TRANSPORTATION

4. TRANSPORTATION PLAN

4.1. Introduction

The Transportation section of the Carver County 2040 Comprehensive Plan is intended to meet regional guidelines and promote a wide-range of modern, responsive, safe, and cost-effective transportation resources to support the County's rural and urban economies and growing population. In general, this section outlines plans for the County's transportation-related facilities, including principal and minor arterial highways; transit services and facilities; bicycling and walking facilities; aviation facilities; and the County's freight related systems.

Carver County, as one of the entities in the seven-county Minneapolis– St. Paul metropolitan area, subscribes to similar intentions and aspirations of the overall Metropolitan Council's mission of planning and building a 21st century transportation system, with the premise that a financially sustainable, world-class transportation system is vital for a thriving regional and county-level economy. As noted in the Council's mission statements, the County takes seriously that the Metropolitan Council is responsible for ensuring that transportation infrastructure equitably meets the demands of its residents as the region grows, and plays central roles in several areas, including land use, economic development, regional transportation, transit, and parks and trails.

Carver County understands that it is also part of Thrive MSP 2040, the Metropolitan Council's vision for the seven-county Twin Cities region over the next 20 years, which calls for policies and regional investments that support a prosperous, equitable, and livable region now and in the future. The Transportation Plan is based on the Thrive MSP 2040 Regional Development Plan and the Council's 2040 population, household, and employment forecasts for the County. The Transportation Plan is one of the specific content areas or plan elements required to contain minimum requirements as well as consider suggested optional value-added planning efforts.

In addition, the Transportation Plan is intended to relate to the Council's System and Policy Plans, such as the 2040 Transportation Policy Plan, as well as other Council special studies like the Principal Arterial Intersection Conversion Study, Congestion Management Safety Plan (CMSP) IV, Highway Truck Corridors Study, and the Regional Bicycle Barriers Study.

Consistent with the Metropolitan Council's Local Planning Handbook, the Transportation Plan is comprised of 6 main areas in addition to the Introduction:

4.2. Roadway System Plan (RSP)
4.3. Transit
4.4. Mobility Trends
4.5. Bicycling and Walking
4.6. Freight
4.7. Aviation

Notes:

- Figures in the Transportation chapter are available in a more readable format online and upon request.
- The county roadway system is defined under the Jurisdictional Classification sub-section of Existing Roadway System on page 4.13 including:

  County Road (CR), County State Aid Highways (CSAH), State Trunk Highways (TH), United States (US) Highways, City, and Township roads.

4.2. Roadway System Plan (RSP)

4.2.A. Introduction

The Carver County 2040 Roadway System Plan (RSP) is a long-range, comprehensive planning and strategy document prepared to provide direction for the management and prioritization of the county's transportation system, roadways, and right of way corridors. The RSP analyzes the existing and future land use and transportation conditions to plan for the County's future needs and interests for a safe and efficient transportation system. In addition, the RSP provides data analysis and direction to assist in financial planning of future transportation investments.

The County's 2040 RSP is an update to the 2030 RSP and 2014 RSP Amendment. The intent and focus of the 2040 RSP is to incorporate and carry forward most all of the original 2030 components as well as those of the 2014 RSP Amendment. The 2040 RSP is meant to establish broad, forward thinking goals, strategies, and implementation elements to provide a framework for ongoing County, Metropolitan Council, and State land use planning and transportation planning activities. The 2040 RSP is also meant to complement other adopted and future planning documents and programs where detailed recommendations supplement the more general recommendations of the 2040 RSP.

The sections of the RSP form a comprehensive transportation planning document to encompass the main goals for the County's transportation system: safety, efficiency and mobility, modernization and preservation, sustainable funding, and partnerships and coordination. The order of the RSP sections are as follows:

- 4.2.B The Roadway System Goals and Strategies section is a set of goals and strategies that set a framework for the RSP, establishing direction for programs and activities.
- 4.2.C Roadway System Performance Measures are linked to transportation elements to help monitor goals and strategies and enable the County to track the condition of transportation infrastructure and assets.
- 4.2.D The Existing Roadway System section inventories past planning efforts, programmed improvements, existing congestion, and safety needs.

The next two sections explain the data analysis process for the 2040 traffic forecasts including sections titled:

- 4.2.E Travel Demand Model: Socioeconomic Forecasts and;
- 4.2.F Travel Demand Model: Roadway System Forecasts (Scenarios).
- 4.2.G This analysis is used to identify 2040 roadway needs in the Future Roadway System Needs section, which includes the traffic model forecasts, future congestion analysis, and priority corridor identification.
- 4.2.H The Policy Direction section provides implementation direction for topics such as jurisdictional transfers, safety, access management, right-of-way preservation, environment, and system preservation.
- 4.2.I The final section, Financial Planning and Project Implementation Strategies, outlines projected revenue and project expenditure analysis and is a financial planning tool for forecasted 2040 roadway system needs and a basis for potential future updates as conditions change.

4.2.B. Roadway System Goals and Strategies

The goals and strategies reflect those included in the 2030 RSP and the 2014 RSP Amendment with revisions based on technical review and input received during the public process. Revisions also reflect policy changes at the local and regional level.

4.2.B.1. Roadway System Goals

COUNTY GOAL TR– 1

Develop, manage, and maintain a roadway network that supports and promotes modern infrastructure conditions and standards.

COUNTY GOAL TR– 2

Develop a roadway network that promotes traffic safety and healthy, livable communities.

COUNTY GOAL TR– 3

Strive to ensure that the roadway network promotes the efficient movement of people and goods and regional mobility.

COUNTY GOAL TR– 4

Maintain and manage traffic demands and levels of service to meet the challenges and opportunities resulting from growth and development.

COUNTY GOAL TR– 5

Build and develop partnerships through cooperation and coordination among jurisdictions.

COUNTY GOAL TR– 6

Identify sustainable funding sources to maintain and operate the County highway system.

COUNTY GOAL TR– 7

Develop, and/or refine, County policies related to operations, safety, mobility, planning, and funding of the County roadway network.

4.2.B.2. Roadway System Strategies

COUNTY STRATEGY TR– 1

Maintain infrastructure in a state of good repair.

COUNTY STRATEGY TR– 2

Modernize County's highways and bridges to meet current and future standards.

COUNTY STRATEGY TR– 3

Reduce roadway and intersection crashes and fatalities in the County.

COUNTY STRATEGY TR– 4

Develop a traffic safety master plan and prioritization schedule.

COUNTY STRATEGY TR– 5

Employ the County's access management program and speed limit levels to maintain mobility and corridor viability.

4.2.B.2. Roadway System Strategies—Continued

COUNTY STRATEGY TR– 6

Make judicious roadway and intersection capacity improvements to meet current traffic needs.

COUNTY STRATEGY TR– 7

Encourage mode separation where possible.

COUNTY STRATEGY TR– 8

Review geometric improvements annually.

COUNTY STRATEGY TR– 9

Evaluate and set appropriate speed limits.

COUNTY STRATEGY TR– 10

Establish a 2040 proposed functional classification system.

COUNTY STRATEGY TR– 11

Establish a County roadway system that meets future capacity demands.

COUNTY STRATEGY TR– 12

Maintain mobility on arterial routes to minimize through-traffic on local routes.

COUNTY STRATEGY TR– 13

Encourage consistency between roadway jurisdiction, designation, and functional classification.

COUNTY STRATEGY TR– 14

Manage county roadway access.

COUNTY STRATEGY TR– 15

Coordinate and interact with state and local roadway agencies on transportation plans and long-range planning initiatives.

COUNTY STRATEGY TR– 16

Implement the County's 20-Year Transportation Tax Improvement Plan.

COUNTY STRATEGY TR– 17

Align rural roadway shoulder improvements with on-road bikeway facilities where possible.

COUNTY STRATEGY TR– 18

Analyze safety conditions for specific intersections, segments, and corridors and identify high-benefit, low-cost strategies for areas with poor safety scores.

COUNTY STRATEGY TR– 19

Support other safety initiatives, such as Towards Zero Death (TZD), road safety audits, and public outreach efforts related to the 5 E's.

4.2.C. Roadway System Performance Measures

The 2040 RSP introduces performances measures, which are tied to major program areas, work activities, and functional attributes of the County's roadway system. Performance measures are designed to serve as benchmarks or indicators to evaluate and quantify progress, increase accountability, and provide transparency through regular reporting. The performance measures are linked to transportation elements to help monitor the RSP's goals and strategies and enable the County to track the condition of transportation infrastructure and assets. It is important to recognize the performance measures are in the early stages of being defined, tracked, and evaluated. The implementation plan will include establishing performance targets for the County's roadway system. More details and analysis may be provided in the future in Appendix D.

4.2.C.1. 2040 Roadway System Performance Measures

System Alignment

- Mileage and percent of county highway system meeting CSAH standards.
- Number and percent of county intersections that are ADA compliant
- Mileage and percent of county highways with a 2040 ADT > 2,500 that have shoulder widths meeting CSAH standards.

Mobility

- Miles of roadway corridor (existing and 2040) exceeding a Volume/Capacity (V/C) ratio of 1.0 or higher.
- Miles of roadway corridor (existing and 2040) exceeding a Volume/Capacity (V/C) ratio of 0.85.
- Percent of signalized intersections on the CSAH system operating at a level of service D.
- Percent of county road to county road intersections at a Volume/Capacity (V/C) ratio of ≥ 1.0.
- Percent of county road to state road intersections at a Volume/Capacity (V/C) ratio of ≥ 1.0.
- Percent of county road to city collector at a Volume/Capacity (V/C) ratio of ≥ 1.0.
- Vehicle Miles Traveled (VMT) per capita on the CSAH and CR system.

Safety

- Number of fatal and serious vehicle crashes countywide, including the state system by year.
- Number of fatal and serious pedestrian and bicycle injury crashes countywide, including the state system by year.

4.2.C.1. Roadway System Performance Measures—Continued

Operations and Maintenance

- Mileage and percent of county pavement in poor condition and county pavement in good condition.
- Mileage and percent of roadbeds > 60 years old.
- Mileage and percent of roadbeds > 75 years old.
- Mileage and percent of the county system with new pavement surface on an annual basis.
- Number and percent of the county signal systems 20 years or older.
- Number and percent of the county intersection lighting system 20 years or older.
- Percent of the county sign system 15 years or older.
- Mileage and percent of county road system at 10 ton axle capacity.
- Average time to clear roads of snow and ice (first pass).

Bridges and Drainage Systems

- Number and percent of bridges in poor condition.
- Number and percent of county bridges in good condition.
- Number of bridges with a load posting.
- Number and percent of centerline culverts in poor condition.
- Number and percent of centerline culverts in good condition.
- Number and percent of side street culverts in poor condition.
- Number and percent of side street culverts in good condition.
- Percent of the culvert system 75 years or older.
- Percent of catch basins/drainage structures inspected on an annual basis to MS4 compliance.

4.2.D. Existing Roadway System

4.2.D.1. Past Planning Efforts

Carver County's transportation system is one of its largest public assets. The county owns and operates over 274 miles of road. The roadway system plays a significant role in the county's prosperity and quality of life. However, Carver County's transportation needs are diverse given its mixture of suburban and rural landscapes. These landscapes will continue to change over the next twenty years. For example, the county is projected to attract 64,000 new residents by year 2040, while adding 27,600 new households and 15,500 new jobs. As the county continues to grow, so will its transportation needs.

To help plan for this growth, Carver County and its local partners have undergone several planning efforts since the last update. Past planning efforts have ranged from corridor studies to safety and traffic operations analysis. Most of these transportation plans/studies include a series of recommendations that address today and tomorrow's transportation needs. It is important to recognize these recommendations, as they provide a foundation for the future transportation network and traffic model scenarios identified in this RSP. Table 4.1: Past Planning Studies (2008-2018) highlights past planning efforts since 2008.

◊ Table 4.1: Past Planning Studies (2008—2018)

Principal Arterial/ Major Arterial	Study/Project	Year Completed	General Findings/Recommendations
US 212	Highway 212 Access Management, Safety and Phasing Plan	2016	• Spot Safety Improvements on US 212 between Carver and Norwood Young America at US 212/CR 34 (2020), US 212/CR 43 (2018), US 212/CSAH 41 (2019), US 212/CSAH 36 (E) (2019) • Reconstruct of US 212 to a four-lane roadway between the Cities of Cologne and Carver (2022). Improvements in Norwood Young America including - Pedestrian underpass (under US 212), trail connections, access modifications at US 212 and Morse Street intersection, signal and lighting upgrades, improvements at Faxon Road five-legged intersection (2020)
TH 5	TH 5 Corridor Study: From TH 41 to TH 212	2008	• Replacement of TH 5 bridge over Hennepin County Regional Railroad Authority Trail (completed in 2013) • Reconstruction of TH 5 from TH 41 to US 212, including intersection and shoulder improvements
TH 41	Highway 41 River Crossing Study	2015	• Construction of new four-lane, 3.0 mile east-west freeway connection between US 169 and US 212 • New interchange connections at US 169 and US 212 • Ramps for local access at the planned US 169/TH 41 interchange, ramps for local access at the US 212/CSAH 11 interchange • New bridge from just south of the Union Pacific Railroad in Scott County to just north of CSAH 61 in Carver County • Partial reconstruction of ramps that have been constructed as part of the US 212 project to connect US 212 to CSAH 11 • Auxiliary lanes on US 169, new TH 41 and US 212
TH 101	TH 101 - CSAH 61 to CSAH 14 Traffic Study	2012	• Reconstruction of CSAH 101 to be a four-lane roadway from CSAH 61 (Flying Cloud Drive) to CSAH 14 (Pioneer Trail) in Chanhassen (2020)
TH 101	Minnesota River Flood Mitigation Study	2011	• Reconstruct the intersection of TH 101/CSAH 61 to be a roundabout (complete) • Construct new 4-lane 101 Bridge over MN River Valley (complete)
CSAH 10	CSAH 10 & ISD 110 Planning Study (Waconia School	2015	• Construct roundabout at TH 5/new CSAH 10/Orchard Road intersection; roundabout at new CSAH 10 and Community Drive; roundabout at Waconia Parkway/new CSAH 10 (2018) • Expand TH 5 to 4 lanes east of new CSAH 10 intersection
CSAH 10	CSAH 10 Watertown River Crossing Study	2013	• Replacement of existing CSAH 10 bridge over the Crow River (complete) • Construct new river crossing near the southern border of the city (not approved by city)
CSAH 61	County Road 61 Corridor Plan (Land Use Study)	2014	• Update City of Chanhassen Land Use Plan; city utilities extension along Highway 101 realignment (separate project); salvage yard site clean-up
CSAH 61	County Road 61 Flood Mitigation Study	2018	• Reconstruction of CSAH 61 (Flying Cloud Drive) between TH 101 and Charlson Road (2019) • Add multi-use trail along the north side of CSAH 61 between Shakopee and Eden Prairie (2019) • Raise roadway out of floodplain (2019)
CSAH 61	CSAH 61 / TH 41 Study	2017	• Reconstruction of CSAH 61 from CSAH 44 to TH 41 (complete). Reconstruction of CSAH 61, from TH 41 to Fire Lane • Improvements on CSAH 61 from Fire Lane to Bluff Creek Drive; improvements on CSAH 61 from CSAH 44 to CR 11; improvements on TH 41 from CSAH 61 to CR 10 (next 10 years); TH 41 improvements from Minnesota River to CSAH 61 (2022)
CSAH 44	Southwest Chaska Plan	2012	• Reconstruction of CSAH 44 and construction of a new interchange at US 212 (2019-2022)
New Minor Arterial	Mayer North/South Corridor Preservation Study	2010	• A new north-south minor arterial extending from 82nd Street to TH 7 east of the City of Mayer (being revisited).
CSAH 11	County Road 11 Corridor Study	2018	• Expand CSAH 11 to 4 lanes between 6th St. and US 212 (2022)

4.2.D.2. Programmed Improvements

The RSP recognizes the planned improvements (reconstruction, expansion or new interchanges) to principal arterials and A-minor arterials as shown in the "Current Revenue" scenario of the 2040 TPP. See Figure 4.1: 2040 Transportation Policy Plan (TPP) Identified Improvements for reference. These improvements consist primarily of pavement investments between 2019 and 2024:

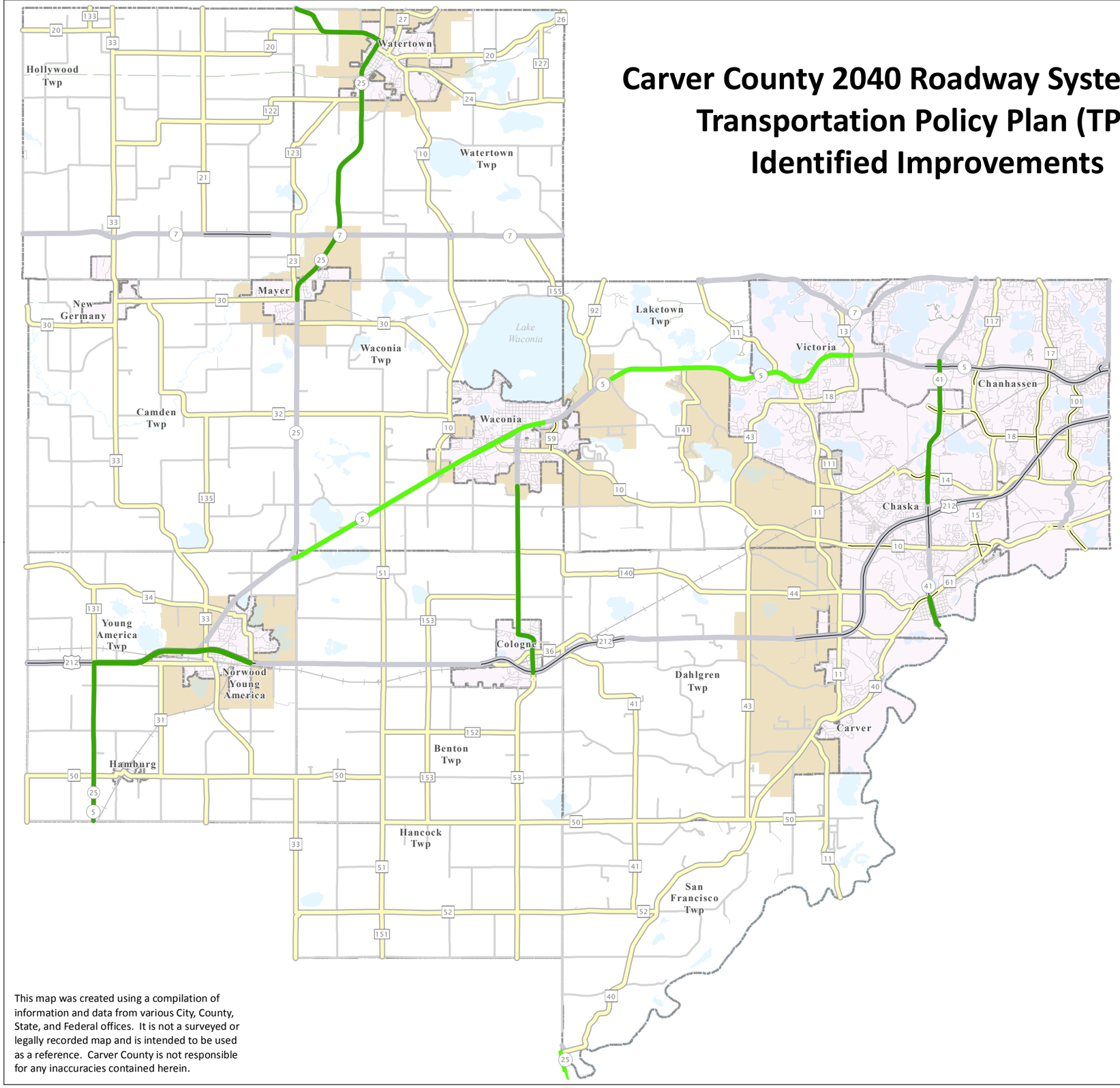
- Trunk Highway 5 (TH 5) throughout the City of Victoria and Laketown Township (2015– 2018 TIP).
- TH 5 throughout the City of Waconia and Waconia Township (2015– 2018 TIP).
- US Highway 212 (US 212) throughout the City of Norwood Young America and Young America Township (2019 and 2024).
- TH 25 throughout Young America Township (2019 and 2024).
- TH 41 throughout the Cities of Chaska and Chanhassen (2019 and 2024).
- TH 25 throughout the City of Mayer, City of Watertown, and Waconia Township (2019 and 2024).
- TH 284 throughout the City of Cologne, Waconia Township, and Benton Township (2019 and 2024).

The Metropolitan Council's Draft 2040 TPP includes an updated map of identified improvements including regional mobility, preservation, safety, freight, and pavement projects. This chapter includes reference and acknowledgement of these improvements so the documents align upon adoption of the Draft 2040 TPP. The updated map is located in Appendix B as Figure B.3: 2040 Draft Transportation Policy Plan (TPP) Identified Improvements.

Beyond these programmed improvements, Carver County is working towards additional investments to the Principal and A-Minor arterial system. These improvements are identified in Carver County's 2018-2023 CIP and the recently adopted (May 2, 2017) half percent transportation sales tax, a $20 vehicle excise tax, and $20 per eligible vehicle wheelage tax. The half percent transportation sales tax only applies to retail sales made within Carver County. The $20 vehicle excise tax applies to sales of motor vehicles registered for road use. The $20 vehicle wheelage tax applies to motor vehicles registered in the county, except for motorcycles and mopeds, trailers and semitrailers, vehicles not subject to annual registration (i.e., collector vehicles), tax exempt, and state owned vehicles. Revenue generated from these taxes will be allocated towards Carver County's 20-Year Transportation Tax Implementation Plan (2018-2037). Figure 4.2: Transportation Tax Projects (2018-2037) and Table 4.2: 20-Year Transportation Tax Implementation Project Table shows the projects approved by the County Board. The County Board can amend these projects if necessary after holding a public hearing. The implementation schedule for these projects will be prioritized based on the availability of outside grants and city needs and then programmed in the Carver County's Capital Improvement Program (CIP). Figure 4.2 and Table 4.2 depict the current priority Transportation Tax Implementation scenario, but this is subject to change. Projects funded with these new taxes include major preservation/rehabilitation projects, which are depicted as dashed lines on the figure. These major rehabilitation projects are placeholders using high level metrics based on age and traffic volume but are subject to change based on actual road conditions closer to implementation.

Carver County 2040 Roadway Systems Plan
Transportation Policy Plan (TPP)
Identified Improvements

DRAFT



This map was created using a compilation of information and data from various City, County, State, and Federal offices. It is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

Transportation Policy Plan (TPP)
Identified Improvements

Figure 4.1

Legend

Transportation Policy Plan

- 2015 - 2018 TIP Pavement
- 2019 - 2024 Pavement

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Area

0 1 2 4 Miles

Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200

Created: 4/27/2018

Carver County 2040 Roadway Systems Plan
Transportation Tax Projects (2018 - 2037)

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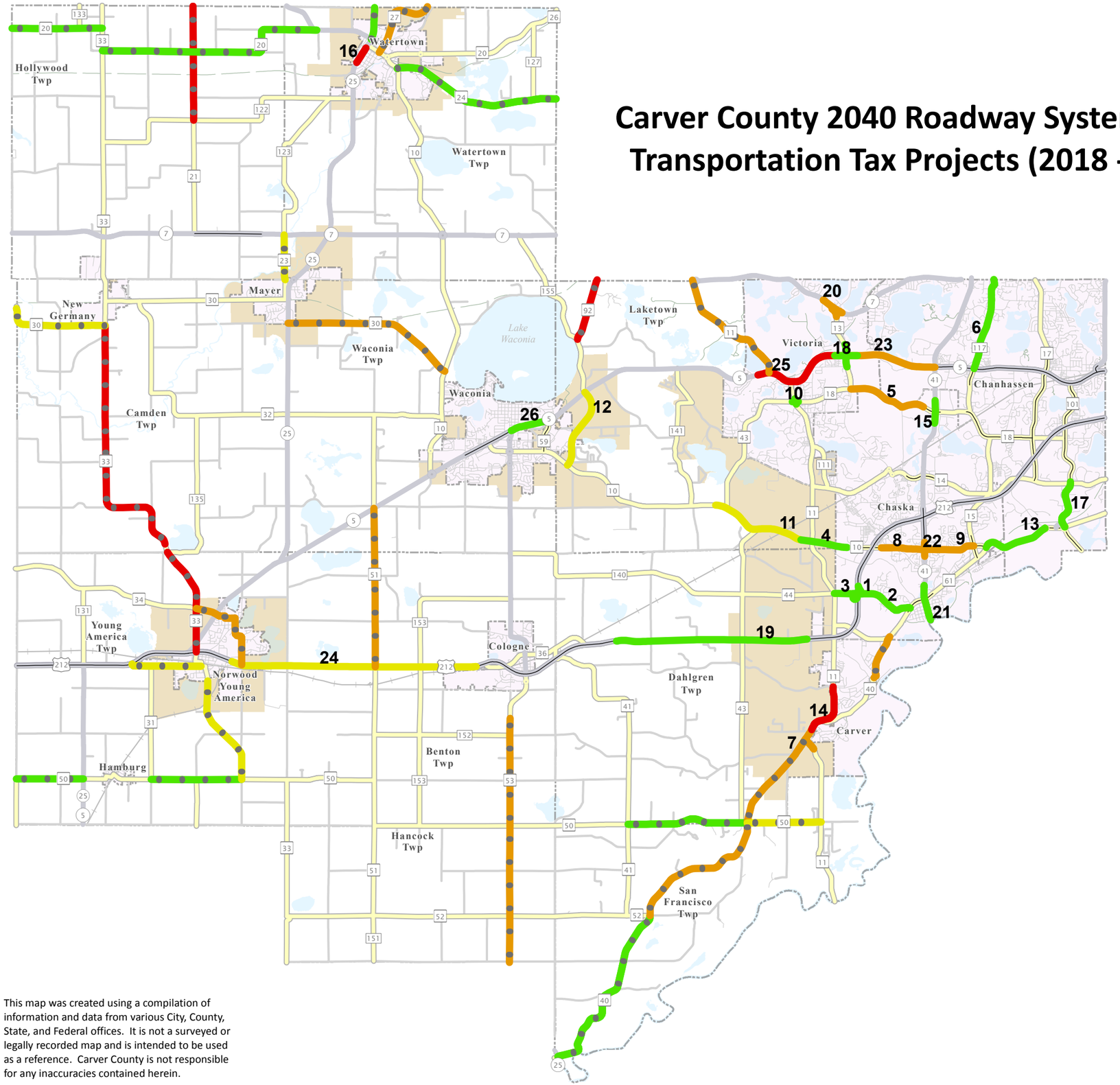

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Transportation Tax Projects
(2018 - 2037)

Figure 4.2

Legend

- Major Rehab
- Priority A (CIP)
- Priority B
- Priority C
- Priority D

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200

Created: 4/27/2018

◊ Table 4.2: 20-Year Transportation Tax Implementation Project Table

County Road Projects | State Road Projects

Map Reference #	Project Description	CIP	Priority
1	CSAH 44 and US 212 Interchange	2018-2023	A (CIP)
2	CSAH 44 from west of CSAH 61 to US 212	2018-2023	A (CIP)
3	CSAH 44 from CSAH 11 to US 212	2018-2023	A (CIP)
4	CSAH 10 (Engler Blvd.) from Clover Ridge Dr. to CSAH 11	2018-2023	A (CIP)
5	CSAH 18 Extension (82nd St) from Bavaria Rd. to TH 41	2024-2028	B
6	CR 117 (Galpin Blvd.) from TH 5 to northern County line	2018-2023	A (CIP)
7	CSAH 11/CSAH 40 (S) Intersection	2024-2028	B
8	CSAH 10 (Engler Blvd.) from TH 41 to TH 212	2024-2028	B
9	CSAH 10 (Engler Blvd.) from TH 41 to CSAH 61	2024-2028	B
10	CSAH 11/CSAH 18/43 Intersection	2018-2023	A (CIP)
11	CSAH 10 from CSAH 11 to CSAH 43 (W)	2029-2033	C
12	East Waconia bypass from CSAH 10 to TH 5	2029-2033	C
13	CSAH 61 (Flying Cloud Dr.) from Engler Blvd. to Bluff Creek Dr.	2018-2023	A (CIP)
14	CSAH 11 (Johnathan Carver Pkwy.) from 6th St. to CSAH 40	2034-2037	D
15	TH 41/Lyman Blvd. Intersection	2018-2023	A (CIP)
16	TH 25 from High St. to White St.	2034-2037	D
17	TH 101 Bluff from Flying Cloud Dr. to Pioneer Trail	2018-2023	A (CIP)
18	TH 5/Rolling Acres Rd. Intersection	2018-2023	A (CIP)
19	US 212 from Carver to Cologne	2018-2023	A (CIP)
20	TH 7/Rolling Acres Rd Intersection	2024-2028	B
21	TH 41 from MN River to Walnut Ct. and CSAH 61 from TH 41 to E Ch	2018-2023	A (CIP)
22	TH 41/CSAH 10 (Engler Blvd.) Intersection	2024-2028	B
23	TH 5 from TH 41 to Rolling Acres Rd.	2024-2028	B
24	TH 212 from Cologne to Norwood Young America	2029-2033	C
25	TH 5 from Rolling Acres Rd. to Victoria Dr. (W)	2034-2037	D
26	TH 5 from Birch St to TH 284	2018-2023	A (CIP)

4.2.D.3. Jurisdictional Classification

The jurisdiction of a roadways is an important element to the plan because it affects several organizational functions and obligations (e.g., regulatory, maintenance, construction and financial). The primary goal is to match the roadway's function with the government-level best suited to handle the route's function. The hierarchy of jurisdictional classification is typically established so that higher-volume, regional corridors carrying inter-county traffic are maintained by the state (e.g., interstates and state trunk highways), while intermediate volume corridors with more limited travel sheds (e.g., CSAHs and county roads) are maintained by the county. Roadways serving local traffic (e.g. MSASs, city streets and township roads) should be maintained by the municipalities or townships.

