the Project. These actions are reasonably foreseeable in that they are likely to occur by virtue of being funded, approved, or part of an officially adopted planning document. Note that future station area planning and other future planning initiatives could identify additional actions that are

not included in the reasonably foreseeable future actions identified by the Council at this time because they have not been funded, approved, or a part of an officially adopted planning document.

Table 6-4 Present and Reasonably Foreseeable Future Actions

City	Action (Project)	Description	Project Developer	Estimated Construction Timing	Potential Environmental Impacts of the Action
Brooklyn Park	Public and private development along CR 81 in the City of Brooklyn Park	Multiple commercial and residential developments	City of Brooklyn Park and private	Ongoing	Construction, stormwater, business impacts, traffic, transportation, noise, visual
Brooklyn Park	Public and private development in the Oak Grove station area	Multiple office, residential, commercial, and mixed-use developments	City of Brooklyn Park and private	2026 and onward	Construction, stormwater, business impacts, traffic, transportation, noise, visual
Crystal	Public and private development along CR 81 in the City of Crystal	Multiple commercial and residential developments	City of Crystal and private	Ongoing	Construction, stormwater, business impacts, traffic, transportation, noise, visual
Robbinsdale	Public and private development in Downtown Robbinsdale	Multiple residential, commercial, and mixed-use developments	City of Robbinsdale and private	Ongoing	Construction, stormwater, business impacts, traffic, transportation, noise, visual
Minneapolis	I-94 reconstruction	Reconstruction and capacity changes of I-94 in the City of Minneapolis north of the 4th St viaduct	MnDOT	Mid- to late 2020s	Construction, right-of-way, stormwater, traffic, transportation, air quality, EJ
Minneapolis	Public and private development in Downtown Minneapolis	Multiple office, residential, commercial, and mixed-use development projects in North Loop and adjacent neighborhoods in Downtown Minneapolis	City of Minneapolis and private	Ongoing	Construction, stormwater, business impacts, traffic, transportation, noise, visual
Minneapolis	Public and private development in West Broadway Business District	Multiple commercial, residential, and mixed-use development projects in North Minneapolis along CR 81	City of Minneapolis and private	Ongoing	Construction, stormwater, business impacts, traffic, transportation, noise, visual, community character
Minneapolis	Green Line (Southwest) LRT Extension	15-mile LRT line between the Cities of Minneapolis and Eden Prairie	Metropolitan Council	2027 opening	Stormwater, right-of-way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns, freight rail traffic), noise
Minneapolis	Hennepin Energy Recovery Center (HERC)	Ongoing operations and potential closure of incinerator facilities	Hennepin County	Unknown closure time frame	Air quality, GHGs, noise, EJ, visual
Minneapolis	Northern Lights Express	New 110-mph passenger rail service between Downtown Minneapolis and the City of Duluth	MnDOT	To be determined	Construction, transportation (travel patterns, freight rail operations), traffic, noise, stormwater

City	Action (Project)	Description	Project Developer	Estimated Construction Timing	Potential Environmental Impacts of the Action
Minneapolis	Midwest High-Speed Rail	High-speed passenger rail service between the Cities of Minneapolis and Chicago	MnDOT	To be determined	Stormwater, right-of-way, visual, construction, land use, business impacts, transportation (transit use, traffic patterns), noise

Reasonably foreseeable future actions are identified through 2040, the planning horizon for the Project.

6.2 Indirect and Cumulative Impacts Assessment

This section describes the potential for indirect and cumulative impacts from the Project. These potential impacts are considered in combination with past trends and the reasonably foreseeable future actions described in Section 6.1.3. The discussion is summarized in Table 6-5 in Section 6.3.

6.2.1 Transportation

This section describes the potential for indirect and cumulative transportation impacts from the Project.

6.2.1.1 Transit Conditions

See Chapter 3 for direct impacts. The areas of indirect benefit on transit include ridership and operational changes. Ridership forecasts for the Project show an increase in new transit trips, which would likely be associated with a decrease in auto trips resulting from people switching from auto to transit for the first time. While the intent of implementing the Project is to retain existing and attract new riders, this would nevertheless be an indirect impact because people may choose to use the new LRT service once it is constructed based on its benefits in relation to their transportation needs. Implementation of the Project would also result in a redistribution of ridership and would necessitate operational changes to the existing local bus system.

Another potential indirect benefit of the Project would be the potential increase in the number of people who use transit because of potential development density or redevelopment in areas surrounding LRT stations. This would have a positive effect on the Project and other elements of the transit system beyond the Project area. Discussion of indirect impacts of redevelopment are discussed in Section 6.2.2 as they relate to concerns about displacement of residents and businesses.

The expected completion of the METRO Green Line Extension and the potential construction of E Line, F Line, and H Line BRT through Downtown Minneapolis could increase system ridership on the regional public transit network and necessitate operational modifications to existing service, including the Project.

6.2.1.2 Pedestrians and Bicyclists

See Chapter 3, Sections 3.2 and 3.3 for direct impacts. The Project would result in long-term indirect impacts to pedestrian and bicycle facilities and travel patterns. Trips via bicycle and pedestrian modes would increase because many transit riders would access the transit system by walking, rolling, and/or cycling, especially where there are no park-and-ride facilities. It is likely that demand for pedestrian and bicycle access to LRT stations would increase as an indirect result of the Project. Over time, this could result in the need for new or expanded pedestrian and bicycle facilities to provide adequate non-motorized access to LRT stations.

