Chapter 5 - Transportation
Transportation

Introduction
The City of Minnetonka is in Hennepin County, Minnesota, and is five miles southwest of downtown Minneapolis and 18 miles southwest of downtown Saint Paul. Minnetonka is the seventeenth largest city in Minnesota by population, and the city boundary encompasses 28 square miles and is bordered by the Cities of Plymouth to the north, St. Louis Park, Hopkins, and Edina to the east, Eden Prairie to the south, and Shorewood, Deephaven, Woodland, and Wayzata to the west.

Vision for the Transportation System
The purpose of the Transportation Plan is to provide a means to better connect the community, outline the policy and program guidance needed to make appropriate transportation related decisions when development occurs, and state when elements of the transportation system need to be upgraded and help forecast when transportation problems may occur. The Transportation Plan demonstrates how the City of Minnetonka will provide for an integrated transportation system that will serve the future needs of its residents and businesses, support the city’s development plans, and complement the portion of the metropolitan transportation system that lies within the city’s boundaries.

The City of Minnetonka maintains public roadways, as well as some of the trails and sidewalks within the city. Maintaining and improving this multimodal transportation system is important to the ongoing economic health and quality of life of the city and it is needed for people to travel easily and safely to work and other destinations, to develop property and to move goods.

Report Organization
The Transportation Plan is organized into the following sections:

» Goals and Policies
» Roadway System Plan
» Transit System Plan
» Multimodal System Plan
» Freight System Plan
» Aviation System Plan
» Planning for the Future
Summary of Regional Transportation Goals

Guidance for the development of the Transportation Plan is provided by the Metropolitan Council’s 2040 Transportation Policy Plan (TPP). The Metropolitan Council’s TPP includes six major themes that address regional transportation:

**Transportation System Stewardship:** Provide sustainable investments in the transportation system which are protected by strategically preserving, maintaining, and operating system assets.

**Safety and Security:** Ensure the regional transportation system is safe and secure for all users.

**Access to Destinations:** Allow people and businesses to prosper by using a reliable, affordable, and efficient multimodal transportation system that connects them to destinations throughout the region and beyond.

**Competitive Economy:** Ensure the regional transportation system supports the economic competitiveness, vitality, and prosperity of the region and state.

**Healthy Environments:** Confirm the regional transportation system advances equity and contributes to communities’ livability and sustainability while protecting the natural, cultural, and developed environments.

**Levering Transportation Investment to Guide Land Use:** Leverage the region’s transportation investments to guide land use and development patterns that advance the regional vision of stewardship, prosperity, livability, equity, and sustainability.

Goals and Policies

To respond to the above themes as well as to serve economic activities and improve the quality of life within Minnetonka, the city has adopted transportation goals and policies. These were developed in concert with the overall comprehensive plan goals and policies and include:

**Goal 1.** Provide a safe, convenient, effective, and integrated transportation system.

- **Policy 1.1** Treat all modes of transportation and related facilities as one integrated system to be coordinated and developed with other partners and stakeholders.

- **Policy 1.2** Provide and improve facilities for all users, encouraging safe design and mitigating accidents, especially with pedestrians and bicyclists, who are the most vulnerable users of the transportation system.
Policy 1.3  Consider traffic control improvements where appropriate to accommodate roadway capacity and reduce delay.

Policy 1.4  Collaborate with other agencies for local and regional transportation improvements and programs to lessen the impacts of congestion and provide the most effective transportation system for the City.

Policy 1.5  Prioritize investments in A-minor arterials that build, manage, or improve the system’s ability to supplement the capacity of the principal arterial system.

Goal 2.  -  Encourage appropriate “traffic calming” techniques within and near residential neighborhoods that are impacted by congestion and excessive traffic volumes and/or speeds.

Policy 2.1  Consider traffic-calming measures to discourage through traffic on local streets.

Policy 2.2  Encourage design of all local residential streets to prevent penetration by through traffic, and properly direct traffic to collector or arterial streets.

Policy 2.3  Support regional roadway improvements to reduce local roadway traffic levels, which otherwise belong on the regional system.

Policy 2.4  Manage the impact of new development upon the local transportation system and encourage the use of Transportation Demand Management (TDM) and other traffic management techniques.

Goal 3.  -  Encourage, with other government agencies, the expansion of multimodal and transit services in the city to support resident and business transportation needs.

Policy 3.1  Promote public transit that serves all residents and provides special transit services for commuters and diverse populations.

Policy 3.2  Support regional transit initiatives such as Bus Rapid Transit (BRT), Light Rail Transit (LRT) and Commuter Rail.

Policy 3.3  Create ways to improve connections within Minnetonka by providing an interconnected transit system and ways for those without a car to move around Minnetonka freely and easily.

Policy 3.4  Promote telecommuting and flex scheduling to reduce traffic.
Policy 3.5 Identify or develop additional park-and-ride lots throughout the city to encourage transit ridership.

Policy 3.6 Utilize sound land use planning to promote multimodal travel alternatives to single-occupant vehicles, with a focus on strategic job, activity and industrial and manufacturing concentrations location on congested highway corridors served by the regional transit service.

Goal 4. - Plan for trails and pedestrian ways as a transportation mode and provide a network of trails and pathway connections to schools, commercial areas, parks, activity centers, and access to transit services.

Policy 4.1 Maintain safe road crossings in high traffic areas and promote safe pathways for pedestrians and bicyclists in parking lots and internal traffic circulation areas.

Policy 4.2 Identify pedestrian/bike trails to connect with adjacent surrounding communities.

Policy 4.3 Focus bicycle and trail connections on activity centers within the community and in neighboring communities.

Goal 5. - Recognize the interrelationship of land use and transportation, and anticipate impacts of the location and intensity of planned land uses on the transportation system.

Policy 5.1 Plan transportation facilities to function in a manner compatible with adjacent land uses.

Policy 5.2 Require pedestrian connections between complementary land uses.

Policy 5.3 Encourage compact and pedestrian-friendly mixed-use developments that offer the type of retail and convenience services that will minimize peak hour traffic demand.

Policy 5.4 Implement land use policies that support future growth around transit stations and high-frequency service areas, and commit to development strategies that support successful transit in these areas.

Goal 6. - Provide a transportation system that supports the economic vitality and prosperity of the city and the region.

Policy 6.1 Provide and protect efficient connections from major freight facilities to the regional highway system.
Policy 6.2 Identify and improve suitable truck routes while minimizing impacts; such as, noise and traffic to sensitive land uses.

Goal 7. - 
Ensure the Minnetonka transportation system is resilient and built to accommodate changes in transportation infrastructure, safeguarding investments for many years to come.

Policy 7.1 Consider opportunities to improve the city’s intelligent transportation system (ITS) infrastructure to be prepared to potentially support autonomous vehicles (AVs) and connected vehicles (CVs) in the future.

Policy 7.2 Mitigate impacts to the natural environment and cultural resources when planning, constructing and operating transportation systems.

Policy 7.3 Minimize the effect of air quality impacts on the natural environments with proposed transportation improvements.

Policy 7.4 Promote rideshare opportunities, such as Uber and Lyft, within the City of Minnetonka to help individuals achieve first and last-mile connections from transit and other modes of transportation.

Roadway System
The City of Minnetonka has excellent access to the regional transportation roadway system with routes Interstate (I)-494, I-394, US Highway (US) 169, US 12 and Trunk Highway (TH) 7 passing through the city. This section of the Transportation Plan identifies issues with the existing roadway system and recommends a plan for future roadway system improvements. The roadway system plan addresses jurisdictional alignment, the functional classification system, existing and future traffic volumes, congestion, safety, future roadway system issues and improvements, and key transportation policies.

Jurisdictional Classification
Jurisdiction over the roadway system in Minnetonka is shared among three levels of government: The State of Minnesota, Hennepin County, and the City of Minnetonka. MnDOT maintains the interstate and trunk highway systems. Hennepin County maintains the County State Aid Highway (CSAH) and County Road (CR) systems, and the remaining streets and roadways are the responsibility of Minnetonka, including Municipal State Aid Streets (MSAS). Often, the municipal boundaries separating Minnetonka from adjacent cities lies within a roadway right-of-way, partnership with adjacent cities is required to coordinate
maintenance of these roadways. Figure 5-1 displays the jurisdictional classification of each roadway within Minnetonka.

The jurisdictional classification system is intended to maintain a balance of responsibility among the agencies and is organized around the principle that the highest volume limited access roadways that carry regional trips are primarily maintained by MnDOT, the intermediate volume roadways that carry medium length trips are maintained by Hennepin County, and the local street system that provides access to individual properties is maintained by the city.

Occasionally, because of development, changes in traffic patterns or the construction of new facilities, the jurisdictional classification needs to be adjusted to reflect changes in the way certain roadways are used. Hennepin County has identified a couple of potential jurisdictional transfers as part of their planning efforts that the City of Minnetonka does not support (county transfers to city jurisdiction). The county’s draft jurisdictional transfer policy states that “a proposed transfer should be evaluated within the context of the county’s Asset Management Program to determine the resources needed, as the county works toward ensuring that the roadway has an adequate 10-year service life, to avoid burdening the accepting city with undue maintenance needs.” If the city were to consider a jurisdictional transfer of the two identified roadways in the future, it would be challenging for the city to consider it based on only a 10-year service life – the long-term maintenance of these roads would put significant financial strain on the city in a very short timeframe.
Figure 5-1   Existing and Proposed Jurisdictional Classification

Existing and County Proposed Jurisdictional Classification

- Proposed County to City Turnback
- City Roadways
- County Roadways
- State Roadways

Source: Met Council, Hennepin County, & SRF Consulting
Functional Classification

The functional classification system defines both the function and role of a roadway within the hierarchy of an overall roadway system. This system is used to create a roadway network that collects and distributes traffic from neighborhoods and ultimately to the State or Interstate highway system. Functional classification planning works to manage mobility, access, and alignment of routes (see Figure 5-2). Functional classification also seeks to align designations that match current and future land uses with the roadway’s purpose.

A roadway’s functional classification is based on several factors, including:

» Trip characteristics: length of route, type and size of activity centers, and route continuity
» Access to regional population centers, activity centers, and major traffic generators
» Proportional balance of access, ease of approaching or entering a location
» Proportional balance of mobility and ability to move without restrictions
» Continuity between travel destinations
» Relationship with neighboring land uses
» Eligibility for State and Federal funding

Within the Twin Cities Metropolitan Area, the Metropolitan Council has established detailed criteria for roadway functional classifications, which are summarized in Table 5-1.
Figure 5-2  Access and Mobility Relationship

Diagram showing the relationship between road access and mobility. The y-axis represents 'Access' ranging from 'Unrestricted' to 'Complete Control'. The x-axis represents 'Mobility' ranging from 'No Thru Traffic Low Speed' to 'No Local Traffic High Speed'. Various road classifications such as Local Roads, City Streets, and Township Roads are shown along the curve, indicating their percentage of roadway mileage.
Table 5-1  Roadway Functional Classification Guidance

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Principal Arterial</th>
<th>Minor Arterial</th>
<th>Collector</th>
<th>Local Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place Connections</td>
<td>Interconnects metro centers and regional business concentrations</td>
<td>Interconnects major trip generators</td>
<td>Interconnects neighborhoods and minor business concentrations</td>
<td>Interconnects blocks within neighborhoods and land parcels within commercial areas</td>
</tr>
<tr>
<td>Spacing</td>
<td>Developed areas: 2-3 miles</td>
<td>Developed areas: 1/2-1 mile</td>
<td>Developed areas: 1/4 - 3/4 mile</td>
<td>As needed to access land uses</td>
</tr>
<tr>
<td></td>
<td>Developing areas: 3-6 miles</td>
<td>Developing areas: 1-2 miles</td>
<td>Developing areas: 1/2 - 1 mile</td>
<td></td>
</tr>
<tr>
<td>Roadway Connections</td>
<td>To interstates, principal arterials and selected minor arterials</td>
<td>To interstates, principal arterials, other minor arterials, collectors and some local streets</td>
<td>To minor arterials, other collectors and local streets</td>
<td>To collectors, other local streets and a few minor arterials</td>
</tr>
<tr>
<td>Mobility</td>
<td>Highest</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Access</td>
<td>No direct property access</td>
<td>Limited property access</td>
<td>Property access is common</td>
<td>Unrestricted property access</td>
</tr>
<tr>
<td>Percent of Mileage</td>
<td>5-10%</td>
<td>15-25%</td>
<td>5-10%</td>
<td>65-80%</td>
</tr>
<tr>
<td>Percent of Vehicle Miles Traveled</td>
<td>40-65%</td>
<td>15-40%</td>
<td>5-10%</td>
<td>10-30%</td>
</tr>
<tr>
<td>Intersections</td>
<td>Grade-separated or high-capacity intersection controls</td>
<td>Traffic signals and cross street stops</td>
<td>All-way stops and some traffic signals</td>
<td>As required for safe operation</td>
</tr>
<tr>
<td>Parking</td>
<td>None</td>
<td>Restricted as necessary</td>
<td>Restricted as necessary</td>
<td>Permitted as necessary</td>
</tr>
<tr>
<td>Large Trucks</td>
<td>No restrictions</td>
<td>No restrictions</td>
<td>Restricted as necessary</td>
<td>Permitted as necessary</td>
</tr>
<tr>
<td>Typical Average Daily Traffic</td>
<td>15,000-200,000</td>
<td>5,000-30,000</td>
<td>3,000-15,000</td>
<td>Less than 3,000</td>
</tr>
<tr>
<td>Posted Speed Limits</td>
<td>45-65 mph</td>
<td>40-50 mph</td>
<td>30-45 mph</td>
<td>Maximum 30 mph</td>
</tr>
<tr>
<td>Right of way Width</td>
<td>100-300 feet</td>
<td>60-150 feet</td>
<td>60-100 feet</td>
<td>50-80 feet</td>
</tr>
<tr>
<td>Transit Accommodations</td>
<td>Priority access for transit in peak periods</td>
<td>Preferential treatment where needed</td>
<td>Designed for use by regular route buses</td>
<td>Normally used as bus routes only in non-residential areas</td>
</tr>
</tbody>
</table>

Source: Metropolitan Council, Transportation Policy Plan, adopted January 14, 2015
The current functional classification of roadways in Minnetonka is shown in Figure 5-3. The functional classification system represents the system that has been approved by the Metropolitan Council and is in place at the writing of this document.