The transportation system in Carver County is comprised of roadway agencies at the local, county, and state level. Carver County is responsible for over 274 centerline miles of County Road (CR) and County State Aid Highways (CSAH). The difference in designation relates to the route's function and funding. Routes qualifying or designed as CSAHs are eligible to receive funding from the Minnesota Highway Users Tax Distribution Fund for maintenance and construction activities, while CRs are funded with local county revenue only (e.g., property tax dollars, wheelage tax, sales tax). The state system in the county is comprised of US Highways and State Highways. The remaining system is under the local cities and townships control. The county's transportation system by jurisdiction is summarized in Table 4.3: Jurisdictional Classification Totals**.** Table 4.4: Jurisdictional Classification Characteristics summarizes the characteristics for each jurisdictional category found within the county.

◊ **Table 4.3: Jurisdictional Classification Totals**

Category	Centerline Miles within Carver County	Percentage of Centerline Miles within Carver County
US Highways (US)	27.0	2.2%
State Trunk Highways (TH)	81.9	6.8%
County State Aid Highways (CSAH)	229.8	19.1%
County Roads (CR)	44.5	3.7%
Local Roads	728.1	60.5%
Other	91.7	7.6%
Total	**1203.0**	**100.0%**

◊ Table 4.4: Jurisdictional Classification Characteristics

State System • Statewide function • Multi-county facilities • Regional connectivity • Higher travel speeds Examples: US 212, TH 7	
County Road System • Regional connectivity • Moderate traffic volumes • Connect urban and outlying rural areas • Paved or gravel routes Example: CSAH 40, CR 153	
City Streets • Short segments with small travel sheds • Serve local land access needs • Moderate traffic volumes • Limited continuity with rural areas Examples: East Railroad Street, East Lake Street, West 1st Street	
Local /Township Roads • Connect neighborhoods, businesses and schools to county system • Provide access to higher-order roadways • Provide lowest degree of continuity • Allow closely spaced access points • Provide direct access to property • Serve limited travel sheds Examples: Lynn Wood Road, Hidden Bay Lane, Klein Drive	

4.2.D.4. Functional Classification

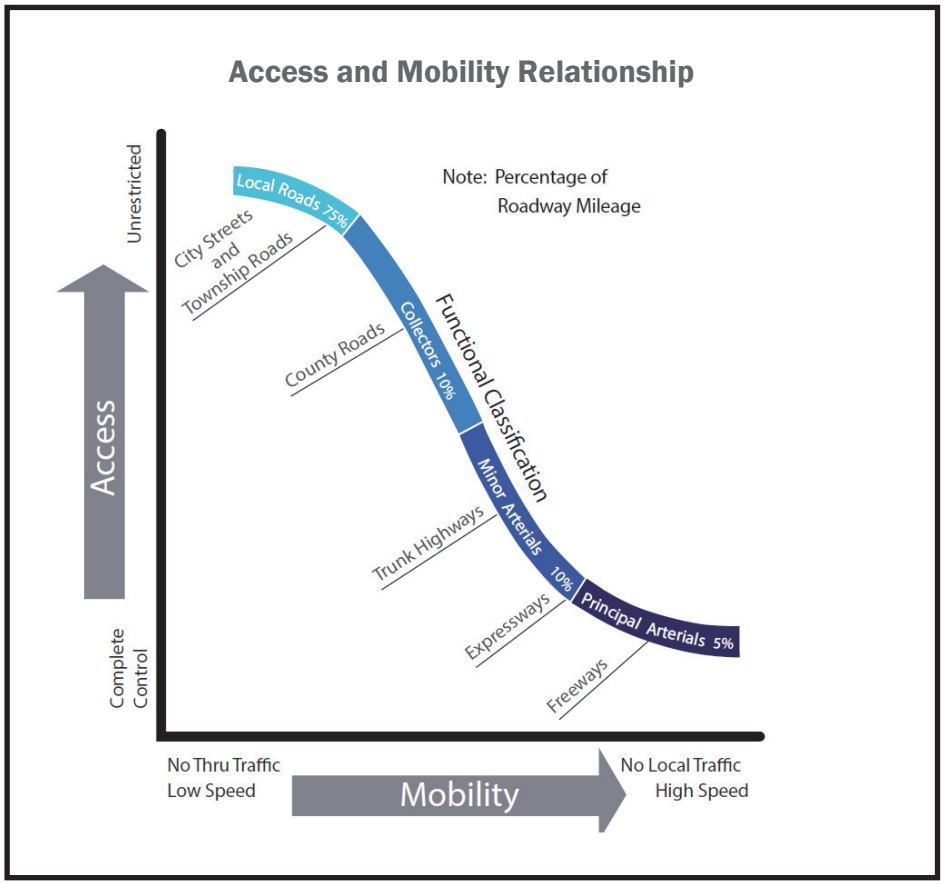
The functional classification system defines both the function and role of a roadway within the hierarchy of an overall roadway system. Figure 4.3: Access and Mobility Relationship illustrates how access and mobility are interrelated and relate to functional classification. This system is used to create a roadway network that collects and distributes traffic from neighborhoods and ultimately to the state or interstate highway system. The purpose of functional classification planning is to manage mobility, access, and alignment of routes. A main goal of functional classification is to align a roadway's functional classification designation to match current and future land uses and 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.
- Proportion balance of mobility and ability to move without restrictions.
- Continuity between travel destinations.
- Relationship with neighboring land uses.
- Eligibility for state and federal funding.

The county's functional classification system is divided into four major categories: Principal Arterials, Minor Arterials (A-Minor and Other Arterials), Collectors (major and minor) and local roadways. Carver County acknowledges the principal arterials adopted as part of the metropolitan highway system in the 2040 Transportation Policy Plan (2040 TPP). Table 4.5: Functional Classification Characteristics illustrates the typical characteristics for each of the four major categories.

◊ **Figure 4.3: Access and Mobility Relationship**



◊ Table 4.5: Functional Classification Characteristics

Principal Arterials • Connect major activity centers, regional job concentrations and freight terminals • Provide significant continuity at a regional level • Server long distance trips • Provide limited access and high speeds • Serve regional or statewide travel sheds • Bicycle and pedestrian accommodations are typically on facilities that cross or are parallel to principal arterials • Typically, only provide transit accommodations as needed during peak periods Examples: US 212 and TH 7	
Minor Arterials (A-Minor and Other Arterials) • Connect key activity center and connect the urban service area with cities and towns outside the Twin Cities region • Provide continuity on a sub-regional level • Serve medium to long distance trips • Provide limited access and high speeds • Serve regional travel sheds • A-Minor Arterials are categorized into the following: Relievers, Expanders, and Connectors • Bicycle and pedestrian accommodations are typically on facilities that cross minor arterials • Typically, only provide transit accommodations as needed during peak periods Example: TH 5, TH 25, and CSAH 13	

◊ Table 4.5: Functional Classification Characteristics—Continued

Collectors (Major and Minor)

- Connect local activity centers to arterials
- Provide increased continuity at a local level
- Serve short to medium length trips
- Balance emphasis of access and mobility
- Provide access to localized areas
- Bicycle and pedestrian accommodations are provided on, along or crossing collector roadways
- Cross-sections and geometrics designed for use by regular-route buses in urban areas

Example: CSAH 41, CSAH 51, and CR 153

Local/Township Roads

- Connect neighborhoods, businesses and schools to county system
- Provide access to higher-order roadways
- Provide lowest degree of continuity
- Allow closely spaced access points
- Provide direct access to property
- Serve limited travel sheds
- Bicycle and pedestrian accommodations are provided on, along or crossing local roadways
- Normally used as bus routes only in nonresidential areas

Example: Lynn Wood Road, Hidden Bay Lane, and Klein Drive

Table 4.6: 7-County Metro & Carver County Existing Functional Classification compares the county's functionally classified roads with the seven-county metro area by mileage and percentage.

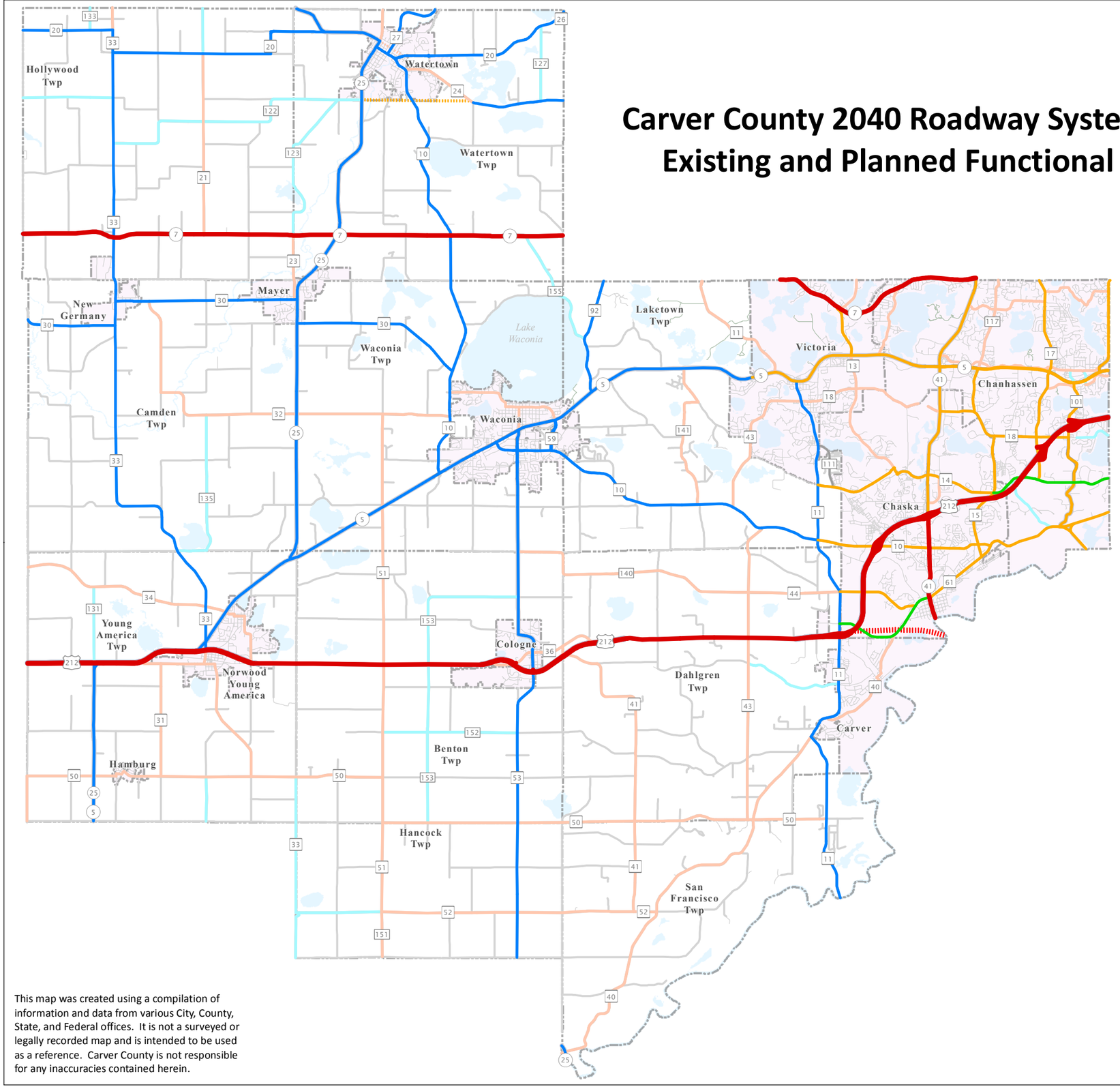
◊ **Table 4.6: 7-County Metro & Carver County Existing Functional Classification**

Functional Class Category	Mileage Totals		Mileage Percentages	
	7-County Total	Carver Co. Total	7-County Total	Carver Co. Total
Principal Arterial	900.5	57.1	5.2%	4.7%
Minor Arterial	2,400.7	222.4	13.9%	18.5%
Collector	1,737.3	137.3	10.1%	11.4%
Local	12,171.5	786.2	70.7%	65.4%
Total	**17,210.0**	**1,203.0**	**100.0%**	**100.0%**

Figure 4.4 Existing and Planned Functional Class displays the existing functional classification system within the County. The 7-County Metro percentages are shown for comparison with the understanding that Carver County's roadway system needs may vary from the 7-County averages due to its Suburban Edge, Agricultural, and Rural Center community designations and status as one of the fastest growing counties in the state.

Carver County 2040 Roadway Systems Plan
Existing and Planned Functional Class

DRAFT



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Existing and Planned Functional Class

Figure 4.4

Legend

Existing Functional Class

- Principal Arterial
- A Minor Reliever
- A Minor Expander
- A Minor Connector
- Major Collector
- Minor Collector
- Local Road

Planned Functional Class

- Principal Arterial
- A Minor Expander
- Major Collector

City/Township Boundary

- Existing City

0 1 2 4 Miles

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(952) 466-5200

Created: 4/27/2018

4.2.D.5. Existing Traffic and Congestion

As the county continues to grow, travel patterns will shift and some roadways may see an increase or decrease in traffic volumes. An assessment was prepared to understand existing congestion and operational issues. This assessment took into consideration county roadway segments and intersections. By identifying areas with congestion or operational problems, improvement options can be investigated and planned (i.e., roadway improvements, intersection control changes, alternative routes, setback requirements, etc.). In addition, these corridors or intersections can be targeted for improvements, access modifications or other management tools to improve traffic operations until major improvements are completed.

Roadway Segment Analysis

A volume-to-capacity analysis was completed for the roadways in Carver County to identify which corridors are experiencing some level of congestion. Congestion on the existing 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 that 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. To better understand the areas of congestion in Carver County the following congestion categories were used for the volume-to-capacity analysis.

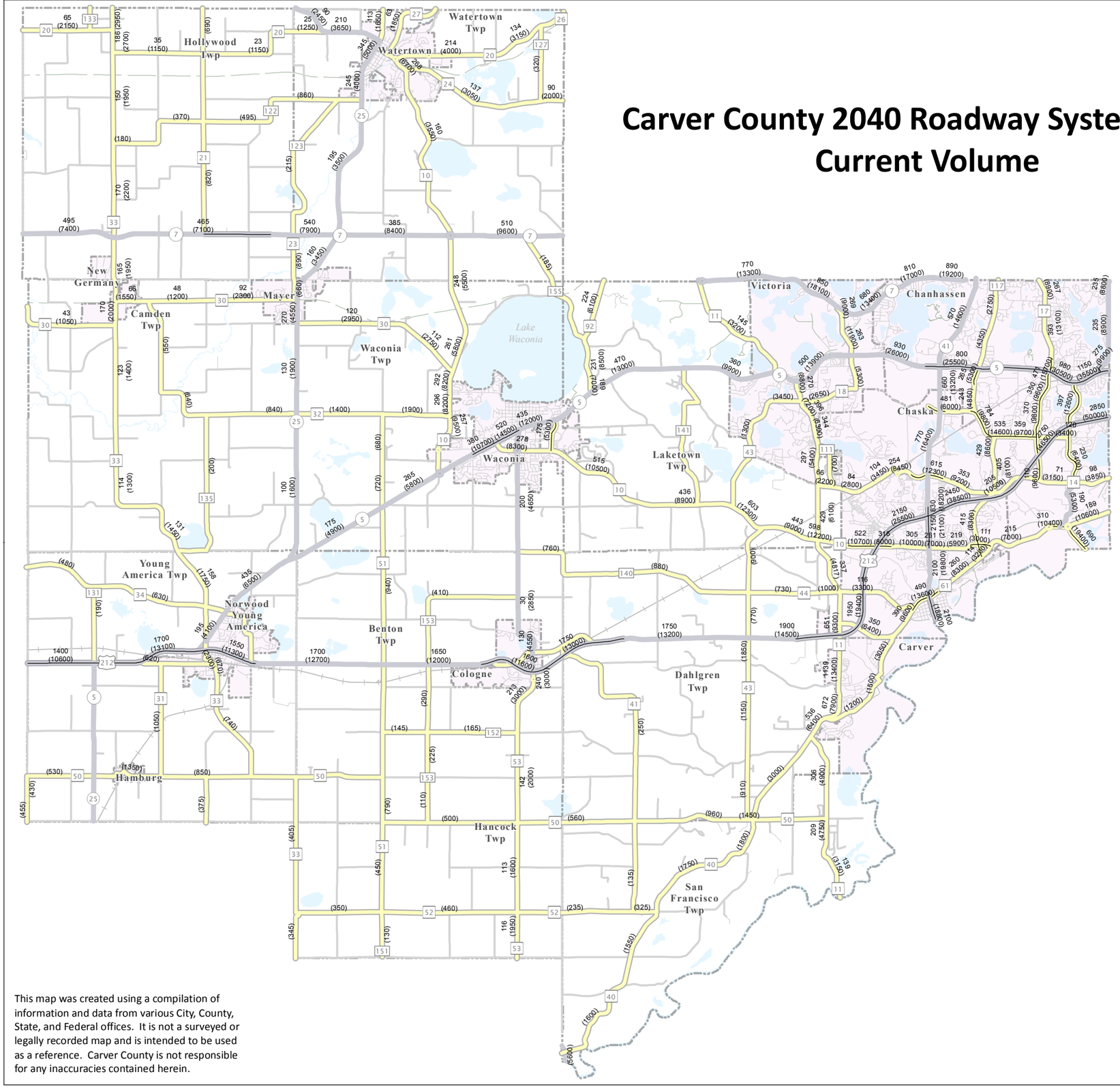
- Uncongested—The existing volume is less than 85 percent of the threshold volume, indicating a low probability of operational problems due to volume of traffic on the facility.
- Near Congestion—The existing volume is between 85 percent and 100 percent of threshold volumes, suggesting a moderate probability of operational problems due to traffic volume on the facility.
- Congested—The existing volume exceeds 100 percent of the threshold volume, indicating a high probability of operational problems due to the volume of traffic on the facility.

Several data inputs were needed to complete the analysis, including MnDOT supplied average daily traffic (ADT) volumes and planning-level roadway capacities. Refinements were made to the typical planning-level roadway capacities to consider specific influencing factors (e.g., terrain/alignment, access spacing, functional class, and peak traffic volumes). Furthermore, the roadway segments in Carver County were categorized based on several factors including existing ADT volumes, number of lanes, and location (rural vs urban) to determine the appropriate capacity range. These “refined planning-level capacity ranges” along with the typical planning-level capacities are presented in Table 4.7: Assumed Theoretical Planning-Level Capacities for Carver County. More information on the table’s source can be found in the April 26, 2012 memo, which is included in Appendix B.

Figure 4.5: Current Volume and Figure 4.6: Existing Volume-to-Capacity (V/C) Ratio shows congestion via the results of the volume-to-capacity ratio analysis completed for Carver County for the existing conditions (existing traffic volumes and today’s roadway system). Results from this analysis play an important role in the generation of the forecasted traffic volumes as well as the evaluation and development of the county’s future system plan.

Carver County 2040 Roadway Systems Plan
Current Volume

DRAFT



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Current Volume

Figure 4.5

Traffic Information — Traffic Volumes
- 2016 HCAADT
(####) - 2016 AADT

Legend

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary

0 1 2 4 Miles

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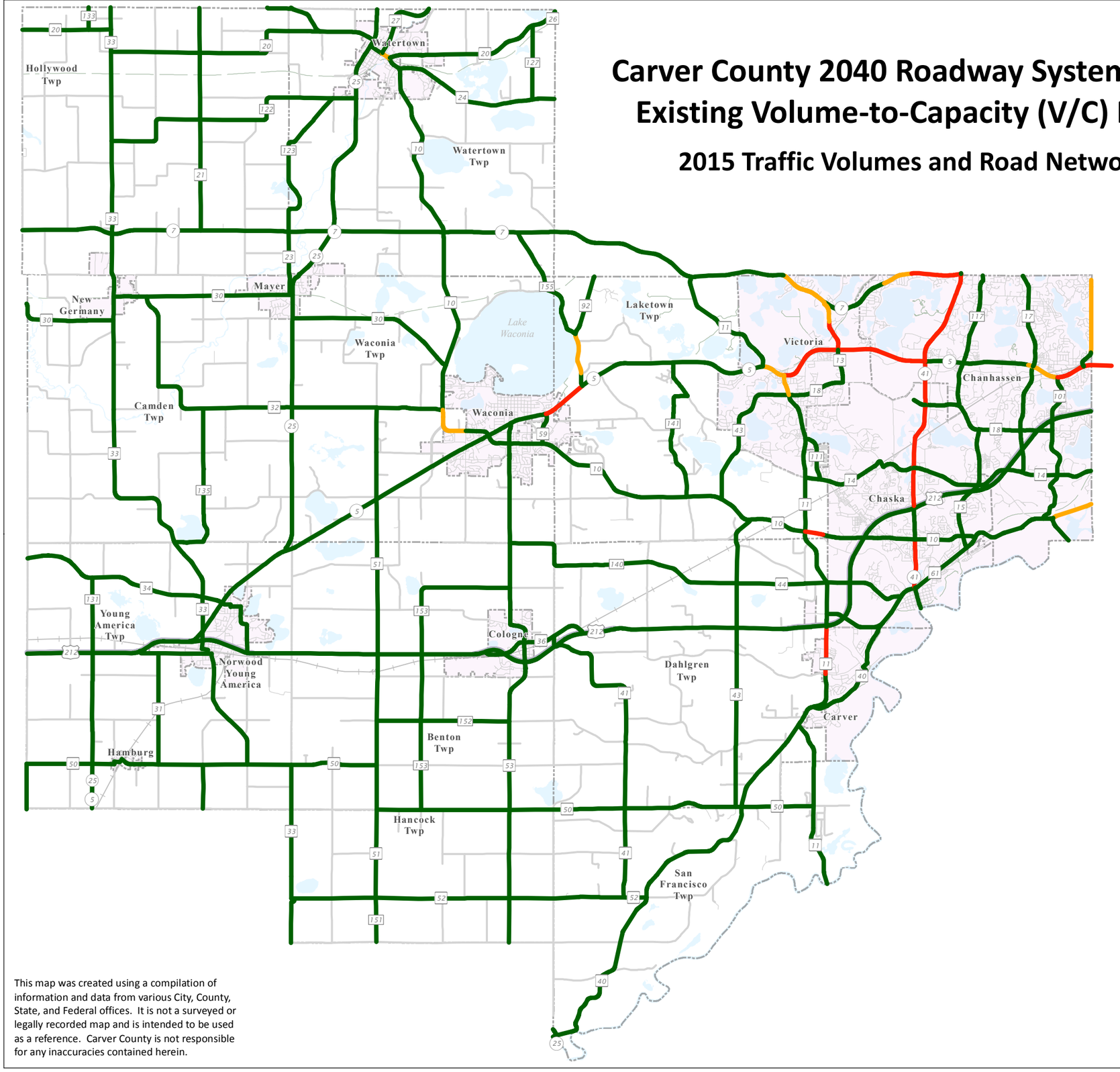
Carver County 2040 Roadway Systems Plan
Existing Volume-to-Capacity (V/C) Ratio

2015 Traffic Volumes and Road Network

DRAFT



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Existing Volume-to-Capacity (V/C) Ratio

Figure 4.6

Legend

V/C Existing

- < 0.85
- 0.85 - 1.00
- > 1.00

City/Township Boundary

- Existing City
- City/Township Boundary

0 1 2 4 Miles

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◊ **Table 4.7: Assumed Theoretical Planning-Level Capacities for Carver County**

Section Type	Planning-Level Capacity	Refined Planning-Level Capacity Range
Two-Lane Urban (No Left-Turn)	10,000	6,800-13,200
Two-Lane Urban	13,000	9,800-16,200
Two-Lane Rural	15,000	11,800-18,200
Two-Lane Divided Urban	17,000	13,800-20,200
Two-Lane Divided Rural	17,000	13,800-20,200
Four-Lane Urban	32,000	28,800-35,200
Four-Lane Rural	38,000	34,800-41,200
Six-Lane Urban	48,000	44,800-51,200

Intersection Capacity Analysis

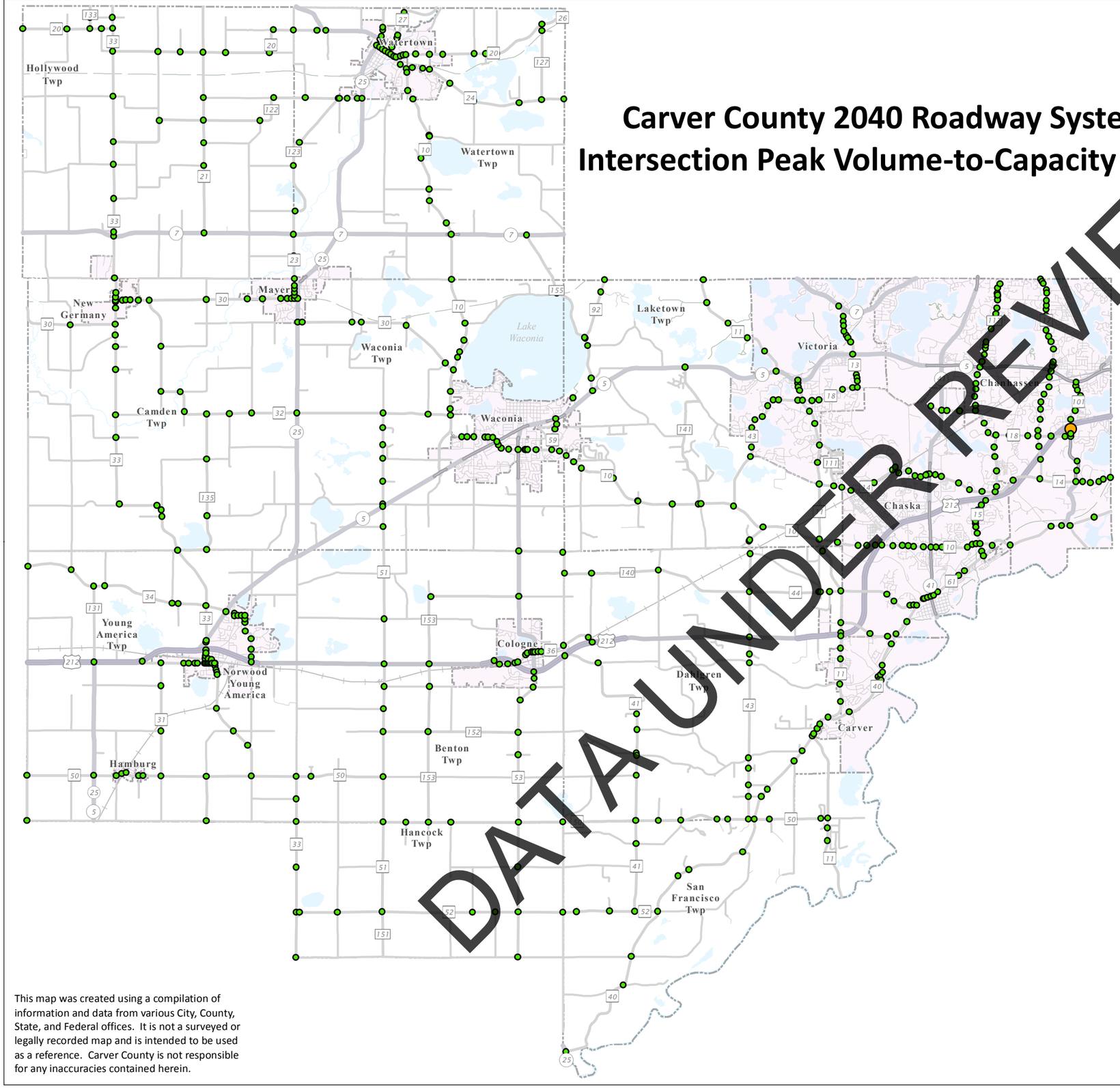
An intersection analysis tool was created to determine which county intersections may be experiencing level of congestion during the peak periods (morning and afternoon). This planning-level analysis considers several factors, including saturation flow rate, green time to cycle length ratio, and volume-to-capacity ratio (V/C ratio). These parameters include cycle length, time of day, number of lanes, and volumes. Using the approximations for the prevailing condition factors and the number of lanes the *saturation flow rate* is calculated. Finally, the capacity is calculated for each leg of the intersection, and the corresponding volume-to-capacity ratio is determined.

The ratio of volume-to-capacity provides a measure of congestion at an intersection that may warrant intersection control modifications or the addition of new turn lanes/thru lanes. The tool leverages daily ADTs to assess congestion, assuming:

- A.M. Peak = 8% of daily ADT
- P.M. Peak = 10% of daily ADT

Figure 4.7: Intersection Capacity Analysis displays the results of the volume-to-capacity analysis completed for Carver County intersections.

Carver County 2040 Roadway Systems Plan
Intersection Peak Volume-to-Capacity (V/C) Ratio



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Intersection Peak
Volume-to-Capacity (V/C) Ratio

Figure 4.7

Legend

PeakHourVC

- < 0.85
- 0.85 - 1.00
- > 1.0

City/Township Boundary

- Existing City
- City/Township Boundary

0 1 2 4 Miles

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4.2.D.6. Existing Safety Analysis

Roadway safety is an important issue for County officials and a high priority for MnDOT, local agencies, and the public. As a part of MnDOT's statewide highway safety planning process, a County Road Safety Plan (Safety Plan) was prepared for Carver County. This plan sought to reduce severe crashes by documenting at-risk locations and identifying cost-effective safety improvement strategies that Carver County can complete as funding becomes available.

Supplemental to the County Road Safety Plan, a crash frequency and severity map has been prepared using the Minnesota Crash Mapping Analysis Tool (MnCMAT) for the most recent five-year period (2011-2015). This dataset identified a total of 4,468 crashes recorded for all roadways within the County (see Figure 4.8: High Crash Rate). Out of these crashes, a total of 1,432 occurred on the County's highway system (CSAH and CR). Of the total crashes, one and one-half percent were identified as severe crashes (fatal and incapacitating injury).

The County's Safety Plan, which provides insight and guidance to the County's approach to transportation system safety. The county's plan aligns with the Minnesota Strategic Highway Safety Plan (SHSP) which promotes a positive safety culture that *"rejects roadway fatalities and life-changing injuries as a cost of doing business and values the life and well-being for all roadway users."* The Safety Plan incorporates best practices from the AASHTO Highway Safety Manual, which contains methods for quantitatively estimating crash frequency or severity at a variety of locations. The County also utilizes information from the National Cooperative Highway Research Programs (NCHRP), administered by the Transportation Research Board, for safety analysis and project implementation practices to deliver safety solutions to meet County safety goals.