This increased demand for pedestrian and bicycle facilities would be concentrated around the LRT stations. In particular, the Project would increase pedestrian and bicycle demand at the following locations:

- Around the Oak Grove Pkwy Station, where Target employees would be able to use the Project to commute to work, and future development may bring new residents and businesses in TODs
- Near the 85th Ave N Station, which is adjacent to North Hennepin Community College
- Near the 63rd Ave N, Bass Lake Rd, and Robbinsdale LRT Stations where the Crystal Lake Regional Trail is adjacent to or within two to three blocks of the LRT stations
- Around the Downtown Robbinsdale Station, where businesses and community facilities can be accessed by walking, rolling, and cycling
- At the Lowry Ave Station, where cyclists and pedestrians may access the Theodore Wirth Parkway Trail, part of the Grand Rounds trail system, or North Memorial Hospital
- Along CR 81 in North Minneapolis, the Project may increase the number of people accessing businesses and community facilities by walking, rolling, and cycling

Biking and walking trips to these LRT stations may use existing trails to access the LRT stations. Over time, additional capacity may be needed on these trails to address this demand. The overall cumulative effect from the increase in pedestrian and bicycle demand is a benefit to the Project area communities and region as a whole by supporting regional goals of reducing VMT.

6.2.1.3 Vehicular Traffic

The Project would have an indirect impact on the roadway network. The areas of indirect impact on roadways and traffic include additional vehicle traffic from the anticipated new development surrounding the LRT stations, and a modest decrease in auto trips on the surrounding roadway network as people switch from auto to transit. Additionally, changes in the vehicular network because of the Project may encourage people to choose transit over driving for trips within the Project area.

The traffic assessment described in Chapter 3, Section 3.4 was based on the regional Travel Demand Model (see Section 3.4.1 for a description of the methodology), which includes 2040 population and employment forecasts that include current and reasonably foreseeable future actions, such as station area development. See Chapter 2 for a discussion of roadway improvements throughout the Project area.

The following planned highway projects, though located outside the Project area, may influence traffic in the Project area:

- Reconstruction of TH 252 between TH 610 in the City of Brooklyn Park and I-94 in the City of Brooklyn Center; potential lane additions or modifications to I-94 between TH 252 and the 4th St Viaduct

The cumulative effect of the Project with TH 252 construction would provide an alternate mode of transportation on transit in the study area.

6.2.1.4 Parking

See Chapter 3, Section 3.5 for direct impacts. The Project could affect the supply of and demand for both on- and off-street parking in the areas surrounding the LRT stations because of station area development/redevelopment. LRT lines can advance the timing and increase the intensity of development surrounding station areas. Any development would be required to comply with the parking requirements of the local jurisdiction.

The Project could also lead to indirect impacts related to "spillover" parking in neighborhoods adjacent to LRT stations. Spillover parking is unwanted parking by LRT riders in off-street parking lots or at on-street parking spaces adjacent to an LRT station. Spillover parking can result from a lack of park-and-ride lot capacity relative to demand for park-and-ride lot spaces and can affect both businesses and residences by limiting available parking spaces for residents, visitors, customers, and employees. Spillover parking could occur at LRT stations where no park-and-ride lots are planned or if there is a shortage of park-and-ride spaces along the Project Alignment or at a particular LRT station.

Planned park-and-ride lots under the Project have been sized to meet forecast (2040) demand for park-and-ride spaces. Traffic impacts from park-and-ride lots are expected to be minimal, as trains are projected to arrive at each LRT station every 10 to 15 minutes during peak transit hours, spreading park-and-ride traffic over time and minimizing peak hour traffic as a result.

Additionally, key destinations in the Project area would experience improved accessibility by transit, potentially reducing the amount of parking necessary to serve business customers and employees.

6.2.1.5 Freight Rail Conditions

See Chapter 3, Section 3.6 for direct impacts. The Project would require no modifications to freight rail track. Future freight rail operations are subject to a range of market forces and are dependent on the business plans of freight railroad operators, which is outside of the jurisdiction of FTA and the Council.

6.2.2 Community and Social Analysis

This section describes the potential for indirect community and social impacts from the Project.

6.2.2.1 Land Use Plan Compatibility

While development and redevelopment in the land use study area is regulated by the affected local jurisdictions and is driven by regional and local economic conditions, LRT lines can advance the timing and increase the intensity of development, particularly in areas surrounding LRT stations (i.e., TOD). Accompanied by land use plans that encourage growth, TOD would lead to many environmental benefits, including a reduction in urban sprawl and greater ability to preserve ecologically sensitive areas, enhanced quality of life and safer streets, and reduction in the per capita carbon footprint of businesses and residents. To fully leverage this development potential and to support local land use goals, Hennepin County, in partnership with the Cities of Minneapolis, Robbinsdale, Crystal, and Brooklyn Park, will continue station area planning efforts. These efforts identify short- and long-term infrastructure needs and land use plans for the station areas.

The station area plans are intended to help coordinate the Project design with the plans and decisions of local jurisdictions and adjacent property owners. These plans are part of an ongoing process that will continue through the Engineering phase and into construction and operation. The station area planning process has featured public workshops and meetings designed to help identify local area goals and the potential for redevelopment near LRT stations. As the Project continues, similar outreach and community involvement effort is anticipated.

Because the OMF would be used to perform light maintenance on LRT vehicles and is not an LRT station, the OMF is not anticipated to attract TOD nor is it anticipated to negatively affect planned growth and development on adjacent

land. Because the OMF and the uses that would occur within it are compatible with existing and planned adjacent land uses, it would not limit future development of adjacent parcels.

Because future potential developments would require the actions of others and are influenced by market forces, they are considered potential indirect impacts to land use. See Figure 6-1 for an illustration of the LRT station locations. The anticipated development and density surrounding the station areas would promote employment by creating new permanent jobs and supporting access to employment opportunities. Commercial, office, and industrial uses would benefit from this improved transit access, as employers would be able to draw from a larger pool of potential employees. Businesses also may be influenced by transit service when selecting new sites, resulting in increased intensity of these land uses.

The expected increase in development density around LRT stations resulting from construction of the Project is consistent with regional and local plans. These plans acknowledge the value of transit in supporting efficient land use development and the value of TOD around LRT stations.

Also under discussion is the land use compatibility between future mixed-use development around Target Field Station and the Hennepin Energy Recovery Center (HERC) that is located nearby. Residents have cited refuse incineration operations at HERC as a potential pollutant. HERC uses state-of-the-art emission control technologies, and continuously operates well below permitted emission levels by MPCA.