Further information on Metropolitan Council functional classification criteria can be found in Appendix D of the Council’s 2040 Transportation Policy Plan.

**Principal Arterials**

Principal arterials are part of the Metropolitan Highway System and provide high-speed mobility between the Twin Cities and important locations outside the metropolitan area. They are also intended to connect the central business districts of the two central cities with each other and with other regional business concentrations in the metropolitan area. These roadways, which are typically spaced from three to six miles apart, are generally constructed as limited access freeways in the urban area but may also be constructed as multiple-lane divided highways.

In Minnetonka, there are five principal arterials: I-494, I-394, US 169, TH 62 and TH 7 (between I-494 and US 212). These facilities are envisioned to continue functioning as principal arterials for the planned future of Minnetonka.

**Minor Arterials and Other Arterials**

Minor arterials also emphasize mobility over land access, serving to connect cities with adjacent communities and the metropolitan highway system. Major business concentrations and other important traffic generators are usually located on minor arterial roadways. In urbanized areas, one-half to two-mile spacing of minor arterials is considered appropriate, depending upon development density.

A well-planned and adequately designed system of principal and A-minor arterials will allow the city’s overall street system to function the way it is intended and will discourage through traffic from using residential streets. Volumes on principal and minor arterial roadways are expected to be higher than on collector or local roadways. Providing the capacity for these higher volumes will keep volumes on other city streets lower.

**Collectors**

Collectors, as the term implies, collect and distribute traffic from neighborhoods and commercial areas and provide a critical link between local streets, which are designed for property access, and minor arterials, which are designed for mobility. Collector streets have an equal emphasis on land access and mobility. It is this category of roadway that the City of Minnetonka has the greatest responsibility for since principal and A-minor arterials tend to be under the jurisdiction of either MnDOT or Hennepin County.
Figure 5-3  Existing and Planned Functional Classification
Local Streets
Local streets provide access to adjacent properties and neighborhoods. Local streets are generally low speed and designed to discourage through traffic. All roadways in the city that are not included under the previous functional classifications above fall under the local road designation.

Proposed Functional Classification System
The functional classification system for roadways in the City of Minnetonka was reviewed to ensure appropriate network connectivity is maintained and for consistency with the functional classification criteria established by the Metropolitan Council. Based on this review, there are no recommended functional classification changes to the principal or A-minor arterial systems. Therefore, the functional classification system illustrated in Figure 5-3 is representative of future conditions for principal and A-minor arterial classifications in the City of Minnetonka.

Planned and Programmed Improvements
Table 5-2 identifies programmed roadway improvements from the City of Minnetonka Capital Improvement Program (CIP), the Hennepin County CIP and MnDOT’s 10-Year Statewide Capital Improvement Plan (CHIP). Programmed improvements have advanced through the project funding programming process and have funds committed to the improvement in a designated year; while planned projects have been formally studied and/or included in a transportation plan, but typically no commitments to fund the improvement have been made.

Coordination with Other Jurisdictions
The City of Minnetonka will continue to coordinate with adjacent jurisdictions (e.g., Chanhassen, Deephaven, Eden Prairie, Edina, Hopkins, Plymouth, Shorewood, St. Louis Park, Wayzata, Woodland, and Carver County) as well as Hennepin County and MnDOT when planning future improvements. Coordination among jurisdictions provides opportunities for collaboration that benefit all agencies and the public. This results in financial and time savings through economies of scale as well as potentially reducing construction impacts to residents and businesses.
### Table 5-2  List of Planned and Programmed Improvements

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Extents</th>
<th>Project Type</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH 62</td>
<td>Beach Road to Tracy Ave</td>
<td>Mill and Overlay, fence repair, curb and gutter, ADA improvements (2019)</td>
<td>MnDOT</td>
</tr>
<tr>
<td>TH 7</td>
<td>Christmas Lake Road to I-494</td>
<td>Mill and Overlay / reclaim (2022)</td>
<td>MnDOT</td>
</tr>
<tr>
<td>TH 62</td>
<td>Nine Mile Creek</td>
<td>Overlay Bridge (2026)</td>
<td>MnDOT</td>
</tr>
<tr>
<td>I-394</td>
<td>I-494 to TH 100</td>
<td>Mill and Overlay (2027)</td>
<td>MnDOT</td>
</tr>
<tr>
<td>I-494</td>
<td>France Ave to US 12</td>
<td>Minor Concrete pavement repair (2027)</td>
<td>MnDOT</td>
</tr>
<tr>
<td>US 12</td>
<td>Wayzata Exit to I-494</td>
<td>Mill and Overlay (2024)</td>
<td>MnDOT</td>
</tr>
<tr>
<td>CSAH 73 (Hopkins Crossroads)</td>
<td>Cedar Lake Road to I-394</td>
<td>Reconstruct as multi-lane roadway (2020)</td>
<td>Hennepin County, Minnetonka</td>
</tr>
<tr>
<td>CSAH 61 (Plymouth Road)</td>
<td>North of BNSF railroad (Cedar Lake Road) to Hilloway Road</td>
<td>Reconstruct as multi-lane roadway (2021)</td>
<td>Hennepin County, Minnetonka</td>
</tr>
<tr>
<td>Woodhill Road</td>
<td>Excelsior Blvd (CSAH 3) to TH 7</td>
<td>Reconstruction (2018)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Old Excelsior Road</td>
<td></td>
<td>Reconstruction (2018)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Ridgedale Drive</td>
<td>Plymouth Road to I-394</td>
<td>Reconstruction (2019)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Parkers Lake Road/Twelve Oaks Center Drive</td>
<td>US 12 to Kingsview Lane</td>
<td>Reconstruction (2020)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Groveland Bay</td>
<td>Various locations</td>
<td>Reconstruction (2021)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Tonka-Woodcroft (Phase I)</td>
<td>Various locations south of Minnetonka Blvd (CSAH 5)</td>
<td>Reconstruction (2022)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Ford Road</td>
<td>Cedar Lake Road to I-394</td>
<td>Mill and Overlay (2018)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Williston Road</td>
<td>Minnetonka Blvd (CSAH 5) to TH 7</td>
<td>Mill and Overlay (2018)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Highland Road</td>
<td>Excelsior Blvd (CSAH 3) to TH 7</td>
<td>Mill and Overlay (2019)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Minnetonka Mills Road</td>
<td>Hopkins Crossroad (CSAH 73) to Shady Oak Road (CSAH 61)</td>
<td>Mill and Overlay (2020)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Rowland Road</td>
<td>Baker Road (CSAH 60) to Bren Road</td>
<td>Mill and Overlay (2020)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Woodhaven Road</td>
<td>Orchard Road to Spring Lake Road</td>
<td>Mill and Overlay (2021)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Whitewater Drive</td>
<td>Clearwater Drive to Rowland Road</td>
<td>Mill and Overlay (2021)</td>
<td>Minnetonka</td>
</tr>
<tr>
<td>Scenic Heights Drive</td>
<td>TH 62 to Excelsior Blvd (CSAH 3)</td>
<td>Mill and Overlay (2022)</td>
<td>Minnetonka</td>
</tr>
</tbody>
</table>
2040 Travel Demand Forecasts

The pattern and intensity of travel within any city is directly related to the distribution and magnitude of households, population and employment within that community, in neighboring communities and in the region. This section provides an overview of the existing land use pattern in the City of Minnetonka.

Minnetonka is now largely developed. While this does not mean that there will be no change or growth within the community, it does mean that redevelopment is now the primary focus, except for certain areas of the city. The Ridgedale Mall area continues to redevelop with increased density and the Opus campus area with Transit Oriented Development. Land use, travel patterns, population and employment change over time and affect the efficiency and adequacy of the transportation network. This section also outlines expected changes in the city’s land use pattern, households, population and employment, which will then be the basis for estimating future travel demand within the city.

Socioeconomic Data

Historic, existing and estimated population, households, and employment levels are shown in Table 5-3. The Metropolitan Council prepared estimates for the overall regional growth in terms of households, population, and employment for the years 2020, 2030, and 2040, allocating an appropriate portion to each municipality.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Households</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>49,734</td>
<td>21,901</td>
<td>44,228</td>
</tr>
<tr>
<td>2020</td>
<td>53,200</td>
<td>24,200</td>
<td>54,400</td>
</tr>
<tr>
<td>2030</td>
<td>58,000</td>
<td>26,600</td>
<td>58,900</td>
</tr>
<tr>
<td>2040</td>
<td>61,500</td>
<td>28,300</td>
<td>63,200</td>
</tr>
</tbody>
</table>


Using the Land Use Guide Plan and development objectives as guidance, and with the assistance of the Metropolitan Council, the city has estimated existing and future population, employment and households for sub-areas of the city called Traffic Analysis Zones (TAZs). This information was required to complete the traffic forecasting procedures used to estimate future traffic volumes. Detailed breakdown of the TAZ allocation is provided as an appendix item.

Forecast 2040 Traffic Volumes

Figure 5-4 presents the base condition “existing” Annualized Average Daily Traffic (AADT) volumes for the roadway system in Minnetonka. Forecasts for the City of Minnetonka were prepared based upon the socio-economic distribution identified for the year 2040. These forecasts are an essential analytical tool to determine the adequacy of the road
system to handle future development. In addition to the programmed roadway projects identified earlier, the traffic forecast model considers future planned improvements that are in the Metropolitan Council’s TPP for regional highways outside the city. The results of the forecast are shown in Figure 5-5.
Figure 5-4  Existing Traffic Volumes

Existing Annualized Average Daily Traffic Volumes

- Existing (2016) AADT Volumes

Figure 5-5  Future (2040) Traffic Volumes
Future (2040) Traffic Volumes

- Future Traffic (AADT)

Source: Met Council, 
& SRF Consulting
Existing and Anticipated Capacity Deficiencies

Congestion on the roadway system is judged to exist when the ratio of traffic volume to roadway capacity (v/c ratio) approaches or exceeds 1.0. The ratio of volume to capacity provides a measure of congestion along a stretch of roadway and can help determine where roadway improvements, access management, transit services, or demand management strategies need to be implemented. It does not, however, provide a basis for determining the need for specific intersection improvements.

Planning-Level Capacity Thresholds

Table 5-4 provides a method to evaluate roadway capacity. For each facility type, the typical planning-level annual AADT capacity ranges and maximum AADT volume ranges are indicated. These volume ranges are based on guidance from the Highway Capacity Manual, discussions with the Metropolitan Council and professional engineering judgment. A range is used since the maximum capacity of any roadway design (v/c = 1) is a theoretical measure that can be affected by its functional classification, traffic peaking characteristics, access spacing, speed, and other roadway characteristics. Further, to define a facility’s “daily capacity,” it is recommended that the top of each facility type’s volume range be used. This allows for capacity improvements that can be achieved by roadway performance enhancements. This planning-level assessment does not supersede the potential need for detailed operational analysis; nor does it preclude the city from making decisions with respect to the transportation system that are more context based that this planning-level may accommodate.