Primary Goals

Reduce all crashes

Eliminate severe crashes

Identify low cost/high benefit safety

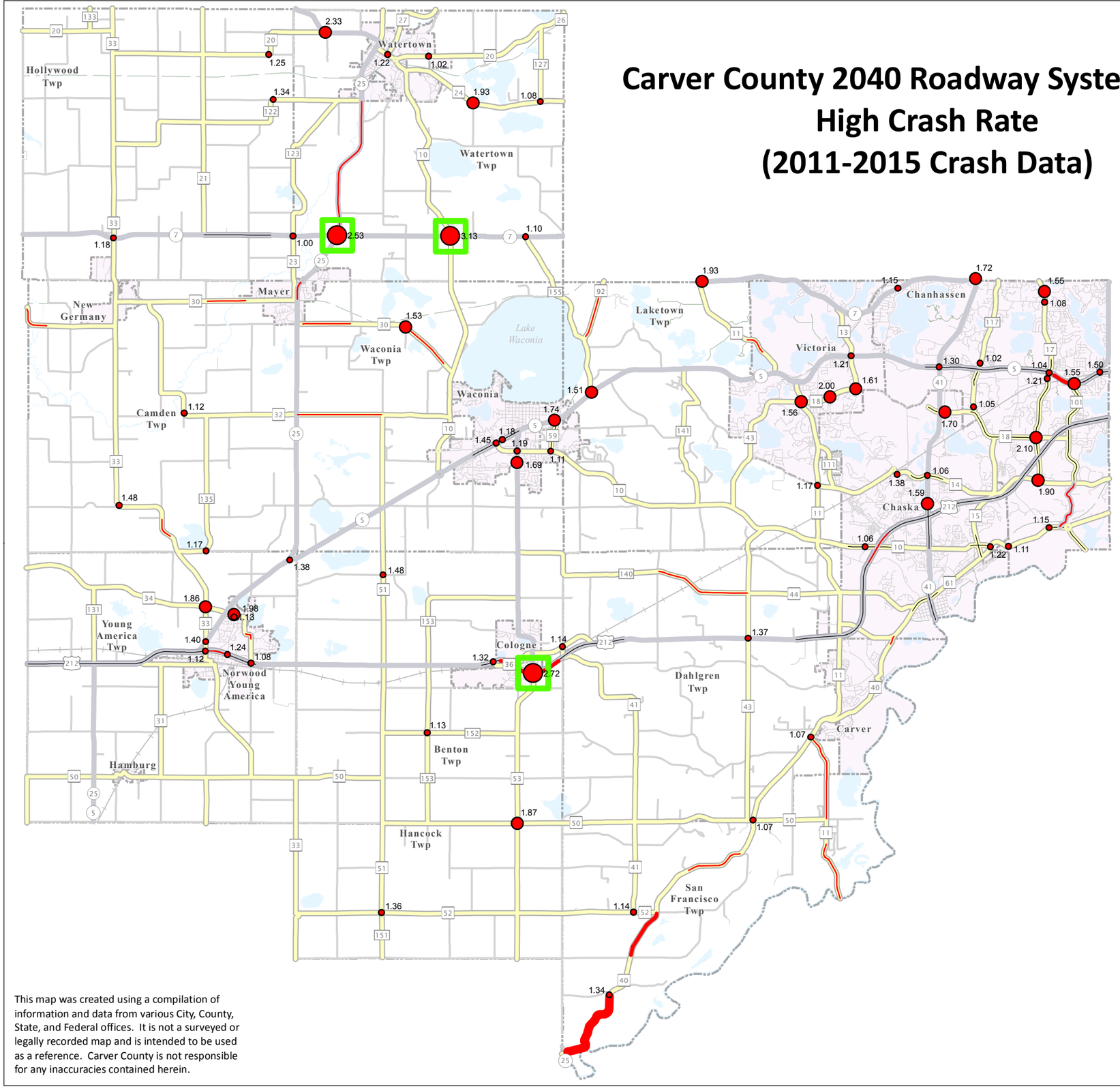
The primary goals of the Safety Plan are to reduce all crashes, eliminate severe crashes, and identify low cost/high benefit safety projects. Carver County's objectives are directly derived from Minnesota's commitment to the Toward Zero Deaths approach to transportation safety. The "Four E's" focus areas of Engineering, Education, Enforcement, and Emergency Services are used to react, mitigate, or eliminate different transportation safety issues. The county incorporates a "Fifth E" of Everyone in recognition that everyone has a responsibility to the transportation system safety by following the laws, state statutes, and rules of the road.

Carver County's 5th E: **E**veryone

Recognition that everyone has a responsibility to the transportation system safety by following the laws, state statutes, and rules of the road.

Carver County 2040 Roadway Systems Plan
High Crash Rate
(2011-2015 Crash Data)

DRAFT



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High Crash Rate (2011-2015 Crash Data)

Figure 4.8

Legend

5 Year Crash Stats - Critical Index

- 1.00 - 1.50
- 1.50 - 2.50
- 2.50 - 3.50
- 3.50 - 4.50

- 1.00 - 1.50
- 1.50 - 2.50
- 2.50 - 3.50
- 3.50 - 4.50

Safety Improvements to Intersection (Implemented Since Crash Data Published)

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary

0 1 2 4 Miles

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Overview

The County uses a data driven approach with a tool formulated specifically for Carver County to manage the major state and county highway system safety analysis. This analysis approach is used to catalogue where crashes occur, the types of crashes, and severity of crashes. For example, the analysis features of the tool provide a summary of the crashes and crash history compared to similar intersections or corridors. The county is able to use the crash tool data to continually understand current trends and develop an understanding of potential future concerns.

Engineering Tactics

The County uses three tactics to address transportation safety concerns:

1. Data-Driven Problem Identification;
2. Performance-Based Approach;
3. High-Benefit, Low-Cost Strategies.

Data-Driven Problem Identification

Data-driven problem identification utilizes data from multiple sources when identifying historical, current, and potential safety issues. Data drives our understanding of where and why crashes occur and is important in determining what factors contribute to crashes. Data sources include:

- Public Comments—Identifies specific roadway and safety inefficiencies.
- Community Priorities—Presents different safety priorities and initiatives.
- Crash Records—Identifies crashes and crash types.
- Location Characteristics—Uses trends and records to proactively mitigate crashes.

Data-driven problem identification utilizes both reactive and proactive approaches by relying on the crash database and methods of evaluation. Being reactive to crashes requires a database of the crashes. Minnesota crash records are maintained by the Minnesota Department of Public Safety (MnDPS) and are provided for public agency use by the Minnesota Department of Transportation (MnDOT). Carver County has its own database using crash records from MnDOT. The tool provides a county-wide perspective on crashes, detailing crash records and methods for identifying potentially hazardous locations. Specific methods include: crash frequency, crash rate, fatal and serious injury crash rate, crash index, and crash costs. The proactive approach to transportation safety uses crash data trends to identify other similar facilities that may have future concerns. A specific feature of this approach is identifying traffic volume trends in relation to traffic safety concerns. Examples of proactive safety projects are the installation of turn-lanes along a corridor to reduce rear-end crashes and the paving of wider shoulders to reduce run-off-the-road crashes. The state of Minnesota has also identified specific systemic safety improvements through the County Road Safety Plans (CRSP).

Proactive safety projects are eligible for MnDOT's solicitation for federal Highway Safety Improvement Program (HSIP) funding, which occurs on a 2-year cycle. HSIP is a federal-aid funding program designed to reduce traffic fatalities and serious injuries on all public roads. The object of the program is to identify, implement and evaluate cost effective construction safety projects.

Performance-Based Approach

A performance-based approach to traffic safety tracks performance metrics and uses the results to identify improvements or investments that increase safety in a cost-effective way. The crash tool incorporates methods to evaluate the system, determine safety improvement strategies, and track progress.

The federal government uses a performance based approach outlined in the federal transportation bill called Fixing America's Surface Transportation (FAST) Act. A cornerstone of this program is a transition to a performance and outcome-based program that provides more efficient investment of federal transportation funds by focusing on national transportation goals. The safety goal looks to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. Carver County follows this methodology to understand how projects meet safety goals.

One of the methods to determine safety improvement needs and track progress is through a scoring system. The crash score is a county-wide comparative intersection analysis. It is used to identify the intersections with the highest need for safety review. The safety score is a direct analysis of a specific intersection, corridor, or the highway system. It is used to identify how safe the facility is and is used to understand how safety improvements have affected the facility and overall safety of the transportation system. The goal is to improve this score over time with safety improvements even as traffic volumes increase.

High-Benefit, Low-Cost Strategies

The crash tool includes a feature to determine how common safety improvement strategies could mitigate locational crashes. The crash reduction for the strategies are based on Crash Modification Factors (CMF) located within the Crash Modification Factor Clearinghouse.

Each location throughout the county is unique, and the strategies employed at each location will be specific to the location based on the site characteristics, the safety issues, and types of crashes. The evaluation of a location may not indicate a systemic issue that can be rectified through engineering measures. In such cases, education strategies, enforcement strategies, risk management strategies, or additional monitoring of the location may be implemented.

Some crash types are more common than others. These crash types are tied to specific safety issues that can then generally be mitigated or reduced through established engineering mitigation strategies. These strategies include:

- Nighttime crashes
- Right angle crashes at un-signalized intersections
- Left turn crashes at un-signalized intersections
- Rear-end, head-on, and sideswipe crashes at un-signalized intersections
- Left turn crashes at signalized intersections
- Rear end crashes at signalized intersections
- Right angle crashes at signalized intersections
- Sideswipe and head-on crashes at signalized intersections
- Pedestrian and bicycle crashes
- Run-off-the-road crashes on corridors
- Head-on and sideswipe crashes on corridors
- Left turn crashes on corridors
- Head-on and run off road crashes on curves
- Younger driver crashes—focus on education versus engineering strategies
- Older driver crashes—focus on education versus engineering strategies

High-Benefit, Low-Cost Strategies (Continued)

The projected benefit based on the crash reduction is identified at each intersection or segment to develop a benefit to cost ratio. The exact costs for each type of countermeasure should be developed based on the characteristics of each location. A higher benefit to cost ratio is obtained for countermeasures that are cost effective, providing a high crash reduction benefit with lower cost improvements.

Funding programs such as the Metropolitan Council's regional solicitation for federal Surface Transportation Program Block Grant (STPBG) funding and MnDOT's solicitation for federal Highway Safety Improvement Program (HSIP) funding incorporate a benefit-cost ratio evaluation for reactive safety projects. The County will use the evaluation of high benefit, low cost strategies to analyze and identify potential projects for these funding sources.

Additional Plans and Tools

Additional plans and tools are also used by the county to identify safety concerns and mitigation measures.

- Strategic Highway Safety Plan (SHSP)
- Minnesota SHSP
- AASHTO Highway Safety Manual and AASHTO Critical Emphasis Areas
- County Roadway Safety Plans (CRSP)
- Congestion Management Safety Plan (CMSP)
- Local Road Research Board (LRRB) - Best Practices and Documents
    - ◊ Minnesota's Best Practices for Pedestrian/Bicycle Safety
    - ◊ Minnesota's Best Practices for Safety Strategies on Highways and Local Roads
    - ◊ Pedestrian Crossings: Uncontrolled Locations Guidebook
- National Cooperative Highway Research Programs (NCHRP)

4.2.E. Travel Demand Model: Socioeconomic Forecasts

Carver County will experience a significant amount of growth over the next twenty years. Table 8: Socioeconomic Forecasts highlights the County's socioeconomic projections to 2040 from the Metropolitan Council's System Statement.

◊ **Table 4.8: Socioeconomic Forecasts**

	2010 (Actual)	2014 (Estimate)	2020 (Projected)	2030 (Projected)	2040 (Projected)
Population	91,042	97,162	108,520	135,960	161,240
Households	32,891	34,956	40,940	52,180	62,590
Employment	31,836	36,700	42,190	46,900	52,240

Cities within the county were responsible for allocating demographic growth to the Traffic Analysis Zones (TAZs) in accordance with future land use plans and the Metropolitan Council System Statement totals. For example, future households were allocated to future residential land use areas. The 2040 forecasts assume relatively low growth in the township areas as compared with the previous 2030 forecasts. This 2040 forecast assumption was based on updated information provided by the cities and overall lower municipal level socioeconomic growth than the 2030 socioeconomic growth projections. The previous 2030 development allocation was last reviewed by the communities during the 2030 Roadway System Plan update in 2007. At that time, more growth and broader annexations were expected to occur. The Metropolitan Council still currently assumes that Laketown Township will be fully annexed by 2040. The Land Use section of this plan explains the County's planning approach for future land use and growth assumptions within township areas.

To help plan for 2040 growth, a Travel Demand Model (TDM) was developed to project traffic volumes and identify potential capacity issues on the county and state system. The model assists in projecting future travel and commuting patterns based on household and employment growth. Travel demand forecasts developed by Carver County were based on the Metropolitan Council's Activity Based Travel Demand Model (ABTDM). The ABTDM was tailored to provide additional detail on the county system. For example, the TAZs were expanded from 111 zones to 449 zones. Each TAZ was reviewed by the cities and townships to confirm the allocation of socioeconomic (population, households and jobs) forecasts. Appendix B: Traffic Analysis Zone Socioeconomic Tables provides the required information regarding the model's socioeconomic forecasts by TAZ and includes Figure B.1: Carver County 2040 Transportation Analysis Zones (TAZ) – East and Figure B.2: Carver County 2040 Transportation Analysis Zones (TAZ) – West for reference maps.

4.2.F. Travel Demand Model: Roadway System Forecasts (Scenarios)

The methodology of the previous (2030) and current county model are somewhat different, which reflects the differences in the overall regional model process. For example, the ABM has a more integrated process for travel between counties outside the seven-county area such as Wright, McLeod and Sibley County compared to the previous model. In addition, roadway network speeds, capacities, and congestion behaviors by roadway type are reflected in the model. The Carver County model reflects the 2010 Regional Travel Behavior Inventory survey. Therefore, it accounts for observed local household trip rates and changing travel behavior as of 2010.

The model is integrated to consider the impact of neighboring counties and communities. For example, the Carver County model is a regional TDM and development assumptions throughout the region are integrated into the model and consistent with the Thrive 2040 municipal forecasts. Observations regarding development assumptions in adjacent communities include:

- Slow, but steady growth is expected in Sibley and McLeod counties.
- Overall, Scott County has lower 2040 socioeconomic forecasts than the previous 2030 forecasts.
- Eden Prairie and Minnetonka 2040 socioeconomic forecasts are higher than previous 2030 forecasts.

A decrease in regional growth socioeconomic projections and travel patterns in neighboring communities has an impact on the Carver County Roadway system.

The following three scenarios are included in the Carver County model to meet the minimum requirements for the Metropolitan Council 2040 forecasts:

- **Scenario One: Thrive 2040 No Build**– Thrive 2040 Socioeconomic Forecasts with no Roadway Improvements after January 2017.
- **Scenario Two: (Base Scenario) Thrive 2040 + Capital Improvement Program (CIP)-** Thrive 2040 Socioeconomic Forecasts with Programmed Roadway Improvements (2017-2022 CIP)
- **Scenario Three: Thrive 2040 + 20-Year Transportation Improvement Plan**– Thrive 2040 Socioeconomic Forecasts with Carver County Long-Term Roadway Improvements (Programmed CIP + 20-Year Transportation Tax Funded Improvements + Local Collector improvements that are anticipated with development)

Two Optional Value-Added Planning Sensitivity Scenarios:

- **Scenario Four: 2040 Enhanced + 20-Year Transportation Improvement Plan**– Sensitivity analysis using Enhanced 2040 Local Socioeconomic Forecasts with Carver County Long-Term Roadway Improvements (CIP + 20-Year Transportation Tax Funded Improvements + Local Collector Improvements that are anticipated with full buildout development). This scenario is for Carver County use in planning long-term improvements and right-of-way preservation strategies. Analysis findings from this scenario are not included in the County's Comprehensive Plan but will be included in Appendix D upon final publication.
- **Scenario Five: 2040 Enhanced + RSP**– Sensitivity analysis with Enhanced 2040 Local Socioeconomic Forecasts with Scenario 4 Road Network Plus Additional Recommended Improvements to support full buildout development. This scenario is for Carver County use in planning long-term improvements and right-of-way preservation strategies. Analysis findings from this scenario are not included in the County's Comprehensive Plan but will be included in Appendix D upon final publication.

The following sections outline the assumptions included with the first three scenarios, with the understanding that the fourth and fifth scenario will be finalized following more optional planning by the County and local communities completing their respective Transportation Plans.

4.2.F.1. Scenario One: Thrive 2040 No Build

Scenario One includes the existing roadway network with Thrive 2040 socioeconomic forecasts (see Appendix B). All roadway capacity improvements that occurred between the 2014 validation scenario and January 2017 are assumed.

State Road Improvement Assumptions:

- Hwy 5 from Hwy 284 to Oak Avenue (Expansion to 4-lane divided arterial)
- Hwy 101 from Scott County 69 in Shakopee to CSAH 61 (Expansion to four-lane river crossing with intersection improvements at CSAH 61.)

County Road Improvement Assumptions:

- None

City/Township Road Improvement Assumptions

- None

Socioeconomic Forecast Assumptions:

- Thrive 2040 Socioeconomic Forecasts

4.2.F.2. Scenario Two: Base Scenario. Thrive 2040 + Capital Improvement Program (CIP)

Scenario Two includes the existing roadway network from Scenario One, plus all funded roadway capacity improvements identified in Thrive 2040 or local Capital Improvement Programs (CIP). The socioeconomic forecasts are consistent with Thrive 2040 (see Appendix B).

State Road Improvement Assumptions:

- Hwy 41 from US 212 to 0.3 miles north of Pioneer Trail (Expansion to four-lane divided arterial)
- Hwy 101 from CSAH 61 to Pioneer Trail (Expansion to four-lane divided arterial)
- Hwy 41 and Hwy 169 Interchange in Scott County

County Road Improvement Assumptions:

- CSAH 10 from CSAH 11 to West Chaska Creek (Expansion to four-lane divided arterial)
- CSAH 11 from 6th Street to US 212 (Expansion to four-lane urban divided arterial)
- CSAH 13 from Hwy 7 to Hwy 5 (Reconstruction to two-lane arterial with shared center turn lane).
- CSAH 14 Extension (Marsh Lake Road) from CSAH 11 to CSAH 43 (Construction of two-lane divided urban arterial)
- CSAH 18 from Hwy 41 to Galpin Blvd (Expansion to four-lane divided arterial between Hwy 41 and Peavey, re-construct as two-lane undivided between Peavey and Galpin Blvd)
- CSAH 44 Partial Interchange at US 212 and corresponding collector system connecting to it.
- CSAH 44 from W. of CSAH 61 to Highway 212 (Reconstruction to 2-lane urban divided urban roadway)

County Road Improvement Assumptions– Continued:

- CSAH 44 from CSAH 11 to Highway 212 (Reconstruction to 2-lane divided urban roadway)
- CSAH 61 from Hwy 101 to Charlston (Expansion to two-lane arterial with shared center left turn lane)
- CSAH 110 from CSAH 10 to Hwy 5 (CSAH 10 will be realigned to connect with Hwy 5 and constructed as a two-lane N/S arterial just west of new Waconia High School)

City/Township Road Improvement Assumptions:

- Chaska N-S collector roads between CSAH 61 and Engler Blvd
- Extension of Bluff Creek Blvd from River Rock Drive to Powers Blvd (Chanhassen)
- Extension of Stieger Lake Ln to CSAH 11 north of Hwy 5 (Victoria)

Socioeconomic Forecast Assumptions:

- Thrive 2040 Socioeconomic Forecasts

4.2.F.3. Scenario Three: Thrive 2040 + 20-Year Transportation Improvement Plan

Scenario Three includes the roadway network from Scenario Two, plus Carver County Long-Term Roadway Improvements (20-Year Transportation Tax Plan + Local Collector Improvements that are anticipated with Development). The socioeconomic forecasts are consistent with Thrive 2040 (see Appendix B). See Figure 4.2: Carver County Transportation Tax Projects for reference.

State Road Improvement Assumptions

- Hwy 5 from Hwy 41 to Rolling Acres Rd (Expansion to 4-lane urban roadway)
- Hwy 5 from Main Street to Hwy 284 (Expansion to 4-lane urban roadway)
- Hwy 5 from Rolling Acres Rd to Victoria Dr West (Expansion to 4-lane urban roadway)
- Hwy 41 from US 212 to 0.3 miles north of Pioneer Trail (Expansion to 4-lane divided arterial)
- Hwy 41 from Minnesota River to Walnut Court (Reduction to 3-lane to 4th St and expansion to 4-lane divided to Hwy 61)
- Hwy 41/County Road 10 Intersection (Expand all approaches to 4-lane urban roads)
- Hwy 101 from CSAH 61 to Pioneer Trail (Expansion to 4-lane divided arterial)
- US 212 from Carver to Cologne (Expansion to a 4-lane expressway)
- US 212 from Cologne to Norwood Young America (Expansion to a 4-lane expressway)
- Hwy 41 and Hwy 169 Interchange in Scott County

County Road Improvement Assumptions:

- CSAH 10 (Engler Blvd.) from Hwy 41 to County Road 61 (Expansion to 4-lane divided roadway)
- County Road 10 from County Road 11 to County Road 43 west (Expansion to 4-lane divided roadway)
- CSAH 10 from CSAH 11 to West Chaska Creek (Expansion to 4-lane divided arterial)
- CSAH 10 from Hwy 41 to US 212 (Expansion to 4-lane urban roadway)
- CSAH 10 from Hwy 41 to Park Ridge (4-lane divided roadway)
- CSAH 11 from 6th St to County Road 40 south (Expansion to 4-lane urban roadway)
- CSAH 11 from 6th Street to US 212 (Expansion to 4-lane urban divided arterial)
- CSAH 13 from Hwy 7 to Hwy 5 (reconstruction to 2-lane arterial with shared center turn lane)
- CSAH 14 Expansion (Marsh Lake Road) from CSAH 11 to CSAH 43 (Construction of 2-lane divided urban arterial)
- CSAH 18 Extension from Bavaria Rd. to Hwy 41 (2-lane urban roadway)
- CSAH 18 from Hwy 41 to Galpin Blvd (Expansion to 4-lane divided arterial between Hwy 41 and Peavey, reconstruct as 2-lane undivided between Peavey and Galpin Blvd)
- CSAH 44 from W. of CSAH 61 to Highway 212 (Reconstruction to 2-lane divided urban roadway)
- CSAH 44 Partial Interchange at US 212 and corresponding collector system connecting to it
- CSAH 44 from CSAH 11 to Highway 212 (Reconstruction to 2-lane divided urban roadway)
- CSAH 61 (Flying Cloud Dr.) from CSAH 15 to Bluff Creek Dr (construction of 2-lane divided urban arterial)
- CSAH 61 from Hwy 101 to Charlston (Expansion to two -lane arterial with shared center left turn lane)
- East Waconia Bypass from County Road 10 to Hwy 5 (Construct new 2-lane divided urban roadway)
- CSAH 110 from CSAH 10 to Hwy 5 (CSAH 10 will be realigned to connect with Hwy 5 and constructed as a 2-lane N/S arterial just west of new Waconia High School)

City/Township Road Improvement Assumptions:

- Chaska N-S collector roads between CSAH 61 and Engler
- Extension of Bluff Creek Blvd from River Rock Drive to Powers Blvd (Chanhassen)
- Extension of Stieger Lake Ln to CSAH 11 north of Hwy 5 (Victoria)
- Airport Rd from Firestead to Laketown Rd (two-lane roadway)

Socioeconomic Forecast Assumptions:

- Thrive 2040 Socioeconomic Forecasts

Model results show lower traffic volumes for 2040 when compared to the 2030 forecasts (updated in 2014). One of the primary reasons is significantly lower socioeconomic 2040 forecasts compared to 2030 (i.e., population, jobs and housing). The 2040 forecasts represent a re-projection of expected growth by 2040 and not an incremental growth from the previous 2030 projections. Lower traffic volumes are also an outcome of incorporating the 2010 Travel Behavior Inventory (TBI) survey; household trip rates are lower than in the 2000 TBI. Specifically, the observed motorized trip rate per household decreased from 10.3 in 2000 to 8.0 in 2010. The new regional activity based model accounts for this decrease and reflects other observed changes in travel behavior over the last decade.

The 2030 and 2040 forecasts are relatively the same on the state system (e.g. US 212 and TH 5). However, the 2040 traffic volumes are much lower on the parallel routes when compared to 2030 forecasts. This decrease can be linked to a shift in 2040 development assumptions. For example, year 2040 development is clustered within Victoria, Waconia and Cologne providing better accessibility to the state system (e.g. US 212 and TH 5). In the previous 2030 traffic forecasts, development assumptions were more sprawling and therefore more centered around the county roadway system.

4.2.G. Future Roadway System Needs

This section uses analysis from the travel demand model to identify 2040 roadway system needs. The Future Roadway System Needs section provides a comprehensive look at 2040 needs including traffic model forecasts, future congestion analysis, priority corridor identification, jurisdictional classification and system designation, and the functional classification system. This section builds on the characteristics of the existing system and projected socioeconomic growth to provide a vision for the 2040 roadway system, which directs the Policy Direction and Implementation sections.

4.2.G.1. 2040 Travel Demand Forecasts

The pattern and intensity of travel within the county is directly related to the distribution and magnitude of households, population and employment within the communities and neighboring counties. To understand these impacts, 2040 traffic forecasts for Carver County were prepared based on the socioeconomic projections identified in Table 8. These forecasts are an essential analytical tool to determine the adequacy of the roadway system to handle future development. The Carver County's ABTDM was developed to provide a 2040 outlook, while assessing future transportation needs. Three primary traffic forecasting scenarios were developed to meet the minimum requirements of the 2040 update guidelines described in Section 6. Two additional scenarios are being developed as optional value-added planning sensitivity efforts. More details of these scenarios (Scenario 4 and Scenario 5) are organized in Appendix D and will be developed further throughout the County's additional planning processes.

Each of the three primary scenarios were developed to represent varying assumptions regarding future development (socioeconomic forecasts) and funding plans, while meeting Metropolitan Council Requirements.

- Scenario One: Thrive 2040 No Build - Thrive 2040 Socioeconomic Forecast with no Roadway Improvements
- Scenario Two: Base Scenario, Thrive 2040 + Capital Improvement Program (CIP) - Thrive 2040 Socioeconomic Forecasts with Programmed Roadway Improvements (2017-2022 CIP)
- Scenario Three: Thrive 2040 + 20-year Transportation Improvement Plan – Thrive 2040 Socioeconomic Forecasts with Carver County Long-Term Roadway Improvements (CIP + 20-Year Transportation Tax Plan Improvements + Local Collector Improvements that are Anticipated with Development)

Optional Value-Added Planning Sensitivity Scenarios

- Scenario Four: 2040 Enhanced + 20-year Transportation Improvement Plan – Enhanced 2040 Local Socioeconomic Forecasts with Carver County Long-Term Roadway Improvements (CIP + 20-Year Transportation (Tax) Improvements + Local Collector Improvements that are Anticipated with Development)
- Scenario Five: 2040 Enhanced + RSP - Enhanced 2040 Local Socioeconomic Forecasts with Scenario 4 Road Network plus Additional Recommended Improvements.

It is important to recognize Scenarios One and Two serve as the primary scenarios for the purposes of the County's comprehensive plan update, as they are consistent with Thrive 2040 socioeconomic projections. Scenario Three is also consistent with Thrive 2040 socioeconomic projections and includes an enhanced revenue scenario, which is based on the County's recently adopted transportation taxes (1/2 percent sales tax, $20 vehicle excise fee, and $20 wheelage tax). Scenario Four and Five are sensitivity analyses to estimate a full buildout development needs in the County. The primary purpose of these scenarios is to estimate potential future traffic growth in order to determine potential long term right of way preservation needs in the developing areas of the county. This analysis is not required by Metropolitan Council and will be included in Appendix D in the plan.

Based on these scenarios, a planning-level analysis was performed to identify locations where capacity problems are expected to occur in the planning horizon year. Capacity was based upon the existing roadway system along with the programmed improvements described in the above scenarios. The volume-to-capacity (V/C) analysis completed for Carver County used a combination of typical planning-level roadway capacities and more refined planning-level roadway capacities to identify corridors that are expected to experience some level of congestion (see Table 4.7 for further information on these capacities).

Like the methodology to determine the existing capacity deficiencies, the future volumes were reviewed to determine if future capacity deficiencies will develop and the following congestion categories were used for the analysis.