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect impacts of the Project, could result in land use changes and increased development or redevelopment in the cumulative-effects study area. This most likely will be in the form of increased residential and commercial densities consistent with TOD. These trends likely will continue until demands for housing and retail, office, and/or industrial space are met.

6.2.2.2 Community Facilities/Community Character and Cohesion

Long-term indirect impacts related to the Project that could affect access to community facilities, community character, and community cohesion generally include property conversion related to station area development, and increased demand for parking in the neighborhoods surrounding stations.

The Project has the potential to result in indirect impacts related to property conversion in the areas surrounding LRT stations. In particular, LRT projects can advance the timing and increase the intensity of private and public development surrounding station areas. Development and redevelopment that may occur along the Project Alignment would be subject to applicable city plans and policies. Direct public outreach would continue to occur throughout engineering, design, and construction, to continue coordination related to community concerns over changes to character and connectivity. Long-term access to community facilities would be maintained, and construction-term access would be minimized.

Over time, continued development of transit and transportation facilities in the Project area, combined with future actions and the direct and indirect impacts of the Project, will place increased demands on community services and facilities while potentially changing community character. For locations where comprehensive plans call for dense, mixed-use development, such changes in character will be consistent with planned growth and development.

6.2.2.3 Relocation and Displacement of Residents and Businesses

There is potential for increased development and redevelopment in areas surrounding LRT stations because of improved transit access. This increased redevelopment may indirectly lead to acquisitions and displacements in situations where property ownership is transferred from one party to another.

Some construction-phase impacts to businesses are expected because storefront access may be less convenient. The Council has heard business owner concerns about construction-phase access, which may cause potential customers to avoid area business districts altogether for the duration of Project construction.

The Project and other transportation projects that use federal funds are required by law to compensate property owners and renters for residences and businesses acquired by transportation improvements, though policies may make remaining in the immediate Project area challenging. Project partners are exploring anti-displacement measures, with the goal that the Project and similar federal actions will lessen cumulative acquisition impacts.

6.2.2.4 Cultural Resources

Development and redevelopment associated with the LRT stations could change the setting, context, and land use in the station areas (typically within a half-mile radius or less from an LRT station).[18] Such changes could have indirect impacts on existing historic resources. The induced development might also directly affect historic properties through demolition, changes in property values, or other impacts.

6.2.2.5 Visual/Aesthetics

Some indirect visual impacts are possible in the long term because the improved accessibility of the areas around the LRT stations would create potential opportunities for new development, including higher residential densities and, in some cases, new or expanded commercial activities. In areas where this occurs, the built environment is likely to appear more intensively developed and possibly more urbanized in character than what exists at present. The extent to which this development would have visual effects would depend upon the effectiveness of planning, development control, and urban design policies and regulations of the communities in which the development takes place. Further, as discussed in Section 6.2.2.1, new development would also be subject to a zoning/permitting process before proceeding.

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect impacts of the Project, could cumulatively change views in the Project area over time. Specifically, views could become more urbanized, and wide-open views could in some cases become more closed. These changes are consistent with adopted comprehensive plans for the communities in the cumulative-effects study area, plans that call for continued development of transportation infrastructure and land.

The Project would implement appropriate measures to avoid, minimize, and mitigate visual quality and aesthetics impacts (see Section 4.5.5); however, future actions other than the Project have the potential to adversely affect visual quality and aesthetics in the cumulative-effects study area.

6.2.2.6 Economic Effects

The Project is likely to have the long-term indirect impact of increased development and redevelopment in the areas surrounding LRT stations.[19] Because future potential developments would require the actions of others and are influenced by market forces, they are understood to be indirect impacts to land use.

Transit investments have proved to yield net positive effects on property values.[20] Research conducted by the Center for Transportation Studies at the University of Minnesota on the impacts the METRO Blue Line (Hiawatha Line LRT) has had on residential, commercial, and industrial properties suggests that LRT has an overall positive effect on property values.[21,22] Proximity to station areas was a major factor in the positive effect on residential and multifamily properties. The overall strength of the economy, local government policies, and land availability are also critical factors in determining the value of the property.[23]

LRT also has the potential to cause environmental impacts ("nuisance effects") that could reduce the value of an area for some existing or planned uses and/or lower the revenue of local businesses over the long term. These potential nuisance effects include changes in noise levels, visual impacts, and reductions in vehicular access and parking. For the Project, the potential nuisance effects are expected to be minimal. The rate and timing of such impacts would depend on the location of the business relative to the new LRT station, changes in business activity during construction and operation of the system, business visibility, and local land use plans and development standards. Mitigation measures for visual quality, noise, vibration, and parking impacts are discussed in Sections 4.5, 5.6, 5.7, and 3.6, respectively.

The Project may indirectly lead to new development and/or redevelopment of land surrounding some of the LRT stations, which could have the effect of increasing property tax revenues for the affected local jurisdictions. While development is regulated by the affected jurisdictions and is driven by regional and local economic conditions, LRT lines can advance the timing and increase the intensity of development, within the limits allowed by local zoning, particularly surrounding station areas. To fully leverage this development potential and to support local land use goals, Hennepin County, in partnership with cities along the Project Alignment, is continuing station area planning. These efforts identify short- and long-term infrastructure needs and land use plans for the station areas included in the Project, with the intent of supporting the local and regional vision for increased TOD.

As discussed in Section 4.6 (Economic Effects) of this Supplemental Draft EIS, while induced development may have broad economic benefits, the potential also exists for uncontrolled increases in property values and property taxes. These increases could result in current and local prospective property owners being priced out of the market and could displace them from their homes and businesses in the Project area. Therefore, land use planning efforts have been augmented with anti-displacement initiatives, which focus on understanding and documenting concerns of key Project stakeholders and the public relative to displacement and identify strategies to avoid or mitigate the potential for displacement. These strategies include potential policy changes and resource re-allocation. A copy of the *Blue Line Extension Anti-Displacement Recommendations* report can be found at mybluelineext.org.