Level of Service Thresholds

Level of Service (LOS), as related to highways and local roadways, categorizes the different operating conditions that occur on a lane or roadway when accommodating various traffic volumes. It is a qualitative measure of the effect of traffic flow factors such as speed and travel time, interruption, ability to maneuver, driver comfort and convenience, and is an indirect measure of safety and operating costs. LOS is expressed as levels “A” through “F,” with level “A” being a condition of free traffic flow with little or no restriction in speed or maneuverability caused by the presence of other vehicles, and level “F” being a forced-flow condition at low speed with many stoppages resulting in the roadway acting as a storage area. Further definition of LOS is described in Table 5-5.
Table 5-4  Planning-Level Roadway Capacities by Facility Type

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Planning Level Daily Capacity Ranges (AADT)</th>
<th>Under Capacity</th>
<th>Approaching Capacity</th>
<th>Over Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-lane undivided urban</td>
<td>8,000 – 10,000</td>
<td>2,000</td>
<td>4,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Two-lane undivided rural</td>
<td>14,000 – 15,000</td>
<td>3,000</td>
<td>6,000</td>
<td>9,000</td>
</tr>
<tr>
<td>Two-lane divided urban (Three-lane)</td>
<td>14,000 – 17,000</td>
<td>3,400</td>
<td>6,800</td>
<td>10,200</td>
</tr>
<tr>
<td>Four-lane undivided urban</td>
<td>18,000 – 22,000</td>
<td>4,400</td>
<td>8,800</td>
<td>13,200</td>
</tr>
<tr>
<td>Four-lane undivided rural</td>
<td>24,000 – 28,000</td>
<td>5,600</td>
<td>11,200</td>
<td>16,800</td>
</tr>
<tr>
<td>Four-lane divided urban (Five-lane)</td>
<td>28,000 – 32,000</td>
<td>6,400</td>
<td>12,800</td>
<td>19,200</td>
</tr>
<tr>
<td>Four-lane divided rural</td>
<td>35,000 – 38,000</td>
<td>7,600</td>
<td>15,200</td>
<td>22,800</td>
</tr>
<tr>
<td>Four-lane expressway rural</td>
<td>45,000</td>
<td>9,000</td>
<td>18,000</td>
<td>27,000</td>
</tr>
<tr>
<td>Four-lane freeway</td>
<td>60,000 – 80,000</td>
<td>16,000</td>
<td>32,000</td>
<td>48,000</td>
</tr>
<tr>
<td>Six-lane freeway</td>
<td>90,000 – 120,000</td>
<td>24,000</td>
<td>48,000</td>
<td>72,000</td>
</tr>
</tbody>
</table>
### Table 5-5  Level of Service Definitions

<table>
<thead>
<tr>
<th>Level of Service (LOS)</th>
<th>Traffic Flow</th>
<th>Vehicle/Capacity Ratio</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Free Flow Below Capacity</td>
<td>0.20</td>
<td>Low volumes and no delays.</td>
</tr>
<tr>
<td>B</td>
<td>Stable Flow Below Capacity</td>
<td>0.40</td>
<td>Low volumes and speed dictated by travel conditions.</td>
</tr>
<tr>
<td>C</td>
<td>Stable Flow Below Capacity</td>
<td>0.60</td>
<td>Speeds and maneuverability closely controlled due to higher volumes.</td>
</tr>
<tr>
<td>D</td>
<td>Restricted Flow Near Capacity</td>
<td>0.85</td>
<td>Higher density traffic restricts maneuverability and volumes approaching capacity.</td>
</tr>
<tr>
<td>E</td>
<td>Unstable Flow Approaching Capacity</td>
<td>1.00</td>
<td>Low speeds, considerable delays, and volumes at or slightly over capacity.</td>
</tr>
<tr>
<td>F</td>
<td>Forced Flow Over Capacity</td>
<td>&gt;1.00</td>
<td>Very low speeds, volumes exceed capacity, and long delays with stop-and-go traffic.</td>
</tr>
</tbody>
</table>

### Existing and Year 2040 Capacity Deficiencies

The existing and year 2040 traffic volumes were analyzed against the existing and future number of lanes (see Figure 5-6). The results of this analysis were mapped to identify roadways that currently exhibit capacity deficiencies (see Figure 5-7 and Figure 5-8).

The methodology described above is a planning-level analysis that uses average daily traffic volumes and is not appropriate for all traffic conditions. For example, traffic conditions that do not fit the average daily traffic criteria (e.g., weekend travel, holiday travel, special events, etc.) are likely to produce different levels of congestion. Additionally, factors such as the amount of access and roadway geometrics may influence capacity. Roadway segments are defined as overcapacity if the volume-to-capacity ratio is at or above 1.0, which signifies that a segment of road has observed volumes which exceed its design capacity. Roadway segments are defined as near capacity if the volume-to-capacity ratio is at or above 0.85.
Anticipated Future Roadway Infrastructure Improvement Needs

The City of Minnetonka understands that over time traffic volumes will fluctuate (increasing and decreasing in varying areas) as travel patterns, development patterns, vehicular technology, etc. change or shift. To be responsive to anticipated future congestion issues and to manage the transportation system into the future the City has identified a set of anticipated future improvements with respect to necessary roadway capacity, intersection or interchange improvements, and roadway connections. It is understood that this list of improvements may change in the coming years but are what is anticipated at this point in 2018 to plan. Further, it is anticipated that all projects will go through a full design and public involvement process prior to implementing.

1. Mn/DOT Roadways
These improvements are on the regional highway system and are primarily Mn/DOT’s responsibility. The timing of these projects is uncertain.

   » I-494 – Add capacity in both directions from approximately I-394 to TH 62 within Minnetonka
   » US 169 – Add capacity in both directions along all portions through Minnetonka (creating a six-lane freeway facility)
   » TH 7 – Consider capacity improvements from approximately the western city boundary to Tonkawood Road

2. Hennepin County Roadways
The following projects are on the County roadway system and are the County’s responsibility, although the city participates financially and therefore must include them in the city’s Plan and the city’s CIP. These are additional needs beyond the projects already programmed and therefore could be completed in the 2013 to 2030 timeframe (if funding were available).

   » CSAH 101 – Consider additional capacity improvements from CSAH 5 (Minnetonka Boulevard) to approximately Lake Street
   » CSAH 60 (Baker Road) – Consider additional capacity improvements from CSAH 5 (Minnetonka Boulevard) to CSAH 3 (Excelsior Boulevard)
   » CSAH 61 (Shady Oak Road) – Consider additional capacity improvements from TH 62 to Bren Road

3. City of Minnetonka Roadways
   » 17th Avenue North – Consider capacity improvements together with City of Hopkins from CSAH 7 to CSAH 3 (Excelsior Boulevard)
» Williston Road – Consider capacity improvements from CSAH 5 (Minnetonka Boulevard) to Orchard Road

» Wayzata Boulevard (north) – Consider capacity improvements from Horn Drive to City View Drive

All improvement considerations should account for safety and access improvements as well.
Figure 5-6  Existing and Future Number of Lanes

Existing and Future Number of Lanes

- 3 Lanes
- 4 Lanes
- 6 Lanes
- 2 Lanes
- Future 4 Lane

Source: Met Council, & SRF Consulting
Existing Capacity Deficiencies

- Approaching Capacity (0.85 ≤ V/C ≤ 1.00)
- Over Capacity (V/C > 1.00)

Source: Met Council, & SRF Consulting
Figure 5-8  Future 2040 Capacity Deficiencies

Future 2040 Capacity Deficiencies

- Approaching Capacity (0.85 ≤ V/C ≤ 1.00)
- Over Capacity (V/C > 1.00)

Source: Met Council, & SRF Consulting
Roadway Safety
A central concern of transportation professionals is roadway safety. To assist in the evaluation of crashes, MnDOT maintains a database of crash records from around the State of Minnesota. These records identify the location, severity and circumstances associated with each crash. As shown in Table 5-6, this dataset was reviewed to identify the number, location and severity of crashes in the City of Minnetonka for the years 2011-2015. Overall, there were 2,629 crashes, of which four involved fatalities, 816 involved personal injury and 1,809 involved property damage.

<table>
<thead>
<tr>
<th>Year</th>
<th>Fatal</th>
<th>Type A Incapacitating Injury</th>
<th>Type B Non-Incapacitating Injury</th>
<th>Type C Possible Injury</th>
<th>Property Damage</th>
<th>Total Crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>1</td>
<td>3</td>
<td>37</td>
<td>153</td>
<td>355</td>
<td>549</td>
</tr>
<tr>
<td>2012</td>
<td>2</td>
<td>4</td>
<td>29</td>
<td>113</td>
<td>324</td>
<td>472</td>
</tr>
<tr>
<td>2013</td>
<td>1</td>
<td>6</td>
<td>42</td>
<td>127</td>
<td>385</td>
<td>561</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>5</td>
<td>27</td>
<td>119</td>
<td>374</td>
<td>525</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
<td>4</td>
<td>32</td>
<td>115</td>
<td>371</td>
<td>522</td>
</tr>
<tr>
<td>Totals</td>
<td>4</td>
<td>22</td>
<td>167</td>
<td>627</td>
<td>1,809</td>
<td>2,629</td>
</tr>
</tbody>
</table>

These crashes were generally widely distributed throughout the city with most locations accounting for only one or two incidents, suggesting that a crash at that location was a random event. However, several of these crashes were concentrated at a limited number of locations. The 10 intersection locations with the highest frequency of crashes between 2011 and 2015 are listed in Table 5-7 and illustrated in Figure 5-9. These intersections were also evaluated for the critical index using MnDOT’s crash rate methodology, also indicated in Table 5-7. Following MnDOT guidelines, a critical index of 1.00 or less indicates performance within statewide trends, and a critical index above 1.00 indicates that the intersection operates outside the normally expected range.

### Critical Index
The critical index is the ratio of the observed crash rate to the critical crash rate. Critical indexes above 1.00 indicate there is likely an existing safety concern at the intersection. Additional analysis and observation of the intersection should be completed to determine the cause of the high critical index. Based on this conclusion, further investigation is recommended at the crash locations with a critical index above 1.00 as identified in Table 5-7 to determine the types of crashes occurring and identify mitigation approaches to increase safety.
## Table 5-7 Top 10 Intersection Crash Locations (2011-2015)

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Severity</th>
<th>Traffic Control</th>
<th>Critical Index</th>
<th>Severity Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSAH 101 and TH 7</td>
<td>1 1 5 26 65</td>
<td>Signal</td>
<td>1.37</td>
<td>1.00</td>
</tr>
<tr>
<td>TH 7 and Williston Road</td>
<td>0 0 4 19 39</td>
<td>Signal</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>TH 7 and CSAH 61 (Shady Oak Road)</td>
<td>0 0 4 14 25</td>
<td>Signal</td>
<td>0.99</td>
<td>0.00</td>
</tr>
<tr>
<td>TH 7 and Woodland Road</td>
<td>0 1 0 7 20</td>
<td>Signal</td>
<td>0.50</td>
<td>0.58</td>
</tr>
<tr>
<td>TH 7 and CSAH 73 (Hopkins Crossroads)</td>
<td>0 0 2 6 20</td>
<td>Signal</td>
<td>0.60</td>
<td>0.00</td>
</tr>
<tr>
<td>CSAH 3 (Excelsior Boulevard) and CSAH 61 (Shady Oak Road)</td>
<td>0 0 2 11 14</td>
<td>Signal</td>
<td>0.56</td>
<td>0.00</td>
</tr>
<tr>
<td>CSAH 3 (Excelsior Boulevard) and CSAH 60 (Baker Road)</td>
<td>0 0 3 9 13</td>
<td>Signal</td>
<td>0.85</td>
<td>0.00</td>
</tr>
<tr>
<td>CSAH 101 and CSAH 5 (Minnetonka Boulevard)</td>
<td>0 0 0 5 14</td>
<td>Signal</td>
<td>0.56</td>
<td>0.00</td>
</tr>
<tr>
<td>CSAH 101 and CSAH 3 (Excelsior Boulevard)</td>
<td>0 1 2 5 10</td>
<td>Signal</td>
<td>0.42</td>
<td>0.66</td>
</tr>
<tr>
<td>CSAH 5 (Minnetonka Boulevard) and CSAH 16 (McGinty Road)</td>
<td>0 0 0 6 8</td>
<td>Signal</td>
<td>0.35</td>
<td>0.00</td>
</tr>
</tbody>
</table>
Recent Crash Data (2011 - 2015)

- Top 10 Intersections
- Fatal - 4 crashes
- Incapacitating Injury - 22 crashes
- Non-incapacitating Injury - 167 crashes
- Possible Injury - 627 crashes

Source: Met Council, & SRF Consulting
As shown above, all the crash hotspots occurred at signalized intersections in the City of Minnetonka. The overwhelming crash types occurring at these intersections include: Rear End, Right Angle, and Left Turn into Traffic. These crash types commonly occur at signalized intersections due to the nature of how these intersections operate. MnDOT’s Traffic Safety Fundamentals Handbook (2015) recommends the following strategies to reduce frequency and severity of intersection crashes:

» Use of multiphase signal operation combined with left turn lanes
» Provide a coordinated signal system along urban arterials
» Use overhead indications – one per through lane mounted at the center of each lane
» Provide dilemma zone protection and optimize clearance intervals
» Use advance-warning flashers to supplement static signs where a signal may be unexpected
» Pedestrian indications including the use of countdown timers

Additionally, an intersection traffic control change such as a roundabout or grade separation can also be considered. Roundabouts may have less crashes or as many crashes as a traffic signal, however the types of crashes associated with roundabouts tend to be less severe. Grade separating an intersection would provide the greatest reduction in intersection conflict points which would most likely reduced the frequency and severity of crashes. A more detailed intersection traffic study will need to be completed to determine the appropriate traffic control type.

