9.0 INDIRECT AND CUMULATIVE IMPACTS

This chapter identifies the potential indirect and cumulative impacts that could occur with implementation of the Central Corridor LRT Project. **Section 9.1** introduces the concepts of indirect and cumulative impacts, and how and why the analysis is done. **Section 9.2** presents the methods used to decide what data was needed, how it was collected, and how it was analyzed. This section also describes some general trends in the study area and provides a table of the significant and reasonably foreseeable future projects in the study area. Finally, this section demonstrates how each topic was selected according to its potential for indirect and cumulative impacts. **Section 9.3** presents a discussion of potential indirect impacts for each topic and a discussion of cumulative impacts. **Section 9.4** summarizes the potential indirect and cumulative effects of the AA/DEIS LPA and the Key Project Elements and lists available mitigation measures that could be applied where indirect and cumulative impacts may occur.

9.1 Introduction

The Central Corridor Alternatives Analysis and Draft Environmental Impact Statement (AA/DEIS) did not include a separate section for an indirect and cumulative effects analysis (ICEA). This section, therefore, is intended to provide a basic discussion of ICEA and to describe the potential for indirect effects and cumulative impacts from the AA/DEIS Locally Preferred Alternative (AA/DEIS LPA), as well as to the Key Project Elements, in combination with other past, present, and future actions. For this chapter, the AA/DEIS LPA and the Key Project Elements are referred to as the Central Corridor LRT project.

Direct impacts of the proposed changes to the AA/DEIS LPA are discussed in the previous chapters of this Supplemental Draft Environmental Impact Statement (SDEIS). These are defined by the Council on Environmental Quality's (CEQ) regulations (40 CFR 1500–1508) as effects, "which are caused by the action and occur at the same time and place (40 CFR 1508.8)."

The same section of the CEQ regulations define indirect effects as those that are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Further:

> "Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."

Examples of indirect effects include new development and land use changes such as residential, commercial, and industrial development (or redevelopment) that could occur due to transit improvements. They also include the associated changes in population density from additional residents and labor, and any effects to natural features from the land use change. When an improvement action enables indirect effects, it does not directly cause the change, but along with other factors, it helps to provide more opportunities for change.

Cumulative impacts are not causally linked to the AA/DEIS LPA and the Key Project Elements, but are the total effect of actions with similar impacts in a broader geographic area. The purpose of a cumulative impacts analysis is to look for impacts that may be minimal and therefore neither significant nor adverse when examined within the context of

the proposed action, but that may accumulate and become both significant and adverse over a large number of actions. The CEQ regulations define cumulative effects thusly:

> "Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7)."

The Central Corridor LRT project may potentially cause indirect and cumulative effects through improvements to transit service and mobility. It is important to note that transportation improvements are but one of the many factors that influence land use decisions and development patterns. Other factors that influence land use include the supply and demand for developable property, which is a fixed resource, institutional factors such as land use controls (zoning and subdivision regulations for example), and the economic health of the community. For development and redevelopment to occur, demand for developable property, supplies of developable property and institutional requirements must be compatible and must be present at the same time and place. The Central Corridor has demonstrated for the last several years that this is the case—in anticipation of LRT service, redevelopment has already been occurring.

The following discussion of indirect and cumulative impacts is based on the information presented in previous sections of this SDEIS, which describe the AA/DEIS LPA and changes that have occurred since the publication of the AA/DEIS, and the impacts that would occur with the Key Project Elements.

9.2 Methodology

9.2.1 Study Area Definition

The SDEIS typically uses an area of 0.5 mile on each side of the project alignment to study effects on most resources. The indirect and cumulative impacts analyses, however, require a somewhat broader geographic area to be considered. This allows the indirect effects that occur at a distance from the project and the combined effects of reasonably foreseeable future projects to be considered. These analyses also allow the analyst to take into account political and natural resource boundaries. For this analysis, the study area was expanded to include an area of about a mile on each side of the project alignment.

9.2.2 Time Frame

Many of the potential impacts considered in this analysis are related to direct effects of changes to and intensification of, land use and associated infrastructure. Cumulative impacts analysis suggests considering past conditions and activities, present day actions, as well as reasonably foreseeable future changes. Because of the fully developed urban nature of the Central Corridor, this analysis starts with existing conditions, and includes foreseeable developments to the year 2030. The year 2030 represents the current extent of transportation and land use planning in the Twin Cities metropolitan region, as well as available demographic forecasts and analyses.

9.2.3 Factors considered

The following factors were taken into account in the analysis of the potential for indirect, and especially, cumulative impacts:

- Existing condition of each potentially affected resource and how it has been affected by other actions (public or private) described in the previous chapters of the SDEIS
- Impacts from the AA/DEIS and the Key Project Elements on the resources described in the previous chapters of the SDEIS
- Present actions and reasonably foreseeable future actions and their possible impacts on the resource
- Potential for indirect impacts on the resource including special designations or standards that relate to the resource, ongoing regulatory authority, policies and plans that afford some measure of protection to the affected resource, and measures that could avoid or minimize negative effects on the resource
- Potential for cumulative impacts on the resource including special designations or standards that relate to the resource, ongoing regulatory authority, policies and plans that afford some measure of protection to the affected resource, and measures that could avoid or minimize negative effects on the resource
- Status/viability and historical context of each potentially affected resource and how these may affect the potential for indirect and cumulative impacts

9.2.4 Existing Conditions and Development Trends

Much of the Central Corridor is being redeveloped and revitalized with a mix of uses—some of the recent and ongoing development has been done in anticipation of the implementation of the proposed Central Corridor LRT and in accordance with local plans. As a result, in some areas where once there were only cultural, industrial, and institutional uses and buildings, populations of residents and employees mingle in mixed-use neighborhoods. Areas that were never anticipated for residential uses now have numerous multifamily units (condominiums and apartments) in new and redeveloped buildings. Activities in the development and redevelopment sector can be described as infill, intensification of land use, and integration of commercial and residential uses in revitalized neighborhoods. Some vacant lots in commercial districts are being filled with new businesses, some parking lots are being developed into new retail spaces or parks, and new community gathering places, such as the Rondo Community Outreach Library, are bringing new focus to old neighborhoods.

The Central Corridor is also the home of “hundreds of nonprofits” Including Minnesota Health and Housing Alliance, YMCA-Midway Branch, HealthEast Foundation, and Children’s Miracle Network of the Upper Midwest. (Minneapolis-St. Paul Business Journal, January 2008).

Since 2000, 12,900 residential units have been completed or are under construction in the Central Corridor and another 7,000 are proposed and approved by the two cities. The University of Minnesota - Twin Cities campus (U of M) began development of its East Gateway District campus expansion in 2005, and to-date has completed or has under construction five new research buildings and TCF Bank Stadium—all to be open by

September 2009. (U of M Presentation to Central Corridor Management Committee, December 13, 2006)

Table 9-1 presents the population changes through 2030 that are expected to take place as these trends continue.