To the extent to which the Project leads to new private development around LRT stations, new jobs could be created in the region as employees gain easier access to businesses, residential housing units, and other facilities. The creation of these jobs would provide a net benefit to the local economy.

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect impacts of the Project, could cumulatively strengthen the business climate by providing improved transportation access to customers and employees. Although it is possible for individual businesses to be affected negatively, the overall (cumulative) result is expected to be positive, especially if anti-displacement measures and redevelopment are structured to benefit the community.

6.2.2.7 Safety and Security

The increased development density and intensity anticipated by the Council around the new LRT stations could affect law enforcement and security providers. New planned concentrations of residential, commercial, and other uses would put more transit riders, pedestrians, and bicyclists in proximity with transit vehicles, tracks, crossings, and freight rail, potentially creating safety conflicts. This could in turn place greater demands on security providers and/or require changes in current patrol routes, schedules, and equipment needs.

The continued development of transit and transportation facilities in the Project area over time, combined with future actions, population growth, and the direct and indirect impacts of the Project, could cumulatively add to the demands on law enforcement and security providers, potentially affecting staffing levels and budgets over the long term.

6.2.3 Physical and Environmental Analysis

This section describes the potential for indirect physical and environmental impacts from the Project.

6.2.3.1 Utilities

No adverse long-term indirect impacts to utilities are anticipated because conflicting utilities would be relocated, and services would be maintained. Site-specific conflicts would be addressed by design measures such as relocating utilities, as appropriate.

The LRT OCS would operate by supplying electrical energy to the train with the return current flowing through the rails. This return current can also flow through underground metal utility pipes and cable lines near the Project. The potential for long-term indirect impacts, such as corrosion of existing metal utility pipes and cables due to stray current from the LRT electrification systems, was evaluated. The Project would include measures to minimize stray current and reduce the amount of corrosion due to stray current in accordance with the Project's design criteria.[24] Therefore, no long-term indirect impacts related to stray current are anticipated.

The increased development density and intensity anticipated around LRT stations could affect utility providers. New planned concentrations of residential, commercial, and other uses could change the patterns and level of demand for utilities in the area. Typically, utility fees charged to users offset net new costs to provide more service. In some cases, such changes could be beneficial to providers because higher-density land use typically results in more efficient distribution of services.

The continued development of transit and transportation facilities in the Project area over time, combined with future actions, natural population growth, and the direct and indirect impacts of the Project, could add to the demands on the customer base of utilities in the cumulative-effects study area. The efficiencies of more compact development patterns (anticipated in station areas) are expected to provide operating efficiencies to the utility providers over the long term.

6.2.3.2 Floodplains

Well before the start of interstate construction in the Project area, floodplains were being adversely affected by development activities, particularly in Hennepin County, the most populous county in the state. The conversion of original land cover (maple and basswood forest, prairies, and wetlands) to agricultural land introduced adverse impacts to hydrology and floodplains that intensified with the increase in urban development. The incomplete

understanding of the inherent value of floodplains, and the lack of comprehensive environmental regulations at the local, state, and federal levels, resulted in a generally degraded condition of floodplains through the first period of interstate construction in the Project area. The passage of legislation, such as the 1972 CWA and the 1991 Minnesota WCA, increased protection of floodplains.

If commercial, transportation, and industrial activities along the Project Alignment increase because of the Project, there may be long-term indirect impacts on surface water resources because of new point and nonpoint sources of pollution. Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect impacts of the Project, could cumulatively affect hydrology and floodplains if BMPs are not implemented.

6.2.3.3 Wetlands

The Project may induce new development that could cause wetland impacts. These impacts could include filling for development, dredging to increase stormwater treatment capacity, or diminished wetland function and value because of increased pollutant loading from runoff. These impacts are less likely if impact avoidance and minimization efforts are used and typical BMPs are followed.

Even before the start of interstate construction in the Project area, wetlands were being adversely affected by development activities, particularly in Hennepin County. The conversion of the Project areas' original land cover, including wetlands, to agricultural land introduced adverse impacts to wetlands that intensified with the increase in urban development. The incomplete understanding of the inherent value of wetlands, and the lack of comprehensive environmental regulations at the local, state, and federal levels, resulted in a generally degraded condition of surface water resources through the first period of interstate construction in the Project area. As an example of past actions on water resources, it has been estimated that Minnesota has lost approximately half of its original pre-settlement wetlands because of draining and filling for agriculture and development.[25]

From a long-term indirect impact standpoint, the Project may affect wetlands by facilitating future development and adding impervious surface that may adversely affect water quality. In addition, the operation of LRT may affect the hydrology and connectivity of public waters along the Project Alignment. Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect impacts of the Project, could cumulatively affect wetlands, particularly if BMPs are not implemented.

6.2.3.4 Geology, Soils, and Topography

No geologic features or hazards were identified in the cumulative-effects study area; however, a portion of the Project is located in an area identified as active karst. Two springs were mapped 1-mile southwest of the cumulative-effects study area. Though no karst features have been identified along the Project Alignment, a small segment of the cumulative-effects study area has a high probability for karst, as shown in Figure 5-15. The design and operation of the Project infrastructure could be affected if subsurface features are encountered during construction. The presence of karst could also exacerbate the spread of contamination if spills or releases of hazardous materials were to occur in this area. Details regarding releases of hazardous materials in karst areas are discussed further in Section 5.4.3.2.

Past public and private projects have affected geology (soils) in a manner similar to the Project. Compressible soils and other soils unsuitable for construction have been excavated and replaced with suitable fill. In addition, past

projects have disturbed soil geology while constructing cuts and fills required to build roadways and private development projects. While past projects would have affected geology, they may have had adverse geology impacts. It is not possible to know whether past actions encountered karst conditions, which could be an adverse geology impact.

Recent past, present, and reasonably foreseeable future actions, whether state/federal transit (e.g., METRO Green Line Extension) or roadway projects or residential/commercial developments, would be expected to have similar soil impacts to the Project's impacts described below.