Access Management

Access management is an important aspect of providing a safe and efficient roadway network. Access management measures include:

» Providing adequate spacing between access points and intersecting streets to separate and reduce conflicts.
» Limiting the number of driveway access points to reduce conflicts.
» Aligning access with other existing access points.
» Sharing access points, through internal connectivity between property owners.
» Encouraging indirect access rather than direct access to high volume arterial roads.
» Constructing parallel roads and backage or frontage roads.
» Implementing sight distance guidelines to improve safety.
» Using channelization to manage and control turning movements.

Access review is a major aspect of the city’s project review process. The goal is to maintain the safety and capacity of the city’s roadways while providing adequate land access.
Access management also involves balancing the access and mobility functions of roadways. Access refers to providing roadway access to properties and is needed at both ends of a trip. Mobility is the ability to get from one place to another. Most roadway serve both functions to some degree based on their functional classification. The four levels of functional classification and their corresponding mobility and access traits are as follows:

» Principal Arterials have the highest mobility with no direct land access.
» Minor Arterials have a high mobility with limited land access.
» Collector Streets have moderate mobility with some land access.
» Local Streets have low mobility with unrestricted land access.

**Access to Principal Arterials**
The City of Minnetonka should follow MnDOT guidelines for access to principal arterials. These guidelines recommend limiting cross-street access to one-half mile spacing within urbanized areas, with one- to two-mile spacing being optimal. No new driveway access is permitted to principal arterials.

**Access to Minor Arterials**
The City of Minnetonka strives to meet Hennepin County guidelines for access to the minor arterial system. These guidelines generally call for one-quarter mile spacing of all access points such as cross streets and driveways.

**Driveway Access on City Streets (Collectors and Local Roads)**
Driveways contribute to crashes and reduced traffic flow on major streets in local communities as they add to the number of locations where vehicle conflicts can occur. Therefore, it is desirable to have guidelines in place that:

» Limit the number of driveways to those that are needed to safely accommodate the traffic generated by each development;

» Provide adequate spacing between driveways so conflicts and resulting crashes between vehicles maneuvering at adjacent driveways are avoided;

» Ensure proper design to accommodate driveway traffic and minimize vehicle conflicts without significantly reducing roadway capacity.

Occasionally topographic features of an individual site or the needs of a unique land use may require special access features in a proposed development. The City of Minnetonka may wish to withhold approval of such developments or site changes until a study has been made of the potential impacts on the affected roadways and the adequacy of the proposed access design determined. The City may require that the following steps be included in the traffic study for the site:
» Estimate site traffic generation and future non-site traffic;
» Determine directional distribution of trips;
» Estimate turning movements at driveway and the resulting level of service;
» Analyze current and future access requirements;
» Provide necessary geometric and operational improvements to safely accommodate access requirements without negative impacts to traffic operation on the adjoining roadways.

The City of Minnetonka will continue to support MnDOT and Hennepin County’s access management guidelines on the principal and minor arterial roadway network in the city through the measures listed above. In addition, the city utilizes Hennepin County’s access spacing guidelines to guide access decisions on the city’s arterial and collector roadway network.

Traffic Management Strategies

Traffic Signals
A well-coordinated traffic signal system will promote the efficient flow of traffic along the A-minor arterials in the City of Minnetonka, as this type of system reduces the likelihood of through traffic diverting to local streets. The city will work with Hennepin County to periodically monitor the progression of traffic signals on key County roadways to ensure efficient system operation.

Operational refinement of the signal system will take place on an ongoing basis. New traffic signals will be built at intersections where specific signal warrants are achieved, and funding is available. Intersection improvements will be considered on a site-by-site basis and will be constructed consistently with the warrants identified in the Minnesota Manual on Uniform Traffic Control Devices (MUTCD) when funding is available. Warrants include specific thresholds relating to traffic volumes and considerations of safety and pedestrian activity.

Stop Signs
The City of Minnetonka receives numerous requests for the installation of stop signs to manage speed and other perceived traffic safety problems in residential neighborhoods. City traffic engineers will evaluate each stop sign request by either applying the city’s neighborhood traffic calming program for local or minor streets in residential areas or by utilizing MnDOT’s uniform traffic warrant criteria for all other stop sign requests.

Traffic Calming
The primary function of minor collector and local streets is to provide access to residences and other uses along the roadway. However, these streets may also provide routes for traveling to and from or passing
through a neighborhood. Conflicts arise between these latter functions when residents become concerned about traffic volumes, speeds and pedestrian safety.

Traffic calming generally refers to strategic physical changes made to streets to reduce vehicle speeds, improve safety, discourage through traffic on residential streets, and decrease the automobile’s visual dominance in a neighborhood setting. There are several activities that may be referred to as traffic calming, examples of which include raised intersections and crosswalks, roundabouts, curvilinear streets, street narrowing, raised medians and islands, pedestrian treatments, and streetscaping. These traffic calming treatments are considered for low volume local and minor collector streets where excessive speeds pose a safety problem. The City of Minnetonka will consider requests for traffic calming devices on a case-by-case basis consistent with the city’s adopted neighborhood traffic calming program.

Transit System Plan
The transportation needs of Minnetonka residents cannot be met by a comprehensive, well maintained roadway system alone. A complete transportation system supports a variety of transportation modes to meet the varied needs of residents, workers, and visitors.

Transit is an important element in the transportation network because it:

» Provides vulnerable populations access to housing, employment, and services in the area, including those who cannot afford a personal vehicle, people who cannot drive, and senior citizens.

» Provides opportunities for people who prefer an alternative to automobile travel.

» Removes a portion of existing and future automobile traffic from the roadway, reducing travel time and congestion for everyone on the roadway.

The City of Minnetonka is committed to supporting and preserving existing transit services and facilities in the city and seeking ways to complement the transit system as new service begins. Although the city does not have direct responsibility for the operation of services or the provision of facilities, the city can advocate for better service by promoting transit supportive land use patterns as sections of the city redevelop and building a complete sidewalk network that facilitates access to transit service areas.

Transit Market Areas
Minnetonka falls completely within the Metropolitan Transit Taxing District and is served by Metro Transit. A small section of the Opus Campus is located within Transit Market area II, portions of the city are located within
Transit Market Area III while others are located within Transit Market Area IV. Employers in the Opus Campus, located in the eastern portion of the city, have a comparatively high level of transit service, with frequent local and express service offered 12-20 hours a day, seven days a week. Most of the western half of the city is located within Transit Market Area IV and service is limited to peak-only express and commuter routes and dial-a-ride service. Please refer to Table 5-8 for detailed information on Transit Market Areas and their corresponding levels of service. Figure 5-10 illustrates existing transit services and facilities within the city.
<table>
<thead>
<tr>
<th>Market Area</th>
<th>Propensity to Use Transit</th>
<th>Service Characteristics</th>
<th>Typical Transit Service</th>
<th>Presence in Minnetonka</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Highest potential for transit ridership.</td>
<td>Frequency: 15-30 min. most modes.</td>
<td>Dense network of local routes with highest levels of service accommodating a wide variety of trip purposes. Limited stop service supplements local routes where appropriate.</td>
<td>None</td>
</tr>
<tr>
<td>II</td>
<td>Approximately half ridership potential of Market Area I.</td>
<td>Frequency: 15-60 min. most modes.</td>
<td>Similar network structure to Market Area I with reduced level of service as demand warrants. Limited stop services are appropriate to connect major destinations.</td>
<td>Opus Campus north of Bren Road</td>
</tr>
<tr>
<td>III</td>
<td>Approximately half ridership potential of Market Area II.</td>
<td>Frequency: 15-60 min. most modes.</td>
<td>Primary emphasis is on commuter express bus service. Suburban local routes providing basic coverage. Public dial-a-ride services are appropriate.</td>
<td>Areas north of 394, most of the area east of 494, bordering Hopkins, Glen Lake area, and near Purgatory Park and Minnetonka High School</td>
</tr>
<tr>
<td>IV</td>
<td>Approximately half ridership potential of Market Area III.</td>
<td>Frequency: Three trips per peak express bus.</td>
<td>Peak period express service is appropriate as local demand warrants. Public dial-a-ride services are appropriate.</td>
<td>Central and western Minnetonka</td>
</tr>
<tr>
<td>V</td>
<td>Lowest potential for transit ridership.</td>
<td>Frequency: 30 minutes, Commuter Rail.</td>
<td>Not well-suited for fixed-route service. Primary emphasis is on public dial-a-ride services.</td>
<td>None</td>
</tr>
</tbody>
</table>

Source: Metropolitan Council, 2040 Transportation Policy Plan, 2015
Existing System Inventory

Minnetonka is served by three different transit services, Metro Transit, Plymouth Metrolink, and Metro Mobility. Metro Transit offers fixed-route service with both local and express routes. With the construction and opening of the Southwest LRT (METRO Green Line Extension), Metro Transit will also offer a light rail connection south to Eden Prairie and northeast to downtown Minneapolis via Hopkins and St. Louis Park. Metro Transit also offers demand-response services, like TransitLink and VanPool that may serve Minnetonka residents. Plymouth Metrolink offers express service to businesses in Plymouth, but also has a few stops north of I-394 in Minnetonka. Metro Mobility offers demand-response services for people with disabilities.

Fixed-Route Transit Bus Service

Fixed-route transit service includes both local and express bus services that operate on a regular schedule and follow consistent routes. Fixed-route transit service in Minnetonka is provided by Metro Transit and Plymouth Metrolink. Plymouth Metrolink routes serve locations north of I-394 before entering the City of Plymouth. Table 5-9 provides details of the transit routes serving Minnetonka and Figure 5-10 shows these routes.

<table>
<thead>
<tr>
<th>Route</th>
<th>Type</th>
<th>Cities Served</th>
<th>Locations Served</th>
<th>Minnetonka Service Times</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Local</td>
<td>Minnetonka, St. Louis Park, Golden Valley, Minneapolis</td>
<td>Green Briar Road</td>
<td>Weekdays 5am-Midnight, Weekends 7am-11pm</td>
<td>60 minutes</td>
</tr>
<tr>
<td>12</td>
<td>Local</td>
<td>Minnetonka, Hopkins, St. Louis Park, Minneapolis</td>
<td>Opportunity Partners</td>
<td>Weekdays 5am-Midnight, more trips for traditional commutes, peak, bi-directional</td>
<td>20-60 minutes</td>
</tr>
<tr>
<td>46</td>
<td>Local</td>
<td>Minnetonka, Edina, Minneapolis, Saint Paul</td>
<td>Opportunity Partners</td>
<td>weekdays, peak, no reverse, 46 D</td>
<td>One trip at peak</td>
</tr>
<tr>
<td>614</td>
<td>Local</td>
<td>Minnetonka</td>
<td>Ridgedale Center, Plymouth Road, Minnetonka Blvd, City Hall, Minnetonka Heights</td>
<td>Weekdays 5am to 7pm</td>
<td>60 minutes</td>
</tr>
</tbody>
</table>