Table 9-1 Past and future population growth by Project Segment

Planning Segment	Population				Households			
	1990	2000[a]	Projected 2030[b]	Percent Change From 2000	1990	2000	Projected 2030	Percent Change From 2000
Downtown St. Paul	5,455	7,320	16,062	119	2,509	3,555	8,425	137
Capitol Area	5,915	5,818	7,820	34	2,633	2,584	3,455	34
Midway East	42,826	45,505	51,357	13	16,542	16,631	18,740	13
Midway West	17,816	18,110	23,612	30	7,220	7,332	9,752	33
University	28,901	32,668	37,503	15	10,292	10,942	13,326	22
Downtown Minneapolis	18,601	19,848	31,867	61	11,231	11,039	19,621	78
Total	119,514	129,269	168,221	77	50,427	52,083	73,319	71

[a] State of Minnesota's Department of Administration, Land Management Information Center

[b] Year 2030 population and household projections are derived from Traffic Analysis Zone (TAZ) data provided by the Metropolitan Council, which are based on Census 2000 numbers. In order to project the population and number of households by planning segment, the TAZs within the study area were overlaid with the previously identified planning segments. The existing total and future projected totals for population and households were summed for that area. When overlap with other planning segments occurred, the entire TAZ was allocated to the planning segment that contained the majority of the TAZ land area.

9.2.5 Anticipated (Reasonable Foreseeable Future) Actions

The actions listed in Table 9-2 and discussed in the remainder of this chapter include development currently anticipated in state, county, and city plans, known private development actions, and planned and funded roadway and other infrastructure projects in, or within an area of influence of, the six planning segments. Because specific details about possible land development proposals are not comprehensively available for the geographic area and time period covered by this analysis, a general description of the type and amount of development as anticipated in county and local land use plans is used. Information was also obtained from various sections of the Metropolitan Council's *Central Corridor LRT Draft New Starts Application* (June, 29, 2006).

The data used in Table 9-2 was obtained from the Metropolitan Council, city and county plans, the State of Minnesota, and from interviews with city, county, and regional officials.

Table 9-2 Reasonably Foreseeable Future Actions

Location and Action	Type of Action/Effect
Federal and State Actions	
U.S. Highway 52 Bridge reconstruction	- MnDOT intends to reconstruct the Lafayette Bridge (State Trunk Highway 52). The facility would be expanded from 2 lanes in each direction to 3 lanes in each direction. Construction is expected to begin in 2011 with completion in 2013.
County Actions – Hennepin County	
Twins Ballpark and "North Loop Village" Phase I (2010 beginning) Phase II [b a] mixed-use development	- Twins ballpark ($522 million) - Ballpark, housing hotel, office and retail next to Multimodal Station served with LRT, Northstar Commuter Rail Phase I: 230 hotel rooms - 120,000 sq. ft. office - Phase II: 142,000 sq. ft. retail - Ballpark and Multimodal station expected to drive conversion of former 16 acre industrial uses to 1000-2,250 Housing units and 230 hotel rooms along 5th St N; 10-30 stories www.mntwinsville.com
County Actions – Ramsey County	
Ramsey County-owned Kellogg and Wabasha site redevelopment [b]	- 6 acres owned by Ramsey County for sale to developers - Redevelopment of adult detention center and former West Publishing sites - 2 development proposals under consideration (as of 12-7-07), both propose condominiums, hotel, and office uses
City Actions – St. Paul	
University Avenue Park at Raymond development [a]	- A new park is proposed at the intersection of Raymond and University. - Venue for public art and open space - Expected to create a focal point for new development
Cass Gilbert Park restoration[a]	- Restore and reinvigorate to create a destination along the Corridor
Leif Erickson Park completion[a] (Leif Erickson Lawn)	- Remove surface parking west of Leif Erickson - Complete space and improve pedestrian connections to Rice Street and Summit-University neighborhood
Hmong Market Garden establishment[a]	- New public square and open space between Arundel and Marion Streets - Establish "heart" of proposed World Cultural Heritage District
Dale Street Village - active senior housing development	- City of St. Paul redevelopment northeast corner of University and Dale intersection - Will implement the *University-Dale Transit Oriented Development(TOD) Study*—first time a TOD plan will be implemented - Four-story development. - Approximately 20,800 square feet of commercial space - 46 units affordable housing on second, third and fourth floors.

Location and Action	Type of Action/Effect
Lexington-Chatsworth Block open space development[a]	- Open space proposed to provide a focus for infill development - Expected to provide identity to the cluster of cultural uses in the area
Dickerman Park reconstruction[a]	- Reconstruction is proposed for a significant open space and improved meeting place along the Central Corridor at University and Fairview Avenue. - Expected to establish an identity for the area and create a focus for local area residents and workers - Funding received from Dickerman family members, and City of St. Paul has recommended $30,000 in Neighborhood STAR grant funds - In 2005 a landscape architecture firm was hired to prepare a design for the park.
Raymond Village Park development[a]	- A new park is proposed at the intersection of Raymond and Charles at the site of an existing parking lot - Expected to create an outdoor community meeting place, public art venue, and provide a focus for new buildings that face Charles.
University Avenue Park at Raymond development	- A new park is proposed close to the intersection of Raymond and University Avenues to create a focal point for new development - Park is proposed to include public art and open space
New mixed-use developments in the Marketplace (Urban Villages) [b]	- Several sites exist where both uses and intensity can be added to the marketplace. These include the site of the former Metro Transit bus barn and the former parking lot of the target big-box store. - This area is adjacent to the site of the new western district police station.
Public spaces in the Marketplace development[a]	- Public spaces internal to the block and along the corridor proposed - Spaces expected to provide a focus for new development
Lexington University Development Block mixed-use development [b]	- The large block located at the southwest corner of University Avenue and Lexington Parkway will be undergoing extensive changes over the next few years. - New retail - Relocation of the Wilder Foundation - Planned new residential
Lexington Park development [a]	- At the intersection of Lexington and University - A new park would act as a focus for new development.
Rondo Square park development [a]	- A new park at the intersection of Dale and University - Across from the Rondo Community Outreach Library - Act as a focus for redevelopment and a gathering place for the community
Fitzgerald Park development [a]	- New open space - Will act as the heart of the emerging Fitzgerald Park neighborhood - Help focus development

Location and Action	Type of Action/Effect
Union Depot redevelopment	- Over the next decade, Union Depot will be transformed into a regional transit hub and heart of the Lowertown neighborhood.
Mears Park development[a]	- Continued investment in Mears Park at the heart of Lowertown is expected to provide green space for this growing neighborhood.
Episcopal Homes Park development[a]	- Create access from University Avenue to stormwater management pond and related open space
City Actions – Minneapolis	
Minnesota Vikings Stadium	- May require state, county, city, and private action. Site would include mixed use office/retail/entertainment complex. Includes blocks around Downtown East station[c]
SEMI lands redevelopment - mixed-use development	- A mix of residential, commercial, office and light Industrial - Focus intense job growth in partnership with U of M, north of U of M Transitway and west towards campus[d]
Washington and Nicollet mixed-use development [b]	- Nicollet hotel block - City RFP out for 1.7-acre site purchased by city with FTA funds - Joint development site
Greenway-Grand Rounds Scenic Byway Connection	- Greenway-Grand Rounds Scenic Byway Connection routes proposed through SEMI lands to link east river road and Stinson Boulevard[e] - Requires coordination among U of M and surrounding neighborhoods - Minneapolis Park and Recreation Board set design criteria and formed a 22-member citizen advisory committee. Public meetings/stakeholder meeting held in fall 2007.[f]
Granary Park development	- SEMI Refined Master Plan recommends developing a major park with ponds and recreational amenities at the natural low elevation point in SEMI[g]
Granary Road development	- Granary Road is part of the plan for the Southeast Minneapolis Industrial/University Research Park (SEMI/URP) plans.[h] - Still in the conceptual stages, Granary Road would be located on the south side of the proposed Granary Park. Although it is planned for both trucks and local traffic. It is designed to be a narrow 26 feet wide and speeds are intended to be kept low.[i] - The proposed Granary Road is planned to cut through to St. Anthony Parkway South. The proposed route (as of June 2007) compatible with the U of M, which would have a joint use of Granary Road.
27th Avenue Amenity Link and stormwater management strategies [j]	- SEMI refined master plan recommends extension of existing 27th Avenue SE - Bridal veil main stem replacement and linear wetlands - 4th Street urban wetlands - Rain gardens and biofiltration systems