The generally compatible geologic conditions along the Project Alignment would accommodate construction and operations, thus limiting long-term direct geology impacts.

Implementing soil correction, and construction of bridge abutments, and piers in areas of compressible soils is not expected to create adverse geologic impacts. No long-term indirect impacts to geology and soils would occur solely during construction of the Project. No direct impacts to topography have been identified. Given that any impacts would be temporary, no cumulative effects to these resources are anticipated.

6.2.3.5 Hazardous-Materials Contamination

The anticipated development and redevelopment induced by the Project around LRT stations could affect hazardous-materials sites if proper BMPs (which are legally required) are not implemented.

A potential beneficial long-term indirect impact of properties being on or in the vicinity of LRT stations is that known and unknown hazardous and contaminated properties may be cleaned up as redevelopment occurs. Areas encountered during construction of the Project that contain hazardous and contaminated materials that are within the LOD would be cleaned up as part of the Project, in accordance with the RAP and CCP (see Section 5.5.4.2).

Additional development that is spurred by the Project could occur on former industrial sites that may require hazardous-materials cleanup. Future development would be required to comply with all relevant environmental standards, and BMPs should be used to minimize risk.

Continued development of transit and transportation facilities in the Project area over time, combined with future actions and the direct and indirect impacts of the Project, would contribute to the remediation of hazardous-materials sites, because such sites would be required to be cleaned up as a condition of development or redevelopment.

6.2.3.6 Noise

Some indirect noise impacts are likely to occur in the long term because of the anticipated increase in development density anticipated around the LRT stations. Local jurisdictions would likely take advantage of better transportation and access following completion of the Project by encouraging TOD/redevelopment of land around the LRT stations, which would result in noise exposure produced by LRT equipment and park-and-ride facilities. The anticipated development induced by the Project around LRT stations would expose more people to noise from transit and associated park-and-ride facilities.

Automobile-related noise levels are also subject to change because of induced shifts in the transportation modes impacted by the Project. Improvements to the transit, pedestrian, and bicycle transportation networks could induce a reduction in automobile-related noise as people have reduced car dependency in the Project area.

The Project would implement appropriate measures to avoid, minimize, and mitigate noise impacts, as appropriate; however, future actions other than the Project have the potential to adversely affect noise in the cumulative-effects study area. The *Noise and Vibration Technical Report* is provided in Appendix A-5.

6.2.3.7 Vibration

Some indirect long-term changes in vibration exposures are likely with the Project because of the anticipated increase in development density around LRT stations. Local jurisdictions would likely take advantage of better transportation and access following completion of the Project by encouraging TOD/redevelopment of land around the LRT stations, which would result in exposure to vibrations produced by LRT and freight rail. The anticipated new development induced by the Project around LRT stations would expose more people to ground-borne vibration from LRT. Construction of new developments would also likely be accompanied by construction-phase vibration that is independent of LRT construction or operation.

The Project would contribute to increases in ground-borne vibration events along its Alignment, and cumulative effects could occur where this transitway is near other public transportation vibration sources in Downtown Minneapolis, sources such as at the Target Field multimodal transportation hub where other LRT and commuter rail lines are planned to converge.

6.2.3.8 Biological Environment (Wildlife Habitat and Endangered Species)

The Project could cause indirect impacts to habitat and endangered species if proper BMPs are not implemented. Indirect impacts could occur if development induced around the station areas were to cause direct impacts to natural habitat. However, the amount of these habitat effects would be limited because the station areas are located in urban and suburban areas, and the species present tend to be generalized species that are adapted to urban conditions. In addition, any such new development would be required to follow applicable permitting and other regulatory requirements related to protecting natural resources.

The Project would implement appropriate measures to avoid, minimize, and mitigate ecosystem impacts (see Section 5.8.4); however, future actions are anticipated to have minor effects on habitat and endangered species, similar to the indirect impacts from the induced development, because they would be located in urban and suburban areas. The planned projects are expected to use to BMPs during construction to limit indirect impacts to aquatic habitats, and no adverse cumulative effects are anticipated.

6.2.3.9 Water Quality and Stormwater

There is potential for increased development and redevelopment in areas surrounding LRT stations because of improved transit access. To the extent to which the Project increases development and redevelopment intensity, long-term indirect impacts would result as commercial, transportation, and industrial activities in the Project's vicinity increase new point and nonpoint sources of water pollutants. Water quality impacts can include:

- Increased export of pollutants from impervious surfaces and compacted soil
- Decreased pollutant filtration
- Increased water temperatures because of riparian vegetation removal

- Export of pollutants from motor vehicles using park-and-ride lots and other associated infrastructure

The anticipated development and redevelopment induced by the Project in station areas likely would temporarily disturb soil and potentially increase the area of impervious surfaces, both of which could directly affect water resources. However, these activities would be subject to current water quality regulations, and installation of required BMPs would protect water quality.

Cumulative effects from future actions in the Project area watersheds could include increased sediment and pollutant loads. However, future actions are subject to the same water quality regulations as the Project and would use similar BMPs during construction and operation. Therefore, no cumulative adverse effects to water quality are anticipated.

6.2.3.10 Air Quality/Greenhouse Gases

The Project would provide more options for public transportation; therefore, the reliance on passenger cars for daily work commute and recreational trips would be reduced as people choose transit instead of driving. The marginal reduction in vehicle travel on highways and local streets would contribute to indirect air quality improvements. Conversely, the induced development that could result from the Project could increase motor vehicle travel, thereby indirectly increasing air pollutant emissions.

The cumulative effect on air quality could be an improvement over the conditions without the Project.

6.2.3.11 Energy

The Project would result in minor shifts from SOVs to transit (see Section 5.10). As a result, a potential benefit from that mode change would be a projected annual reduction in passenger VMT compared to the No-Build Alternative in 2040 are 104,700 (east of I-94) and 111,900 (Lyndale). The resulting reduction in annual energy consumption compared to the No-Build Alternative in 2040 is 119 billion Btu for the Project area and the region over the long term.