Table 5-9 Transit Routes in Minnetonka
<table>
<thead>
<tr>
<th>Route</th>
<th>Type</th>
<th>Origin</th>
<th>Destination</th>
<th>Service Details</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>615</td>
<td>Local</td>
<td>Minnetonka, Hopkins, Saint Louis Park</td>
<td>Ridgedale, Hopkins High School, Greenbrier</td>
<td>Monday through Saturday 7am to 8pm</td>
<td>60 minutes</td>
</tr>
<tr>
<td>643</td>
<td>Express</td>
<td>Minnetonka, Golden Valley, St. Louis Park, Minneapolis</td>
<td>Cedar Lake Road to Greenbrier Road.</td>
<td>Weekdays, peak, no reverse</td>
<td>5 trips in am, 3 trips in pm</td>
</tr>
<tr>
<td>645</td>
<td>Express</td>
<td>Mound, Orono, Wayzata, Minnetonka, Golden Valley, St. Louis Park, Minneapolis</td>
<td>Carlson south of I-494, Ridgedale Center, Plymouth Road Park-and-Ride, County Road 73 Park-and-Ride.</td>
<td>7 days a week</td>
<td>20-30 minutes at peak, midday and weekend 60 minutes</td>
</tr>
<tr>
<td>652</td>
<td>Express</td>
<td>Minnetonka, Golden Valley, St Louis Park, University of Minnesota</td>
<td>County Road 73 Park-and-Ride, Plymouth Road Park-and-Ride.</td>
<td>Weekdays, peak, no reverse</td>
<td>2 trips in the am, 2 trips in the pm</td>
</tr>
<tr>
<td>663</td>
<td>Express</td>
<td>Minnetonka, St Louis Park, Minneapolis</td>
<td>Cedar Lake Road, Green Brier Road</td>
<td>Weekdays, peak, no reverse</td>
<td>8 trips at each peak period</td>
</tr>
<tr>
<td>664</td>
<td>Express</td>
<td>Minnetonka, Hopkins, St Louis Park, Minneapolis</td>
<td>North Opus</td>
<td>Weekdays, peak, no reverse</td>
<td>4 trips each peak period</td>
</tr>
<tr>
<td>667</td>
<td>Express</td>
<td>Minnetonka, Hopkins, St Louis Park, Minneapolis</td>
<td>Spans Minnetonka through County Road 101 and Highway 7</td>
<td>Weekdays, peak, no reverse</td>
<td>3 trips each peak period</td>
</tr>
<tr>
<td>670</td>
<td>Express</td>
<td>Excelsior, Minnetonka, Hopkins, Minneapolis</td>
<td>Follows Excelsior Blvd through Minnetonka</td>
<td>Weekdays, peak, no reverse</td>
<td>3 trips each peak period</td>
</tr>
<tr>
<td>671</td>
<td>Express</td>
<td>Orono, Tonka Bay, Shorewood, Excelsior, Greenwood, Deephaven,</td>
<td>Follows Minnetonka Blvd through Minnetonka</td>
<td>Weekdays, peak, no reverse</td>
<td>3 trips each peak period</td>
</tr>
<tr>
<td>Route</td>
<td>Type</td>
<td>Origin</td>
<td>Destination</td>
<td>Frequency</td>
<td>Characteristics</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>--------</td>
<td>-------------</td>
<td>-----------</td>
<td>----------------</td>
</tr>
<tr>
<td>672</td>
<td>Express</td>
<td>Wayzata, Minnetonka, St Louis Park, Minneapolis</td>
<td>Plymouth Road Park-and-Ride, businesses north of I-394</td>
<td>Weekdays, peak, bi-directional</td>
<td>4 to 5 trips each direction during peak periods</td>
</tr>
<tr>
<td>673</td>
<td>Express</td>
<td>Minnetonka, Minneapolis</td>
<td>County Road 73 Park-and-Ride</td>
<td>Weekdays, peak, bi-directional</td>
<td>11 trips east in am, 4 trips west in am, 10 trips west in pm</td>
</tr>
<tr>
<td>679</td>
<td>Express</td>
<td>Minnetonka, Minneapolis</td>
<td>County Road 73 Park-and-Ride</td>
<td>Weekdays, pm peak, eastbound</td>
<td>5 trips</td>
</tr>
<tr>
<td>747</td>
<td>Express</td>
<td>Plymouth, Minnetonka, Minneapolis</td>
<td>Carlson Towers</td>
<td>Weekdays, reverse</td>
<td>11 trips am, 10 trips pm</td>
</tr>
</tbody>
</table>

**Metro Mobility**

Metro Mobility is the Americans with Disability Act (ADA) public paratransit service for persons with disabilities. Metro Mobility operates service in Minnetonka during the same span of service each day as the fixed route service operates. Metro Mobility is a shared ride system, in which customers make a reservation and routes are developed to the trip origins and destinations. Rider eligibility is based on a person’s functional inability to use regular-route services due to disability or health condition. The federal ADA provides parameters and requirements for the service structure that the Metropolitan Council must follow. Metro Mobility service is funded through appropriations from the Minnesota State Legislature, passenger fares and federal funding. The Metro Mobility service in Minnetonka is currently available to eligible customers from 5:00 a.m. to 2:00 a.m., seven days a week.

**Existing Transit Facilities**

Many express and local routes serve park-and-rides. There was a strong demand for park and ride service reported in the Minnetonka 2012 Transit Study. Minnetonka has four park-and-rides (see Figure 5-10):
There is a park-and-ride that mirrors CSAH 73 South & I-394 on the north side of I-394 that opens for special events. It is possible that in the future, this northern parking lot may be formalized and serve riders year-round. CSAH 73 South & I-394 Park-and-Ride utilization has held steady between 65 and 75 percent utilization in the past six years. This park-and-ride is served by five routes and has a three-level parking ramp, an indoor waiting area, heated shelters, and real-time arrival information.

Plymouth Road Park-and-Ride is planned to close by 2030. Although utilization was falling for a few years, it has begun to rise again. This park-and-ride is served by four routes and has bike lockers.

Both park-and-rides on Minnetonka Boulevard have low capacity and are served by the same two express routes, 614 and 671. Utilization at these park-and-rides have been low to moderate. Neither Minnetonka Boulevard and Steele Street nor Minnetonka Boulevard and Baker Road park-and-rides have bus shelters and both appear to serve as overflow lots for churches on the weekends.

Park-and-rides are planned at METRO Green Line Extension stations in and near Minnetonka. Opus Station is expected to have 80 stalls for parking.

### Transit Advantages

Transit advantages is a term that describes physical features that provide a travel time advantage over automobiles using the same facility. These include bus-only shoulders, MnPASS lanes, and ramp-meter bypasses. Transit advantages improve the attractiveness of transit by allowing buses to move faster than automobiles making the same trip, effectively reducing the travel time for transit patrons relative to automobile users.

### Bus-Only Shoulders

Bus-Only Shoulders (BOS) allow buses to use the roadway shoulder to bypass automobiles that are in the general flow of traffic. They may only be used when the speed in the general-purpose lanes drops to 35 mph or lower. BOS are useful in those areas where there is chronic peak-period

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**Table 5-10 Existing Transit Facilities in Minnetonka**

<table>
<thead>
<tr>
<th>Park and Ride</th>
<th>Number of Stalls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hopkins Crossroad (CSAH 73) and I-394</td>
<td>732 Stalls</td>
</tr>
<tr>
<td>Plymouth Road (CSAH 61) and I-394</td>
<td>111 Stalls</td>
</tr>
<tr>
<td>Minnetonka Boulevard (CSAH 5) and Steele Street</td>
<td>25 Stalls</td>
</tr>
<tr>
<td>Minnetonka Boulevard (CSAH 5) and Baker Road (CSAH 60)</td>
<td>16 Stalls</td>
</tr>
</tbody>
</table>
congestion and increase the attractiveness of peak-hour express buses by allowing express buses to maintain a minimum speed through congested areas and adhere to schedules.

BOS have been established in the following areas that benefit transit routes in Minnetonka:

» Both directions on TH 7 between US 169 and Shady Oak Road (CSAH 61)
» On I-494 south of I-394

**Ramp Meter Bypasses**

Ramp meter bypass lanes allow buses and cars with two or more people to bypass congested on ramps during peak travel times. There are six ramp-meter bypass lanes within the Minnetonka service area:

» I-494 westbound ramp from Minnetonka Boulevard (CSAH 5)
» I-494 northbound ramp from TH 62
» I-394 eastbound from Hopkins Crossroad (CSAH 73)
» I-394 eastbound from Ridgedale Drive
» US 12 eastbound from CSAH 101
» US 12 eastbound from CSAH 101
Figure 5-10  Existing Transit System in Minnetonka

Transit System Connectivity

- Transit Stops
- Park-and-Ride Lots
- Transit Routes
- Market Area II
- Southwest LRT Stations
- Market Area III
- Southwest LRT
- Market Area IV
- Source: Met Council & SRF Consulting
High Occupancy Vehicle Lanes
There are bidirectional MnPASS lanes along I-394 through Minnetonka. MnPASS lanes provide toll lanes for private drivers and quick access to downtown for express routes. Express routes that do not use MnPASS also benefit from the less traffic on general purpose lanes of I-394. There is also a dedicated bus lane on Plymouth Road, connecting to Plymouth Road Park-and-Ride.

Transit Strategies
Transit needs and strategies for the metropolitan area were identified in the Metropolitan Council’s 2040 Transportation Policy Plan (TPP), 2015. This document essentially emphasized similar transit development goals. The findings and recommendations from these plans relevant to Minnetonka are summarized below.

» Safety and Security. Safety and security are essential elements of the transit system. Their consideration should be integrated with all investments.

» Access to Destinations. Providing access is a fundamental role of the transit system. The 2040 TPP has multiple considerations for increasing ridership and the availability of transit throughout the investment factors. Equity is also an important investment factor to address gaps in access to opportunities that exist in the region.

» Competitive Economy. The 2040 TPP includes transitway system investments (Southwest LRT) that will make the region a more attractive place to live and do business. The Plan also includes an Increased Revenue Scenario that will broaden the investments to include more bus service, allowing transit to serve more parts of the region. Connecting to jobs is an important emphasis on the investment factors.

» Healthy Environment. Considering impacts on the environment, particularly pollution related to congestion and additional impacts could be related to land use planning that encourages a car-free lifestyle.

» Leveraging Transportation Investment to Guide Land Use. Helping shape the growth of the region with transit investments as catalysts for livable places. Investment factors help guide transit to areas that are adequately planning for high-density, livable places.

Travel Demand Management (TDM)
TDM includes strategies and actions for reducing single-occupant vehicle travel, increasing vehicle-occupancy rates, and reducing vehicle miles of travel. Changes in travel behavior for the metropolitan area are constantly being sought to more effectively manage existing transportation facilities. By modifying demand for travel, congestion and the need for facility (roadway) expansion can be lessened.
Minnetonka is a member and active participant in the I-494 Corridor Coalition and their I-494 Commuter Services. This coalition is a Transportation Management Organization (TMO) funded by the Metropolitan Council and ongoing federal Congestion Mitigation and Air Quality (CMAQ) grants.

TDM may include strategies and incentives to reduce trip-making activity, decrease single-occupant vehicle travel, shift travel away from congested locations, increase high-occupancy vehicle travel and decrease peak-hour travel. Most TDM actions are targeted toward the peak-hour work trip in highly congested areas. TDM programs are more effective where there are multiple strategies for changing behavior.

The actions selected depend upon the stated objectives and priorities of the TDM sponsor, funding availability, administrative resources, and participant support. Minnetonka completed a TDM policy study in 2013, which led to the creation of a TDM program. The program that requires developers to provide a sidewalk/trail alignment plan and describe efforts to promote walking, biking, transit and carpools with each development proposal. As part of the city’s TDM program, they will also consider reduced zoning ordinance requirements such as a reduction in requirements for auto parking in transit-oriented developments or bike/walk districts. Other TDM strategies applicable to Minnetonka are discussed below.

Ridesharing
Minnesota Rideshare provides carpool and vanpool matching services, promotes ridesharing, and sponsors demonstration projects in the Twin Cities area. Ridesharing can be especially attractive for longer trips on congested corridors such as work trips from Minnetonka to other metropolitan centers.

Transit/Ridesharing Incentives
Employers can encourage employees to rideshare or use public transit if available. The benefits to the employer may include a reduction in the need for parking facilities and less traffic congestion around the employment site. Incentives from employers can include subsidized bus passes, on-site sale of bus passes, distribution of transit schedules and ridesharing information, subsidy of vanpools, and preferential parking for those ridesharing.

Alternative Work Schedules
Variable work hours, flex time and the ability to work remotely can shift from the peak period or eliminate the trip altogether. However, changes in start-time tend to dilute the ability to share rides.

MnPASS Express Lanes
MnPASS facilities provide incentives for carpooling, vanpooling and transit. As highways become congested, riders can use MnPASS lanes
for a toll charged to driver MnPASS Express Lane accounts. On I-394, eastbound between CSAH 101 to TH 100 is charged between 6am and 10 a.m. For westbound traffic on I-394 between TH 100 and I-494 charge times are between 3 p.m. and 7 p.m.