Location and Action	Type of Action/Effect
East River Parkway extension	- Planned trail reconstruction along East River Parkway - Plans include replacement of the pedestrian pathway south of Franklin Avenue to the south city limits, and reconstruction of both pedestrian and bike trails north of Franklin Avenue to approximately 1200 feet north of the intersection of East River Parkway and Fulton St. SE.[k] - The East Bank connection to Bridge 9 will be addressed by the U of M, which consists of a long-planned bike trail that will follow the railroad line into Dinkytown and link up to the planned Granary Road bike trail.[l]
University of Minnesota Actions	
TCF Bank Stadium at U of M	- $288 million TCF Bank Stadium - The 50,000 seat on-campus "horseshoe" style stadium is under construction and planned to be built in time for the 2009 football season.
East Gateway District research park development[m]	- 8 to 10 more new research building—one to be built every two years - A total of 750,000 square feet was authorized in 2006 (including medical biosciences building, which is under construction) - Includes multimodal transportation hub (near Central Corridor LRT station) - $310 million bond - Attracts $20 million/year in new research dollars - 65-acre site (including TCF Bank Stadium)[n]
Multimodal transportation hub development	- Potential for a mixed used activity center around the station that could incorporate bus transfer, parking, retail, entertainment, housing, and U of M academic programs including transportation studies[o]
Private Actions	
Minnesota Thunder Soccer Stadium proposal	- Potential 20,000-plus seat soccer stadium located on the former Diamond Products site between Broadway and U.S. 52, and 5th St. and Prince St.
Washington/ Hennepin mixed-use development[b]	- Whole Foods Grocery, Retail Space, 1.25 acre green space - 76,000 sq. Ft. Grocery; 6,500 retail - 35-story condo tower, with retail and grocery; includes four and eight story buildings. - On Jaguar site northwest corner of Hennepin and Washington
240 Hennepin Ave. S. residential development[b]	- Two high-rise residential towers (24 & 32 stories with 505 dwelling units) and rooftop gardens
Superior Plating Site residential development[b]	- Future residential tower
Monte Carlo Site mixed-use development[b]	- The Pacific - 80 homes on the Monte Carlo block with a hotel, retail & rentals 150-room upscale hotel, 325 to 400 condominiums, 150 to 225 rental apartments, and 60,000 to 80,000 square feet of retail space - 25 story residential tower in future

Location and Action	Type of Action/Effect
719 Hennepin Ave - Skyway Theater Tower - residential development[b]	- 300 dwelling units
Washington/Hennepin/ N. 2nd St. The Market Place – residential development[b]	- 250 units in 3 buildings - 4, 8, and 35 stories
4th St. and Marquette mixed-use development [b]	- Redevelopment of Powers/Ritz block with 250 condos and office or hotel with first floor retail. - Hiawatha LRT Nicollet station expansion to accommodate redevelopment.
1367 Willow and 1368 LaSalle Av - Eitel Hospital Site/Allina - mixed-use development[b]	- 275 condos in 39-story building - 215 apartments in 5-story building with street-level retail on park
932 12th Ave. S Project for Pride in Living Housing residential development[b]	- Van Cleve Court (2.93 acres); the site is occupied by a vacant grain elevator, silos and offices owned by Bunge Elevator Company. - The developer intends to demolish the existing buildings and construct 100 homeownership units and 90 rental units, 20 of which will be supportive housing (2010). - Affordable housing will make up 20% of the homeownership units and nearly all of the rental units.
69 W. Exchange St. Joseph's Hospital expansion[b]	- Large 5 story expansion of current 401-bed hospital - $100 million expansion on 15 acre site with more patient space, expanded emergency dept, new heart & neuroscience centers - 2005 to 2010 - ongoing
88 S. 10th St., 10th and Nicollet to 1009 Nicollet Avenue The Nicollet residential development[b]	- Street-level commercial (18,000 sq. Ft.) with housing above - 50 floor condominium; 1/3 pre-sold by Dec 2005 – has been put on hold while developers bring in a new partner to study a mixed-use project.
10th and Minnesota The Penfield mixed-use, condo/hotel development[b]	- Potential for 313 condos in a 33-story building. - Redevelopment of 2-acre Department of Public Safety and St. Paul Police site - $130.7 million development. Currently considering a hotel and 100 fewer condo units.

[a] Central Corridor Development Strategy, Section 2.4, 90 Initiatives for the Corridor, City of St. Paul, April 2007.

[b] Attachment 11-B, Development Projects – Minneapolis/St. Paul Central Corridor, Constructed or Proposed 2000-2006. Metropolitan Council, January 17, 2008.

[c] Land Use Planning – Central Corridor LRT in Minneapolis: www.metrocouncil.org/transportation/ccorridor/CAC/CACMplsLandUsePlansMay172007.pdf

[d] Land Use Planning – Central Corridor LRT in Minneapolis: www.metrocouncil.org/transportation/ccorridor/CAC/CACMplsLandUsePlansMay172007.pdf

[e] City of Minneapolis & Minneapolis Community Development Agency, SEMI Refined Master Plan, May, 2001, pages 30-31.

[f] Twin Cities Daily Planet, Debate of the 'Missing Link', Anna Pratt, October 29, 2007.

[g] City of Minneapolis & Minneapolis Community Development Agency, SEMI Refined Master Plan, May, 2001, pages 32-33.

[h] Southeast Minneapolis Industrial/University Research Park (SEMI/URP), City of Minneapolis Community Planning and Economic Development and Public Works. http://thegrandrounds.com/documents/design/missing/road_development.pdf

[i] City of Minneapolis & Minneapolis Community Development Agency, SEMI Refined Master Plan, May, 2001, pages 32-33.

[j] City of Minneapolis & Minneapolis Community Development Agency, SEMI Refined Master Plan, May, 2001, pages 35.

[k] News from Cam Gordon, Council Member, Second Ward, March 2008. http://www.ci.minneapolis.mn.us/council/ward2/

[l] Second Ward, Minneapolis, http://secondward.blogspot.com/2008/02/bridge-9-extension.html

[m] U of M Twin Cities Campus and the Central Corridor: Upcoming Developments, Preferred Alternatives, and Design Principles, Presentation to Central Corridor Management Committee, December 13, 2006.

[n] UMN news: U of M Regents hear plan for future of Northrop Auditorium, new East Gateway campus district. News Releases 2/9/2007.

[o] www1.umn.edu/pts/graphics/UofM_LRT_Design_050207.pdf slide 26/30

9.2.6 Resource Identification

Table 9-3 presents brief descriptions of the potential for indirect and cumulative effect of the following environmental resources:

- Land use and socioeconomics
- Neighborhoods, community services, and community cohesion
- Cultural resources
- Parklands and recreation area
- Visual quality and aesthetics
- Environmental justice populations
- Economic conditions
- Station area development
- Transit effects
- Hazardous/regulated materials
- Roadways
- Other transportation facilities and services
- Green House Gas Emissions (GHG)
- Section 4(f) properties

9.3 Potential for Indirect Impacts and Cumulative Effects

The resources selected for analysis in the ICEA chapter met one or more of the factors considered and listed in Section 9.2.3. The potential effects are shown in Table 9-3.