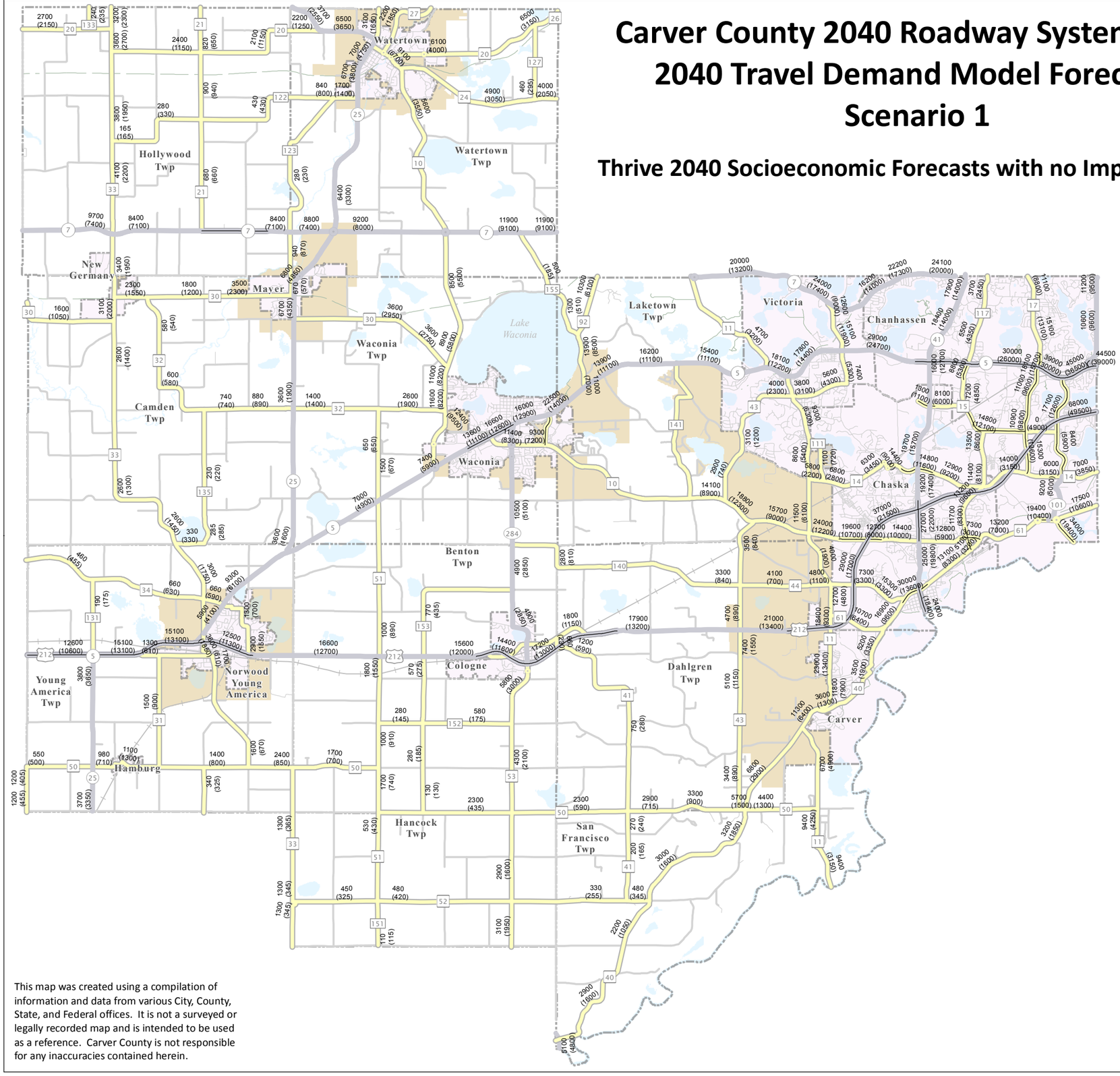
- **Uncongested** – The existing volume is less than 85 percent of the threshold volume, indicating a low probability of operational problems due to volume of traffic on the facility.
- **Near Congestion** – The existing volume is between 85 percent and 100 percent of threshold volumes, suggesting a moderate probability of operational problems due to traffic volume on the facility.
- **Congested** – The existing volume exceeds 100 percent of the threshold volume, indicating a high probability of operational problems due to the volume of traffic on the facility.

2040 traffic volume forecasts for Scenarios 1, 2, and 3 are listed in Figure 4.9: 2040 Travel Demand Forecasts Scenario 1, Figure 4.10: 2040 Travel Demand Forecasts & Recommended Improvements Scenario 2 – Base, and Figure 4.11: 2040 Travel Demand Forecasts & Recommended Improvements Scenario 3. Volume to Capacity ratios for Scenarios 1, 2, and 3 are in Figures 4.12, 4.13, and 4.14, respectively. Scenario 1, 2040 growth with no roadway improvements, shows V/C ratios exceeding 1.0 on priority mobility corridors including US 212, TH 5, TH 7, TH 41, and CSAH 10. Scenario 2, 2040 growth with limited roadway improvements as programmed in County CIP, shows similar capacity issues as Scenario 1. Scenario 3, 2040 growth with County Tax Plan improvements, relieves certain capacity issues on priority corridors including US 212, and pieces of TH 5 and CSAH 10 corridors. In summary, the application of Metropolitan Council's 2040 socioeconomic growth to the 2040 financially constrained transportation system yields capacity issues on key mobility corridors including TH 7, TH 41, TH 5, and CSAH 10.

Carver County 2040 Roadway Systems Plan
2040 Travel Demand Model Forecasts
Scenario 1

Thrive 2040 Socioeconomic Forecasts with no Improvements

DRAFT



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2040 Travel Demand Model Forecasts Scenario 1

Figure 4.9

Traffic Information — Traffic Volumes
- 2040
(####) - 2015

Legend

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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Carver County 2040 Roadway Systems Plan
2040 Travel Demand Model Forecasts & Recommended Improvements
Scenario 2 - Base

Thrive 2040 Socioeconomic Forecast and 2018-2023 Programmed Improvements

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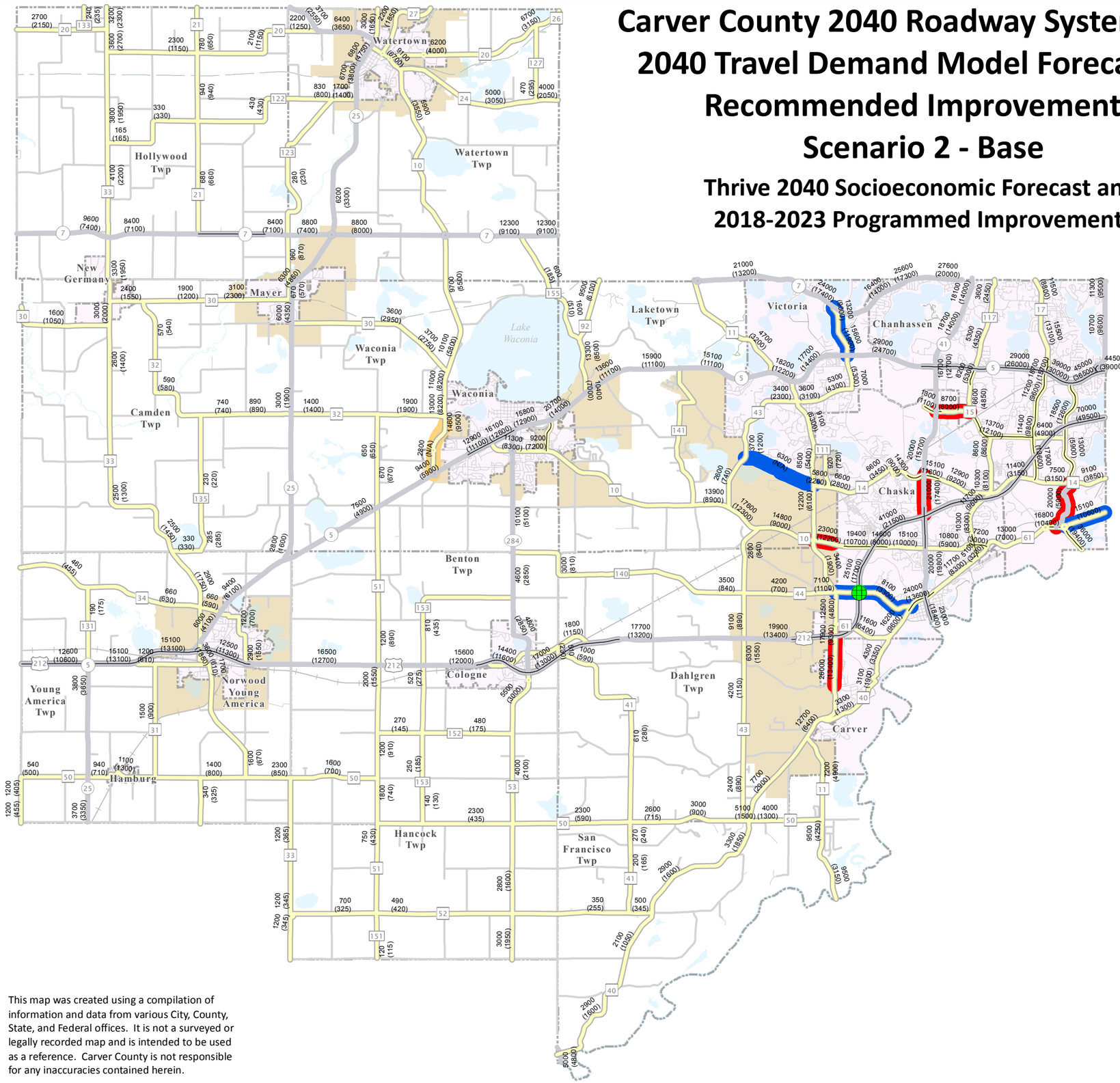

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2040 Travel Demand Model Forecasts & Recommended Improvements
Scenario 2 - Base
Figure 4.10

Traffic Information — Traffic Volumes
- 2040
(####) - 2015

Legend

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

Recommended Roadway Network

- 2-Lane
- 2-Lane Divided
- 4-Lane Divided
- Interchange

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

Note:

Only County and State Road Improvements are Shown

0 1 2 4 Miles

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Carver County 2040 Roadway Systems Plan
2040 Travel Demand Model Forecasts & Recommended Improvements Scenario 3

Thrive 2040 Socioeconomic Forecast and Long Term Roadway Improvements
(CIP + 20 Year Transportation Tax Plan Improvements)

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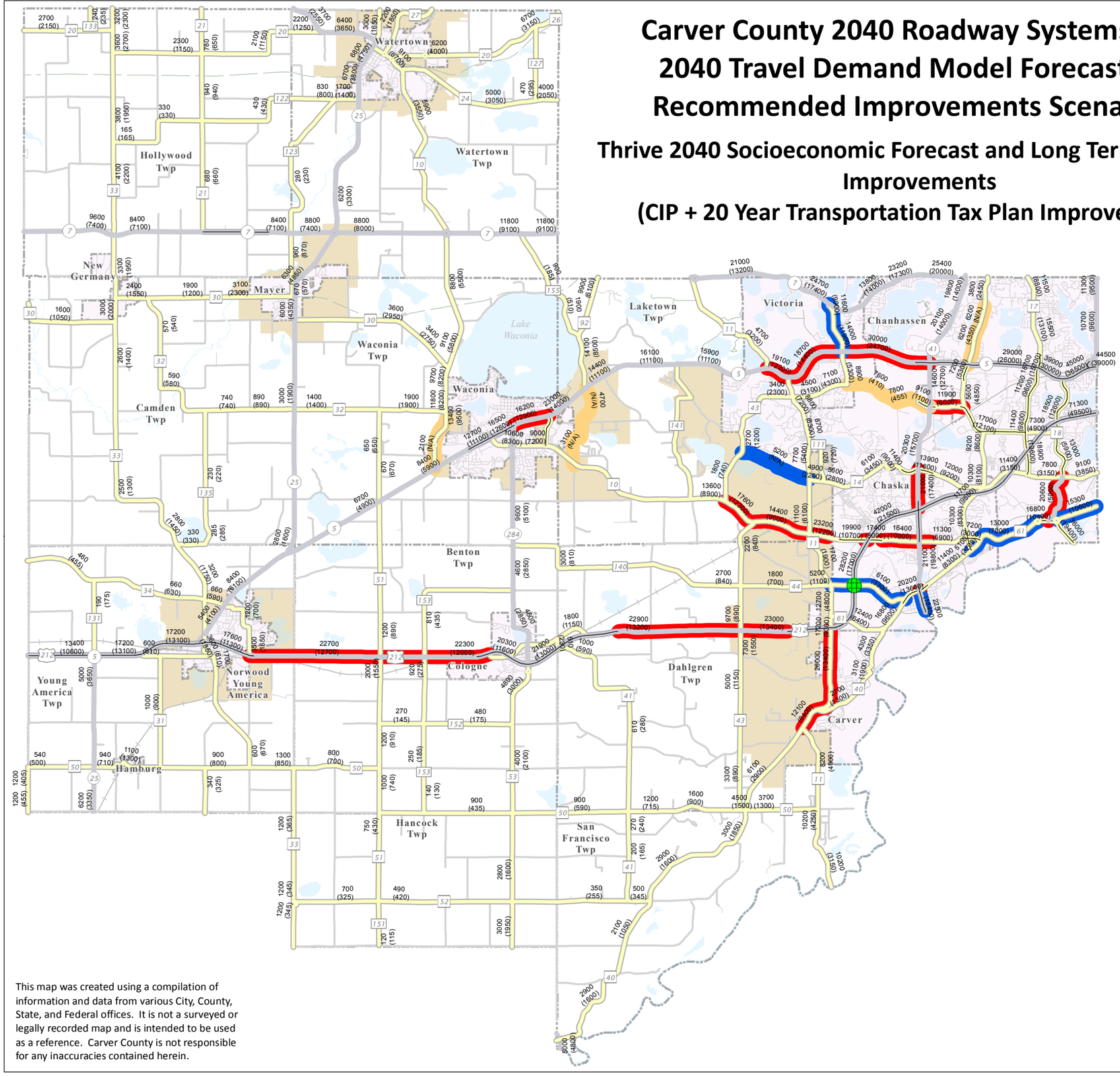

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2040 Travel Demand Model Forecasts & Recommended Improvements Scenario 3

Figure 4.11

Traffic Information — Traffic Volumes
- 2040
(####) - 2015

Legend

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

Recommended Roadway Network

- 2-Lane
- 2-Lane Divided
- 4-Lane Divided
- Interchange

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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Carver County 2040 Roadway Systems Plan
2040 Scenario 1 Volume-to-Capacity (V/C) Ratio

DRAFT

Hollywood Twp
Watertown
Watertown Twp
Mayer
New Germany
Waconia Twp
Lake Waconia
Waconia
Laketown Twp
Victoria
Chanhassen
Camden Twp
Chaska
Young America Twp
Norwood Young America
Cologne
Dahlgren Twp
Carver
Benton Twp
Hamburg
Hancock Twp
San Francisco Twp

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2040 Scenario 1
Volume-to-Capacity (V/C) Ratio

Figure 4.12

Legend

V/C Scenario 1

- < 0.85
- 0.85 - 1.00
- > 1.00

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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Carver County 2040 Roadway Systems Plan
2040 Scenario 2 Volume-to-Capacity (V/C) Ratio

DRAFT

Hollywood Twp
Watertown
Watertown Twp
Mayer
New Germany
Waconia Twp
Lake Waconia
Waconia
Laketown Twp
Victoria
Chanhassen
Camden Twp
Chaska
Young America Twp
Norwood Young America
Cologne
Dahlgren Twp
Carver
Benton Twp
Hamburg
Hancock Twp
San Francisco Twp

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2040 Scenario 2
Volume-to-Capacity (V/C) Ratio

Figure 4.13

Legend

V/C Scenario 2

- < 0.85
- 0.85 - 1.00
- > 1.00

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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Carver County 2040 Roadway Systems Plan
2040 Scenario 3 Volume-to-Capacity (V/C) Ratio

DRAFT

Hollywood Twp
Watertown
Watertown Twp
Mayer
New Germany
Waconia Twp
Lake Waconia
Laketown Twp
Victoria
Chanhassen
Camden Twp
Waconia
Chaska
Young America Twp
Norwood Young America
Cologne
Dahlgren Twp
Carver
Benton Twp
Hamburg
Hancock Twp
San Francisco Twp

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2040 Scenario 3
Volume-to-Capacity (V/C) Ratio

Figure 4.14

Legend

V/C Scenario 3

- < 0.85
- 0.85 - 1.00
- > 1.00

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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4.2.G.2. Jurisdictional Classification

The jurisdiction of roads is an important element of the future system plan because roadways that are misaligned (i.e., not owned by the most appropriate jurisdiction) can result in several problems for the transportation system. These include:

- Causing the highway system to contain segments that are not "jurisdictionally appropriate" for current and future functions.
- Setting design and condition standards that exceed actual roadway function.
- Directing critical financial resources away from appropriately aligned roadways.
- Providing a level of service in terms of both capacity and customer expectations (i.e., safety, ride equality, and maintenance) that does not match the actual roadway conditions or ownership.

Potential jurisdictional transfers should be pursued as opportunities arise. This RSP establishes guidelines and screening criteria for jurisdictional transfers. Information is provided under the Policy Direction section which includes Jurisdictional Transfer Criteria and Jurisdictional Guidelines Regarding Township and City Transfers to the County. Potential jurisdictional transfers are shown in Figure 4.16: Potential Jurisdictional Transfers.

4.2.G.3. System Designation

Carver County highways are signed as County Roads (CR), but for the funding purposes the county highway system is divided into two categories: County State Aid Highways (CSAH) and County Roads (CR). The difference in designation relates to the route's function and funding. The CSAH system originated in the mid-1950s to provide an integrated network of secondary roads servicing the state's rural transportation needs. Routes qualifying or designated as CSAHs are eligible to receive state funding for maintenance and construction activities, while CRs are funded with local property tax dollars. In Carver County, generally 2-digit numbered county roads are eligible for State Aid (i.e. CR 18, CR 10), while 3-digit county roads (i.e., CR 131, CR 153) are funded with local tax dollars. Administration of the CSAH system is based on a detailed set of rules administered by the Minnesota Department of Transportation Office of State Aid. These rules outline requirements and responsibilities including designation, maintenance, and reconstruction.

Reviewing the system designation ensures that demographic and transportation changes in the county are adequately addressed through system designation changes. Route designation, as outlined in Chapter 8820.07 of the State Aid Rules "Selection Criteria," parallels the functional classification criteria used to designate collector and arterial routes. State Aid criteria are summarized as follows:

- State Aid routes carry heavier traffic volumes or are functionally classified as collector or arterial routes on the county's functional classification system.
- State Aid routes connect towns, communities, shipping points and markets within a county or in adjacent counties; provide access to churches, schools, community meeting halls, industrial areas, state institutions and recreational areas; or serve as a principal rural mail route and school bus route.
- State Aid routes provide an integrated and coordinated highway system, consistent with projected traffic demands.

Carver County's transportation system should be periodically reviewed to identify additional potential designation changes, based on functional classification changes, jurisdiction changes, proposed new roadway alignments and major construction projects recommended by this plan.

Other methods of revising designations are available for consideration. These include three approaches:

1. As cities grow beyond 5,000 in population and become eligible for Municipal State Aid (MSA), it may be possible to have these cities accept on to their new MSA system, CSAH roads within their boundaries. Appropriately selected, these changes could help cities by increasing their State Aid "needs" while also benefiting the county by freeing-up CSAH mileage that could then be assigned to existing CRs or new routes.
2. If existing MSA eligible cities have less than 20 percent of their municipal roadways designated MSA, it may be advantageous to the city to have the county upgrade a CSAH within the city and then have the city accept it on to its MSA system. In this example, the city obtains county assistance for a roadway important to the city, and then the county, by transferring the CSAH designation to MSA, frees up CSAH mileage to be used on another important road in its system.
3. The county can maintain its current CSAH designations but increase its "needs" and therefore increase funding for these roadways by regularly updating its "after the fact" needs data.

System designation and continually updating "State Aid needs" is an important element to the county's transportation system because it can affect the sources of funding and facility standards. The long-term (2040 and post-2040) designation vision for the roadway system in Carver County is illustrated in Figure 4.15. Figure 4.15: Future CSAH/County Road System illustrates the long-term vision for the future county road system. Potential jurisdictional transfers and future interchange access and preservation locations are identified in Figure 4.16: Potential Jurisdictional Transfers.

Carver County 2040 Roadway Systems Plan
Future CSAH / CR System

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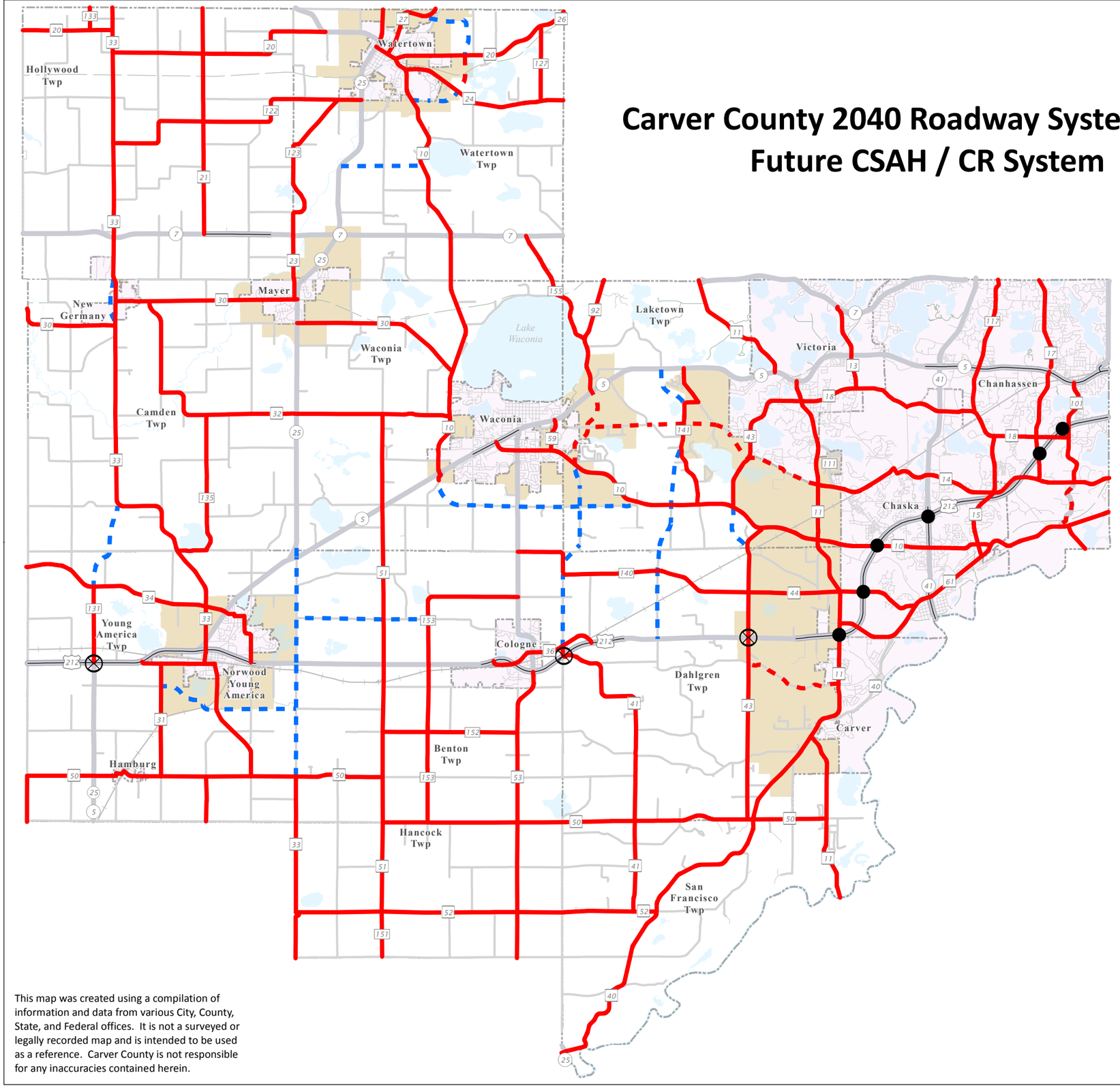

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Future CSAH / CR System

Figure 4.15

Legend

TH 212 Access

- Interchange Access Locations
- Potential Interchange Preservation Location

County Road Network

- County Road System
- Additions to County Road System by 2040
- Additions to County Road System Post 2040

Other Roadway Network

- 2 Lane Trunk Highway
- 4 Lane Trunk Highway
- City/Township Road

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

Note:

Does not depict potential jurisdictional transfers unless agreement is in place.

0 1 2 4 Miles

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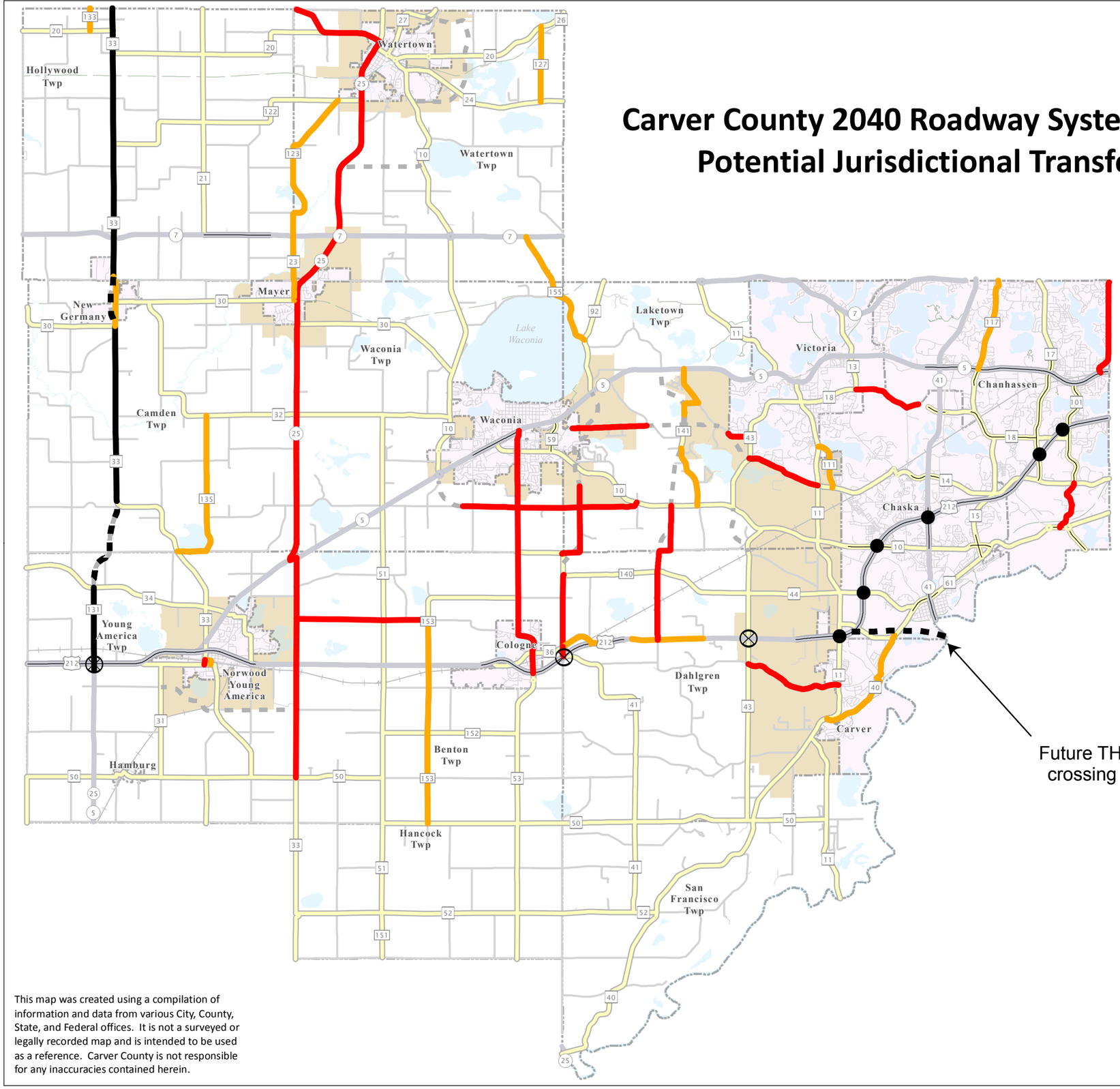
Carver County 2040 Roadway Systems Plan
Potential Jurisdictional Transfers

DRAFT



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Potential Jurisdictional Transfers

Figure 4.16

Legend

TH 212 Access

- Interchange Access Locations
- Potential Interchange Preservation Location

Jurisdictional Transfers

- Potential Transfer to City/Township
- Potential Transfer to County
- Potential Transfer to State

County Road Additions

- Potential Future System Connectivity

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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4.2.G.4. Future Functional Classification

The future roadway functional classification defines the function and role of all key highways within the hierarchy of Carver County's transportation system. The designation of a future functional classification for the roadway system enables state, county, and local planning officials to better manage access and the design of roadways. The future functional classification recommendations attempt to address anticipated changes in land use and development patterns, address inconsistencies and misaligned routes related to established guidelines, and provide appropriate connections to adjacent counties.

The future functional classification for the county's roadway network is shown in Figure 4.17: Future Functional Classification. The future functional classification designation is primarily for corridor planning and preservation, and the functional classification of the roadway could be changed to this designation within the 2040 planning horizon.

As the population and employment of the region continues to grow and urban development encompasses more of the land area, additional principal arterial roadways will be needed, beyond the planning horizon of this plan. Based on spacing, connectivity, and other functional classification criteria, the following routes are identified as potential future (post-2040) principal arterials:

- CSAH 33/CR 131/TH 5 – from the north county border running south along CSAH 33, utilizing a new roadway segment connection to CR 131, continuing south along CR 131 connecting with TH 5 south of US 212, running to the south county border.