Carpool and Vanpool
Minnetonka residents are part of the regional car pool matching database, a service for those wishing to share a ride. Carpool participants: qualify for the regional guaranteed ride home program; may use MnPASS lanes and meter bypass ramps; receive parking discounts in some circumstances; and may participate in occasional promotional benefits. Minnetonka commuters also can participate in the regional Metro Vanpool program. Metro Vanpool is a regional vanpool program sponsored by the Metropolitan Council. Vanpools are made up of 5 to 15 commuters picked up along the vanpool route or at an agreed-upon location. Like buses and carpools, vanpools are eligible to use meter bypass lanes or ramps and MnPASS lanes.

Future Transit Development

Transit Service Types
Three basic types of transit service may be considered for implementation in Minnetonka. Based on peer city experience, the largest portion of a future service package will probably consist of regular-route express commuter services, connecting Minnetonka to downtown Minneapolis and St. Paul. Reverse commute service from the central urban areas to Minnetonka employment sites can also be provided on the return runs. Commuter express service normally operates Monday through Friday from roughly 5:45 a.m. to 9:00 a.m., and 3:45 p.m. to 7:45 p.m. Mid-day trips may also be included to provide better travel options.

The second type of service is regular-route, scheduled local circulator bus service. This could be limited to circulation within Minnetonka to facilitate travel to and from express services and transit hubs, and between other local destinations, or reach outside city boundaries to connect with other destinations. Local bus service might operate Monday to Friday from 6:00 a.m. to 6:30 p.m., with service concentrated around the peak periods to collect riders for the express services. Four routes and buses could essentially cover most of the city with acceptable walking distances, if adequate pedestrian amenities (sidewalks, stops, and shelters) are provided. If demand develops, circulator services could be expanded to nights and weekends.

A secondary benefit of providing regular route local bus service would be the expansion of ADA services. The Metropolitan Council is required by federal mandate to provide ADA complementary dial-a-ride services in those parts of the metropolitan area that is served by regular route local bus service.
The third type of available service is **dial-a-ride**. This is a curb-to-curb demand-response bus service that generally offers rides on a pre-arranged or reserved basis within the city, or beyond as desired. This service offers the maximum trip flexibility for a transit rider, but less convenience and predictability than scheduled circulators. Dial-a-ride service could operate Monday to Friday from 6:00 a.m. to 7:00 p.m., with expanded service nights and weekends as desired. Two to three small, accessible buses supported by a central reservations/dispatch office would probably provide all service necessary, based on peer system examples. If circulator service would be downplayed as a preference, dial-a-ride service during the peak periods, including standing orders (regular daily arranged pick-ups) or a subscription service, could provide local commuter connections at a somewhat lower capacity and flexibility but higher convenience (essentially door-to-door) for some riders.

**Local Public Transit Services**
Minnetonka has been provided by the Legislature, the right to operate an independent suburban transit authority, with the ability to locally manage and operate transit services for residents and share in a portion of regional operating and capital transit funds. The city obtained this authority in 2002, and currently receives and oversees transit services from the Metropolitan Council via a Memorandum of Understanding. Minnetonka could elect in the future to directly contract for and operate these services if the City Council so chooses for any reason. With or without independent transit operations, city staff may direct and provide input for service redesigns annually under current agreements. Local bus service redesign can benefit residents and provide for changing travel patterns, increase transit access and availability in and around Minnetonka, potential population growth, and business growth where it is deemed appropriate, depending on resource availability and transit usage.

**Southwest LRT**
Southwest LRT is in the final stages of applying for federal funding and has begun accepting bids for construction. A route has been selected, and includes one station in Minnetonka, and two stations near the southeast borders of the city in Hopkins and Eden Prairie (see Figure 5-10). The Southwest LRT will connect Eden Prairie, Minnetonka, Hopkins, and St. Louis Park with downtown Minneapolis with 15 miles of light rail. The line is scheduled to open in 2020. Stations will be served with transit as frequently as every 10 minutes at peak travel times.

Shady Oak Station is just on the Hopkins side of Minnetonka’s city border near Shady Oak Road and Excelsior Boulevard. This station serves nearby light-industrial businesses. It is expected that these light-industrial uses will turn to residential and office gradually. Today, there are nearly 3,000 jobs and more than 800 people living within a half-mile of the
station. An operation maintenance facility for the light rail will be located just south of Shady Oak Station in Hopkins. There will be a park-and-ride lot that can handle more than 700 vehicles. This station will feature a public plaza complete with access to the regional trail, bicycle parking, landscaping, and a passenger drop off area.

Opus Station will serve Opus Business Park in southeast Minnetonka. Among the many multifamily residential and office buildings, more than a thousand people reside and more than 5,000 work within a half-mile. Currently, Opus is served by a handful of trips each day on route 12 and route 46, so the new station will bring more frequent service to the area. A park-and-ride lot will be built east of the station with 80 parking spaces. There will be a plaza between the station and the parking area with lighting, seating spaces, bike parking, and landscaping. In further support of LRT in the transit corridor, the city has planned for transit supportive uses and densities within one-half mile of the Opus Station.

City West Station will serve UnitedHealth Group’s corporate campus just south of Minnetonka’s border at TH 62 near US 212 in Eden Prairie. The station is within a half-mile of more than 5,500 employment opportunities, but currently reaches less than 800 people living in the same area. Future development is expected to expand residential and commercial options. Connections to the Opus Campus will be much simpler with the METRO Green Line.

**Land Use Planning**

Land use planning, as well as provision of trails and pedestrian amenities, play a crucial role in the success of transit in a community. Adequate and safe sidewalks, bus stops, shelters, and transfer or waiting facilities all are necessary components of a convenient and successful transit system. Mixed-use developments and other Transit-Oriented Development (TOD) around METRO Green Line station areas are also key for increasing transit use as they lead to more people living and working near transit stations.

The City of Minnetonka plans to guide dense development around the Opus LRT station that will create an engaging environment for transit passengers and Opus residents and visitors. Continued planning on the Opus Campus is paramount to making sure that there is enough transit-oriented development to support needed ridership at the station.

**Improved Travel Demand Management**

As noted earlier, TDM strategies and travel options, have had some success affecting commuter travel, especially ridesharing, car-pooling, and van-pooling, but has not had a significant impact on congestion or travel flexibility. Strategies such as flex work hours have not been adopted widely in the Twin Cities, nor has telecommuting. These both
offer good potential as future measures, especially telecommuting as computer networks continue to grow in capacity and sophistication.

New TDM options will be supported and explored by Minnetonka as they develop. These include systems like automated vehicles, car-sharing, and short-term rental services. Transit promotions, new fare tools and transit incentives including expanded specialty pass programs, and changes to taxi regulation and other commercial services are other TDM activities that may provide benefits to Minnetonka residents and employers.

Multimodal System Plan

The following sections describe the three major moves the city is making toward realizing their vision for a stronger multimodal system; these include providing local connections to the RBTN network, providing connections to transit, and providing connections to regional employment clusters.

Planning for a Connected Pedestrian and Bicycle System

The City of Minnetonka is a suburban community that experienced significant growth from the 1960s to the 1990s during a period when the provision of bicycle and pedestrian facilities was not a common practice. Yet, the City of Minnetonka was ahead of the curve and has worked for a period of over 40 years to implement a well-developed trail system. These trails help reduce traffic by encouraging non-motorized transportation modes such as bicycling and walking.

The city will strive to achieve the following trail system goals as related to transportation:

» To enhance the transportation system through provisions for multiple modes of travel and intermodal connections;

» To encourage pedestrian and biking travel for local trips and for transit facilities access;

» To provide direct and continuous access for destination-oriented pedestrian and bicycle trips;

» To provide pedestrian and bicycle-oriented improvements that overcome natural and man-made barriers and promote neighborhood connectivity;

» To provide appropriate safe-crossings for pedestrians and bicyclists at intersections and destinations;

» To provide safe, attractive and convenient pedestrian-oriented improvements which meet the needs of users of all ages and levels of mobility;
To provide for the integration of street and park system trails, to support the transportation, park, and land-use elements of the city’s Comprehensive Plan.

The recreational and land use related policies and strategies for the city trail system and connections are discussed in Chapter III – Overall Policies, Chapter IV – 2040 Land Use Plan, and Chapter VII – Parks, Open Space, and Trails of this Comprehensive Plan.

Existing Trail System

The City of Minnetonka trail system connects neighborhoods, parks, businesses, schools, and two regional trails that extend through the city. The first trail segment was built in 1971 on Lake Street Extension. Since then, the system has expanded and currently is comprised of three facility types:

» Off-road trails: Typically located in an independent corridor, or parallel to roadways. While existing trails are primarily constructed from asphalt, the regional trails and some trails within parks are constructed from gravel.

» Sidewalks: Typically located parallel to roadways within the right-of-way, and primarily concrete in material.

» On-road trails: Typically located on wide roadway shoulders, allowing existing roadway pavement to be used by pedestrians and bicyclists.

Over the last decade, Minnetonka has focused on incorporating off-road trails and sidewalks into new roadway improvements throughout the city, closing gaps in the trail network and increasing connections to neighborhoods. Major north-south facilities traverse Meadow Park and extend along the following roadways:

» CSAH 101
» Parts of Williston Rd
» Beacon Hill Road
» Eden Prairie Road (CSAH 4)
» Woodhill Road
» Crosby Road
» Plymouth Road (CSA 61)
» Shady Oak Road (CSA 61)
» I-494 from I-394 to Minnetonka Boulevard (CSA 5)

Major east-west facilities extend along Wayzata Boulevard (on the north side of I-394) and Cedar Lake Road.

Regional and inter-city bicycle trips can be made today on the Minnesota River Bluffs LRT Regional Trail and the Lake Minnetonka LRT Regional Trail, maintained by Three Rivers Park District. Figure 5-11, Existing and
Funded Trail Facilities, shows existing trails and planned trails that are currently funded in Minnetonka.

Figure 5-11 Existing Trail System in Minnetonka
Gaps in the Existing Trail System

Improving the local trail system involves identifying and eliminating existing gaps to enhance connections to key destinations within and outside the city limits. Four primary connections for the local trail system include:

1. Connections to local parks and schools
2. Connections to regional parks
3. Connections to nearby Regional Employment Clusters
4. Connections to Regional Bicycle Transportation Network (RBTN)

The city prepared a draft Trail Improvement Plan in 2017. The goal of the study was to prioritize trails for construction based on ease of implementation and estimated demand. The ranking was performed on an inventory of 71 trail segments comprising more than 44 miles of trails that were currently not scheduled or funded. The trail segments were assigned priority rankings based on the following criteria: Degree of Difficulty, Cost Effectiveness, Nature of Use, and Community Access.

Additionally, Hennepin County conducted a bicycle system gaps analysis for the 2040 Bicycle Transportation Plan in 2015, which identified critical gaps in the County’s trail system. Within Minnetonka, gaps were identified along:

- Cedar Lake Rd (Bridge over US 169) – designated as “On-street Bikeway System Gap”
- Fairchild Avenue (Minnetonka Boulevard to the existing trail connection) – designated as “On-street Bikeway System Gap”
- Gleason Lake Road (Glenhaven Road to Hunters Glen Road) – designated as “Undesignated Bikeway System Gap”
- Excelsior Boulevard (Williston Road to Glenview Drive) – designated as “On-street Bikeway System Gap”

In addition to fulfilling the important connections listed above, there are several gaps in the local trail network that, when completed, will enhance the overall trail network. The gaps identified include incomplete segments of trails that connect to the RBTN network. Additional identified trail gaps referenced above are depicted as Proposed Off-road Trails in Figure 5-12, Existing and Proposed Trail Facilities.
Figure 5.12  Existing and Proposed Trail System in Minnetonka
Connections to Regional Employment Clusters

Creating strong multimodal connections to regional employment clusters with trails and sidewalks will enhance Minnetonka’s trail network by providing residents and visitors alternatives to driving to frequently utilized services. The regional employment clusters are commonly located at the intersection of major highways. Major highways can create obstacles for local trails because there are often large bridges and expansive intersections at the edge and within the center of the regional employment cluster locations. Planning for trail connections to and within these locations is an important first step in ensuring that future development includes multimodal facility enhancements, such as off-road trails, independent pedestrian bridges, and Americans with Disabilities (ADA) compliant street crossings.

The City of Minnetonka has two regional employment clusters, Opus Business Park and Ridgedale Center Area, which are defined as concentrated areas of professional, commercial, retail, and industrial uses. The city desires to increase walking and biking to, and through, the regional employment clusters. Enhancing connections to these areas is particularly impactful in creating more diverse mode-share split opportunities to high density destinations.

The Opus Business Park is located northwest of US 169 & TH 62 and lies approximately midway between the Nine Mile Creek Regional Trail and the existing trails along Shady Oak Road (CSAH 61). The Opus Business Park is a major employment center that is home to more than 12,000 jobs, according the Southwest LRT Community Works website. Included in the development area are several large corporations, as well as multifamily apartments and condominiums. This area has more than six miles of off-road trails which provides a unique opportunity for non-motorized transportation to the planned Opus LRT station in the Opus Business Park.