Table 9-3 Potential for Indirect Impacts and Cumulative Effects

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Land use and socioeconomics	The University Avenue corridor is traditionally nonresidential and, for retail and business use, is often considered first when siting a business. As described above, multiple public and private actions have been undertaken in the corridor—much of it in anticipation of the building of Central Corridor LRT. The large stock of old warehouses, however, continues to present redevelopment opportunities not associated with Central Corridor LRT.	Although a few relocations will be necessary, generally speaking, this project will not change the current curb alignment along the affected streets and will not affect land uses. Access to some properties may be potentially affected, and loss of on-street parking may occur. The expected changes in intensity and density of land uses around the proposed station sites will be among the long-term effects on the corridor.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment. The City of St. Paul *Central Corridor Development Strategy* (April 2007) contains a Resources for Implementation Strategy that outlines ways to fund public infrastructure, housing, and other improvements proposed in the plan.	Implementation of the Project is expected to encourage the market to continue the current development and redevelopment trends in the corridor. In effect, the Project will encourage implementation of Minneapolis and St. Paul land use plans, transit oriented development (TOD) proposals and economic development initiatives—not all of those plans are immediately adjacent to the Central Corridor LRT corridor, and none of them are part of the Project.	The Project's indirect effects, in combination with the multiple public and private developments in the Central Corridor LRT corridor will have mostly positive cumulative effects including economic development and an improved tax base for the cities and counties.
Neighborhood, community services, and community cohesion	The AA/DEIS and the SDEIS document opportunities for infill and redevelopment within a half-mile radius of each potential station.[a]	Access to properties may be potentially affected, and loss of on-street parking will occur. The greatest potential for traffic changes is along Washington Avenue through the University of Minnesota campus (University/Prospect Park segment). Median closures proposed in some locations along University Avenue (Midway East, Midway West, University/Prospect Park segments) may make it more difficult, at times, to cross University Avenue in a car. However, signalized and unsignalized intersections will be provided with pedestrian crossing amenities to ensure LRT tracks and stations would not divide the communities. Station design and locations and the design and placement of power poles and overhead lines will cause the predominant visual impacts to the neighborhoods through all area segments. The expected changes in intensity and density of land uses around the proposed stations will be among the long-term effects to the neighborhoods, which may experience a change in population composition.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment. In recent years, the Midway area has grown rapidly in minority-owned retail and services.[a] In recent years, the Midway area has also experienced growth in multifamily housing and new commercial/office enterprises. This activity is expected to continue along the corridor in response to market demand.[a] The City of St. Paul *Central Corridor Development Strategy* (April 2007) contains an Inclusive Housing strategy that is intended to mitigate the potential displacement of low-income individuals and families from the corridor as property values rise. Three specific strategies are identified including home ownership assistance.	The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. Underutilized land and buildings near some station areas will become prime development and redevelopment sites.[a] Although more housing opportunities will be available for current residents in the corridor, population and neighborhood character may change as new residents (gentrification) and businesses move into the area.	The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. By 2030, the Twin Cities Metropolitan Area is expected to add nearly 1 million people—560,000 households. Many of these households will occupy the higher intensity development in the two central cities and their downtowns.[a] Underutilized land and buildings near some station areas that are now prime development and redevelopment sites will be built out. More housing opportunities will be available for current residents in the corridor, but population composition and neighborhood character may change as new residents (gentrification) move into the neighborhoods to take advantage of transit.

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Cultural resources	34 historic properties are located in the vicinity of the Central Corridor LRT. 20 properties and 2 historic districts are identified as eligible for the National Register of Historic Places. 11 properties are already listed.	The Minnesota State Capitol Mall Historic District would have a small portion of its property adjacent to University Avenue converted to a transportation use. The historic Washington Avenue Bridge deck would be modified to accommodate LRT. Generally speaking, this project will not change the current curb alignment at any historic properties, but access to some historic properties may be affected, and there will be some loss of on-street parking. The greatest potential for traffic changes in the vicinity of historic properties is along Washington Avenue through the University of Minnesota campus, especially with the At-Grade Transit/Pedestrian Mall (University/Prospect Park segment). Median closures are proposed in some locations along University Avenue. Station design and locations, placement of power poles, and overhead lines may cause some visual impacts to cultural resources. Vibration, noise, traffic, and visual impacts would be experienced at cultural resources throughout construction.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment. Land value increases have been uneven in the St. Paul segment, with a general upward trend. Overall, such increases have not been appreciably higher to-date than in other commercial corridors in St. Paul. Both cities have enacted zoning ordinances that encourage TOD along transit corridors.[a]	The expected changes in intensity and density of land uses around the proposed stations will be among the long-term indirect effects to the corridor—these changes may affect the context of the cultural resources, land values, and redevelopment potential. It is not uncommon for projects of this type to increase the awareness of the importance of preserving historic properties and to stimulate private parties to strengthen protective actions.	The expected changes in intensity and density of land uses around the proposed stations may be among the long-term effects to the corridor—these changes may affect the context of the cultural resources. Land values will continue to increase, which may cause the redevelopment or conservation, rather than preservation, of cultural resources. Redevelopment is likely to occur and continue, particularly in the areas surrounding the proposed station sites. Between the stations, redevelopment is most likely to occur and continue on properties immediately facing the alignment. Combined with the visual effects of the LRT components, these anticipated developments may affect the visual context of the cultural properties.
Parklands and recreation areas	35 parks are located in the vicinity of the Central Corridor LRT, including the Mississippi National River and Recreation Area.	Eight parks are located within 350 feet of the proposed project. From the Key Project Elements, 3 parks may experience short-term effects, and 1 park may experience long-term effects.	As described in Table 9-2, St. Paul and Minneapolis plan for new parks in the corridor, including those that could act as community focal points, community redevelopment catalysts, and that will enhance transit stations—none of these are part of the Project.	Underutilized land and buildings near some station areas will become prime development and redevelopment sites.[a] With more housing opportunities available in the corridor, more demand for parkland and recreation facilities is likely.	By 2030, the Twin Cities Metropolitan Area is expected to add nearly 1 million people—560,000 households. Many of these households will occupy the higher intensity development in the two central cities and their downtowns.[a] Underutilized land and buildings near station areas will continue to be prime development and redevelopment sites. With more housing opportunities available in the corridor, more demand for parkland and recreation facilities will continue.