New development and redevelopment in the station areas could result in greater demand for electricity in these locations; however, this type of new urban development (e.g., buildings) is typically more energy-efficient than existing or less dense development. Conversely, the induced development that could result from the Project could increase motor vehicle travel, thereby indirectly increasing energy consumption.

The cumulative effect on energy use would likely be an improvement over the No-Build Alternative (see Section 5.11.4).

6.2.4 Environmental Justice

See Section 7.4.6 for a discussion of indirect impacts and cumulative effects for EJ.

6.2.5 Parklands and Open Space

Parks and open spaces are important community resources and are considered an asset in the indirect-impacts study area. Greater levels of activity at parks and open spaces could result from the increased accessibility provided by the Project. People who previously did not have exposure or interest in park spaces within the Project area could be attracted by their increased accessibility. Greater use of parks and open spaces could, in turn, strain facilities and increase maintenance levels.

Currently, the reasonably foreseeable future projects in Table 6-4 above are not expected to adversely affect parks or recreation areas. As described in Section 8.1 and summarized in Table 8-1, it is anticipated that six parks would be impacted by a *de minimis* use and seven parks would be affected by a temporary occupancy.

Population growth in the cumulative-effects analysis area caused by new residential development surrounding the LRT stations may increase demand and capacity pressure on public parks and recreation facilities. Because of limited land availability and funding for acquisitions, the City of Minneapolis and other communities are limited in park expansion opportunities to meet recreational demands. These limitations have the potential to result in a long-term shortfall in the ratio of parks and recreation areas to population.

The Project would implement appropriate measures to avoid, minimize, and mitigate other parks, recreation areas, and open-space impacts not related to acquisitions; however, future actions other than the Project have the potential to adversely affect parks, recreation, and open space in the cumulative-effects study area.

6.3 Mitigation and Summary of Effects

This section includes a review of mitigation considerations for the indirect impacts and cumulative effects to each resource of interest as well as a summary of effects. Table 6-5 presents this information. Planned transportation and other governmental development and private development in the cumulative-effects study area would occur independently of the Project. These developments are located in communities along the Project Alignment. Projections of anticipated land development are based on current local and regional land use and growth management objectives and regulations, which already consider the implementation of the Project.

The Project would have an incremental effect on resources of interest in the context of other past, present, and reasonably foreseeable future actions in the cumulative-effects study area. In general, the direct and indirect adverse impacts of the Project would be localized, and the Council does not anticipate that the Project would result in substantial cumulative effects for the resource categories evaluated. The Council's assessment of the cumulative effects of the Project and other past, present, and reasonably foreseeable future actions is presented by each resource of interest in the following sections.

Table 6-5 Summary of Indirect Impacts, Cumulative Effects, and Associated Mitigation

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Transportation	Travel by transit, pedestrian, and bicycle modes would increase, and the number of SOVs would decrease, because of the Project. The Project could also lead to indirect impacts related to "spillover" parking in neighborhoods adjacent to LRT stations.	The Project in combination with the reasonably foreseeable future actions would increase overall transportation demand. The combination of the roadway improvements and the Project would draw additional vehicle traffic associated with passengers accessing the LRT stations.	Because the indirect impacts and cumulative effects identified are consistent with the comprehensive plans of the communities affected, as well as with county and regional plans, no mitigation is required. To address the potential for spillover parking in neighborhoods adjacent to LRT stations, the Council would complete a Regional Park-and-Ride System Report on an annual basis, which tracks facility use and emerging travel patterns to identify the appropriate mitigation, as needed and where feasible.
Land use plan compatibility	Market-driven development could lead to increased density and intensely used spaces along the Project Alignment.	Reasonably foreseeable future actions would likely increase the density and intensity of development in the Project area.	The cities in the Project area have planned for future growth and development with their individual comprehensive plans. Potential indirect impacts and cumulative effects on land use are compatible with these plans and plans for the region, which state the agencies' desire for transit to alleviate traffic and congestion. No mitigation is required.
Community facilities/community character and cohesion	New businesses and residential development could be attracted to station areas, likely leading to denser land use patterns and increased demand on community services and facilities. Increased development could affect access to community facilities.	The Project in combination with the reasonably foreseeable future actions could change the character of neighborhoods by increasing mixed-use development in the cumulative-effects study area.	The types of indirect impacts and cumulative effects identified are typically consistent with and governed by applicable land use plans. No mitigation is required.
Relocation and displacement of residents and businesses	New station area development could result in displacements of existing uses, limited by zoning, comprehensive plans, and local economic conditions.	Additional transportation investments in the Project area to service induced development, in combination with the reasonably foreseeable future actions, could lead to the acquisition of right-of-way and the relocation of residents and businesses.	As part of the Project, the Council would compensate affected property owners in accordance with the Uniform Relocation and Assistance Act. Additional exploration of mitigation measures for relocation and displacement assistance/avoidance for Environmental Justice communities are explored in Chapter 7 of this document.

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Cultural resources	More dense and intense development could affect the context of cultural resources. Induced development could directly affect historic properties through demolition, change in property values, or other impacts.	Induced development associated with the Project in combination with the reasonably foreseeable future actions could cumulatively diminish the integrity of a historic properties or district's location, feeling, or association cultural resources.	All indirect impacts and cumulative effects are subject to the protections and regulations of Section 106 of the NHPA. Committed mitigation would be documented in an amendment to the Section 106 MOA. If development occurs independent of the Project but is induced by the Project and the development requires approvals from state agencies, the Minnesota Historic Sites Act (Minn. Stat. 138.661–138.669), it is required that state agencies consult with SHPO before undertaking or licensing projects that may affect properties on the State Historic Sites Network, State Register of Historic Places, or NRHP. Within the City of Minneapolis, the Minneapolis Heritage Preservation Ordinance requires the Heritage Preservation Commission (HPC) and Community Planning and Economic Development (CPED) staff to review alterations to local landmarks, properties within historic districts, and properties under interim protection. The ordinance also requires CPED staff to review all wrecking and moving permits to determine whether the affected property is a historic resource and, if so, whether the demolition requires approval by the HPC.
Visual/aesthetics	Induced development around the LRT stations would likely change the views of the area. Specifically, a new building that is in keeping with the scale and character of the existing neighborhood would typically be seen as a positive impact on visual resources, whereas a new building that does not fit in with the existing character could be seen as a negative impact.	Increased development associated with the Project in combination with the reasonably foreseeable future actions could require more personnel providing safety and security services and could cumulatively strain local providers' capacity to deliver these services.	Development that occurs in response to the Project and future actions would likely have a visual impact on the Project area. All development is regulated through applicable municipal codes. No additional mitigation is required.