Carver County 2040 Roadway Systems Plan
Future Functional Class

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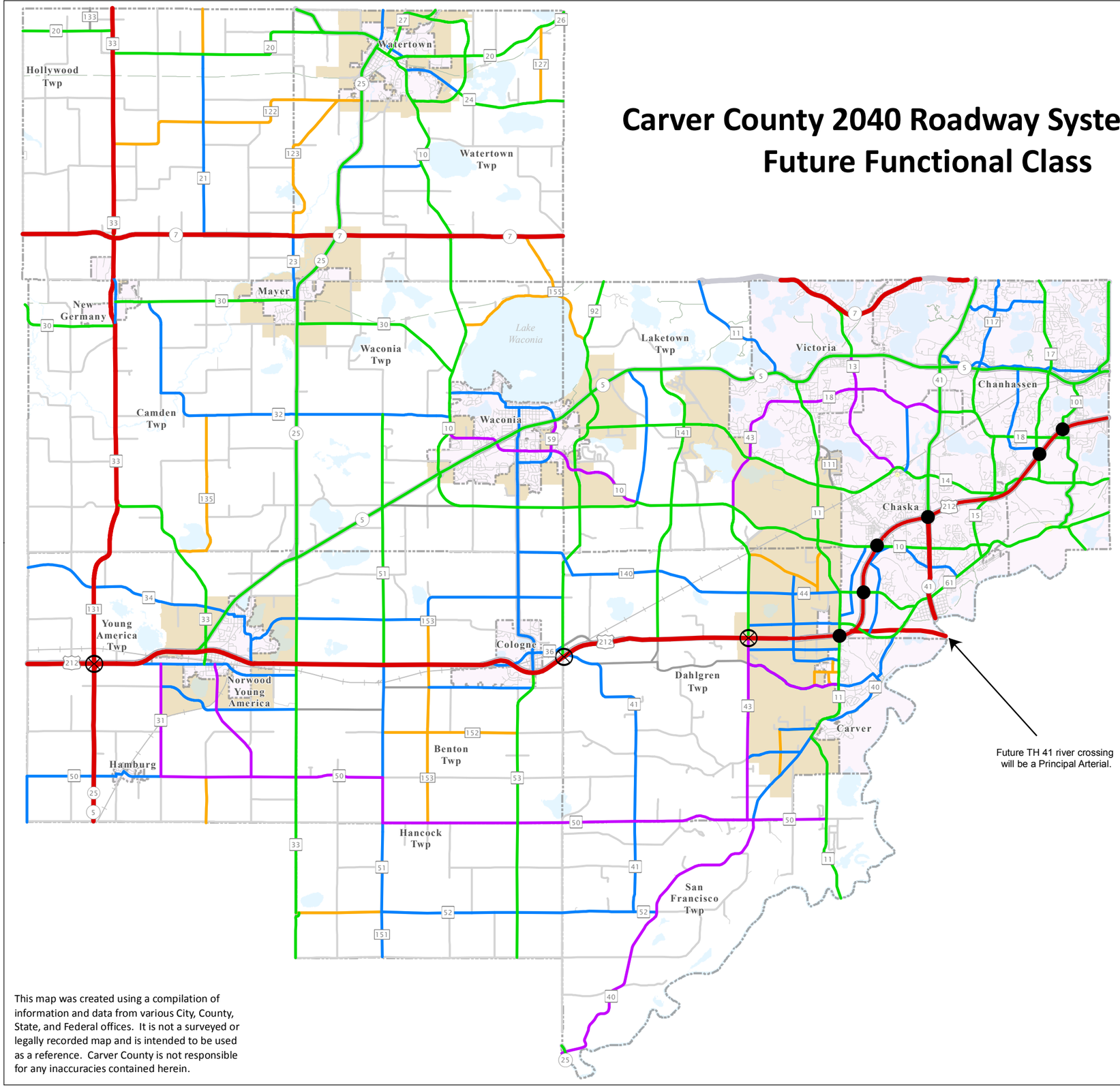

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Future Functional Class

Figure 4.17

Legend

- Interchange Access Locations
- Potential Interchange Preservation Location

Future Functional Class

- Principal Arterial
- A Minor Arterial
- B Minor Arterial
- Major Collector
- Minor Collector
- Local

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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4.2.G.5. Priority Corridors

The traffic model is one tool used in helping plan for the future. Detailed corridor studies and/or traffic studies are a more comprehensive approach to determine appropriate solutions for maintaining safe, accessible, and well-engineered corridors for the future transportation system. The following corridors are priorities for future study:

- TH 5 (Completed in 2008, Scheduled to be updated for Victoria and Chanhassen area in 2018, 2019)
- US 212 (Completed in 2016)
- TH 41 and CSAH 61 in Chaska, Chanhassen and Carver. (Completed in 2017)
- CSAH 10 (Scheduled for 2018)
- CSAH 11 in Carver (Completed in 2018)
- CSAH 18 in Chaska and Victoria (Scheduled for 2018, 2019)
- CSAH 13 in Victoria (Scheduled for 2018, 2019)
- Future CSAH 92 (East Waconia Bypass) (Scheduled for 2018)

4.2.G.6. Post– 2040 Roadway System Plan

The 2014 Amendment to the County's 2030 Comprehensive Plan recognized future roadway system connections based on the 2030 traffic forecasts. The 2040 roadway needs were updated with the 2040 traffic model, which includes updated, lower 2040 socioeconomic inputs. Some of the roadway system needs identified in the 2014 amendment may be now post-2040 needs and may no longer be included in this plan.

It is important to perform a sensitivity analysis in a high growth area like Carver County in the event that more aggressive land development than predicted with THRIVE 2040 occurs, as well as to anticipate post-2040 full buildout needs for corridor preservation. Scenario 4 and 5 along with the road network from the 2030 Comprehensive Plan (2014 Amendment) was used as a post-2040 planning model and included in Appendix D to this roadway system plan.

4.2.G.7. 2040 Intersection Capacity Analysis

Similar to the existing conditions intersection capacity analysis, the intersection analysis tool was run to identify the deficient intersections that can be expected under future scenario conditions. The volume-to-capacity results are overlaid onto Figures 4.12, 4.13, & 4.14 and included in Appendix D as Figures D.2, D.3, and D.4.

4.2.H. Policy Direction

It is important to establish appropriate policies and guidelines to guide the maintenance and development of the County's roadway network. These policies strive to balance the needs of maintaining an efficient transportation network with community needs and priorities. The following sections discuss the RSP policies and guidelines established for Carver County.

Existing transportation related Policies and Procedures as adopted by the County Board of Commissioners include:

- Rumble Strip Policy
- Highway Sign Policy
- Snow and Ice Control Policy
- Right of Way Ordinance
- Landscape Policy
- Cost Participation Policy (Cooperative Highway Projects)
- Cost Participation Policy (Trails)
- Development Review Procedure
- ADA Transition Plan

This 2040 RSP includes policy direction considered valuable for planning a sound and sustainable transportation system. These policies are brought forward from the 2030 RSP policies with minor updates.

4.2.H.1. Jurisdictional Transfers

The jurisdiction of roads is an important element of the future system plan because it affects several organizational functions and obligations (e.g., regulatory, maintenance, construction, and financial). The hierarchy of jurisdictional classification is typically established so that higher volume, regional corridors carrying inter-county traffic are maintained by MnDOT (e.g., trunk highways), while intermediate volume corridors with more limited travel sheds (e.g., County State Aid Highways and County Roads) are maintained by the county. Roadways that serve local traffic (e.g., Municipal State Aid Streets/city streets, and township roads) should be maintained by the individual municipality or township. In that respect, jurisdictional classification is intended to maintain a balance or responsibility among state, county, municipal, and township agencies.

If a roadway is not aligned properly with the appropriate jurisdiction there is an opportunity to transfer ownership of the roadway between jurisdictions. This could include a "turn-up" (i.e. transfer from township/city to county OR county to MnDOT) or "turnback" (i.e. transfer from county to a township/city). Table 4.9 provides jurisdictional guidelines relative to county roads for making transfer determinations.

◊ **Table 4.9: Jurisdictional Guidelines**

County Jurisdiction Guidelines	Jurisdictional Transfer Guidelines
Functional Class: The functional classification of roadways within the county system should primarily consist of minor arterials and collector roads.	Most of the county road system should be classified as minor arterials and collectors. Typically, local cities and towns have jurisdiction over collector roads and all local roads, and the state has jurisdiction over principal arterials such as interstates and trunk highways. If the roadway is determined to be misaligned functionally, then a jurisdictional transfer should be considered.
Traffic Volume: Facilities within the county roadway system should carry a relatively heavy volume of daily and peak hour trips.	The traffic volume should be consistent among facilities within the county roadway system. According to criteria established in the 2040 Transportation Policy Plan, typical average daily traffic (ADT) volumes of collectors are characterized as supporting 1,000 – 15,000 vehicles and local roads typically support less than 1,000 vehicles within the urban service area. Facilities within the county roadway system with low ADT volume of less than 1,000 should be considered candidates to transfer to the local jurisdiction.
System Continuity and Connectivity: Facilities within the county roadway system should be consistent with the primary purpose of supporting regional and sub-regional travel. County roadways should interconnect to other county roadways and the regional highway system. These facilities should link major job and activity centers, span major natural or man-made barriers, or interconnect urban and rural environmental.	The county is primarily responsible for maintaining regional and sub-regional travel, whereas state jurisdictions are focused on maintaining connections to regional job concentrations and providing connections between major cities and local jurisdictions are focused on maintaining connections within local neighborhoods. County facilities that are misaligned with the primary purpose of the county roadway system should be considered to transfer to the state or local jurisdictions.
Segment Length: The county roadway system should support medium length trips that travel within a community or across city boundaries within the county.	County facilities that consist of short segments or are disjointed with a different jurisdiction maintaining the majority of the roadway, are not consistent with the primary purpose of the county roadway system. Whereas, facilities that consist of longer segments (greater than 8 miles with at least 5 continuous miles on principal arterials) that span across multiple counties or cities should be considered for transfer to the state jurisdiction.

◊ **Table 4.9: Jurisdictional Guidelines—Continued**

County Jurisdiction Guidelines	Jurisdictional Transfer Guidelines
System Spacing: The system spacing should be compatible with the county roadway network.	Roadways within the county roadway system should be consistent with the typical system spacing of minor arterials and collector roads. Based on the 2040 Transportation Policy Plan, system spacing of minor arterials typically should be spaced every one-half to two miles where urban or suburban level of development is planned. County roadways that are spaced further or closer than this should be considered for transfer to the state or local jurisdiction.
Level of Mobility and Land Access: County roads should be characterized as providing a moderate level of mobility compared to a relatively lower level of direct land access.	The balance between providing mobility and land access should be consistent. Although variation may exist between urban and rural area, most of the county roadway system should support mobility versus land access. County roadways that primarily provide local land access rather than mobility, may be appropriate candidates to transfer to the local jurisdiction. Whereas, county facilities whose function is to emphasis mobility for longer trips rather than direct land access may be appropriate candidates to transfer to the state jurisdiction.
Weight Limits: The county roadway system should support a freight network that allows the movement of goods/ products between commercial centers, freight generators and the region.	The weight limitations of a road and bridge play a factor in supporting the movement of heavy commercial vehicles: • All paved routes in Minnesota are 10-ton routes, unless posted with a sign indicating a lesser axle weight limit. County roads not designed as 10 ton routes may be appropriate candidates to transfer to the local jurisdiction. • All unpaved routes in Minnesota are 9-ton routes, unless posted with a sign indicating a lesser axle weight limit. *(Source Minnesota Trucking Regulations - MnDOT)*

Jurisdictional Screening Criteria

Using the jurisdictional guidelines (see Table 9), a set of screening criteria (see Table 4.10) were developed to help the county identify future jurisdictional transfer candidates. The following benchmarks help support the screening criteria when determining if a roadway is misaligned with the appropriate jurisdiction.

- Low Misalignment Probability: If the roadway meets five or more of the screening criteria, there is a low probability the roadway is misaligned with the responsible jurisdiction.
- Medium Misalignment Probability: If the roadway meets four to five of the screening criteria, there is a medium probability the roadway is misaligned with the responsible jurisdiction.
- High Misalignment Probability: If the roadway meets one to three of the screening criteria, there is a high probability the roadway is misaligned with the responsible jurisdiction.

◊ **Table 4.10: Jurisdictional Screening Criteria**

Criteria	Local Roadway System	County Roadway System	State Roadway System
Future Functional Class	The local roadway system should primarily represent roads classified as "locals" or "minor" collectors.	The county roadway system should primarily represent roads classified as "major collectors" and above.	The state roadway system should primarily represent roads classified as "minor arterials" and above.
Traffic Volume	Typically, < 1,000 ADT	Typically, > 2,500 ADT	Typically, > 10,000 ADT in urban areas Typically, > 5,000 ADT in rural areas
System Continuity and Connectivity	Provides connections to local roads or collectors.	Provides continuous, sub-regional east/west or north/south routes.	Provides continuous, regional east/west or north/south routes.
Segment Length	Serves trips of small length (e.g., < 3 mile).	Serves trips of moderate length (e.g., 3 to 15 miles).	Serves trips of moderate to large lengths (e.g., > 15 miles), or segments greater than 8 miles with at least 5 continuous miles on principal arterials.
System Spacing	Local roads should be spaced at intervals that safely bring traffic to collectors.	County roads should be adequately spaced. A-Minor arterials may vary between 1/8 to ½ mile in urban environments and 2 to 3 miles in rural environments.	State roads should be adequately spaced. Principal Arterials are spaced 1 to 5 miles, depending on their location (urban vs. rural).
Level of Mobility and Land Access	Unrestricted access/local thru traffic/ low speed (e.g., (35 mph)	Controlled access/local & regional thru traffic/ higher speeds (e.g., 35 mph – 55 mph)	Restricted access/no local traffic/higher speeds (e.g., 55 mph)
Freight (Weight Limit)	Paved routes < 10 ton Unpaved routes < 9-ton	Paved routes = 10 ton Unpaved routes > 9-ton	Paved routes = 10 ton Unpaved routes > 9-ton

Jurisdictional Guidelines Regarding Township and City Transfers to the County

The county will consider township/city turn-ups (transfers to the county) based on the following guidelines:

- Roadway must be identified in a Long Range Transportation Plan as a future county highway.
- Existing ADT > 750 for rural unpaved roadway.
- Existing ADT > 2,500 for rural paved roadway.
- Existing ADT > 5,000 for urban paved roadway.
- Roadway creates a contiguous sub-regional county route.
- Continual coordination (and collaboration) between Township/City and County after criteria being met. This includes consideration of funding availability at the time of consideration.

4.2.H.2. Safety

Roadway safety is an important issue for county officials and a high priority for MnDOT, local agencies, and the public. As part of MnDOT's statewide highway safety planning process, a County Road Safety Plan (CRSP) (2013) was prepared for Carver County. This recently completed plan sought to reduce severe crashes by documenting at-risk locations and identifying cost-effective safety improvement strategies that Carver County could complete once funding becomes available.

Unfortunately, the shelf life of the CRSP is limited, and it is recommended that the CRSP be updated with new data and practices as they become available. Carver County is committed to a policy based approach as it pertains to safety. In keeping with the structure and theme of the CRSP, the county will continue to update and monitor crash data as roadway and traffic conditions change. The county will also continue to be proactive to prevent additional at-risk locations from developing, as well as continue to be reactive to already existing at-risk locations. Existing recommendations identified in the CRSP as well as any future recommended safety projects and studies will be implemented as funding becomes available through the Highway Safety Improvement Program (HSIP) and other local funding sources.

4.2.H.3. Access Management

Access management guidelines provide a means for transportation engineers and planners to balance private property concerns with the need to provide for a safe and efficient transportation system. Standardized guidelines provide a way for clear communications between the agencies and individuals involved (developers, city/county staff, landowners) in the process. The access spacing guidelines developed for Carver County reflect those adopted by MnDOT. Through this coordination, access in Carver County will be consistent with MnDOT best practices.

Access guidelines and corridor management practices should be implemented at the county and city levels, as well as by townships with active land use planning programs, because these units of government are involved at the planning stages of development proposals. Long-term benefits of access management require mutual support and effective communication at all government levels. Table 4.11 below provides a summary of the MnDOT Access Spacing Guidelines and the 2040 RSP Carver County Access Spacing Guidelines.

◊ Table 4.11: MnDOT and Carver County Access Management Guidelines

Source: MnDOT Access Management Manual, Chapter 3 (January 2008) & Carver County

Category		Area or Facility Type	Typical Functional Class	Intersection Spacing		Signal Spacing	Private Access
				Primary Full Movement Intersection	Conditional Secondary Intersection		
MnDOT Access Spacing Guidelines	1	High Priority Interregional Corridors (US 212)					
	1F	Interstate Freeway	Principal Arterials	Interchange Access Only			
	1A-F	Non-Interstate Freeway		Interchange Access Only			
	1A	Rural, Exurban & Bypass		1 mile	1/2 mile	Interim Only By Deviation Only	By Deviation Only
	2	Medium Priority Interregional Corridors (N/A)					
	2A-F	Non-Interstate Freeway	Principal Arterials	Interchange Access Only			
	2A	Rural, Exurban & Bypass		1 mile	1/2 mile	Strongly Discouraged By Deviation Only	By Exception or Deviation Only
	2B	Urban/Urbanizing		1/2 mile	1/4 mile	Strongly Discouraged By Deviation Only	By Exception or Deviation Only
	2C	Urban Core		300-600 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
	3	Regional Corridors (TH 7)					
	3A-F	Non-Interstate Freeway	Principal and Minor Arterials	Interchange Access Only			
	3A	Rural, Exurban & Bypass		1 mile	1/2 mile	1 mile	Permitted Subject to Conditions
	3B	Urban/Urbanizing		1/2 mile	1/4 mile	1/2 mile	By Exception or Deviation Only
	3C	Urban Core		300-600 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
Carver County Access Spacing Guidelines	4	Principal Arterials					
	4A-F	Non-Interstate Freeway	Principal Arterials	Interchange Access Only			
	4A-F	Rural, Exurban & Bypass		1 mile	1/2 mile	1 mile	By Deviation Only
	4B	Urban/Urbanizing		1/2 mile	1/4 mile	1/2 mile	By Exception or Deviation Only
	4C	Urban Core		300-600 feet dependent upon block length		1/4 mile	Permitted Subject to Conditions
	5	Minor Arterials					
	5A	Rural, Exurban & Bypass	Minor Arterials	1/2 mile	1/4 mile	1/2 mile	Permitted Subject to Conditions
	5B	Urban/Urbanizing		1/4 mile	1/8 mile	1/4 mile	By Exception or Deviation Only
	5C	Urban Core		300-600 feet dependent upon block length		1/8 mile	Permitted Subject to Conditions
	6	Collectors					
	6A	Rural, Exurban & Bypass	Collectors	1/2 mile	1/4 mile	1/2 mile	Permitted Subject to Conditions
	6B	Urban/Urbanizing		1/4 mile	1/8 mile	1/4 mile	
	6C	Urban Core		300-600 feet dependent upon block length		1/8 mile	
	7	Specific Action Plan					
	7	All	All	By Adopted Plan			

The following are notes related to Table 4.11:

- The guidelines in Table 4.11 apply primarily to routes with a collector functional classification or above; however, partners may also use the guidelines for applicable local streets.
- The guidelines should be used as long-term goals, not as absolute rules.
- Maintaining a degree of flexibility is important in promoting access consolidation.
- The approach to implementation is as important as the guidelines themselves.
- Existing physical barriers or constraints need to be considered.

The first step in encouraging better access management is to develop consistent access standards for both rural and urban roadways. Access management efforts in urban areas typically focus on addressing mobility concerns while balancing access needs of local businesses and residents. In existing corridors where significant development has occurred, the number of existing access points will likely exceed access guidelines. Unless significant redevelopment is occurring in along these corridors, access management must be approached differently than in undeveloped rural areas. In urban areas, new access points should be minimized while existing access points are consolidated or reduced as redevelopment occurs.

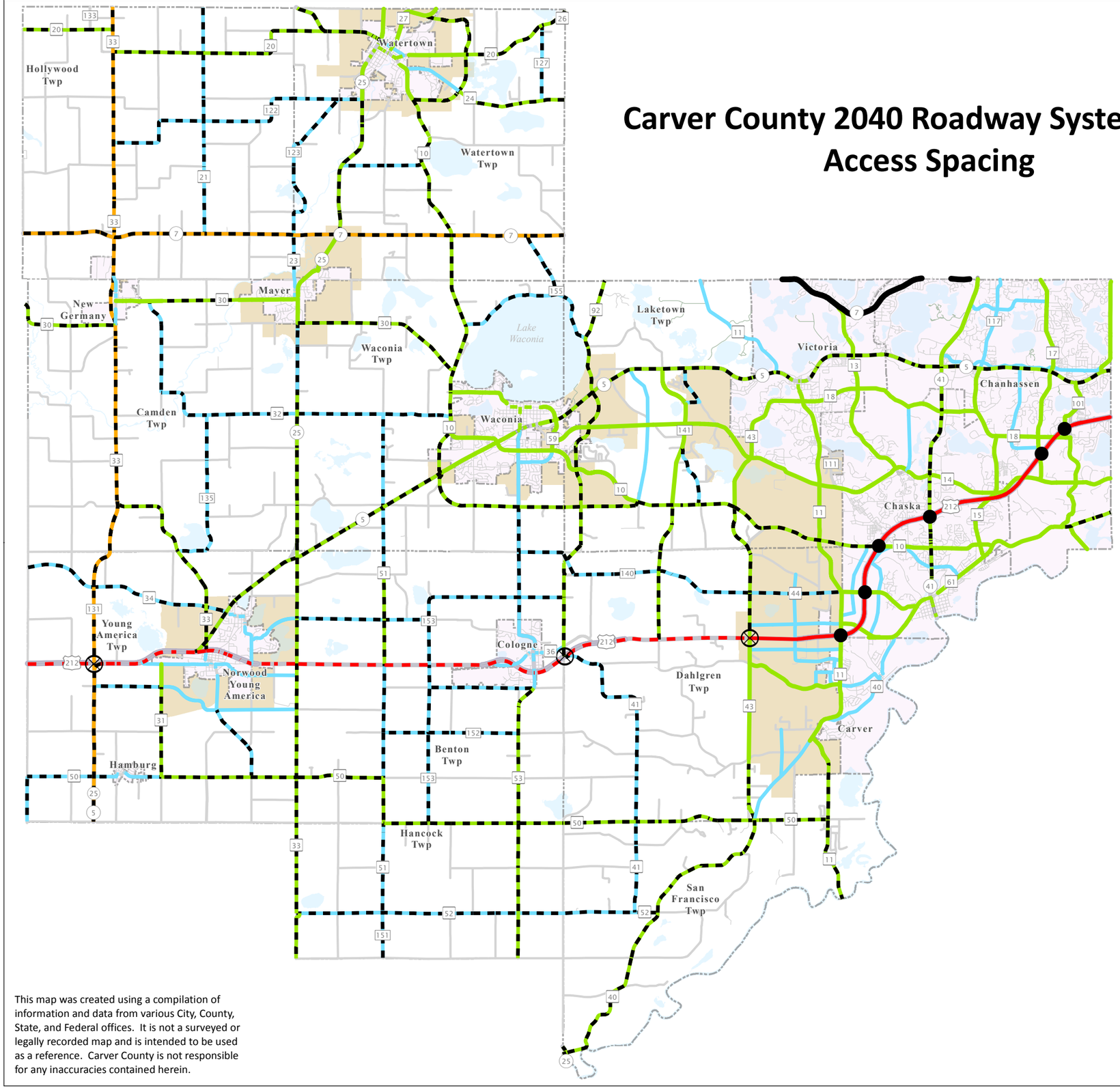
In addition to establishing spacing guidelines, it is important to consider how these guidelines are implemented as part of county planning and development review procedures. Figure 4.18: Access Spacing illustrates the recommended spacing by roadway type.

Best access management practices in urban and developing areas include the following:

- **Encourage shared driveways and internal circulation plans:** If indirect access cannot be achieved during plat reviews, promote internal site circulation using shared access points.
- **Restrict turning movements to reduce conflicts:** If access points cannot be eliminated, consider turning movement restrictions (e.g., left-in only or right -in/right-out only) through the installation of raised median or other channelization or signing. Eliminating a single turning movement can significantly reduce vehicle conflicts and potential crashes.
- **Develop good parallel street systems for carrying local traffic:** Make sure that important arterial routes have connecting parallel street system to provide the local access function and to carry shorter local trips.
- **Develop proper setbacks for future frontage roads:** If frontage roads cannot be justified (benefits do not outweigh costs), make sure that proper building and parking lot setbacks are established so that future frontage roads can be installed with minimal impacts.
- **Develop proper secondary street spacing:** When reviewing plats and new development proposals, be sure that they provide proper intersection spacing for future signals. As a guideline, signalized intersections should be limited depending upon the type of street. Collector streets should provide some continuity and connectivity with other street systems.
- **Encourage proper lot layout to minimize access points:** Promote direct residential access points onto local routes, not arterials or major collectors. Direct residential access to arterial or collector routes can result in complaints when traffic levels increase. In rural areas, where farms have one access point per 40-acre entitlement and where they cluster lots in one portion of the farmstead, access should be encouraged off local roads, not high-speed, high-volume state or county roads.

Carver County 2040 Roadway Systems Plan
Access Spacing

DRAFT



This map was created using a compilation of information and data from various City, County, State, and Federal offices. It is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

0 1 2 4 Miles

Access Spacing

Figure 4.18

Legend

TH 212 Access

- Interchange Access Locations
- Potential Interchange Preservation Location

High Priority Interregional Corridors

- 1A — *Rural Principal Arterial (1 mile full intersection spacing, 1/2 mile secondary intersection spacing)*
- 1A-F — *Non-Interstate Freeway (Interchange Access Only)*

High Priority Regional Corridors

- 3A — *Rural, Exurban & Bypass (1 mile full intersection spacing, 1/2 mile secondary intersection spacing)*

Minor Arterials

- 5A — *Rural, Exurban & Bypass Arterial (1/2 mile full intersection spacing, 1/4 mile secondary intersection spacing)*
- 5B — *Urban/Urbanizing Arterial (1/4 mile full intersection spacing, 1/8 mile secondary intersection spacing)*
- 5C — *Urban Core Arterial (300-600 feet, depending upon block length)*

Collectors

- 6A — *Rural, Exurban & Bypass Collector (1/2 mile full intersection spacing, 1/4 mile secondary intersection spacing)*
- 6B — *Urban/Urbanizing Collector (1/4 mile full intersection spacing, 1/8 mile secondary intersection spacing)*
- 6C — *Urban Core Collector (300-600 feet, depending upon block length)*

Specific Access Plan

- 7 — *Specific Access Plan*

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200

Created: 4/27/2018

- **Encourage connectivity between developments:** Individual developments should align streets to provide access to existing developments or reserve right-of-way to provide for future connections to adjacent developments. This promotes neighborhood connectivity, good emergency services and more efficient travel for mail, garbage and bus services as well as street maintenance activities.
- **Consider official map process for important corridors:** Important arterial corridors or future interchange areas that are in development-prone areas can be protected through an official mapping process. Local agencies should revise zoning ordinances and subdivision regulations to provide for dedication of officially mapped corridors at the time of platting.

Within urban areas, access management objectives relate to maintaining roadway capacity and mobility, and improving safety. However, the rationale for managing access in rural areas differs somewhat from the rationale used in urban areas. Roadways in rural areas mostly serve low-density land uses and usually have volumes well below capacity thresholds. Managing rural access increases safety (i.e., sight distance, number of conflict areas, and severity of crashes when vehicles run-off-the-road) and minimizes operational/maintenance costs (i.e., snow removal, resurfacing and drainage).

To address access in rural areas, Minnesota's Local Road Research Board (LRRB) developed the following best management practices:

- Establish an access policy – develop a formal policy that ensures that the agency has processes in place to determine the need for and evaluate the use, location, spacing, and design characteristics of the requested access points.
- Encourage coordination during the zoning and platting processes.
- Give access permits for specific use.
- Encourage adequate spacing of access points.
- Protect the functional area of intersections.
- Ensure adequate sight distance at entrances.
- Avoid offset or dogleg intersections and entrances.
- Encourage development of turn lanes and entrances.
- Consider consolidating access or relocating existing access.
- Encourage good driveway and intersection design characteristics, such as:
- Require proper driveway width and turning radii.
- Require proper corner clearance
- Require adequate approach grade
- Align intersections at right angles to maximize sight lines, to minimize the time a vehicle is in the conflict area, and to facilitate turning movements.
- Require proper grading of entrance in-slopes and culvert openings.
- Keep sight triangles and clear zones free of obstructions.

4.2.H.4. Right-of-Way

Right-of-way is a valuable public asset. Therefore, it needs to be preserved and managed in a way that respects its intended function, while serving the greatest public good.

Carver County, with the current and anticipated growth will need to reconstruct, widen and construct new roadway segments to meet future capacity and connectivity demands. Such improvements will require adequate right-of-way to be maintained or secured. To ensure consistency and financial responsibility, the county has established right-of-way guidelines, which identify needed right-of-way widths. Table 4.12 presents the 2040 right-of-way guidelines by facility type and with consideration of the type of bike/pedestrian facility needed. Use of these guidelines during the development review, corridor preservation, and right-of-way acquisition processes will preserve county mobility goals and provide for orderly and cost-effective development.