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Visual quality and aesthetics	The visual character of the corridor is urban, composed of vehicle (bus and automobile) oriented streets, with a mix of commercial/retail and industrial buildings, multi-unit residential building (old, rehabilitated old, and modern). Areas of visual interest include parks, the Mississippi River, Union Depot, the State Capitol and associated government facilities, and the U of M campus. Other elements include a small number of single family residences and a large number of surface parking lots. The development of Gopher Stadium will change the visual character of that part of the U of M campus.	The Project and associated elements would introduce a visual change of LRT vehicles, associated tracks, overhead lines, TPSS, and multiple stations. Residents in the Lowertown District of St. Paul will experience visual impacts from the extension of the Central Corridor LRT beyond the Union Depot to the proposed Maintenance Facility south of Kellogg Boulevard and under the Lafayette Bridge. Downtown St. Paul would have visual impacts with the installation of the Diagonal at Cedar/4th Street Alternative, which would create new access points to downtown. The At-Grade Transit/Pedestrian Mall Alternative at the U of M would change the visual environment from a car and bus dominated avenue to an area of pedestrians and transit users.	The cities of St. Paul and Minneapolis are instituting processes to guide transit-oriented development (TOD), including the adoption of a zoning overly district in St. Paul, which could result in changes to the visual character around transit stations. The Union Depot in St. Paul is under consideration for use as a transportation hub. Changes to its visual qualities are likely. Continuing development of research buildings near the new TCF Bank Stadium and in the vicinity of the SEMI lands will continue to change the visual character of those U of M areas.	With an increased interest in the development of areas surrounding the LRT comes a heightened interest from the residents to make improvements in community aesthetics—more emphasis will be placed on parks, community art, and a clean, well-lighted environment. It is possible that a variety of development types will create a series of distinct and diverse visual environments.	Market forces in the Central Corridor are likely to attract more developers in search of development sites. This may result in a reduction of vacant auto dealership lots and similar underutilized parcels, which now give a sense of openness and longer views into neighborhoods along the eastern and central section of University Avenue. Viewsheds from the roadway are likely to be reduced as infill development occurs and urban development utilizes minimum setbacks from the street.
Environmental justice	Environmental justice populations, specifically low-income and minority populations live in the Central Corridor. The study area is predominantly inhabited by non-Hispanic Whites. However, ethnic minority populations comprise a significant portion of study area population (22 percent), and account for a higher total minority population percentage than Hennepin County (19 percent) and slightly less than Ramsey County (23 percent). Within the study area, the Asian population represents the greatest ethnic minority group next to non-Hispanic Whites. The Central Corridor includes the Rondo neighborhood, the heart of St. Paul's African-American community. The poverty level for the Central Corridor (one-half mile from the alignment) is estimated to be nearly 3 times greater than the region's percentage. Incomes are lowest surrounding the University of Minnesota, but it also includes the university area where many students reside in dormitories.	Environmental justice populations and special user groups are not expected to experience any disproportionate impacts from the Central Corridor LRT project. Mobility options will be improved and LRT vehicles will be easier to board.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities around the new stadium, Minneapolis plans for SEMI lands, and Union Depot redevelopment.	The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. Underutilized land and buildings near some station areas will become prime development and redevelopment sites.[a] Land values will continue to increase and such increases will likely be substantial in some areas, particularly in the Westgate area.	The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. This development will further the goals outlined in the *Central Corridor Development Strategy*. The retail and service market is beginning to follow the housing market around proposed Central Corridor Stations. By 2030, the Twin Cities Metropolitan Area is expected to add nearly 1 million people—560,000 households. Many of these households will occupy the higher intensity development in the two central cities and their downtowns.[a] Improved transit mobility and connectivity could result in reduced dependence on private motor vehicles for low income and minority populations. In the 1950s, the Rondo neighborhood was negatively affected by the construction of I-94, and community members are concerned about maintaining the remaining neighborhood fabric and community cohesion.

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Economic conditions	The Twin Cities market is responding favorably to the Hiawatha LRT corridor, with new transit-supportive development in several locations. The Central Corridor has a unique economic environment—it is anchored on both ends in downtowns that are thriving, and it serves the University of Minnesota and the State Capitol Complex—areas of high employment and strong economic activity. The corridor between the cities is at the cusp of redevelopment and revitalization. The Central Corridor, cities of Minneapolis and St. Paul, and the region are experiencing significant population and employment growth, which is expected to continue through 2030. Although the office market in both downtowns has slowed, it is expected to recover fully in time. The retail and service market is beginning to follow the increased housing market, which is pursuing developments in anticipation of implementation of the Central Corridor LRT Stations. Post graduate educational institutions have had rapid increases in enrollment.[a]	Implementation and construction, continuing operation, and market reaction to the Project would influence economic activity in the local economy. The project would provide increased mobility to both residents and businesses within the Central Corridor and is expected to contribute to economic growth. New transportation capacity could create competitive advantages for businesses located along the alignment. Construction of the Project would expand local earnings for the duration of the project's construction cycle. The new jobs required to operate and maintain the project would be long-term recurring impacts. The earnings of new construction and transit workers would translate into a proportional increase in consumer demand as these workers purchase goods and services in the region.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities around the new stadium, Minneapolis plans for SEMI lands, and Union Depot redevelopment. Although land values have increased substantially in the corridor, land value increases have been uneven in the St. Paul segment, with a general upward trend. Overall, such increases have not been appreciably higher to-date than in other commercial corridors in St. Paul. Both cities have enacted zoning ordinances that encourage TOD along transit corridors.[a] It is expected that new development in this Study Area would capture an increasing share of residential and employment growth as densities increase.	A further increase of new employment across a wide variety of industrial sectors and occupational classifications is expected as employers hire to meet this increase in local consumer demand. This type of hiring represents the project's indirect impact. The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. Underutilized land and buildings near some station areas will become prime development and redevelopment sites.[a] The project is anticipated to have positive effects on commercial and residential development located near transit stations, and would contribute economic benefits by encouraging and supporting higher-density residential and commercial land uses around proposed transit stations.	The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. Focused development in areas with existing infrastructure accrues benefits to the taxing jurisdictions.
Station area development	The AA/DEIS and the SDEIS document ample areas for infill and redevelopment within a half-mile radius of each potential station.[a] In recent years, the Midway section of the corridor has seen rapid growth in minority-owned retail and services businesses, particularly Asian-owned businesses, as well as the construction of multi-family housing and new commercial/ office enterprises.	Access to properties may be potentially affected, and loss of on-street parking may occur. Median closures are proposed in some locations along University Avenue (Midway East, Midway West, University/Prospect Park segments). Station design and locations and the design and placement of power poles and overhead lines may cause visual impacts to station areas.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment. Plans for redevelopment of Union Depot to a multimodal hub for passenger buses, commuter rail, and light rail are underway, and implementation is likely by 2030.	The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. Underutilized land and buildings near some station areas will become prime development and redevelopment sites.	The TOD around the proposed stations will continue to exist or be developed and densities will increase over time. By 2030, the Twin Cities Metropolitan Area is expected to add nearly 1 million people—560,000 households. Many of these households will occupy the TOD—higher intensity—developments being encouraged by the two cities.[a]