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Economic effects	To the extent to which the Project leads to new private development around LRT stations, new jobs could be created in the region as employees gain easier access to businesses, residential housing units, and other facilities. The creation of these jobs would provide a net benefit to the local economy. Conversely, increased property values could displace residents.	Induced development associated with the Project in combination with the reasonably foreseeable future actions would likely increase the number of customers in the Project area.	Additional exploration of mitigation measures to prevent and address indirect displacement of residents and businesses are explored in Chapter 7 of this document.
Safety and security	Increased development densities around LRT stations could place greater demands on safety and security personnel and systems.	Increased development associated with the Project in combination with the reasonably foreseeable future actions could require more service personnel and could cumulatively strain local providers' capacity to deliver services.	The Council's implementation of the SSAP, which includes increased investment in Metro Transit police, private security, CSOs, and community ambassadors, could reduce safety and security concerns.
Utilities	No long-term indirect impacts related to stray current are anticipated. Induced development would put a greater demand on the existing utilities in the Project area.	Induced development associated with the Project in combination with the reasonably foreseeable future actions would likely put a greater demand on utilities in the Project area.	To meet increased demand for utilities from induced development and future actions, utility providers would plan appropriately through their regular planning processes. No additional mitigation is required.
Floodplains	Induced development could adversely affect hydrology (increased impervious surfaces) and floodplains storage if BMPs are not implemented during the development process.	Induced development associated with the Project in combination with the reasonably foreseeable future actions could have a cumulative effect on increased sediment and pollutant load if BMPs are not implemented.	All permanent impacts to hydrology and floodplains caused by induced development and future actions would be mitigated according to applicable regulations. No additional mitigation is required.
Wetlands and other aquatic resources	Induced development could adversely affect wetlands if new developments were to cause wetland impacts and BMPs are not implemented.	Induced development associated with the Project in combination with the reasonably foreseeable future actions could have a cumulative effect if new developments were to cause wetland impacts and BMPs are not implemented.	All permanent impacts to wetlands caused by induced development and future actions would be mitigated according to applicable regulations. No additional mitigation is required.
Geology, soils, and topography	No indirect impacts are anticipated.	No cumulative effects are anticipated.	Not applicable (no indirect impacts or cumulative effects are anticipated).
Hazardous-materials contamination	If BMPs are followed, no adverse indirect impacts should occur; beneficial impacts would occur through remediation.	Induced development associated with the Project in combination with the reasonably foreseeable future actions would have a positive effect by contributing to the remediation of hazardous-materials sites within the LOD, because such sites would be required to be cleaned up as a condition of development or redevelopment.	Parties involved would be required to follow all state and federal laws concerning hazardous materials. No additional mitigation is required.

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Noise	Changes in development density and intensity would bring more people into contact with noise produced by the Project. Mode shifting could lead to a reduction in noise related to automobile traffic in the Project area.	Induced development associated with the Project in combination with the reasonably foreseeable future actions would likely result in more people and traffic in the area. Although the Project would add a new noise source to the cumulative-effects study area, the combined effects of the Project and the W Broadway Ave Reconstruction project would result in lower noise impacts to sensitive receptors.	Noise impacts caused by development or other future actions would be assessed for mitigation on a project-by-project basis. No additional mitigation is required.
Vibration	Changes in development density and intensity would bring more people into contact with vibration produced by the Project.	Cumulative vibration impacts could occur at the Target Field multimodal transportation hub in Downtown Minneapolis.	No mitigation for impacts to induced development is identified. Mitigation for vibration impacts associated with other LRT or commuter rail lines and the Target Field multimodal transportation hub is documented in each project's environmental clearance commitments.
Biological environment (wildlife habitat and endangered species)	New development induced by the Project, with implementation of proper BMPs, is unlikely to result in impacts on habitat and endangered species.	Induced development associated with the Project in combination with the reasonably foreseeable future actions would not likely have a cumulative effect on habitat or endangered species because of the urbanized nature of the Project area.	No additional mitigation is required. The Council assumes that BMPs would be followed for any new development.
Water quality and stormwater	No indirect impacts are anticipated if BMPs are implemented.	Induced development associated with the Project in combination with the reasonably foreseeable future actions could increase the amount of impervious surfaces in the Project area and have a cumulative effect on increased sediment and pollutant loads if BMPs are not implemented.	BMPs would be implemented to reduce potential cumulative effects from induced development. No additional mitigation is required.

Resource	Indirect Impacts	Cumulative Effects	Mitigation
Air quality/GHG emissions	The mode shift away from automobiles with the Project would result in fewer cars on local roads and marginally less congestion, resulting in a positive impact on air pollution. Conversely, the induced development that could result from the Project could increase motor vehicle travel, thereby indirectly increasing air pollutant emissions.	The Project's positive contribution to air quality would improve cumulative conditions over what they would be without the Project.	No adverse effects, therefore, no mitigation is warranted.
Energy	The mode shift to LRT with the Project would likely lead to an operational efficiency in passenger transport and reduced energy use.	Induced development associated with the Project in combination with the reasonably foreseeable future actions could increase the amount of transit riders and cumulatively reduce the amount of energy consumed for transportation.	No adverse effects, therefore, no mitigation is warranted.
Parklands and open space	Greater accessibility could lead to higher usage rates of parks and open spaces along the Project Alignment. Greater use of parks and open space could strain facilities and increase maintenance levels.	Induced development associated with the Project in combination with the reasonably foreseeable future actions and natural population growth would likely place a greater demand on parks and open spaces and could result in a cumulative adverse effect.	The Council and the municipalities in the Project area have plans to expand and enhance parks and open spaces in the area to meet the demands of population growth. No additional mitigation is required.