◊ **Table 4.12: Carver County Right-of-Way Guidelines***

Facility Type	Definition**	ROW Widths (ft.)***		
		No Bike/Pedestrian Facilities	One Separated Bike/Pedestrian Facility	Two Separated Bike/Pedestrian Facilities
2-lane rural	turn lanes + trail one side	120	140	160
2-lane divided rural	median + turn lanes (ltl, rtl) + trail one side	130	150	170
2-lane divided urban	median + turn lanes (ltl, rtl) + trail both sides	110	120	130
2-lane urban - undivided	turn lanes (ltl, rtl) + trail both sides	100	110	120
2-lane urban - continuous left-turn lane	turn lanes (ltl, rtl) + trail both sides	100	110	120
4-lane rural	divided with turn lanes (ltl, rtl) + trail one side	180	200	220
4-lane urban	divided with turn lanes (ltl, rtl) + trail both sides	130	140	150
6-lane urban	divided with turn lanes (2xltl, rtl) + trail both sides	170	180	190

* All ROW widths assume no parking on roadway

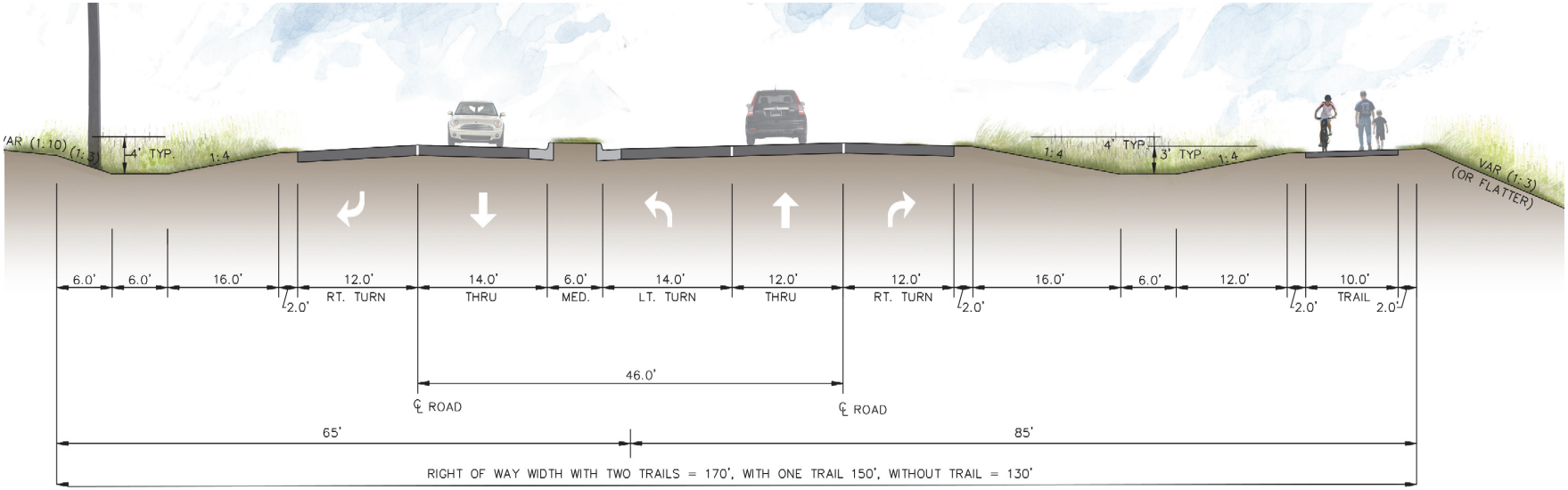
** Definition describes the assumed cross-section

*** Due to certain development conditions or physical features of the site or highway corridor, Carver County may require additional right-of-way width greater than shown in the Right-of-Way Guidelines. Trail and bikeway needs may vary depending on bicycle route, activity centers, and designation in the RBTN and Parks Trail & Bikeway Plan

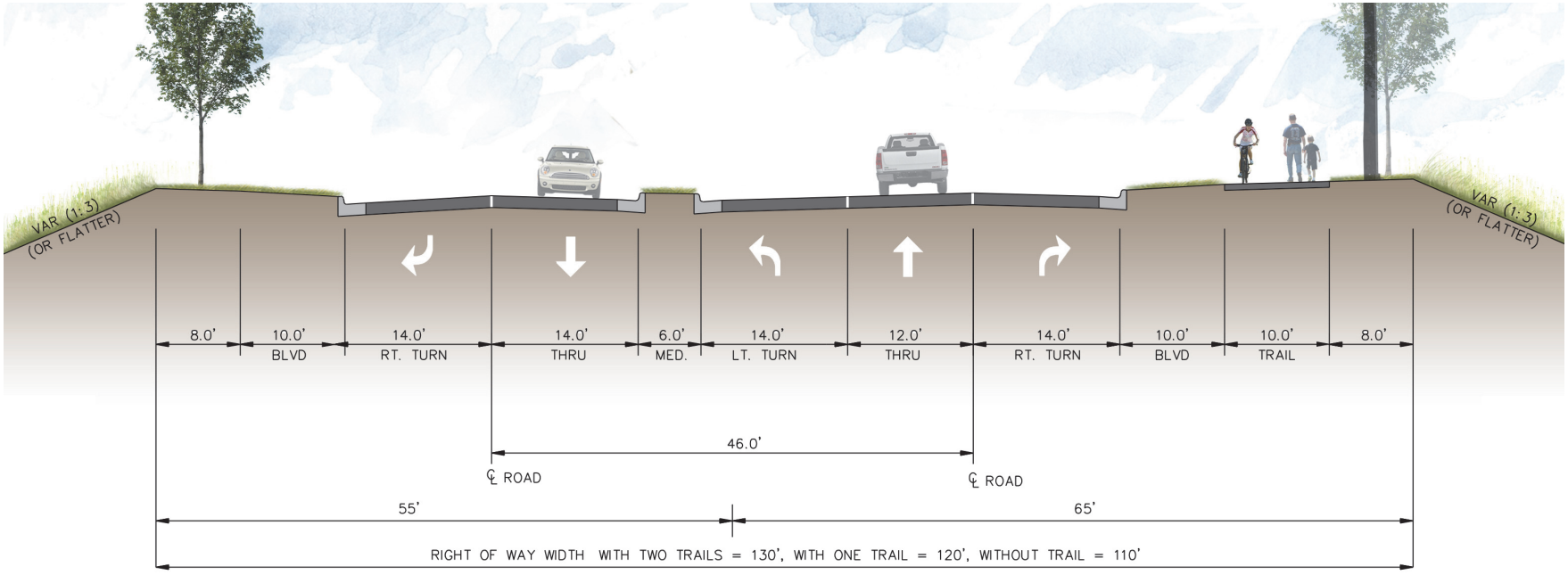
Note: In areas near high density housing or other noise sensitive areas additional right of way may be needed to accommodate a noise wall if deemed necessary. Typical placement of noise wall is 5 feet from edge of trail, then an additional 10 feet is needed on the back side of the noise wall for maintenance.

Typical roadway cross-sections related to eight major facility types were developed to show more detail and for use in planning, right-of-way preservation, and design. These build off of the typical cross-sections incorporated into the RSP as part of the 2014 amendment and are updated to reflect current practices. Two examples are shown below and these are broken out by mid-block and intersection types for a total of 16 typical cross-sections in Appendix B. Figure 4.19: Planning Level Typical Roadway Sections shows two typical cross-section examples for the 2-Lane Divided Urban - Intersection and 2-Lane Divided Rural - Intersection facility types as defined in Table 4.12. These examples show the typical widths needed for roadway through lanes, turn lanes, median, boulevard, trail, drainage, and utilities.

◊ **Figure 4.19: Planning Level Typical Roadway Sections**



2-LANE DIVIDED RURAL - INTERSECTION



2-LANE DIVIDED URBAN - INTERSECTION

Right-of-Way Preservation

When future expansion or realignment of a roadway is proposed, but not immediately programmed, agencies should consider right-of-way preservation strategies to reduce costs and maintain the feasibility of the proposed improvement. Several different strategies can be used to preserve right-of-way for future construction, including advanced purchase, zoning and subdivision techniques, official mapping, and corridor signing. Before implementing any right-of-way preservation programs, local agencies should weigh the risks of proceeding with right-of-way preservation without environmental documentation. (Note: MnDOT policy requires environmental documentation prior to purchase.) If environmental documentation is not completed, there is risk in preserving a corridor or parcel with associated environmental issues.

Advanced Purchase

One of the best ways to preserve right-of-way is to purchase it. Unfortunately, agencies rarely have the necessary funds to purchase right-of-way in advance, and the public benefit of purchasing right-of-way is not realized until a roadway or transportation facility is built. Most typically, local jurisdictions utilize various corridor preservation methods prior to roadway construction and then purchase the right-of-way if it is not dedicated at the time of design and construction.

Zoning and Subdivision Techniques

Local agencies have the authority to regulate existing and future land use. Under this authority, agencies have a number of tools for preserving right-of-way for transportation projects. These tools include:

Zoning: If the property is in a very low-density area (e.g., agricultural district), local agencies should try to maintain the existing zoning classification. Lower zoning classification limits the risk for significant development until funding becomes available for roadway construction. *Platting and Subdivision Regulations:* Local platting and subdivision regulations give agencies authority to consider future roadway alignments during the platting process because most land must be platted before it is developed. Cities and counties can use their authority to regulate land development to influence plat configuration and the location of proposed roadways. In most instances, planning and engineering staff works with developers to prepare a plat that accommodates their needs, and conforms to a long-term community vision and/or plans. Local agencies can require right-of-way dedication as part of the platting and subdivision process. *Transfer of Development Rights:* In addition to the above strategies, some agencies negotiate with property owners by allowing increased development densities on portions of the parcel if the developer will transfer right-of-way to the jurisdiction for the future roadways needed by the development. This enables the developer to get the same number of lots or units and also enables the agency to obtain the needed right-of-way.

Official Mapping

A final strategy to preserve right-of-way is to adopt an official map. An official map is developed by the local governmental unit and identifies the centerline and right-of-way needed for a future roadway. The local agency then holds a public hearing showing the location of the future roadway and incorporates the official map into its thoroughfare or community facilities plan. The official mapping process allows agencies to control proposed development within an identified area and influence development on adjacent parcels. However, if a directly affected property owner requests to develop his/her property, agencies have six months to initiate acquisition of the property to prevent its development. If the property is not publicly purchased, the owner is allowed to develop it in conformance with current zoning and subdivision regulations. Thus, the official mapping process should only be used for preserving key corridors in areas with significant growth pressures. In some cases, official mapping key parcels/corridors may increase the agency's ability to find sources of funds to purchase at-risk parcels.

Corridor Signing Program

In addition to land use regulations, some jurisdictions have used an innovative corridor signing program to identify arterial roadways that are planned for expansion projects. This program notifies residents and potential developers that the particular roadway is planned to be upgraded or a new roadway is planned to be constructed. This often makes negotiations with residents/developers easier, since they have been given advanced notice of major roadway expansion projects. Further, this advanced information aids developers in planning harmonious land uses and access management measures into their subdivisions. Signs are generally placed along roads on the urban fringe near the city limits or within a city's extraterritorial expansion area.

Additional information on many of the tools and techniques listed above can be found in Appendix J of MnDOT's Interregional Corridors: A Guide for Plan

Development and Corridor Management. This guide also includes information on the environmental review and documentation process as it relates to right-of-way preservation.

4.2.H.5. Public Health, Environmental Considerations, and Healthy Environment

Carver County will review and plan for public health, environmental, and special interest group considerations in transportation related development processes. This includes the consideration of healthy environment considerations noted in the Metropolitan Council Local Planning Handbook (2016) and related conditions and activities unique to Carver County such as flooding and slope failures. Some elements of this are noted below and more details and analysis are planned to be provided in the future in Appendix D as an additional County planning effort. An example of this is studies and best practices related to flooding, slope failures, and mitigation measures from groups like the Local Road Research Board (LRRB).

Project Development and Environmental Review Process

Depending on the size and type of project, implementing improvements identified in the RSP may require additional public participation and environmental review. Environmental documents must be prepared if state or federal funding is involved in the project, with the type of document depending on the size of the project. For example, projects that construct more than two-lane roadways and have alignments of more than two miles require more in depth analysis than projects that convert an existing at-grade intersection into an interchange or overpass according to state rules.

Even if no federal or state funding is involved, state environmental review requirements and local ordinances or guidelines may apply. Specific rules on the level of environmental documentation can be found in the Highway Project Development Process Handbook at www.dot.state.mn.us.

In addition to state and federal rules regarding environmental documentation, there are a number of local, state, and federal permits that regulate wetlands, water quality, air quality, noise, and other environmental and cultural resources.

Project Development and Wetland Protection

Wetlands are an important component of the county's landscape. Wetlands provide valuable ecological functions (i.e., water quality protection, surface water storage, wildlife habitat, groundwater recharge and aesthetic/recreational value). Applicable federal, state, and other regulations that protect these valuable resources will be incorporated into project development and delivery.

Smart Growth/ Growth Management

Smart growth is a concept that can be considered in context of the county's overall land use and transportation planning. The planning concept encourages growth within communities where people already live and work. Smart growth may also limit the encroachment of new development on farmland and open space and make existing communities more attractive by creating communities with a mix of housing, restaurants, parks, and employment opportunities.

Several principles of smart growth could be considered to manage growth in high demand areas and specific corridors. For example, Carver County is currently experiencing growth along the TH 5 and US 212 corridors in the eastern portion of the county. While this growth affects all public facilities and services, it is having a considerable effect on the county's transportation system. The following are smart growth principles that may be considered in the county's decision making processes:

A. Stewardship – Use land and natural resources wisely to sustain them for the future.
B. Efficiency – Make efficient, integrated public investments in transportation, housing, schools, utilities, information infrastructure and other public services.
C. Choice – Give communities smart growth options and choices.
D. Accountability – Reinforce responsibility and accountability for development decisions.

The County's planning efforts are intended to consider best practices and planning direction outlined in the Land Use section of this plan and other resources.

4.2.H.6. System Preservation

Preserving existing assets is considered the highest priority transportation related goal for the County.

Carver County has developed the following process to guide the preservation of the road and bridge system:

- The County roadway condition is evaluated every year using the State's pavement rating system and equipment.
- The County bridge system is inspected every year under the Bridge Safety program as required by FHWA.
- Other highway assets including but not limited to signs, traffic signals, guard rails, culverts, and drainage systems, are periodically inspected for condition.
- Asset information is collected and compiled into the county asset management system (Cartegraph). The county is in a multiyear implementation process to build and utilize this system including establishing performance targets and generating work flows for operational activities.

The roadway pavements are the highest value asset and the following scheduled maintenance activities are established following a total reconstruction:

- Cracks are sealed as required, generally 3 years after paving, then periodically as needed.
- Seal coat performed at year 4 then again at year 12 if necessary.
- Pavements are resurfaced between 15 and 20 years depending on condition index.
- Major rehabilitation (full depth reclamation or cold in-place recycling) is considered when the roadway section is 60-years old unless the traffic volume is less than 750 vehicles per day in which case major rehabilitation is considered at 75 years.

- Shoulder widening is performed with a major rehabilitation on rural roadways that have deficient shoulders and a projected 2040 volume of at least 2500 vehicles per day. Additional shoulder widening is considered on routes that are identified as important bike corridors.
- These criteria guide the long term preservation plan in order to fully fund pavement preservation in 5-year CIP windows. The asset management system along with geotechnical evaluation determines the pavement treatment required prior to programing actual projects.

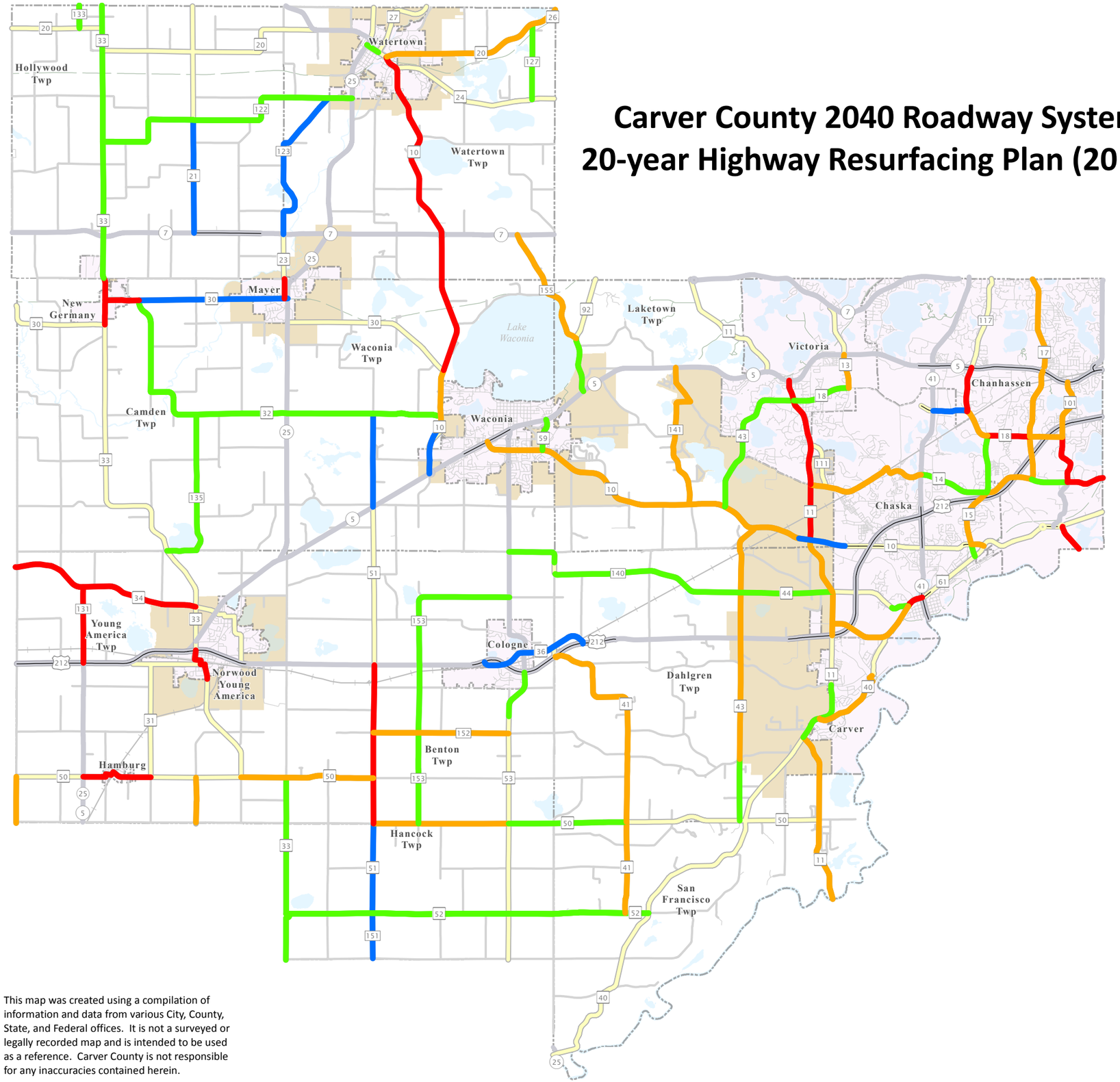
Figure 4.20: 20-year Highway Resurfacing Plan (2018-2037) shows the current 20-year Highway Preservation Plan including resurfacing and Figure 4.21: 20-year Highway Rehabilitation Plan (2018-2037) shows major rehabilitation projects. The financial plan in Appendix D includes highway preservation costs and funding. These are funded in the county CIP using a combination of county levy, county state aid highway funds, and wheelage tax. The local option sales tax is also used for major rehabilitation projects to fill a funding gap. Minor maintenance work such as crack sealing, seal coating and patching is funded form the county operating budget.

Bridge replacement and rehabilitation projects are evaluated based on the annual safety inspections. Bridges that are deficient in structure or function are programmed into the CIP and funded with a combination of county funds and state bridge bonding.

Other assets are replaced based on condition and performance targets and are funded as needed as part of the county's operating budget.

Carver County 2040 Roadway Systems Plan
20-year Highway Resurfacing Plan (2018 - 2037)

DRAFT



This map was created using a compilation of information and data from various City, County, State, and Federal offices. It is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

20-year Highway Resurfacing Plan (2018 - 2037)

Figure 4.20

Legend

Resurfacing

- 2018-2023
- 2024-2028
- 2029-2033
- 2034-2037

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

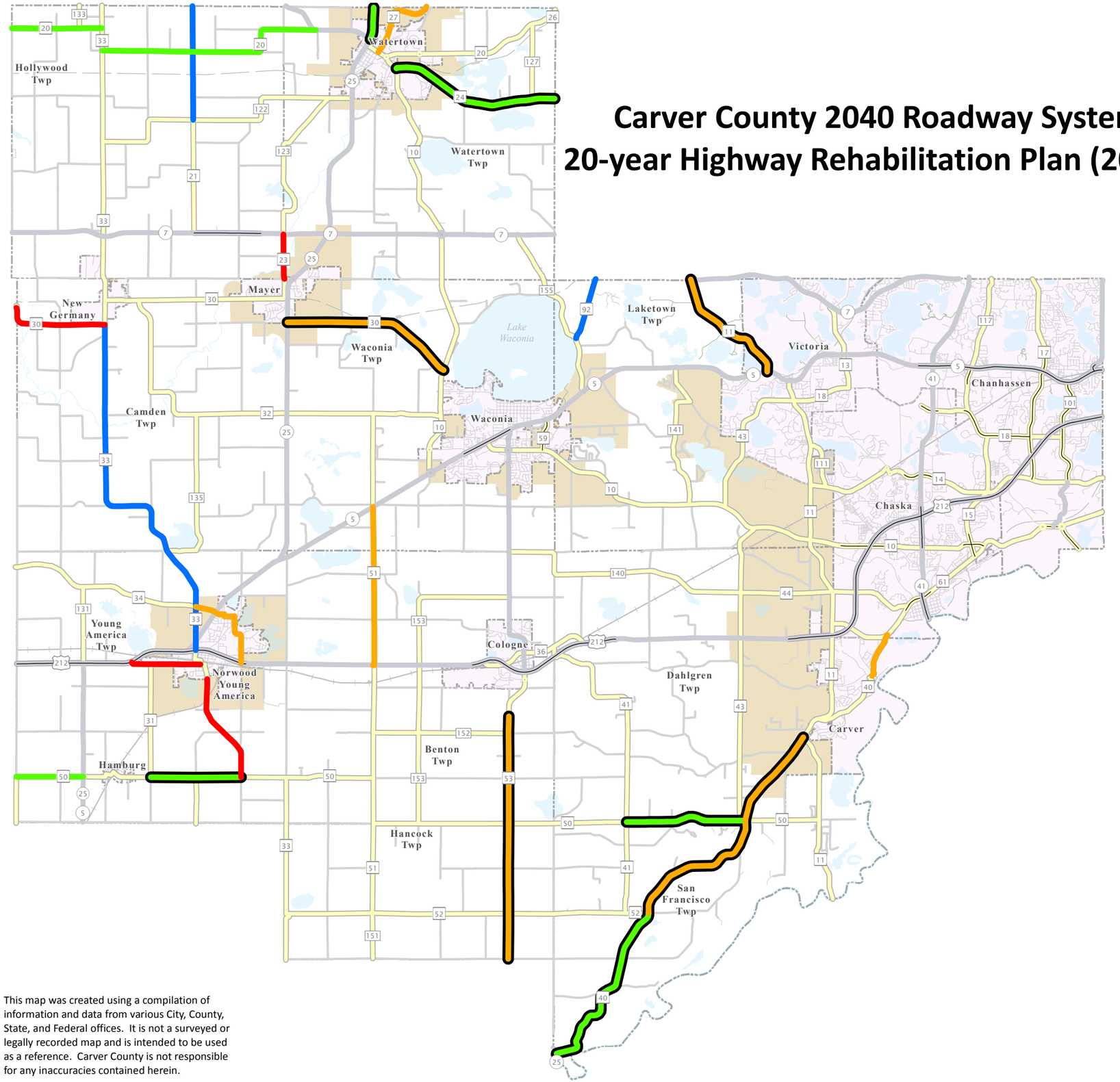
0 1 2 4 Miles

Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200

Created: 4/27/2018

Carver County 2040 Roadway Systems Plan
20-year Highway Rehabilitation Plan (2018 - 2037)

DRAFT



This map was created using a compilation of information and data from various City, County, State, and Federal offices. It is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

20-year Highway Rehabilitation Plan (2018 - 2037)

Figure 4.21

Legend

Major Rehab

- 2018-2023
- 2024-2028
- 2029-2033
- 2034-2037
- Shoulder Widening

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

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Created: 4/27/2018

4.2.I. Financial Planning and Project Implementation Strategies

4.2.I.1. Project Planning

Financial planning is key to successfully implementing a transportation system to meet the demands of the future including preservation, operations, expansion, and new road and bridge needs. The County has prepared a CIP Prioritization Tool that evaluates long term roadway needs from the RSP using a set of performance criteria. This is a high level tool to assist the county in developing short range CIP plans.

The tool estimates project costs at a planning level detail and compares them to available traditional county and assumed outside funding to help determine potential funding gaps.

The following criteria are used to measure long range projects for shorter term programming consideration (It should be noted that this is only one of several factors that determines how projects are programmed):

- Safety Benefits (Measures crash rate and frequency and if route has high risk)
- Congestion (Measures volume/capacity)
- System Relief (Measures future traffic demand)
- Significance of System (Measures functional class and connections to jobs, economic growth areas, transit service and accounts for physical barriers like rivers, railroads)
- Multimodal Connections (Measures transit and trail importance)
- Roadway Condition (Measures pavement condition, age, structural capacity, and geometric deficiencies)
- Freight Needs (Measures heavy commercial truck volume and if the roadway connects to large industrial areas)
- Funding Availability (Measures how many funding opportunities exist)
- Project Readiness (Measures level of project development)
- Community Support (Measures if the project is supported/requested by a city)

Financing and developing projects often takes several years due to the increasingly complex financial and regulatory environment. Preservation and safety projects are programmed first. Remaining funds are used for reconstruction, expansion and new systems.

4.2.I.2. Transportation Funding Sources and Programs

The costs of constructing and maintaining the County road and bridge system is financed from the following sources:

- **County Tax Dollars:** Tax funding for the Road and Bridge CIP Fund consists of approximately $1,800,000 in annual Property Tax Levy
- **County Tax Abatement:** Some projects that are required due to imminent property development that would not otherwise be in the CIP are funded using the County Tax Abatement Policy.
- **Tax Increment Financing (TIF):** Some projects that are required due to imminent property development that would not otherwise be in the CIP are funded using the Tax Increment Financing (TIF). This can be a direct allocation from the TIF District to the road improvement project or a bond issue with payments coming from the TIF District.

- **County Program Aid (CPA):** CPA is not a consistent funding source for transportation as it is often revised by the Legislature and is also used to help balance operating levy shortages due to levy limits or other changes in legislation. When available, the County makes CPA available at 50% for the Road and Bridge CIP. The County utilizes the fund on a variety of projects including bridge replacements, pavement markings and pay as you go projects.
- **General Obligation Revenue Bonds:** The County issues General Obligation Revenue Bonds for additional CIP road and bridge projects when necessary and available. The bonds are generally paid over a 15-year period from Wheelage Tax revenue, county debt service tax levy, and tax abatement.
- **State Aid Construction and Maintenance:** State Aid Construction and Maintenance dollars are received from the State and provide funding for County construction projects, grading, and other maintenance projects. County State Aid Highway (CSAH) funds are constitutionally dedicated and distributed through the Highway Users Tax Distribution Fund (HUTDF). The majority of funding comes from Fuel Tax, License Tabs Fees, and Motor Vehicle Registration Fees. A portion of the revenue from the sales tax on leased vehicles is also added to the County's CSAH fund.
- **Local Option Sales Tax, Vehicle Excise Fee and Wheelage Tax:** On May 2, 2017, the Carver County Board adopted a half percent local option sales tax, a $20 excise tax on vehicle purchases, and an increase in the wheelage tax from $10 per vehicle to $20 per vehicle to fund transportation specific projects within the county. These new revenue sources, estimated to generate $104 million over 20 years, are dedicated to funding road and bridge projects to improve traffic flow and address safety issues. A list of 26 high priority roadway projects are identified to utilize the funding. It is expected the funding will leverage state and federal funding to complete the most critical connections for expansion of the highway system. The Carver County Transportation Tax Projects List and Map (Table 4.2 and Figure 4.2) show the specific implementation plan for these 20-year transportation revenue sources. This plan will be refined as needed based on the availability of outside grants and city cost participation. Changes to the plan require a public hearing and county board resolution.
- **Other State Funds:** In addition to CSAH funds, other funding is received from the state on a case-by-case basis including:
  - ◊ *Local Road Improvement Program (LRIP)* funds are State General Obligation Bonds used for high priority improvement projects on the local roadway system.
  - ◊ *State Bridge Bonds* for a portion of the replacement or rehabilitation of deficient bridges. Several Carver County bridge projects utilize these funds. Usually 50% of the bridge construction costs are eligible on CSAH bridges, and up to 100% for County Road bridges.
  - ◊ *State Park Road Fund* for roads providing access to recreational areas. (HUDTF dollars administered by the DNR).
  - ◊ *State Trunk Highway* funds are used for cooperative projects on Minnesota Department of Transportation (MnDOT) trunk highways either through the annual Cooperative Agreement Program or via special agreement.
  - ◊ *Corridors of Commerce Funds* are appropriated by the legislature for Trunk Highway improvement projects that improve freight and eliminate bottlenecks. US 212 between Chaska and Norwood Young America is an example of a candidate for this funding.
  - ◊ *Transportation Revolving Loan Fund (TRLF):* This is a revolving loan fund administered by the Public Facilities Authority (PFA) with a subsidized interest rate and works as a line of credit with a 15-year payback. This was recently used to finance a portion of the 101 Bridge project.
  - ◊ *Transportation Economic Development (TED):* Provides competitive grants to construction projects on state highways that provide measurable economic benefits.

- **Municipal Funds**: The County has a cost-participation policy (amended in March 2013) which requires cities to share in the cost of county road reconstruction projects. Cities typically share in the cost of urban features such as curb and gutter, sidewalk and trails, traffic signals, street lighting and utilities.
- **Federal Funds:** Direct or State pass-through grants are available from several federal programs for transportation projects including:
  - ◊ Surface Transportation Program Block Grants (STPBG) for reconstruction and rehabilitation of county road classified as A-minor and non-freeway Principal Arterials.
  - ◊ Congestion Mitigation and Air Quality (CMAQ) program for transit-related projects.
  - ◊ Transportation Alternatives Program (TAP) program for projects and programs that provide for non-driver alternatives to transportation such as on and off road bike and pedestrian facilities.
  - ◊ Safe Routes to School (SRTS) program for projects that encourage biking and walking to school.
  - ◊ Highway Safety Improvement Program (HSIP) for lower cost safety mitigation projects.
  - ◊ Federal DOT grants: BUILD and FASTLANE grants for regionally and nationally significant transportation projects. A nationwide competitive grant with a 40-50% local match. Carver County submits grant requests for regional projects on US 212.
  - ◊ Federal transportation funds administered by the state such as Minnesota Highway Freight Program.

4.2.I.3. Future Revenue and Expenditures Estimates

Financial plan details are not required by the Metropolitan Council for the Comprehensive Plan. Detailed information will be included in Appendix D to this plan at the time of final publication. This will include a 2040 needs and revenue gap assessment based on Scenario 3 model projections as well as additional County planning of Scenario 4 and 5 sensitivity analysis outcomes.

4.3. Transit

4.3.A. Introduction

As more people choose to live, work, and play in Carver County, public transit is an important component of meeting mobility needs and linking Carver County residents to regional job centers and activities. Transit systems, both fixed route and demand-response, provide for the varied transit needs of Carver County. For those that live in Carver County, but commute to workplaces in the central cities, express bus service may offer cost and time savings.

Transit is an important part of the transportation network because it:

- Offers access to medical care, shopping, and government services for those who cannot access or operate a vehicle.
- Provides opportunities for people who prefer an alternative to automobile travel.
- Removes a portion of existing or future automobile traffic from the roadway, reducing travel time and congestion for other vehicles on the roadway.

The comprehensive transportation needs of Carver County residents likely will not be met by private vehicle ownership alone; many are unable to use a private vehicle or choose to use other means of transportation. Carver County is comprised of suburban edge, emerging suburban edge, and rural centers among agricultural and rural residential land. Finding the right transit service for existing and future development patterns is important to Carver County, and although Carver County does not operate transit service, Carver County can advocate for better service while promoting more transit supportive land use patterns as sections of the County develop.