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Transit effects	Central Corridor is currently served by Routes 16 and 50, and Express service on I-94. The success of the Hiawatha LRT has inspired the development community to respond to the market for more residential and commercial development in the corridor. Ridership continues to grow as more jobs are added—especially in the downtowns—and as residential buildings are developed in the corridor.	Ridership is likely to increase as more residents, employers, and employees use transit for work and personal trips. Mobility along the corridor will be improved, particularly for transit dependent populations.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment. Plans for redevelopment of Union Depot to a multimodal hub for passenger buses, commuter rail, and light rail are underway, and implementation is likely by 2030. Under the Council's plan, additional transitways will be built between 2005 and 2020. The Southwest Transitway is a proposed high frequency transit line connecting Eden Prairie, Minnetonka, Hopkins, St. Louis Park, Minneapolis neighborhoods and the Minneapolis downtown area. The three recommended routes range from 15.7 to 18.3 miles. The Northstar Commuter Rail project, as described on the Northstar Commuter Rail Web site, is being constructed along a 40-mile-long transportation corridor that runs along Highway 10 from Big Lake to downtown Minneapolis using the Burlington Northern Santa Fe Railroad (BNSF) right-of-way. Project planners hope to extend the line to the full 82-mile corridor in the future. The Red Rock Corridor analyzed the potential for commuter rail passenger service between downtown Minneapolis, downtown St. Paul (Union Depot Station) and Hastings, Minnesota. The main purpose of the Red Rock Corridor line is to foster a more sustainable development pattern to accommodate the expected growth in the area. Several BRT corridors are in various stages of planning and development, including the Cedar Avenue Corridor and I-35W. The Central Corridor will serve as a distributor for these corridors. An additional corridor of note is the line southeast from downtown St. Paul toward Hastings and Red Wing, which will contain the Upper Midwest High Speed Rail connection from Chicago.	The implementation of LRT in the Central Corridor is likely to reduce reliance on single occupancy vehicles for work and recreation trips for choice riders, and thus help to improve air quality and congestion. Ridership would continue to increase as TOD, particularly around stations, continues to be developed and encouraged by both cities, thus increasing density and the number of potential choice riders.	Combined with planned future LRT service in the region, the implementation of LRT in the Central Corridor is likely to reduce reliance on single occupancy vehicles for work and recreation trips for choice riders in the region, and thus improve regional air quality and congestion. Improved mobility for transit dependent populations would give them access to employment, which would improve the overall economy in the corridor and the region. Linking the Central Corridor LRT to the proposed multimodal station at Union Depot will increase its chances of success. Ridership would continue to increase as TOD, particularly around stations, continues to be developed and encouraged by both cities, thus increasing density and the number of potential choice riders. On the other hand, as the demand for homes and businesses increases and is satisfied by the development community, more transit service will be in demand. Additional transportation uses would strengthen the role of the Union Depot as a regional transportation hub and contribute to its economic viability. Additional transit connectivity, including Union Depot, would improve mobility for area residents and intercity travelers.

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Hazardous/regulated materials	The corridor is urban—composed of vehicle (bus and automobile) oriented streets, with a mix of commercial/retail and industrial buildings, and multi-unit residential buildings (old, rehabilitated old, and modern). The University Avenue corridor is traditionally nonresidential and, for retail and business use, is often considered first when siting a business. As described above, multiple public and private actions have been undertaken in the corridor—much of it in anticipation of the building of Central Corridor LRT. The large stock of old warehouses continues to present redevelopment opportunities not associated with Central Corridor LRT, and the AA/DEIS and the SDEIS document ample areas for infill and redevelopment within a half-mile radius of each potential station.[a] A total of 1,070 hazardous/regulated materials sites that could potentially affect the Central Corridor LRT Study Area, and the private or public development of adjacent lands, were identified in October 2007.	The Central Corridor LRT roadways would be rehabilitated, new crosswalks and sidewalks would be constructed, and new signals, where needed, would be installed, The implementation of LRT would disturb areas where known and unknown hazardous/regulated materials contaminate the construction sites and adjacent land areas. The expected changes in intensity and density of land uses around the proposed stations will be among the long-term effects to the neighborhoods, which may experience a change in population composition. As the land near the LRT is redeveloped, areas of known and unknown contamination would be disturbed.	As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment. Although land values have increased substantially in the corridor, land value increases have been uneven in the St. Paul segment, with a general upward trend. Overall, such increases have not been appreciably higher to-date than in other commercial corridors in St. Paul. Both cities have enacted zoning ordinances that encourage TOD along transit corridors.[a] It is expected that new development in this Study Area would capture an increasing share of residential and employment growth and densities would increase. Continuing development of research buildings near the new TCF Bank Stadium and in the vicinity of the SEMI lands will continue. The Tax Base Revitalization Account (TBRA) helps cities clean up contaminated urban land for subsequent commercial and industrial development, thus restoring tax base and jobs near existing housing and services. This program is conducted in coordination with the Minnesota Department of Trade and Economic Development. Recent projects funded in the corridor include: o Carleton Place Lofts - I and II - asbestos and lead-based paint abatement, and addressing four underground storage tanks, petroleum impacted soil and contaminated ground water. o Mai Village - Phase II investigation, asbestos abatement, soil corrections, tank removal, and some cleanup management costs. o Schnitzer/Watkins redevelopment site - remove lead, PCBs, asbestos, batteries, fluorescent lights, and soil contaminated with petroleum derivatives and lead. o Specialty Manufacturing Co. building restoration/redevelopment - Lead paint and asbestos abatement.	TOD around the proposed stations will continue to exist or to be developed and densities will increase over time. Development sites with known and unknown hazardous/regulated materials contamination will be cleaned up as development occurs. Underutilized land and buildings near some station areas will become prime development and redevelopment sites[a] and those with known and unknown hazardous/regulated materials contamination will be cleaned up as redevelopment occurs. The project is anticipated to have positive effects on contaminated land and buildings with the development and redevelopment of commercial and residential sites located near transit stations, and would contribute to the overall remediation of such sites all along the Central Corridor. It is not uncommon for projects of this type to increase the awareness of the importance of preventing contamination and remediating contaminated sites, and to stimulate and strengthen preventive and clean up actions. Use of TBRA funds and similar funds if available will continue for rehabilitation, restoration, and remediation of property along the Central Corridor.	TOD around the proposed stations will continue to exist or be developed and hazardous/regulated materials clean up will also continue to take place. Underutilized land and buildings near some station areas that are now prime development and redevelopment sites will be built out and associated hazardous/regulated materials will be cleaned up. The Project's indirect effects, in combination with the multiple public and private developments in the Central Corridor LRT corridor will have mostly positive cumulative effects in the remediation of hazardous/regulated materials sites. Use of TBRA funds and similar funds if available will continue for rehabilitation, restoration, and remediation of property along the Central Corridor.