[1] 40 CFR § 1508.1 (g)(3).
[2] 40 CFR Parts 1500–1508.
[3] Center for Environmental Quality, *Considering Cumulative Effects Under the National Environmental Policy Act* (Washington, D.C.: CEQ, 1997), https://www.energy.gov/nepa/articles/considering-cumulative-effects-under-national-environmental-policy-act-ceq-1997.
[4] U.S. Environmental Protection Agency, *Consideration of Cumulative Impacts in EPA Review of NEPA Documents* (Washington, D.C.: EPA, 1999), https://www.epa.gov/sites/default/files/2014-08/documents/cumulative.pdf.
[5] Federal Highway Administration, *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process* (Washington, D.C.: FHWA, 2003), https://www.environment.fhwa.dot.gov/nepa/QAimpact.aspx.
[6] Center for Environmental Quality, *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (Washington, D.C.: CEQ, 2005), https://www.energy.gov/nepa/articles/guidance-consideration-past-actions-cumulative-effects-analysis-ceq-2005.
[7] National Cooperative Highway Research Program, *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects*, NCHRP Report 466 (East Orange, N.J.: NCHRP, 2002), https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_466.pdf.
[8] United States Environmental Protection Agency, *Cumulative Impacts Addendum to EPA Legal Tools to Advance Environmental Justice* (Washington, D.C.: EPA, 2023), https://www.epa.gov/system/files/documents/2022-12/bh508-Cumulative%20Impacts%20Addendum%20Final%202022-11-28.pdf.
[9] Federal Highway Administration, *Interim Guidance: Questions and Answers Regarding Indirect and Cumulative Impact Considerations in the NEPA Process* (Washington, D.C.: FHWA, 2003), https://www.environment.fhwa.dot.gov/nepa/QAimpact.aspx.
[10] National Cooperative Highway Research Program, *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects*, NCHRP Report 466 (East Orange, N.J.: NCHRP, 2002), https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_466.pdf.
[11] U.S. Census Bureau.
[12] The project will be completely within Hennepin County, Minnesota.
[13] To develop local forecasts, the Council uses a land use model, simulating real estate development possibilities, and predicting growth patterns responsive to the region's future industry mix and future demographics. Local data—including planned land use from each community's 2030 comprehensive plan—inform the model about land supply and allowable land uses. Future transportation networks also influence the local forecasts. These forecasts reflect the array of growth policies, investment priorities, infrastructure plans, and redevelopment tools that currently exist (*Thrive MSP 2040*, page 186 [Metropolitan Council 2014]).
[14] University of Minnesota, *Politics and Freeways: Building the Twin Cities Interstate System* (Minneapolis: University of Minnesota, 2006), https://conservancy.umn.edu/bitstream/handle/11299/2082/Freeways.pdf?sequence=1&isAllowed=y.
[15] Minnesota Historical Aerial Photos. MHAPO (umn.edu)
[16] *Minnesota History Magazine,* "From Emission to Pollution: Regulation and Changing Ideas about Smoke in the Twin Cities" (Minneapolis: University of Minnesota, 2011),
[17] *MinnPost,* "Northern Metals' Minneapolis facility shut down after company admits to altering pollution records" (Minneapolis: *MinnPost,* 2019), https://www.minnpost.com/environment/2019/09/northern-metals-minneapolis-facility-shut-down-after-company-admits-to-altering-pollution-records/.

[18] In 2011, SHPO concurred that the architecture/history APE around each station was a ¼-mile radius from the center point of each station. SHPO also concurred that the APE for archaeology was a 500-foot radius from the center point of each station.
[19] Research on the impacts associated with light-rail systems indicates that light rail is one of many factors that can influence development. In a study titled "Public Transportation: Multiple Factors Influence Extent of Transit-Oriented Development" (Wise 2014), the US Government Accountability Office (GAO) reviewed six federally funded transit projects and found a wide range in the amount of TOD near transit stations since transit operations began. The findings of the GAO study are consistent with a study conducted by the Center for Transit-Oriented Development (2011) that reviewed the development patterns along three LRT projects in the United States.
[20] Transportation Research Board, *Impacts of Rail Transit on Property Values* Diaz, R.B. (1999), https://trid.trb.org/view/504776
[21] University of Minnesota Center for Transportation Studies, *Economic Impacts of Transitways, Part 1: The Hiawatha Light Rail Line* Goetz et al. (2010), https://www.cts.umn.edu/research/project/economic-impacts-of-transitways-part-1-the-hiawatha-light-rail-line.
[22] Transportation Research Board, *Impacts of the Hiawatha Light Rail Line on Commercial and Industrial Property Values in Minneapolis*, Ko and Cao (2010), https://trid.trb.org/view/909584.
[23] The impact to residential and commercial property values of light-rail projects has been studied in other markets across the nation. While impacts to property values have varied depending on the community, residential and commercial properties located closer to light-rail stations experienced greater increases in property values. In a report for the American Public Transportation Association titled "Economic Impact of Public Transportation Investment" (2009), several studies in other cities were summarized and generally concluded a positive effect to property values.
[24] Cathodic protection is a way to prevent corrosion of a pipeline by using special cathodes and anodes to circumvent corrosive damage caused by electrical current.
[25] Minnesota Department of Natural Resources, *Status and Trends of Wetlands in Minnesota: Wetland Quantity Trends from 2006 to 2011* (St. Paul: Minnesota Department of Natural Resources, 2013), https://files.dnr.state.mn.us/eco/wetlands/wstmp_trend_report_2006-2011.pdf.