The Ridgedale Center Area is in the southeast quadrant of I-394 and Plymouth Road (CSAH 61), at the intersection of two Tier 2 RBTN corridors. Ridgedale Center shopping mall is the nexus of the cluster, with big box commercial to the west, and a County Library and Service Center to the south. Funded planned enhancements to the area include Plymouth Road (CSAH 61) connections to the north and south. Eliminating identified gaps along the ring road, and to neighboring commercial areas will aid further connectivity. Additionally, the city will focus its efforts on meeting with the Mall to develop facilities that increase connectivity within their internal site and traffic circulation areas to improve trail-to-door access. This type of “last mile” planning will provide
clear and safe travel options for pedestrians and bicyclists to reach entrances to the Mall and other businesses.

**Regional Parks System Components**

Regional parks system components such as regional parks, park reserves, special recreation features, and regional trails are identified in the 2040 Metropolitan Council Regional Parks Policy Plan. There are currently no regional parks and park reserves within the City of Minnetonka.

**Regional Bicycle Transportation Network (RBTN)**

Future phases of the city’s multimodal system will be guided by the Regional Bicycle Transportation Network (RBTN) to provide seamless connections to neighboring communities and the broader regional transportation network.

The RBTN was developed as an outcome to the Regional Bicycle System Study and serves as a framework of designated regional corridors and alignments that define critical bicycle transportation links needed to achieve regional bicycle facility connectivity. The RBTN is subdivided into two tiers for regional planning and investment prioritization:

» **Tier 1 – Priority Regional Bicycle Transportation Corridors and Alignments.** These corridors and alignments provide direct connections to regional activity centers in urban and suburban areas. They are expected to attract high bicycle ridership while also encouraging walking, biking and use of transit. Tier 1 corridors and alignments are given the highest priority for transportation planning and investment.

» **Tier 2 – Regional Bicycle Transportation Network Corridors and Alignments.** These corridors and alignments are the second highest priority for transportation planning and investment. They provide connections to regional facilities in neighboring cities, and serve to connections between priority regional bicycle transportation corridors and alignments.

**RBTN Tier 1**

» Lake Minnetonka LRT Regional Trail and the Minnesota River Bluffs LRT Regional Trail. Lake Minnetonka LRT Regional Trail extends between downtown Hopkin and Carver Park Reserve.

» The Minnesota River Bluffs LRT Regional Trail extends between downtown Hopkins and the Minnesota River Valley. From downtown Hopkins, both trails connect to additional regional trails that provide access further east.

» Shady Oak Road from Excelsior Boulevard extending south to Eden Prairie.
» Minnetonka Boulevard extending east from the Lake Minnetonka LRT Regional Trail into Hopkins and St. Louis Park.

» Tier 1 Corridors within the city include:

» I-494 between the Lake Minnetonka LRT Regional Trail and the Minnesota River Bluffs LRT Regional Trail.

» Hopkins Crossroad from northern city limits to Minnetonka Boulevard.

» Nine Mile Creek Regional Trail from Minnesota River Bluffs LRT Regional Trail extending east into Edina.

**RBTN Tier 2**
The city’s only Tier 2 Alignment runs the full length of the city along CSAH 101, extending north into Wayzata and south into Eden Prairie. Tier 2 Corridors include:

» Excelsior Boulevard between Hopkins and TH 7 and then continuing to extend west along TH 7.

» From the Minnesota River Bluffs LRT Regional Trail near I-494, south into Eden Prairie.

» Cedar Lake Road from the Lake Minnetonka LRT Regional Trail eastward into St. Louis Park.

» McGinty Road between the Lake Minnetonka LRT Regional Trail to Wayzata where it will make a connection with the Dakota Rail Regional Trail.

» I-394 between Wayzata and Golden Valley.

» Plymouth Road between the Lake Minnetonka LRT Regional Trail and I-394 corridor.

**Linking Local Trails to the RBTN**
The existing network of trails in Minnetonka is strong, but could be further enhanced by increasing local connections to the RBTN network. Local trails should focus on neighborhood connectivity to primary routes that connect to RTBN alignments, which are often connected to regional facilities.

Several primary north-south and east-west trail corridors provide a solid base for the city’s bicycle system, and are within RBTN corridors, including parts of Baker Road, Plymouth Road, Hopkins Crossroad, Woodland Road, Ford Road, and Essex Road. The primary east-west corridors that fit within the RBTN network include areas of McGinty Road, Orchard Road, Lake Street Extension, TH 7, Excelsior Boulevard, Ridgedale Road, and Wayzata Boulevard.

Several incomplete segments near the Opus Business Area have been identified, and would provide enhanced connections from neighborhoods, schools, and businesses to Shady Oak Road (CSAH 61), a Tier 1 RBTN
Alignment. Proposed trails depicted in Figure 5-12 provide routes that meet the desired connections expressed in the RBTN corridors.

Local trails in Minnetonka provide important connections to the two regional trails in the city. The regional trail connections provide residents and visitors easy off-street access to regional parks and employment clusters. Plans to fill gap trails on the northwestern edge of Minnetonka, including segments along Hopkins Crossroad (CSAH 73) will strengthen local connections to the neighboring RBTN networks in Plymouth, as well as regional trails and parks: Luce Line Regional Trail, Medicine Lake Regional Trail, and Clifton E. French Regional Park.

Connections to Transit
Another important element of the city’s trails network is its relationship to the transit system. Better trail connectivity to park-and-ride facilities and planned LRT stations provides residents the opportunity to travel to work and recreation destinations using transit.

Currently, there are trail connections to each of the park-and-ride lots within the city. As additional transit facilities are developed in the Minnetonka, the city will ensure adequate pedestrian and bicycle trail connections are available. Station area planning at the planned Opus and Shady Oak LRT stations will focus on providing paved sidewalks and trails that link to the existing trail network.

Sidewalk System Plan
In addition to providing trail facilities for bicyclists and pedestrians, the City of Minnetonka is committed to providing pedestrian sidewalk facilities, where appropriate. Most of Minnetonka is suburban in nature and does not have sidewalks located in residential neighborhoods. Pedestrian sidewalk facilities are typically in the more “urbanized” areas of the city (near significant retail or commercial development) to provide safe and convenient walking connections between various destinations.

Typically, adding sidewalk facilities will occur at the time of redevelopment. The following key points will be used as guiding factors for the implementation of future sidewalk improvements:

» Maintain a goal to fill gaps in this existing sidewalk network;

» Install new sidewalks as roadways are reconstructed or redevelopment occurs.

» Use care to locate sidewalks to have the least impact on adjacent property owners, but provide the most efficient connectivity and system continuity.

» Locate sidewalks to connect major recreation, shopping and institutional uses.
» Construct sidewalks to support an interconnected network of trails (avoid sidewalk to nowhere trap).

» Where possible, ensure sidewalks can connect to existing and proposed trail networks.

» Develop trail-to-door connections at city destinations and commercial centers

Pedestrian Safe Crossing Criteria
In 2017, the City of Minnetonka developed a draft pedestrian crossing assessment process to identify appropriate pedestrian crossing treatments at intersections. Based on roadway traffic volumes, pedestrian crossing volumes, and pedestrian network connectivity, a two-part toolkit was prepared to help the community understand the process that the City of Minnetonka uses to determine if a pedestrian crossing treatment is needed for an intersection. A preliminary evaluation of nine city-identified pedestrian crossings was performed using the toolkit – a statement of guidance was provided for each crossing following the evaluation. The city intends to implement the guidance, and utilize the toolkit for future intersection treatments.

Maintenance Performance
Infrastructure maintenance is an important aspect of a pedestrian and bicycle facility network. Without dedicated funds, the pedestrian and bicycle infrastructure will be difficult to maintain, as well as unreliably accessible during winter months. The City of Minnetonka is committed to maintaining their trails and sidewalks to reasonably address the safety and accessibility needs of all people.

Freight System Plan
The movement of goods and services is just as important and the movement of people in Minnetonka. To best achieve the successful movement of goods and services, there needs to be a thoughtful process for the interconnectivity between the regional and local roadway networks, how adjacent lands uses cohabitate between one another, and ultimately how best to minimize the impact of freight on the local system.

Existing Freight System
A major component of the City of Minnetonka’s freight system lies in its roadway network (Figure 5-13). I-394 and I-494 run through the city, converging along the city’s northern boundary. Key freight corridors within the city include TH 7, segments of US 169 as well as segments of TH 62 along the city’s southern boundary.

The City of Minnetonka is located at a key area in the Twin Cities Metropolitan Region, at a critical crossroads within the regional freight
system. The major roadways that pass through and along the borders of the city serve as major freight thoroughfares for interregional goods movement as well as the movement of goods from western Minnesota to markets in the Twin Cities.

The freight network is also comprised of rail. The rail network in the City of Minnetonka includes an active line that runs east-west across the northern third of the city operated by Burlington Northern Santa Fe (BNSF). Cutting across the southeastern corner of the city boundary runs a line that is operated by Canadian Pacific (CP) and Twin Cities & Western (TCWR) (Figure 5-13). These lines intercept with all “Class I” railroads serving the Minneapolis-St. Paul area, providing connections to the entire North American rail network.

There are no barge facilities or intermodal freight terminals within the City of Minnetonka.
Figure 5-13  Existing Freight System
Freight Generators

Figure 5-13 illustrates the location of freight generators in the City of Minnetonka and includes major economic centers. Of these economic centers, the land uses located in proximity to I-494, I-394, US 169, and TH 62 are significant to the city’s freight network. These areas contain freight intensive clusters that generate substantial amounts of truck activity. These clusters primarily consist of manufacturing, wholesale trade, transportation and warehousing establishments, office complexes, and large retail and commercial establishments. The length of the I-394 corridor, stretching across the northern boundary of the city, is also a freight intensive cluster. Many major freight generators are located along its length, from US 169 in Golden Valley, west to the border with Wayzata. These businesses represent a variety of industries from food distributors, technology companies, financial firms, car dealerships, commercial retail space among others. Many of these businesses, and their employees, use US 169 as their primary route to transport goods to the area from the Twin Cities and other areas in Greater Minnesota.

Heavy Commercial Vehicle Volumes

Existing (2013) heavy commercial annual average daily traffic (HCAADT) volumes are depicted in Figure 5-13. High volume corridors include I-494, I-394, TH 7, and TH 62. These roadways are estimated to support up to 1,200 trucks per day on the smaller trunk highways, 2,700 trucks per day along I-394, and up to 7,300 trucks per day on I-494. I-494 heavy commercial vehicles represent 15 percent of the total daily traffic based on 2013 MnDOT traffic volume data.

Safety and Capacity Issues

All industrial areas in the City of Minnetonka are located within adequate access to the metropolitan highway system. US 169, TH 7 and TH 62 are part of either the National Truck Network or the Minnesota Twin Trailer Network, and are built to 10-ton axle loading standards, allowing extra capacity and flexibility for commercial trucking. This major highway coverage reduces the impact of truck traffic on local roadways and minimizes the potential for disruption of neighborhoods and areas of lower density.

It is important that commercial vehicle traffic from industrial, warehouse and commercial land uses be adequately considered. Increased traffic can be sufficiently accommodated through various measures including land uses, design standards, and signage (right sidebar).

Truck travel reliability and freight mobility concerns have been identified within the city’s freight network. Poor truck travel time reliability generally coincides with routes that contain several intersections and bottlenecks. I-
394, I-494, TH 7, and US 169 are the most important freight corridors in Minnetonka.

**Improvement Projects**

Recent and planned projects of the US and County Roadway system that support the freight network in Minnetonka are identified below. Planned projects include:

- **Ridgedale Drive (MSAS 153):** Reconstruction of ramps to provide full access, turn lanes, an underpass, and signaling from Ridgedale Avenue to CSAH 61 (2018-2021 TIP).
- **TH 7:** Mill and overlay and signaling from I-494 to Louisiana Avenue in St. Louis Park (2018-2021 TIP).
- **TH 62:** Mill and overlay and curb and gutter work from Beach Road to Tracy Avenue in Edina (2018-2021 TIP).
- **US 169:** Lengthen acceleration and deceleration lanes and installation of traffic management systems at Cedar Lake Road (2018-2021 TIP).
- **CSAH 101:** Reconstruct of CSAH 101 as a multi-lane roadway from TH 62 to TH 3 (2017-2021 CIP).
- **Hopkins Crossroad (CSAH 73):** Reconstruction of CSAH 73 as a multi-lane roadway from Cedar Lake Rd to I-394 (2017-2021 CIP).