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Effects on roadways	The Metropolitan Council 2030 Transportation Policy Plan has been adopted and includes all regional transportation projects. Two projects have occurred since the AA/DEIS affecting existing conditions in the corridor: I-35W bridge collapse and construction of the TCF Bank Stadium.	Access will be affected for some properties as approximately one-half of cross street crossings along University Avenue will be eliminated. Also, loss of on-street parking will occur as much of the parking on University Avenue will be eliminated. The Central Corridor LRT roadways would be rehabilitated, new crosswalks and sidewalks would be constructed, and new signals, where needed, would be installed. The implementation of LRT would modify driving lanes and on-street parking spaces along portions of the alignment. The greatest potential for traffic changes is along Washington Avenue through the University of Minnesota campus, especially with the implementation of an At-Grade Transit/Pedestrian Mall at the U of M (University/ Prospect Park segment). The proposed mall has the potential to negatively affect traffic circulation and add to congestion. Further, it is possible that vehicles operated by delivery services and emergency service providers could have difficulty gaining access to businesses along the proposed At-Grade Transit/Pedestrian Mall because of necessary changes to the traffic patterns and street configurations. These potential impacts are continuing to be evaluated and mitigation strategies are being developed. Median closures are proposed in some locations along University Avenue (Midway East, Midway West, University/Prospect Park segments). Several intersections would be affected by the U of M transit/pedestrian mall because of closure to automobile traffic would operate with unacceptable levels of service. These intersections are continuing to be evaluated and mitigation strategies are being developed.	Greenway-Grand Rounds Scenic Byway Connection Routes (the "missing link") is proposed through SEMI lands to link East River Road and Stinson Boulevard, but no route has been selected to date.[b] I-94 is not listed in the LRTP for improvements. Lafayette Bridge is slated for reconstruction. Plans for redevelopment of Union Depot to a multimodal hub for passenger buses, commuter rail, and light rail are underway, and implementation is likely by 2030. East River Parkway extension plans include replacement of the pedestrian pathway south of Franklin Avenue to the south city limits, reconstruction of both pedestrian and bike trails north of Franklin Avenue to approximately 1200 feet north of the intersection of East River Parkway and Fulton St. SE,[c] and connection to Bridge 9, which consists of a long-planned bike trail that will follow the railroad line into Dinkytown and link up to the planned Granary Road bike trail.[d] Granary Road is part of the plan for the Southeast Minneapolis Industrial/University Research Park (SEMI/URP) plans.[e] It would be located on the south side of the proposed Granary Park, and as currently planned, would cut through to St. Anthony Parkway South. The U of M would have a joint use of Granary Road. As described in Table 9-2 U of M development activities and Minneapolis plans for SEMI lands are underway. These developments will affect traffic patterns in and around the U of M and nearby neighborhoods.	I-94 congestion may grow at a less rapid rate with implementation of the Central Corridor LRT. The expected changes in intensity and density of land uses around the proposed station sites will be among the long-term effects to the corridor and will affect traffic on surrounding roadways. TOD may slow the growth of automobile traffic on roadways in the vicinity of the Central Corridor LRT because choice riders may choose to live in proximity to the facility to take advantage of transit service. U of M development activities and Minneapolis plans for SEMI lands are expected to continue. These developments will continue to affect traffic patterns in and around the U of M and nearby neighborhoods.	The project should provide beneficial impacts in the long-term on corridor roadway facilities because LRT riders will use vehicles less often. Additionally, demand for capacity improvements to local roadways may be reduced.
Effects on other transportation facilities and services	Many miles of bike paths and sidewalks are available in the study area. Both cities have extensive skyway systems in the downtowns. The Capitol Area and U of M also have extensive pedestrian facilities. Downtown Action Plan - Access Minneapolis contains a bicycle transportation plan, which will be complete in 2008. St. Paul has a draft bicycle plan that calls for bicycle lanes downtown. These plans propose improvements for alternate transportation modes and connections to transit. Plans are underway to connect the Grand	On-street parking spaces would be removed throughout the project area. A bike trail on the north side of the Hiawatha LRT (Cedar/Riverside) would be relocated to accommodate the connection to the Central Corridor LRT. Eastbound traffic from the Washington Avenue Bridge would be diverted to the East River Parkway—speed bumps and additional parking spaces may be removed. Emergency service access to the U of M medical facilities will be unchanged from present conditions with conversion of	The Union Depot is being considered for redevelopment as a multimodal transportation hub, where new transit lines including the Central Corridor, Rush Line, and Red Rock would connect to Amtrak trains and High Speed Rail to Chicago. As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment.	Implementation of the Project is expected to encourage the market to continue the current development and redevelopment trends in the corridor. As the population grows along the corridor, additional demand for pedestrian and bicycle facilities should be anticipated. In effect, the Project will encourage implementation of Minneapolis and St. Paul land use plans, transit oriented development (TOD) proposals, and alternate transportation mode plans—not all of those plans are immediately adjacent to the Central Corridor LRT corridor, and none of them are part of	Access by alternate transportation modes—bicycles and pedestrians—would strengthen the role of the Union Depot as a regional transportation hub. Additional transit connectivity through Union Depot would improve mobility for area residents and intercity travelers. Combined with planned future LRT service in the region, the implementation of LRT in the Central Corridor is likely to reduce reliance on single occupancy vehicles for work and recreation trips for choice riders in the region, and encourage the use of alternate modes.

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
	Rounds, which includes bicycle lanes. Streets along the Central Corridor alignment are lined with public parking spaces.	Washington Avenue to a transit/pedestrian mall. Vehicle lanes will be open only to transit vehicles and emergency service vehicles and maintenance equipment when required.		the Project. Emergency service access to the U of M medical facilities will be unchanged from present conditions with conversion of Washington Avenue to a transit/pedestrian mall. Vehicle lanes will be open only to transit vehicles and emergency service vehicles and maintenance equipment when required.	No cumulative effects to emergency services are expected.
Effects on Greenhouse Gas Emissions	Transportation vehicles that burn gasoline and diesel fuel produce greenhouse gas emissions that may contribute to global warming. Carbon dioxide is the primary greenhouse gas emitted by fossil fuel burning transportation vehicles. The cumulative effects analysis will be reassessed in the context of greenhouse gas emissions in the FEIS.	LRT transportation does not directly contribute to greenhouse gas emissions since it does not burn gasoline or diesel fuel, provided that the electric source is not produced from burning fossil fuels. LRT provides an alternative to automobiles, and has the potential to reduce greenhouse gas production from these vehicles. If the electric source if based on burning fossil fuels, then the LRT effect on greenhouse gas emissions would likely be neutral. The FEIS will include analysis of the electrical source for LRT operation and the potential cumulative impacts associated with the Central Corridor LRT project. The cumulative effects analysis will be reassessed in the context of greenhouse gas emissions in the FEIS.	Many factors contribute to the use of fossil fuels for transportation, such as fuel prices, government regulations, vehicle technology, and alternative energy sources. Reasonably foreseeable future actions include new fuel standards that require higher fuel efficiency for automobiles, potential development of other LRT facilities, increased ridership of public transportation (as evidenced by current local and national trends), increased use of automobiles (particularly in developing countries), and increased use of all types of energy due to global development. Future carbon emissions are difficult to project because of the many contributing factors. Factors that reduce the use of fossil fuel, such as higher fuel standards, high fuel prices, and development of alternative energy would reduce greenhouse gas emissions. Factors that increase the use of fossil fuel, such as increasing use of automobiles worldwide and global development would increase greenhouse gas emissions. The long-term trends indicate that emissions will continue to increase for the foreseeable future. The cumulative effects analysis will be reassessed in the context of greenhouse gas emissions in the FEIS.	In comparison to the major activities that contribute directly or indirectly to greenhouse gas emissions, the Central Corridor LRT project will be insignificant. Depending on the source of electricity used to operate the LRT, the project may have a positive or neutral effect, overall. The cumulative effects analysis will be reassessed in the context of greenhouse gas emissions in the FEIS.	In comparison to the major activities that cumulatively contribute to greenhouse gas emissions, the Central Corridor LRT project will be insignificant. Depending on the source of electricity used to operate the LRT, the project may have a positive or neutral cumulative effect, overall. The cumulative effects analysis will be reassessed in the context of greenhouse gas emissions in the FEIS.