4.3.B. Transit Goals

COUNTY GOAL TR-8

Create a strong transit system, which can be an integral part of growth and development in the County.

COUNTY GOAL TR-9

Establish multi-modal transportation options for Carver County residents and workers to support a high quality of life, economic development, a diverse workforce and the needs of an aging population.

COUNTY GOAL TR-10

Recognize the importance of an integrated system of bus and trails to create non-automobile options for County residents and workers.

COUNTY GOAL TR-11

Accommodate and support emerging trends in autonomous and connected vehicle technologies, as well as shared mobility.

4.3.C. Transit Strategies

COUNTY STRATEGY TR-18

Support and advocate for the growth of the current transit service areas to adjacent communities. Regional transit plans should be revised to reflect 2040 demand for service in these growing areas and the need for growth and transit service to be planned for and occur simultaneously.

COUNTY STRATEGY TR-19

Support the efforts of SouthWest Transit (SWT) in increasing capacity on the bus system, including park & ride/transit hub capacity where necessary, additional bus service, and service area expansion.

COUNTY STRATEGY TR-20

Support the expansion of demand response transit service in Carver County as it accommodates demand from populations who cannot drive or choose not to drive, and who live in areas that are difficult to service with fixed routes.

COUNTY STRATEGY TR-21

Support and encourage integrated land use planning and transit-oriented development around current and proposed transit hubs and in freestanding town centers.

COUNTY STRATEGY TR-22

Advocate for the planning, funding and construction of transitways that serve Carver County residents and link to the region, including the SWLRT and its connecting bus service.

COUNTY STRATEGY TR-23

Support an integrated transit system which creates opportunities and removes barriers to access by linking demand response service to commuter and fixed route systems, linking bus service to potential rail service, and linking the trail network to transit stops and facilities.

COUNTY STRATEGY TR-24

On a five-year basis, conduct transit service plans that make specific recommendations for enhancing demand response transit service, connections to high frequency/high quality regional transit connections, and identify locations suitable for effective transit-oriented development.

COUNTY STRATEGY TR-25

Design roadways that effectively accommodate pedestrian connections to transit service, and offer high quality transit stop and station facilities.

COUNTY STRATEGY TR-26

Incorporate technologies and roadway and parking infrastructure that supports shared mobility programs, and support related pilot projects and research within the County.

COUNTY STRATEGY TR-27

Transit performance measure should be reported to County leadership on a regular basis to gain an understanding of market conditions.

4.3.D. Transit System Performance Measures

General Transit Performance Measures

- Total transit system boardings by mode (annual unlinked trips
  - ◊ Express Bus
  - ◊ Demand-Response
  - ◊ ADA Complementary Paratransit

Transit Service Productivity Measures

- Park-and-Ride Utilization—The total number of park-and-ride spaces and the percent of spaces being utilizes (measured on an annual basis via the Regional Park-and-Ride System Report).
- System Effectiveness—Passengers Per In-Service Hour; annual unlinked trips divided by the total annual revenue hours, measure on a five-year time trend basis.
- Service Efficiency—Cost per In-Service Hour; annual operating expenses divided by annual revenue hours, measured on a five-year time trend basis.
- Cost Effectiveness—Cost per Passenger Trip; annual operating expenses divided by annual unlinked trips, measured on a five-year time trend basis.

Transit Service Quality Performance Measures

- Transit Service Frequency
  - ◊ Express Bus—Greater than or equal to three peak direction trips from major transit origins and facilities
  - ◊ Suburban Local Bus—Greater than or equal to hourly frequencies.
- Demand Response/Paratransit
  - ◊ In-vehicle time compared to equivalent fixed route service (if applicable)
- On-Time Performance
  - ◊ Schedule adherence
  - ◊ Accuracy of pick-up and drop-off times
- Amenities
  - ◊ Bus shelter placement, static and dynamic schedule and route information, waste receptacles—inventory of each element
- ADA Compliant Bus Stop Facilities—percent compliant
- Customer Service and Market Research
  - ◊ Customer complaints per revenue mile
  - ◊ Annual transit survey of County Residents that incorporates mobility needs of users and non-users alike

Integration of Transit and Development

- Incorporation of transit advantages and transit supportive design into County infrastructure projects
- Incorporation of transit supportive design and transit facilities into County development projects.

4.3.E. Existing Conditions

4.3.E.1. Transit Market Areas

In 2015, the Metropolitan Council adopted the 2040 Transportation Policy Plan which identified five different Transit Market Areas across the seven-county metro. These market areas designate the amount and type of transit service that is most appropriate for a pattern of development. Transit Market Areas are created using intersection density, population, and employment figures. Transit Market Areas are advisory, and are not the final authority on what transit service best serves a community—for example, pilot service can be tested in a region to determine if a different level of service is appropriate.

Transit service in Carver County has begun to grow from an express service market to incorporate demand-response service. Both reverse commute express service and flex service were previously offered in Carver County. Carver County is not along the route of any planned transitways, but may see changes to service with the completion of the Green Line in nearby Eden Prairie. Waconia is designated as a Freestanding Town Center. Freestanding Town Centers have concentrated downtowns that are small and removed from other transit supportive land uses, limiting the potential for fixed route transit. Transit Market Areas are shown in Figure 4.22 and described in Table 4.13.

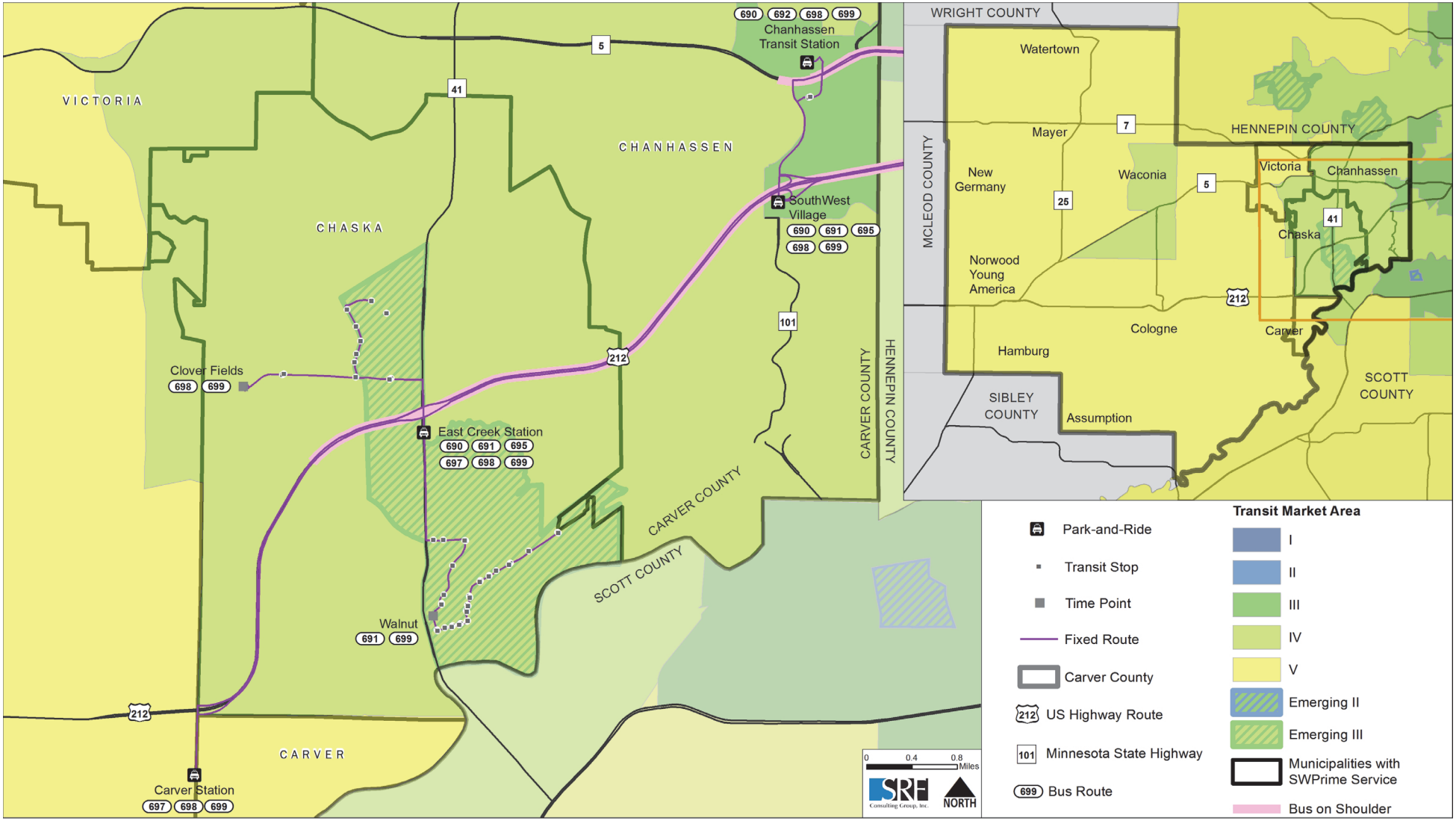
◊ Table 4.13: Transit Market Areas

Source: Metropolitan Council TPP 2015

Market Area	Propensity to Use Transit	Service Characteristics	Typical Transit Service	Presence in Carver County
I	Highest potential for transit ridership	• Frequency: 15-30 min most modes • Span: early to late, seven days a week. • Access: 1/2 mile between routes	Dense network of local routes with highest levels of service accommo-dating a wide variety of trip purposes. Limited stop service supplements local routes where appropriate.	None
II	Approximately 1/2 ridership potential of Market Area I	• Frequency: 15-60 min most modes • Span: Morning to night, 7 days a week • Access: one mile between routes	Similar network structure to Market Area I with reduced level of service as demand warrants. Limited stop services are appropriate to connect major destinations.	None
III	Approximately 1/2 ridership potential of Market Area II	• Frequency: 15-60 min most modes • Span: peak times, occasional week-ends • Access: varies on development patterns	Primary emphasis is on commuter express bus service. Suburban local routes providing basic coverage. General public dial-a-ride complements fixed-route in some cases.	Areas in Chanhassen and emerging Transit Market Area III in Chaska
IV	Approximately 1/2 ridership potential of Market Area III	• Frequency: three trips per peak express bus • Span: Peak times • Access: Usually at large nodes, if at	Peak period express service is appropriate as local demand warrants. Demand-response services are appropriate.	Most of Chanhassen and Chaska, a small section of Victoria
V	Lowest potential for transit ridership	• Frequency: 30 min, Commuter Rail • Span: n/a • Access: n/a	Not well-suited for fixed-route service. Primary emphasis is on demand response services.	North and western Victoria, rural areas of Carver County
Free-Standing Town Center	Limited Potential for Fixed Route Transit	Varies	Potential for local community circulator as demand warrants. Some peak period commuter express service may be appropriate	Waconia

Note: Current transit service in Carver County is unique in the metro, and does not closely follow the described typical transit service due to the prominence of demand-response service.

◊ **Figure 4.22: Transit Market Areas**



4.3.F. Existing Transit Services and Facilities

In the eastern section of Carver County, SouthWest Transit (SWT) is the transit service provider. SWT serves Chaska, Chanhassen, Carver, Victoria, and Eden Prairie. Although Waconia is designated as Transit Market Area IV, there is no fixed route transit service offered by SWT in this community as of January 2018. SmartLink and Metro Mobility both offer dial-a-ride service in Carver County.

SWT offers two different types of service in Carver County—Express Bus/Fixed Route, and Demand Response. SWT operates four passenger facilities in Carver County, which are served by seven different fixed routes and SW Prime. Figure 4.22 shows fixed routes and municipalities served by SW Prime.

4.3.F.1. Express Bus/Fixed Route Transit Service

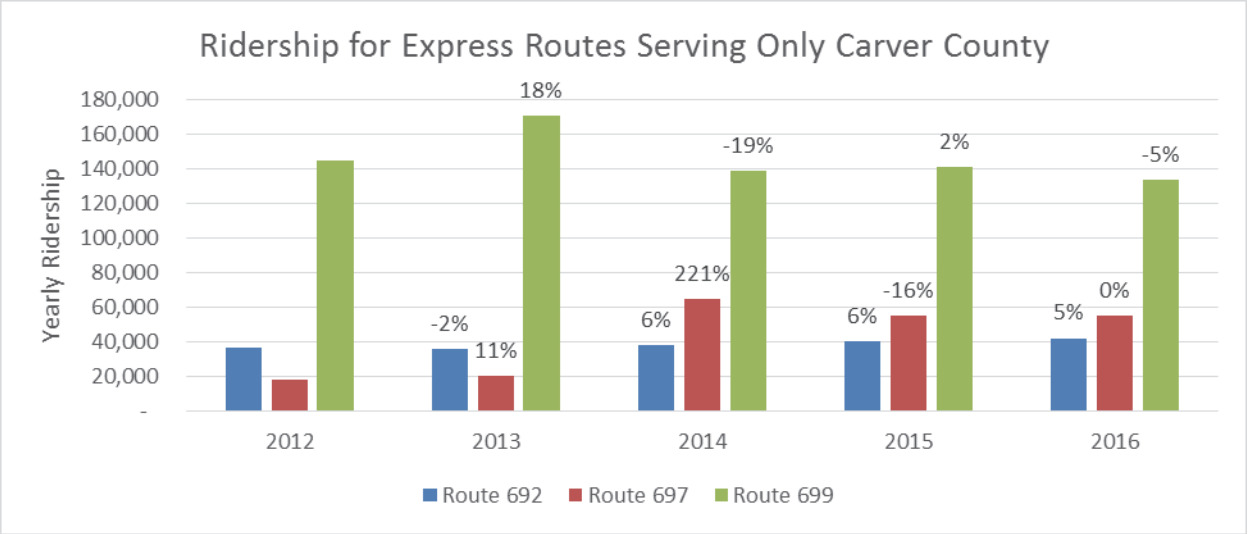
Fixed route transit service is offered Monday through Friday. All fixed route service offered is express bus service to Minneapolis heading into the city in the morning and back toward Carver County in the evenings. Express bus service is defined in the Metropolitan Council's Transportation Policy Plan as routes that primarily operate at peak periods to connect commuters to major employment centers. The routes typically operate non-stop on highways between park and ride facilities and major destinations.

There are no direct reverse-commute express routes offered outside of midday service to the University of Minnesota, though riders trying to reach Carver County employment centers in the morning may connect to SW Prime at Southdale Transit Center. Routes 692, 697 and 699 serve Carver County but not Eden Prairie, while the rest of the routes serve Carver County as well as Eden Prairie. Service costs are $3.25 at peak and $2.50 off-peak for adults in January, 2018.

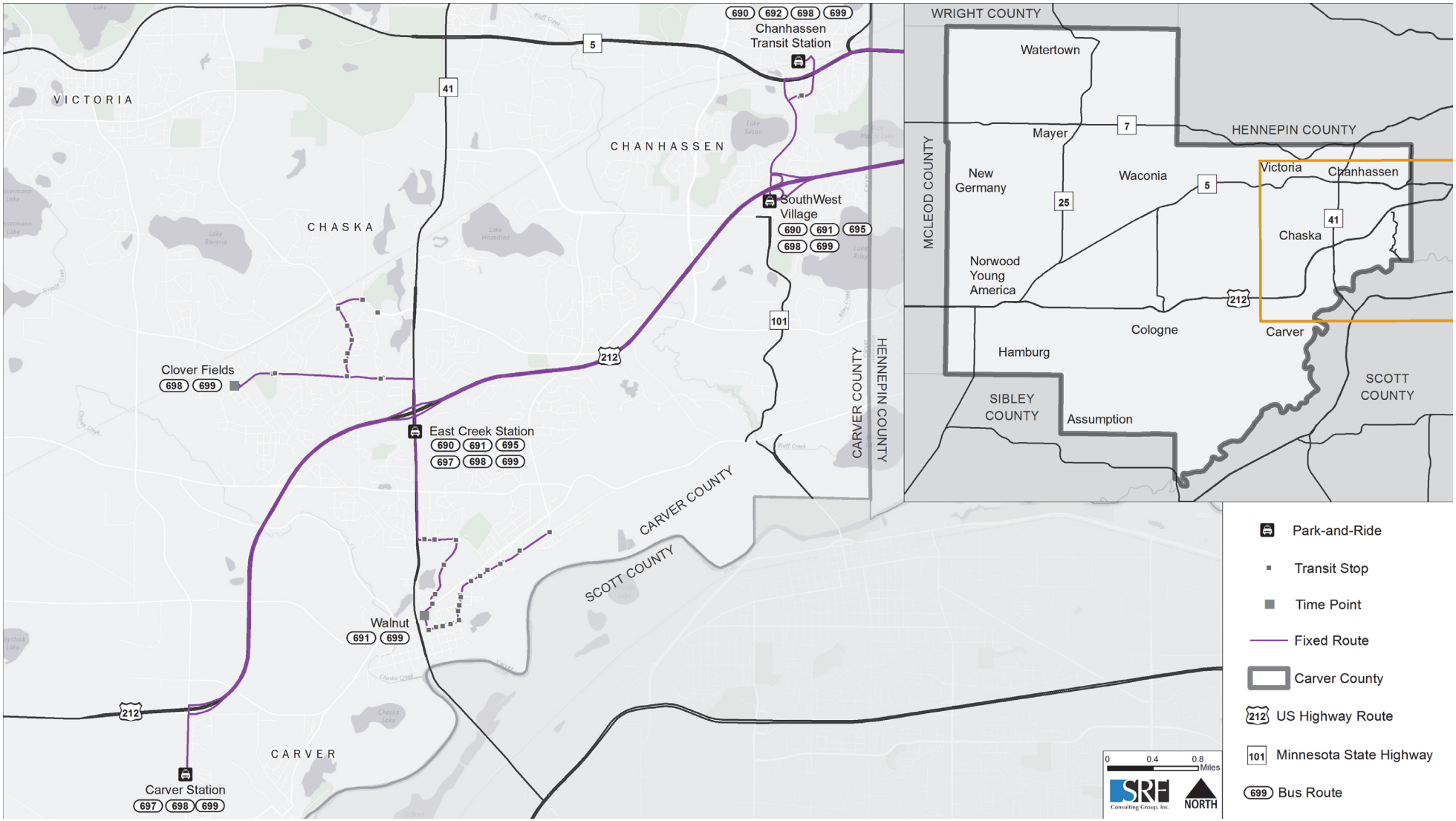
Total ridership of routes that exclusively serve Carver County has fallen slightly over the last five years with a notable peak in 2013 (see Figure 4.23). Some of this tracks with regional changes in bus ridership and cuts and realignments of SouthWest Transit service. Percentage values on top of each bar represent the ridership change from the previous year. SouthWest Transit reports that each year, between a quarter and a third of total system ridership is generated by Carver County. Routes 691, 695, and 698 all serve Carver County as well as Eden Prairie. A map of Carver County transit service is shown in Figure 4.24. Most express service is oriented to the US 212 Corridor, and travels to downtown Minneapolis via I-494 and I-394. SWT drivers have some flexibility with their freeway routing and can modify it in response to congestion.

Bus ridership has slightly declined across the region, though suburban transit providers have seen small gains in ridership in recent years. It is important to consider if ridership changes are related to changes in service.

◊ **Figure: 4.23 Ridership for Routes Serving Only Carver County, 2012-2016**



◊ Figure 4.24: Existing Transit Service



ROUTE 690

690C and 690V serve Carver County communities with five routes in the morning and two routes in the evening. 690C serves Chanhassen Transit Station with four morning trips and two evening trips, while 690V serves East Creek Station and SouthWest Village once in the morning. This route currently serves SouthWest Station in Eden Prairie which will provide a connection to METRO Green Line LRT and planned connecting local bus service at this transfer point.

ROUTE 691

Route 691 operates one trip in the morning from Walnut Park-and-Ride, East Creek Station, and Southwest Village before continuing to downtown Minneapolis. This route currently serves SouthWest Station in Eden Prairie which will provide a connection to METRO Green Line LRT.

ROUTE 692

Route 692 offers express service from Chanhassen Transit Station directly to Downtown Minneapolis with 4 trips in the morning, and 3 return trips in the afternoon.

ROUTE 695

Route 695 serves East Creek Station, SouthWest Village, and SouthWest Station before going to Downtown East and the University of Minnesota campus. This route runs 7 trips east in the morning and 6 trips west in the afternoon and evening. This route currently serves SouthWest Station in Eden Prairie which will provide a connection to METRO Green Line LRT.

ROUTE 697

Route 697 serves Carver Station and East Creek Station with express service to downtown Minneapolis with four routes in the morning and three trips west in the afternoon. This route does not serve any other stations or Park-and-Rides.

ROUTE 698

Route 698 serves both downtown Minneapolis and the University of Minnesota with Eastbound service from 5:30am until 2:30pm and with Westbound service from 11:00am until 9:30pm. Service is more frequent and the span is longer during the school year and less frequent in the summer. During the school year, there are four trips offered in the morning and evening peak periods, and service roughly every half hour outside of peak before 8pm. All trips serve SouthWest Village, and nearly all trips serve Chanhassen Transit Station and East Creek Station. There is one trip in the morning that serves Clover Field Park-and-Ride and multifamily homes along Pioneer Trail, and 3 trips that reach Carver Station headed westbound in the afternoon and evening. Route 698 is notably the only route that connects SouthWest Village and Chanhassen Station outside of the last trip west for 699A. This route currently serves SouthWest Station in Eden Prairie which will provide a connection to METRO Green Line LRT.

ROUTE 699

Route 699 offers the broadest geographic service of any express route in Carver County, serving all active and inactive stations and Park-and-Rides in Carver County at least once. Route 699 does not stop in Eden Prairie, and serves the North Loop in downtown Minneapolis. Carver Station is served by one route in the morning and two routes in the evening, Walnut Park-and-Ride is served by one route in the morning, Clover Field Park-and-Ride is served by two routes in the morning. SouthWest Village and East Creek Station are both served with 9 trips in the morning and 10 trips in the evening. Chanhassen Transit station is served by one route in the evening.

4.3.G. Demand-Response Transit Service

4.3.G.1. SouthWest Prime (SW Prime)

SW Prime is a shared-ride demand-response service for Chanhassen, Chaska, Carver, Victoria, and Eden Prairie. Riders can pay four dollars ($0.75 to $1.50 more than fixed route service depending on the time of day) to ride anywhere within the five cities between 6:30am and 6:00pm Monday through Friday. Riders request routes either by phone, online, or by using the SW Prime App on a mobile device. SW Prime transfers between the Eden Prairie and Carver County SW Prime buses at SW Village. SW Prime helps connect people who cannot access Park-and-Rides on their own to express routes.

SW Prime service began in July 2015 serving Chaska, Chanhassen, and Eden Prairie for three dollars a ride. Fares were raised to four dollars a ride in October of 2017. Before the first two years of SW Prime service, the 12-passenger van fleet increased from three to 11 vans. Vans are ADA accessible, however riders must specify as they book their ride if they are using a mobility device or have a bicycle. SouthWest Transit has used SW Prime as a market test in Shakopee but ultimately decided to discontinue service. SW Prime service area was extended to Victoria at the start of 2018. Regular requests for SW Prime service to specific destinations at specific times could help identify future fixed routes.

4.3.G.2. Metro Mobility

Metro Mobility, the paratransit service offered by Metropolitan Council under the requirements of the Americans with Disabilities Act (ADA), serves Chanhassen and Chaska in Carver County as these communities are part of the Transit Taxing District established by the Legislature in March 2006. Three-quarter mile buffers around Chanhassen Station and SouthWest Station comprise the federally mandated service area. Metro Mobility is an origin to destination, curb-to-curb service that for people with disabilities. There are several conditions that may make one temporarily or permanently eligible for ADA paratransit service, the commonality of which is that a person is not able to ride fixed route transit due to a disability.

Draft results from the Metro Mobility Needs Assessment Project show that currently more than a fifth of the nearly 20,000 metro mobility trips that begin in Carver County also end in Carver County. Popular destinations include Eden Prairie/Minnetonka and Plymouth/North Hennepin /Brooklyn Center, while top generators of rides to Carver County are Eden Prairie/Minnetonka and Medina/West Lake Minnetonka.

4.3.G.3. SmartLink Transit

SmartLink is a general public dial-a-ride service offered 6am through 7pm Monday through Friday in all of Carver County and Scott County. All SmartLink vehicles are equipped with wheelchair lifts, but SmartLink does not offer personal care assistants to riders that need them. Riders schedule a ride through Metro Mobility. SmartLink offers a suite of services that includes dial-a-ride public transit, medical transportation, and rides provided by volunteer drivers. Passenger fares vary based on service type and distance.

4.3.G.4. Medical Transportation

Water's Edge Transportation based in Waconia offers private, non-emergency medical transportation (NEMT) in their fleet of accessible minivans. They are a State Certified Special Transportation Service established in 2006. They provide rides for hospital discharges, same-day surgery, dialysis, and people who live in assisted living. If requested, they can provide stretcher service, door through door service, and provide an attendant. They frequently serve 212 Medical Center and Ridgeview Medical. Rates are calculated based on miles traveled. Additionally, NEMT rides are provided through the Twin Cities metro area network within Minnesota's medical assistance brokerage managed by MTM, Inc. This supports several programs through the Minnesota Department of Human Services that offer a passenger transportation benefit.

4.3.H. Recent Changes to Service and Pilot Programs

Flex service was piloted between August 2017 and December 2017, and replaced some local fixed route service and reverse-commute service previously offered by Route 684. SW Flex Red and Blue both offered transfer opportunities at Southdale Transit Center, running trips reverse directions in the afternoon compared to morning rides. Riders requested a pick-up or drop-off within specified flex zones by asking the driver as they boarding the bus, online, by using the SW Transit app, or by calling ahead the same day in a manner similar to SW Prime. Service was discontinued due to low ridership and difficulty coordinating with other scheduled services.

Reverse commute service ran from the start of SouthWest Transit service in 1986 through August of 2017, with trips originating in downtown Minneapolis and serving large employers in Carver County along Lyman Boulevard. This route has been removed, and reverse commuters may access Carver County by connecting to SW Prime at Southdale Mall in Edina.

4.3.I. Passenger Transit Facilities

Park-and-ride facilities are planned at the corridor level and have been constructed to meet long-term commuter needs in Carver County. Even with the inactive status of Walnut and Clover Fields, the recent addition of Carver Station to the park-and-ride system in the southwest metropolitan area meets projected future needs for park-and-ride development. A summary of park-and-ride information and usage data is shown in Table 2.

CHANHASSEN TRANSIT STATION

Chanhassen Transit Station opened in late 2011 and has room for 420 parking spaces. Chanhassen Transit Station is served by 42 trips each day from four routes (690, 692, 698, and 699.) The parking deck includes an indoor waiting area for riders, and an opportunity to purchase and refill Go To cards once a week. Utilization of this Park-and-Ride facility has fluctuated between 20 and nearly 50%, reaching a peak at 47% in 2015.

SOUTHWEST VILLAGE

SouthWest Village was has 511 parking stalls. The two-story parking deck includes an indoor waiting area for riders, and an opportunity to purchase and refill Go To cards once a week. This station is served by five different routes (690, 691, 695, 698, and 699), and 64 trips a day. Southwest Village has seen utilization rates as high as 82% (2012) but has fallen to 51% as of 2016. A third level may be added to the parking deck in the future if expansion is needed.

EAST CREEK STATION

The parking ramp was expanded to include a total of more than 700 stalls in 2013, East Creek Station is served by six different routes (690, 691, 695, 697, 698, and 699) and 69 trips each day. East Creek Station has seen utilization higher than 70%, but most recently came in at 40% in 2016. The parking deck includes an indoor waiting area for riders, and an opportunity to purchase and refill Go To cards once a week.

CARVER STATION

Built in 2015 and has space for 400 vehicles, this Park-and-Ride was built with the intention of spurring nearby residential development. Carver Station is served by three routes (697, 698, 699) and a total of 13 trips. In the first two years, Carver Station only saw about 5% utilization but this is expected to grow as more development continues near the Park-and-Ride. So far, both single family homes and multifamily homes have been built near Carver Station.

CLOVER FIELDS/WALNUT

Both Clover Fields and Walnut were park-and-ride facilities in Chaska operated by SouthWest Transit. Their status as park-and-ride facilities is currently being phased out and the capacity has shifted to improved and expanded locations along the US 212 corridor. Clover Fields is served by two routes (698 and 699) with a total of three trips a day, all of them in the morning. Riders wishing to return to their vehicles at this station must use SW Prime. Walnut is served by two routes (691 and 699) with a total of two trips a day, both of them in the morning and has a similar option to Clover Fields using return trips on SW Prime. Both facilities remain time points on schedules with passenger waiting areas, though park-and-ride service has been discontinued.