**Future Considerations**

In recent years, e-commerce and day-of deliveries have become increasingly more important to the national economy. This phenomenon is also reflected at a regional level throughout the greater Twin Cities area. The demands of customers, to receive seemingly any product of their choosing within a moment’s notice has, and will continue to increase freight traffic on major and local roadways. Due to its location in the outer suburbs of the Minneapolis-St. Paul metropolitan area, Minnetonka is primarily residential. Minnetonka is already experiencing a rise in e-commerce deliveries in recent years as consumers now demand and expect items to be delivered within one or two days, sometimes within one to two hours. With population expected to increase dramatically by 2040, Minnetonka will see increases in e-commerce related deliveries which will put strains on the roadway and freight network. It is imperative that these trends be planned for to maintain traffic flows and avoid congestion along roadways in the City of Minnetonka.
Aviation Plan

There are no airports located within the Minnetonka. The closest airport to the city is the Flying Cloud Airport (FCM) located in the adjacent City of Eden Prairie. The US Federal Aviation Administration (FAA) classifies the FCM as a reliever airport on their National Plan of Integrated Airport Systems (NPIAS). As shown on Figure 9-1 in Chapter 9 of the Metropolitan Council’s 2040 Transportation Policy Plan, the southern half of the City of Minnetonka lies within the six-nautical mile radius of the FCM which prohibits the construction of any new landfills or wind towers within this area. A small area in the northeastern portion of the city falls within the six-nautical mile radius of the Crystal Airport (MIC). The airspace over Minnetonka is used by aircrafts operating from the other eight metropolitan area airports as well as airports outside of the metropolitan area.

As noted in the Metropolitan Council’s 2040 Transportation Policy Plan, no new general aviation airports are proposed in the future. There is adequate capacity at the airports surrounding the metropolitan area to support future growth.

Height and Safety Zoning

Structures which are 200 feet or higher above ground level may pose hazards to air navigation. Minnetonka has no existing structures of this height; does not permit such structures under its zoning ordinance, and has no plans to permit such structures in the future. Any applicant who proposes to construct such a structure shall notify the city and the Federal Aviation Agency (FAA) as defined under the provisions of Federal Regulation Title 14 Part 77, using the FAA Form 7460-1 “Notice of Proposed Construction or Alteration.” These forms must be submitted 30 days before alteration/construction begins or the construction permit is filed, whichever is earlier. MnDOT must also be notified (see MnDOT Rules Chapter 8800). The Minneapolis-St. Paul (MSP) airport/community zoning board’s land use safety zoning ordinance should also be considered when reviewing construction in the city that raises potential aviation conflicts.

Heliports

There are no heliports within the City of Minnetonka. Several heliports exist in the neighboring City of Plymouth, but are rarely used and do not affect Minnetonka airspace.

Float/Seaplanes

Wayzata Bay of Lake Minnetonka is designated in Minnesota State Rules Chapter 8800.2800 as authorized for purposes of safe seaplane use. The
operation of seaplanes on Wayzata Bay must conform to all applicable marine traffic rules and regulations.

Planning for the Future
Throughout the City of Minnetonka’s comprehensive planning effort, the city will consider how to address existing transportation needs, while setting the stage for future growth. Items for consideration include the following:

» Funding Strategies
» System Preservation
» Travel Demand Management
» Assisted Driving and Autonomous Vehicles
» Complete Streets and Safe Routes to School

Funding Strategies
Roadways under city jurisdiction are maintained, preserved, constructed, and reconstructed by the city’s Department of Public Works. Funding for these activities, including the administrative costs of operating the Department, are obtained from a variety of sources, including ad valorem taxes, special assessments, development fees, and tax increment financing. A major concern of the city is the availability of sufficient funds for maintenance and construction activities. If funds are unavailable, needed projects may be delayed or terminated and maintenance of existing facilities may fall short of acceptable standards. The following explains the existing sources of funding and potential new sources of revenue.

State Aid
An important source of revenue to the city is State Aid. The city’s MSAS are eligible for funding assistance with revenue from the State Highway User Tax Distribution Fund. This constitutionally-protected funding allocation is comprised of gasoline taxes and vehicle registration fees and is allocated based on a formula that considers the population of a city and the financial construction needs of its MSAS system.

Ad Valorem Taxes
For situations in which 20 percent of the cost of a city project can be assessed to the adjacent property owners, the remaining cost of the project can be added to the ad valorem or property taxes of the remaining property owners in the city. Ad valorem taxes for street improvements are excluded from the State-mandated levy limits.

Tax Increment Financing
Establishing a tax increment financing (TIF) district is a method of funding infrastructure improvements that are needed immediately using the
additional tax revenue to be generated in future years by a specific development. Municipal bonds are issued against this future revenue, which is dedicated for a period of years to the repayment of the bonds or to other improvements within the TIF project area. TIF districts can accelerate economic development in an area by ensuring that the needed infrastructure is in place without requiring support from the usual funding.

Grant Funding
There are many opportunities for metropolitan cities to take advantage of various grant funding initiatives. Regional Solicitation and Highway Safety Improvement Program (HSIP) are among grant solicitations for the Twin Cities metropolitan area. The city should monitor the grant funding opportunities available for applicable projects and submit applications when possible.

System Preservation
Infrastructure systems such as roadways, bridges, culverts, and sidewalks have become expensive and challenging to maintain in today’s environment with aging infrastructure, rising costs of materials, and stagnant or declining revenue. In fact, many local agencies are being forced to pause, and ask questions about the costs and benefits of continuing to maintain assets throughout their entire system, or if other approaches should be explored to better balance needs with available resources. Generally, approaches to be considered include:

Performance Standards and Measures
A performance-based approach improves the accountability of local infrastructure investments, assesses risks related to different performance levels, and monitors progress and increases transparency.

Project Prioritization
Project prioritization can help the city rank infrastructure needs in a manner that is consistent with preservation goals and objectives. This technique can help avoid the typical “worst first” approach to programming preservation projects that tends to invest limited resources in the most expensive improvements instead of directing maintenance funds to infrastructure that merely need rehabilitation, which will provide more cost-effective solutions in a timely manner.

New Revenue Sources
There are methods to capture new revenue streams to close the financial gap in maintaining assets in a state of good repair. Exploring new revenue sources will allow the city to expand and accelerate preservation initiatives.

New Maintenance Techniques
There are new maintenance techniques that can extend the lifecycle of an asset. For example, new maintenance techniques for roadway surfaces
can provide longer service life and higher traffic volume thresholds, resulting in more stable road maintenance costs. Cost reduction of life cycle extension strategies which save money, or extend surface life, can directly benefit preservation needs, and minimize any identified financial gap.

**Asset Management**
Tracking assets and their condition will provide a stronger outlook on lifecycle costs and replacement schedules. This will help establish funding plans and identified future funding gaps or shortfalls.

**Travel Demand Management**
Research has shown that Travel Demand Management strategies are a useful technique in helping alleviate parking demands in a geographical area. TDM strategies are applied to help reduce the number of single occupancy vehicles traveling and parking in a certain area. Opportunities to encourage TDM strategies are highlighted throughout this section.

**Bicycle Amenities**
Actively promoting bicycling as an alternative means of travel to and from a destination can be achieved through information dissemination and the provision of bicycle storage facilities and adding on-street bicycle lanes and additional connections to trails. These actions can help decrease the demand for vehicle parking.

**Car Sharing Provisions**
Car sharing programs provide mobility options to a cross section of residents who would not otherwise have access to a vehicle. These programs encourage the efficient use of a single vehicle among multiple users, while reducing the amount of parking needed to accommodate each resident within a neighborhood. Zoning language can encourage or require new developments of a certain size to include off-street parking provisions for car sharing programs.

**Shared Mobility**
Shared mobility includes bikesharing, carsharing, and ridesourcing services provided by companies such as Uber and Lyft. Predictions indicate that by creating a robust network of mobility options, these new modes will help reduce car ownership and increase use of public transit, which will continue to function as the backbone of an integrated, multimodal transportation system.

**Assisted Driving and Autonomous Vehicles**
The potential for significant vehicle technology shifts in the coming decades influences how the city plans the future of multimodal mobility infrastructure. However, there is no way of knowing how things will
change or to what extent. The planning process must not hamper the potential benefits of technology, yet brace for the potential disadvantages technology may bring with it. Today’s changing needs demand that the city find ways to bring together old and new modes of mobility so that they complement and enhance each other. With more, and better, data available now than ever before, the city needs to think in terms of true mobility management.

Fully autonomous cars are still in the advanced testing stages, but partially automated technology and low-speed cars are beginning to embed themselves into markets across the country. In that respect, understanding autonomous vehicles will play an important role in how agencies manage their mobility assets, while setting the stage for investments. In addition to fully autonomous vehicles there are connected vehicles that will interact with the mobility system (vehicles that communicate with the roadside to complete driving functions or provide information to the driver to make informed decisions).

Aside from some of the more obvious predicted impacts such as the continued growth of car-sharing, and on-demand taxi services like Uber and Lyft, autonomous vehicles (AVs) and connected vehicles (CVs) also stand to disrupt the norms of both transportation and land use planning. Parking minimums, street design, right-of-way needs, development demand, signage and signalization, building siting and design, access management, and their accompanying norms and standards have the potential to change dramatically over the next 40-50 years.

Researchers have concluded that AVs and CVs will reshape future road rights-of-way. Autonomous vehicles are likely to be smaller than existing passenger vehicles, permitting narrower lanes, likely not requiring medians, and due to wireless communication between vehicles, will allow travel much closer to one another. By accommodating the same or more vehicular volume in less space, newly available street width can be reapportioned to other road users like pedestrians and bicycles.¹

Although newly available street space may be configured for additional multimodal mobility, there are some potential drawbacks for pedestrians, bicyclists, and other users that the city will need to be conscious of when moving towards a more automated street type infrastructure. The reapportioning of rights-of-way may allow for expanded sidewalks and more dedicated bike lanes, however, due to potential signal removal this may cause longer waits at intersections dominated by free-flowing

vehicles. Adding pick-up and drop-off locations could also fragment the streetscape, complicating travel for multimodal users.

The redevelopment of former parking lots has the potential to transform existing urban centers, such as Minnetonka and surround communities. Future site designs will be impacted by the implementation of autonomous vehicle structure, potentially allowing for buildings to more regularly front streets rather than parking lots. Accommodation for pick-up and drop-off locations within these parking lots will need to be a consideration. However, off-site parking reservoirs may reshape future site designs.

The city must be prepared to incorporate and accommodate communication between vehicles and infrastructure such as traffic signals (V2I). This is already available on a very limited basis, and has strong potential for use in safety notification of construction zones and weather or road hazards. V2I systems can inform drivers of “time to green” when approaching red lights. Vehicle-to-infrastructure and other vehicles (V2X) communication is further behind the implementation curve, but is anticipated to greatly reduce the severity of crashes. V2X effectiveness is contingent on having a critical mass of similarly equipped vehicles on the road. The city should stay in close coordination with MnDOT and Hennepin County regarding potential for research projects in the coming years regarding this technology.

A very important area for the city to be focused is how AVs will interact with pedestrians and bicyclists. Less is known about how AVs will communicate with and avoid pedestrians and bicyclists. Research suggests that a safer environment will be possible, especially if AVs are programmed to stop and yield to pedestrians and bicyclists. In urban areas, greater separation of vehicle and pedestrian/bicycle infrastructure may be needed.

Minnetonka should monitor autonomous vehicle technology adoption, as well as other technological innovations that will have an impact on mobility trends and infrastructure, and consider system changes when they make sense for the community. It is also understood that more traditional planning and operations practices will likely predominate through the current ten-year Comprehensive Plan cycle.

**Complete Streets and Safe Routes to School**

Complete Streets are commonly defined as roadways that accommodate all users such as pedestrians, bicyclist, vehicles and transit, regardless of age and ability. This is important to consider when recognizing the diversity of people traveling throughout the community.
The Transportation Plan’s goals and policies embrace several elements of complete streets, such as safety for pedestrians and bicyclists. MnDOT has adopted a Complete Streets Policy, last updated in May 2016, and has committed to assessing opportunities for incorporating complete street design principles in all MnDOT projects. MnDOT’s Complete Streets Policy can serve as a resource to the city for incorporating complete street design standards into city projects.

Safe Routes to School is a national initiative to increase safety and promote walking and bicycling for America’s youth. The Safe Routes to school program will assist in providing infrastructure and non-infrastructure grants to build trails, paths, and safe connections to local schools.

Planning for safe routes to schools will require specific attention to certain elements such as bike routes, complete street treatments, sidewalk networks, pedestrian/bicycle amenities and wayfinding signage. Combined, these elements can create Safe Routes to Schools or Complete Streets.