Resource	Existing Condition and How It Has Been Affected by Other Actions	Impacts from AA/DEIS LPA and Key Project Elements	Present and Reasonably Foreseeable Future Actions Possible Impacts	Potential for Indirect Impacts	Potential for Cumulative Impacts on the Resource
Section 4(f) resources	Of the many historic properties in the study area, 14 may experience temporary or permanent impacts. Of the many parks in the study area, 4 Section 4(f) parks and recreational areas could experience temporary or permanent impacts. Consultation is ongoing. FTA will determine if a temporary, permanent, or constructive use of Section 4(f) property would occur.	The historic Washington Avenue Bridge would be modified to accommodate LRT, and land associated with the Leif Erikson portion of the Capitol Mall Historic District would be converted to a transportation use A narrow swath of land from the border of Currie Park would have a temporary impact to support construction activities. Consultation is ongoing. FTA will determine if a temporary, permanent, or constructive use of Section 4(f) property would occur.	As described in Table 9-2, St. Paul and Minneapolis plan for new parks in the corridor, including those that could act as community focal points, community redevelopment catalysts, and that will enhance transit stations—none of these are part of the Project. As described in Table 9-2, multiple public and private actions have been planned to take place in the corridor—none of these are part of the Project. Of particular note are U of M development activities, Minneapolis plans for SEMI lands, and Union Depot redevelopment. Both cities have enacted zoning ordinances that encourage TOD along transit corridors.[a]	The expected changes in intensity and density of land uses around the proposed stations will be among the long-term effects to the corridor—these changes may affect the context of the historic properties, land values, and redevelopment potential. The transit oriented development around the proposed stations will continue to exist or be developed and densities will increase over time. Underutilized land and buildings near some station areas will become prime development and redevelopment sites. [a] Underutilized land and buildings near some station areas will become prime development and redevelopment sites. [a] With more housing opportunities available in the corridor, more demand for parkland and recreation facilities is likely.	The expected changes in intensity and density of land uses around the proposed stations may be among the long-term effects to the corridor—these changes may affect the context of the historic property in the corridor. Land values will continue to increase, which may stimulate the conversion or replacement, rather than preservation, of historic property. Redevelopment is likely to occur and continue, particularly in the areas surrounding the proposed station sites. Between the stations, redevelopment is most likely to occur and continue on properties immediately facing the alignment. Combined with the visual effects of the LRT facilities, these anticipated developments may affect the visual context of the historic properties. Underutilized land and buildings near station areas will continue to be prime development and redevelopment sites. With more housing opportunities available in the corridor, more demand for parkland and recreation facilities will continue.

[a] Metropolitan Council, 2006. Central Corridor LRT Draft New Starts Application – 29 June 2006. Pages L-1-71.
[b] City of Minneapolis & Minneapolis Community Development Agency, SEMI Refined Master Plan, May, 2001, pages 30-31
[c] News from Cam Gordon, Council Member, Second Ward, March 2008. http://www.ci.minneapolis.mn.us/council/ward2/
[d] Second Ward, Minneapolis, http://secondward.blogspot.com/2008/02/bridge-9-extension.html
[e] Southeast Minneapolis Industrial/University Research Park (SEMI/URP), City of Minneapolis Community Planning and Economic Development and Public Works. http://thegrandrounds.com/documents/design/missing/road_development.pdf

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9.4 Conclusion

9.4.1 Long-term effects

9.4.1.1 Indirect effects and cumulative effects

The primary sources of potential indirect and cumulative effects, as described above in Table 9-3, would be the increased development and redevelopment in the proposed station areas for the Central Corridor LRT project, and the potential indirect impacts to roadways such as those in the vicinity of the proposed At-grade Transit/Pedestrian Mall at the U of M. The addition of LRT would not directly cause the development and redevelopment activities, but many are being proposed or are underway in the corridor. Responding to the demand for new housing and commercial development in the corridor and given the opportunity to direct it in the most beneficial manner, Minneapolis and St. Paul are instituting plans and regulatory guidance that will control the location and quality of the products and ensure that they are compatible with their surroundings and suitable for the existing neighborhoods. Traffic analysis, potential impacts and potential traffic mitigation in the vicinity of the U of M and surrounding neighborhoods is presented in Chapter 6.2. Potential indirect impacts with the proposed introduction of an At-grade Transit/Pedestrian Mall are not anticipated. Further refinement to the alignment and to the Transit/Pedestrian Mall will continue during the PE process. All impacts related to the adopted LPA and mitigation commitments will be evaluated and documented in the FEIS.

No-Build Alternative

Under the No-Build Alternative, current development patterns would continue as the market demands. Traffic congestion associated with trips that have both origins and destinations in the Central Corridor would not be improved.

The No-Build Alternative would not result in any project-related cumulative impacts.

AA/DEIS LPA and Key Project Elements

As stated above, the primary sources of potential indirect and cumulative effects would be increased development and redevelopment in the station areas proposed by the Central Corridor LRT project, and the potential indirect impacts to roadways such as those in the vicinity of the proposed At-grade Transit/Pedestrian Mall. The LRT would likely hasten the development that is already started, but potential indirect impacts with the proposed introduction of an At-grade Transit/Pedestrian Mall are not anticipated.

As described in Table 9-3, the likely changes in density and land use intensity, particularly in the vicinity of the proposed stations, are the most significant indirect effect and cumulative effect anticipated. These changes will be the result of natural market forces that strive to meet the demand for convenient housing and businesses where transit riders board and alight from LRT vehicles. These changes are already occurring in areas where underutilized land and buildings are available.

As the Twin Cities' population grows and people are attracted to the residential areas surrounding the Central Corridor LRT, continued development and redevelopment will result in increased density around stations, and possibly a change in the ethnic, racial, and income characteristics of some neighborhoods.

Changes in visual character due to denser development would occur, but because this is already an urban environment, would not be considered a negative indirect or cumulative effect. In most cases, the reuse and redevelopment of underutilized land will also increase the attractiveness and safety of the neighborhoods along the Central Corridor alignment, bring new and improved services, and with increased mobility, enhance cohesiveness and neighborhood identity.

An increased attraction to the neighborhoods surrounding the Central Corridor LRT alignment is likely to instill a heightened interest in the residents and local governments to make improvements in community aesthetics—more emphasis on parks, community art, and a clean, well-lighted environment, which would be expected to be positive indirect and cumulative effects. It is also possible that as developers reuse vacant auto dealership lots and similar underutilized parcels that a variety of development types will create a series of distinct and diverse visual environments along the corridor.

An improved tax base and economic development are positive expected indirect and cumulative effects. The project is anticipated to have positive effects on commercial and residential development located near transit stations, and would contribute economic benefits by encouraging and supporting higher-density residential and commercial land uses around the proposed transit stations.

The implementation of LRT in the Central Corridor is likely to reduce reliance on single occupancy vehicles for work and recreation trips for choice riders, and reduce traffic congestion associated with trips that have both origins and destinations in the Central Corridor.

As presented in Section 6.2, potential indirect impacts to traffic with the proposed introduction of an At-grade Transit/Pedestrian Mall are not anticipated.

9.4.2 Mitigation

Indirect and cumulative effects associated with the Central Corridor LRT project are related primarily to population and job growth anticipated under the No-Build Alternative and development attracted to underutilized land and buildings, especially near proposed stations, along the Central Corridor LRT alignment.

As discussed above, in many respects the cities are addressing the expected population growth and attractiveness of the LRT station areas with plans and regulatory guidance that will control the location and quality of the developments and ensure that they are compatible with their surroundings. Refer to Section 3.1 Land Use and Socioeconomics, which describes St. Paul's Transit Opportunity Zone (TOZ) regulations.

The indirect and cumulative effects of the Central Corridor LRT project are, thus, planned for, expected, and in most cases desired by the cities. No mitigation for the expected indirect and cumulative impacts of the project is proposed.

Further refinement to the alignment and to the Transit/Pedestrian Mall will continue during the PE process. All direct and indirect impacts related to the adopted LPA and mitigation commitments will be evaluated and documented in the FEIS.