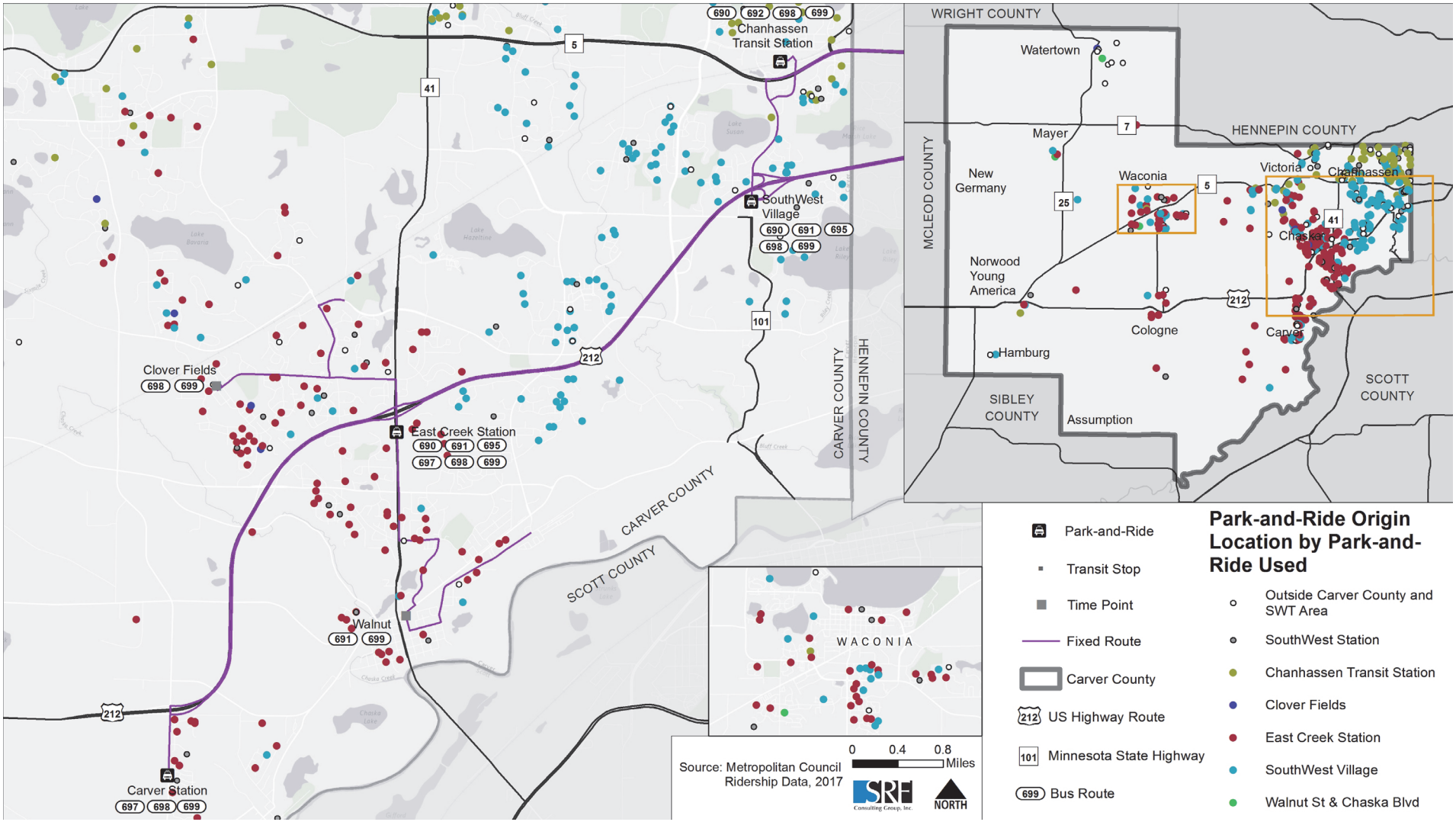
◊ **Table 4.14: Park-and-Ride Summary**

Station Name	City	Parking Capacity	Utilization	Routes (total 3: list of routes)	Status
Chanhassen Transit Station	Chanhassen	420	Low (below 50%)	Four: 690, 692, 698, 699	Active
SouthWest Village	Chanhassen	511	Moderate (between 50 and 80%)	Five: 690, 691, 695, 698, 699	Active
East Creek Station	Chaska	700	High (above 70%)	Six: 690, 691, 695, 697, 698, 699	Active
Carver Station	Carver	400	Very Low (5%)	Three: 697, 698, 699	Active
Clover Fields	Chaska	39	N/A	Two: 698, 699	Served, but not maintained as a park-and-ride facility.
Walnut	Chaska	50	N/A	Two: 699	Served, but not maintained as a park-and-ride facility

4.3.J. Park-and-Ride User Origin

Using Metro Transit's 2016 Onboard-Survey data, Figure 4.25 shows where surveyed riders that used park-and-ride facilities started their trips and which facility they used. Most riders used either East Creek Station, Chanhassen Transit Station, or Southwest Village. Riders north of Highway 5 usually chose Chanhassen Transit Station, riders east of Highway 41 and south of US 212 generally use East Creek Transit Station, and in-between those two loosely defined markets, most riders use Southwest Village. Riders from Waconia and Norwood Young America were split between East Creek Station and Southwest Village.

◊ **Figure 4.25: Park-and-Ride User Origin**



4.3.K. Transit Advantages

Transit advantages are physical infrastructure that is designed to provide a travel time advantage for transit vehicles compared to other automobiles using the same facility. Examples include dedicated lanes, transit signal priority, bus only shoulders, HOV lanes, and ramp-meter bypasses. Transit advantages improve the attractiveness of transit by allowing buses to move faster than automobiles making the same trip in times of significant congestion.

The only physical transit advantage offered in Carver County in 2018 is a bus-only shoulder lane available to buses in both directions of travel along TH 5 and US 212. These bus-only shoulder lanes allow express busses to maintain a minimum speed through congested areas by using the shoulder when traffic in general travel lanes drops below 35mph. All routes that serve Carver County are routed on either TH 5 or US 212 and may use the bus-only shoulders, shown in pink on Figure 4.22. There are also transit signal priority intersections at signals near active park-and-ride facilities.

4.3.L. Transit Programs

Carver County residents are eligible to participate in Vanpool and the regional car pool matching database managed by the Metropolitan Council. Carpool and Vanpool participants qualify for the regional guaranteed ride home program; may use High Occupancy Vehicle (HOV) lanes and meter bypass ramps; receive parking discounts in some circumstances; and may participate in occasional promotional benefits.

Travel Demand Management (TDM) services include programs that promote and support any alternative to commuting via single-occupant vehicle (SOV.) TDM may include ride-matching, car-pool or van-pool services as previously described. Transit promotions, employer-subsidized bus passes, flexible work hours, and telecommuting are just some of the possible strategies to reduce SOV use. Metro Transit provides a regional TDM service through its Metro Commuter Services group, and four local Transportation Management Organizations provide further support and services, including two downtown organizations. Cities and employers in Carver County may use services and programs free of charge to benefit employee travel arrangements and budgets. Although Carver County is not covered by a TMO, Metro Transit's Employer Program Hotline offers assistance to employers in Carver County.

4.3.M. Transit Market Indicators

Population, employment, density, and transit-dependent populations are all demographic indicators of propensity and need for transit use. Looking at these socioeconomic factors, both present and future, across the county is a good way to determine where transit service is most appropriate and most needed as an alternative to private car ownership. Equity is an important factor to consider when evaluating transit service. Transit agencies are required to ensure that no group of persons is discriminated against with regards to service including adverse effects and disparate impact, and adopt service policies to ensure that practices do not produce discriminatory results.

The County will continue to monitor indicators such as: population over 65 years of age, zero-vehicle households, population with disabilities, poverty status, multi-family and subsidized housing, and job density.

4.3.N. Future Metro Mobility Needs

Although only calculated for Chaska and Chanhassen, it is still helpful to review forecasted Metro Mobility Ridership Forecasts. Metro Mobility requests are expected to increase in Carver County at a rate greater than the central cities, however, as a share of total requests, Carver County is still a small proportion of both total production and attraction. Notably, Carver County sees more than 100 percent growth in trip production between 2014 and 2020. 2014 ADA ridership in Carver County was approximately 41,300 passenger trips; forecasted 2040 ADA ridership is projected to be approximately 71,800 passenger trips. Some other transit markets served by suburban transit providers have senior and paratransit providers, and this is a consideration for Carver County which has a large aging population.

Only two small ¾ mile buffers around Chanhassen Transit Station and SouthWest Village are within the federally mandated ADA service area. If Metro Mobility makes a policy shift toward changing their service area, transit providers in Carver County may need to consider rural solutions for connecting seniors and people living with disabilities to the community.

4.3.O. Transit Advantages

Although the only transit advantages offered in Carver County are bus-only shoulder lanes along TH 5 and US 212, in the future, it may be necessary to expand to other advantages to keep transit as a competitive option among transportation modes. Signal priority can be used in more locations to ensure buses stay on schedule if congestion grows on main thoroughfares and at large intersections. With signal priority, transit vehicles interrupt regular timing when they approach intersections and receive green lights more quickly. Allowing transit vehicles priority at busy intersections ensures that transit is a competitive mode choice for riders.

4.3.P. Long-Range Transit Service Recommendations

In reviewing existing and future conditions, and being mindful of transit market trends, the following are long-term transit service concepts that Carver County supports through 2040.

4.3.P.1. Park-and-Ride Capacity

As described in earlier sections, park-and-ride capacity, including the expected closing of Clover Fields and Walnut, exceeds present-day demand in Carver County and should continue to do so through 2040. Future transit facilities can be located in areas with concentrations of higher density housing, and former park-and-rides could be converted to a conventional bus stop in the future if supported by sufficient pedestrian facilities to facilitate access. Larger park-and-ride facilities closer to arterials would absorb the demand. Transit service should continue to be aligned with park-and-ride demand, and continued monitoring of system usage will guide investment decisions. If there is increased congestion along Highway 5, there could be potential need for a park and Ride near Highway 5 and Rolling Acres on the eastern side of Victoria.

4.3.P.2. Expanded Express Bus Service

Express bus service, provided by SouthWest Transit, links major employers and activity centers with Carver County. Currently, park-and-rides are operating well within their capacity and service is adequately meeting that demand. However, park-and-ride usage is expected to grow on a long-term basis. As this is the case, additional transit trips will need to be added on express bus routes to support this demand. Local, fixed route extensions of express routes may also be desirable to support areas with increased housing development and population growth. Further study of common major employment destinations outside of Carver County, such as the Mall of America, Southwest suburban employment centers, and MSP International Airport is needed to determine if there is demand for express service to those locations. In many cases, this information can be gathered from concurrent regional transit planning efforts (Regional Park -and-Ride System Plan, etc.).

It is sound practice to invest in additional trips on the most productive routes. Analysis or ridership, park-and-ride capacity, and route productivity should help drive investment decisions on transit service expansion.

Although reverse commute express bus service to Carver County has been discontinued, projected employment growth and the changing needs of businesses may necessitate a revival of this service. Future reverse commute service should be based on the needs of employers expressed through continued dialogue with service providers.

4.2.P.3. Expanded Local Transit Service

In reviewing future areas where there is increased propensity for transit use, most of the emerging areas are covered by the existing footprint of fixed transit service, however as demand increases or shifts the amount and type of service may change. For example, existing fixed route service as a spine service along Highway 212. If demand for this service increases, additional vehicle capacity may be required to maintain convenient travel times. The areas within the demand response zones for SW Flex will see some growth in population and employment, and depending on land use patterns may convert from a demand-response to a flex or fixed route service.

Beginning in January 2018, SouthWest Transit is offering SW Prime service in Victoria. The ease and opportunity to use SW Prime to explore markets for local transit service is fortuitous, but special attention must be paid to equity issues that may arise because of the higher cost of SW Prime service as compared to fixed route service. New markets could be tested using lower fares or fare vouchers for low-income riders in newly tested service areas to assess the market for vulnerable populations that may not regularly be able to pay the higher fare.

Another area where there is opportunity for expanded transit service is Waconia. Waconia is forecasted to have significant employment growth and has physical development patterns that are supportive of transit service. If a new local bus route – either flex route or fixed route – is to be developed in Western Carver County, Waconia is a reasonable location. Service could link to Victoria and Chanhassen routes via Highway 5, and focus on Main St. and Olive St. within Waconia. Key transit destinations in Waconia include the downtown area (Main Street), Highway 5 Corridor, and Ridgeview Medical Center and its immediate surroundings.

Expansion in transit service will depend on adequate funding.

4.3.P.4. Transitways

Major planned transitways that are near Carver County include the METRO Green Line LRT, terminating in Eden Prairie, and a future potential Highway BRT service transitway that would serve Highway 169 through Shakopee. While there are no current local transit service plans that link Carver County to these transit lines, high quality, high frequency transit service can induce demand resulting from its frequency, reliability, and amenities. Local transit routes that provide connecting service to transitways should always be evaluated and considered as theses corridors are developed. In the Bus Transit Operations Plan, no large changes to fixed route service entering Carver County are recorded.

Metro Green Line LRT may expand into Carver County eventually, but current development patterns and destinations do not support this investment in service. The County may partner on planning and feasibility studies with transit providers, the State, Metropolitan Council, counties and/or cities for future transitways such as bus rapid transit service within or connecting to the County.

4.4. Mobility Trends

Comprehensive plans are living documents that adapt as communities and technologies evolve, and should be updated to reflect various changes to the transportation environment. Technological advancements like Transportation Network Companies, Car Sharing Services, and Autonomous Vehicles will can change the way that people get around Carver County and vehicle interaction with public infrastructure. With changing demographics, including a large aging population and changing generational preferences, people living in and coming to Carver County may be less likely to get around in self-operated and owned private vehicles. Parking structures and amounts, access to transit and transportation across the community, and infrastructure will all need to adapt. At the time of this plan's conception the impacts of these transportation modes are not fully known, nonetheless they are presented here as concepts that should be monitored as transportation development decisions are made in Carver County.

4.4.A. Transportation Network Companies and Car Sharing Services

Transportation Network Companies (TNC) like Uber and Lyft use websites and applications to connect customers with non-commercial drivers. Car Sharing Services (CSS) allow customers to use cars for a short amount of time. These companies have changed the way that people get around, offering an on-demand option for riders willing to pay for quick and easy-to-arrange service. Although most popular in urban centers, TNC drivers also serve suburban locations like Carver County, although service is less frequent and reliable. There have been various studies and inconclusive data on the impacts of TNCs along rates of drunk driving, congestion, and whether it competes with public transit, as well as variation in the effects of TNC's in different urban environments. TNCs present in the Minneapolis-St. Paul region currently offer service in private vehicles. Although some drivers have accessible vehicles, state laws on requirements for drivers of accessible vehicles prohibit drivers without specialized training to serve riders, although riders can request accessible vehicles by choosing specific settings for accessibility in the application.

CSSs like Zipcar and HourCar, which require returning the car to a set home location, currently serve other areas in the Twin Cities metro. Car2Go, a service which allowed drivers to leave the vehicle in public parking, previously operated in the Twin Cities, but exited the market at the end of 2016. TNCs offer greater utility for people who do not want to drive or are unable to drive, while CSSs serve those that don't mind driving but would prefer to pay for a service rather than manage the ownership and maintenance of a car.

Transit service providers are beginning to explore partnerships with TNCs and CSSs to expand coverage. This type of partnership may be beneficial in Carver County depending on funding availability and demand unmet by public transit services.

4.4.B. Alternative Fuel Vehicles

Political realities surrounding petroleum and gasoline are constantly changing, and some people have chosen to purchase vehicles that rely on other fuel sources, such as ethanol, biofuel, and most recently electricity. Electric vehicles may begin to drop in price as more manufacturers bring them on the market. Charging stations are necessary to support the use of electric vehicles over long distances. Especially if freight becomes powered by electric vehicles, infrastructure and fueling stations will need to change to adapt to their needs.

4.4.C. Automated Vehicles

Automated Vehicles (AV) are passenger vehicles that require some or no human input to operate and navigate safely on the roadway. AVs can be owned and operated by private passengers, ride-sharing services, TNCs, or public transit agencies. At the time of this writing, small buses that travel up to 25 miles per hour and carry 12 people are being piloted around the world. Transit operators should continue to monitor the applicability of implementing AVs and service vehicles as they are tested in other markets.

There are different levels of input that AVs need from human drivers to operate. Some AVs require a dedicated track, while others can operate on a roadway with the general purpose traffic. These six levels of automation that are in the process of being accepted by USDOT are as follows:

- **Level 0 – No Automation**: The full-time performance by the human driver of all aspects of the dynamic driving task, even when enhanced by warning or intervention systems
- **Level 1 – Driver Assistance**: The driving mode-specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the human driver performs all remaining aspects of the dynamic driving task
- **Level 2 – Partial Automation**: The driving mode-specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the human driver performs all remaining aspects of the dynamic driving task
- **Level 3 – Conditional Automation**: The driving mode-specific performance by an Automated Driving System of all aspects of the dynamic driving task with the expectation that the human driver will respond appropriately to a request to intervene
- **Level 4 – High Automation**: The driving mode-specific performance by an Automated Driving System of all aspects of the dynamic driving task, even if a human driver does not respond appropriately to a request to intervene
- **Level 5 – Full Automation**: The full-time performance by an Automated Driving System of all aspects of the dynamic driving task under all roadway and environmental conditions that can be managed by a human driver

In the future, it may be prudent to make changes to the roadway for AVs. An example of a roadway change for an AV is to dedicate parts of roadways to only AVs (in effect creating a track,) putting in specialized paint or signage, or specialized sensors at bus stops and transit stations. It is unlikely that the tonnage or construction of roads will need to be changed as vehicles are likely to become lighter and carry less passengers. New parking structures should be built with adaptive reuses in mind as parking needs may change. Because Carver County encompasses a landscape that transitions from suburban to rural, sustained attention to scale and appropriateness of innovative technologies for the range of communities is imperative.

As with any technological advance in transportation or otherwise, it is hard to know how quickly change from the status quo or adoption of new practices will take place. Being prepared for change so that technology does not out pace policy and roadway updates is important to make sure that Carver County drivers and passengers can get around for years to come. Pilot programs, similar to the roll out of SW Prime service, are a responsible way to investigate advances in transportation and applicability to the needs of Carver County. Carver County will continue to monitor and stay abreast of emerging trends in order to provide appropriate infrastructure for service that best serves residents and visitors.

4.5. Bicycling and Walking

The County's bicycle and pedestrian system is generally comprised of the Metropolitan Council Regional Bicycle Transportation Network (RBTN) and the County's internal trail and sidewalk network. Most of the bicycle and pedestrian system plan is identified in the Parks, Trails, and Open Space Chapter of this Plan. This chapter identifies and highlights goals and policies related to the RBTN bicycle and pedestrian transportation system and maps existing and proposed facilities.

4.5.A. Regional Bicycle Transportation Network (RBTN)

The RBTN was established in the Metropolitan Council's 2040 Transportation Policy Plan (TPP) "to establish an integrated seamless network of on-street bikeways and off-road trails to most effectively improve conditions for bicycle transportation at the regional level and to encourage planning and implementation of future bikeways by cities, counties, parks agencies, and the state, in support of the network vision" (2040 TPP, page 7.11).

The Regional Bicycle Transportation Network is divided into two tiers of alignments and corridors that serve to define the planning and development of critical bicycle transportation links.

- **Tier 1—Priority RBTN Corridors and Alignments**
  - ◊ These corridors and alignments have been determined to provide the best transportation connectivity to regional facilities and developed area. The priority corridors and alignments are planned in locations where they can attract the most riders and most effectively enhance mode choice.
- **Tier 2– RBTN Corridors and Alignments**
  - ◊ These corridors and alignments provide connections to regional facilities in neighboring cities, and serve to connect Tier 1 RBTN corridors and alignments.

The RBTN in Carver County includes the following designations:

- Tier 1 Alignments
  - ◊ Trunk Highway 5 from Waconia to the eastern county border;
  - ◊ Lake Minnetonka LRT Regional Trail from Victoria northeast to the northern county border;
  - ◊ Trunk Highway 101 from the southern county border north to the Minnesota River Bluffs LRT Regional Trail;
  - ◊ Minnesota River Bluffs LRT Regional Trail from Flying Cloud Dr. to the eastern county border.
- Tier 2 Alignments
  - ◊ Trunk Highway 41 from the Minnesota River to Trunk Highway 7/ northern county border;
  - ◊ Laketown Parkway from Trunk Highway 5 to Trunk Highway 7/northern county border;
  - ◊ Trunk Highway 101/Great Plains Boulevard from Minnesota River Bluffs LRT Regional Trail north to Trunk Highway 5;
  - ◊ Trunk Highway 101/Chanhassen Road/West 102nd Avenue from Trunk Highway 5 north to the northern county border.

- Tier 1 Priority Search Corridor
  - ◊ Connection from Chaska/Trunk Highway 41 to the Minnesota River Bluffs LRT Regional Trail endpoint at Flying Cloud Drive. Search Area near CSAH 61/Chaska Boulevard.
- Tier 2 Priority Search Corridor
  - ◊ Connection from Carver/Minnesota River Valley northeast to Waconia. Search area near CSAH 61/CR 110/CSAH 10.

Two maps of the RBTN system (as shown in existing 2040 TPP) in Carver County are included in Appendix C, Parks and Trails Analysis. The first map shows the RBTN with regional search corridors, planned regional trail search corridors, existing destination trails, and existing linking trails. The second map shows the RBTN in relationship to existing local trails in addition to existing destination trails and existing linking trails. In addition to these two required maps, The RBTN is shown in Figure 4.26: RBTN, Employment Clusters, Activity Centers, On & Off Road Bike. This figure shows the RBTN in relationship to activity centers such as transit park and rides, schools, parks, and RBTN destinations. Figure 4.26 also contains information on bicycle-roadway compatibility measures including shoulder width, vehicles per minute, and bicycles-prohibited designations.

The RBTN is being modified as part of the Metropolitan Council's 2040 Transportation Policy Plan update process. In 2017 Metropolitan Council staff met with local officials to consider changes and compiled a list of the proposed RBTN changes. Eight changes to the RBTN were proposed and processed in 2017 for the updated 2040 Transportation Policy Plan (TPP) to be adopted in 2018. Three of the changes were approved as administrative changes and the other five are included in the draft TPP for further review prior to adoption.

- Administrative Changes
  - ◊ Designate CSAH 10 as Tier 2 Alignment to replace corridor bet. E. Main Street in Waconia & US 212 in Chaska;
  - ◊ Designate Tier 1 alignment to replace Tier 1 corridor thru Chaska to follow the regional trail to Old Audubon Road near Chaska Boulevard, then follow Chaska Boulevard and the abandoned rail corridor southwest to the existing regional trail connection at West First Street;
  - ◊ Designate existing regional trail as Tier 2 alignment to replace Tier 2 corridor segment from West First Street in Chaska to East Main Street in Carver near the old rail crossing of the Minnesota River.
- Changes included for TAC/TAB review in the Draft TPP
  - ◊ Change Tier 2 alignment to Tier 2 corridor along Trunk Highway 41 between Crosstown Boulevard and the Minnesota River Bridge in Chaska. (RBTN Alignment Proposed Change);
  - ◊ Propose CSAH 10 (Engler Boulevard) as a new Tier 2 alignment between US 212 and CR 61 (Flying Cloud Drive). (Proposed New RBTN Alignment);
  - ◊ Propose new Tier 2 alignment centered on CR 11 (Victoria Drive) between CSAH 10 and TH 5. (Proposed New RBTN Corridor);
  - ◊ Propose new Tier 2 alignment along CR 11 (Jonathon Carver Parkway) from CSAH 10 south to CR 40 in Carver. (Proposed New RBTN Alignment);
  - ◊ Propose new Tier 2 alignment along planned regional trail (along CR 40/Main Street West) from Main Street East trail intersection in Carver southwesterly to intersection with CR 11 (terminus of proposed Tier 2 alignment above). (Proposed New RBTN Alignment).

The Metropolitan Council table showing these changes is included in Appendix B as part of this Plan, so the documents align upon adoption. The table is from the Metropolitan Council website and is labeled: Proposed RBTN Changes – Carver County, table dated 10-12-17.

4.5.B. Bicycle Barriers

Major bicycle barriers within Carver County include geographical and topographical challenges related to designated bluff areas, water bodies including lakes, rivers, and streams, rail corridors, and freeways or other major highways where bicycles are prohibited or narrow shoulders and high traffic make bicycling a challenge (see Figure 4.26: RBTN, Employment Clusters, Activity Centers, On & off Road). Regional roadway facilities such as US 212, TH 5, TH 41, TH 7, TH 25 and major regional transportation barriers such as the Minnesota River are some of the major obstacles to bicycle facility connectivity in the County. Bicycle facility improvements to mitigate major regional barriers can be expensive and need the support of regional federal or state funding. The Goals and Strategies in the Roadway System Plan (RSP) and Parks, Trails, and Open Space Plan identify how the County will support and implement low-cost, high-benefit bicycle specific or bicycle compatible facilities. For example, the RSP lists Strategy 17 as: Align rural roadway shoulder improvements with on-road bikeway routes where possible. Figure 4.27: Bike and Roadway Improvements shows existing and future trails and future planned major roadway rehab. The County uses this information to plan for shoulder widening investments.

4.5.C. Bicycle and Pedestrian Systems in County Context

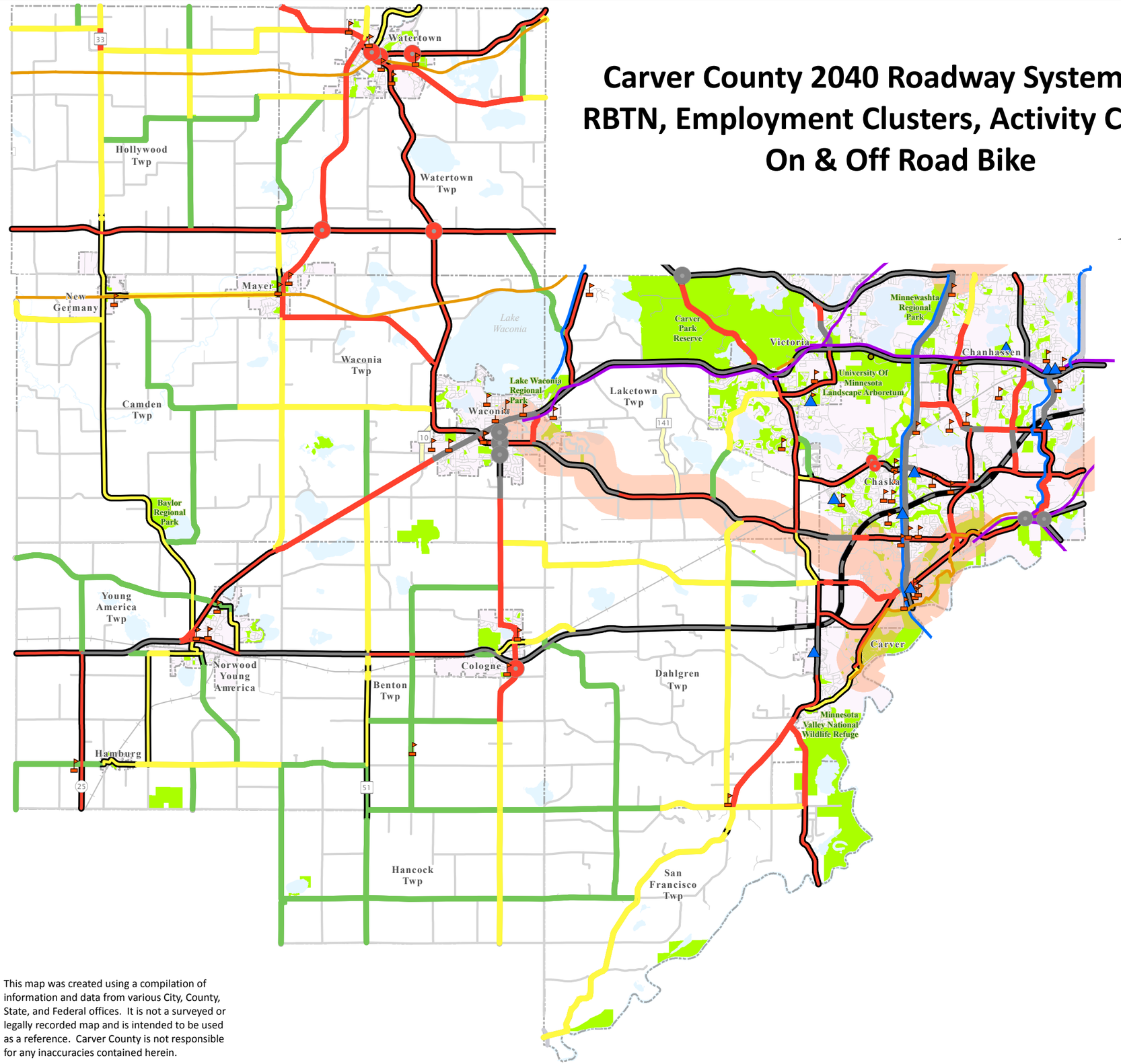
The County's bicycle and pedestrian system aspires to match and complement as much as possible the County's unique mix of urban and rural features, while at the same time remaining competitive with the larger metropolitan region and transportation programs and funding resources. The County is located on the edge of the Metropolitan area and includes Suburban Edge and Emerging Suburban Edge cities in the eastern part of the county as a major growth area for the region. A good portion of the County is not part of the contiguous urbanized metropolitan core, with the majority of the western half of the County designated as Agricultural and Rural Centers. The western half of the County is intentionally rural due to Land Use policies covered in that chapter and adopted in the 2030 Comprehensive Plan, such as the 1 dwelling unit per 40 acres rule.

Carver County is both suburban, part of the greater metropolitan region, and rural with characteristics similar to counties in greater Minnesota such as Sibley County or McLeod County. Suburban Edge cities like Chaska are denser like Plymouth and other parts of Hennepin County. Other Carver County cities like Waconia, Victoria, and Carver are growing but are separated from the urbanized area by rural areas and agricultural land. The City, County, and State's bicycle trail network does not yet fully serve Carver County cities and rural areas.

Specific pedestrian facility system and design needs are addressed at the county level through the ADA Transition Plan, coordination with cities and transit providers, and through participating in programs such as Safe Routes to School. The County's concern and interest is that Rural Centers, Agriculture, Suburban Edge, and Emerging Suburban community designations are appropriately recognized for inclusion in such things as special studies and new or updated scoring criteria and funding eligibilities for bicycle and pedestrian systems.

Carver County 2040 Roadway Systems Plan
RBTN, Employment Clusters, Activity Centers, On & Off Road Bike

DRAFT



This map was created using a compilation of information and data from various City, County, State, and Federal offices. It is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

RBTN, Employment Clusters, Activity Centers, On & Off Road Bike

Figure 4.26

Legend

Existing Destination Trails

RBTN Alignments

- Tier 1 Alignment
- Tier 2 Alignment

Bicycle Classification

Greater Than 4 Foot Shoulders

- 10,000+ (24+ CARS/MIN)
- 2501 - 10,000 (12 CARS/MIN)
- 751 - 2500 (3 CARS/MIN)
- 0 - 750 (< 3 CARS/MIN)

Less Than 4 Foot Shoulders

- 10,000+ (24+ CARS/MIN)
- 2501 - 10,000 (12 CARS/MIN)
- 751 - 2500 (3 CARS/MIN)
- 0 - 750 (< 3 CARS/MIN)

Bicycles Prohibited

- Transit Centers
- Schools
- RBTNDestinations

Carver Roundabouts Grading

- 2
- 3
- 4
- RBTN Corridors
- Parks

City/Township Boundary

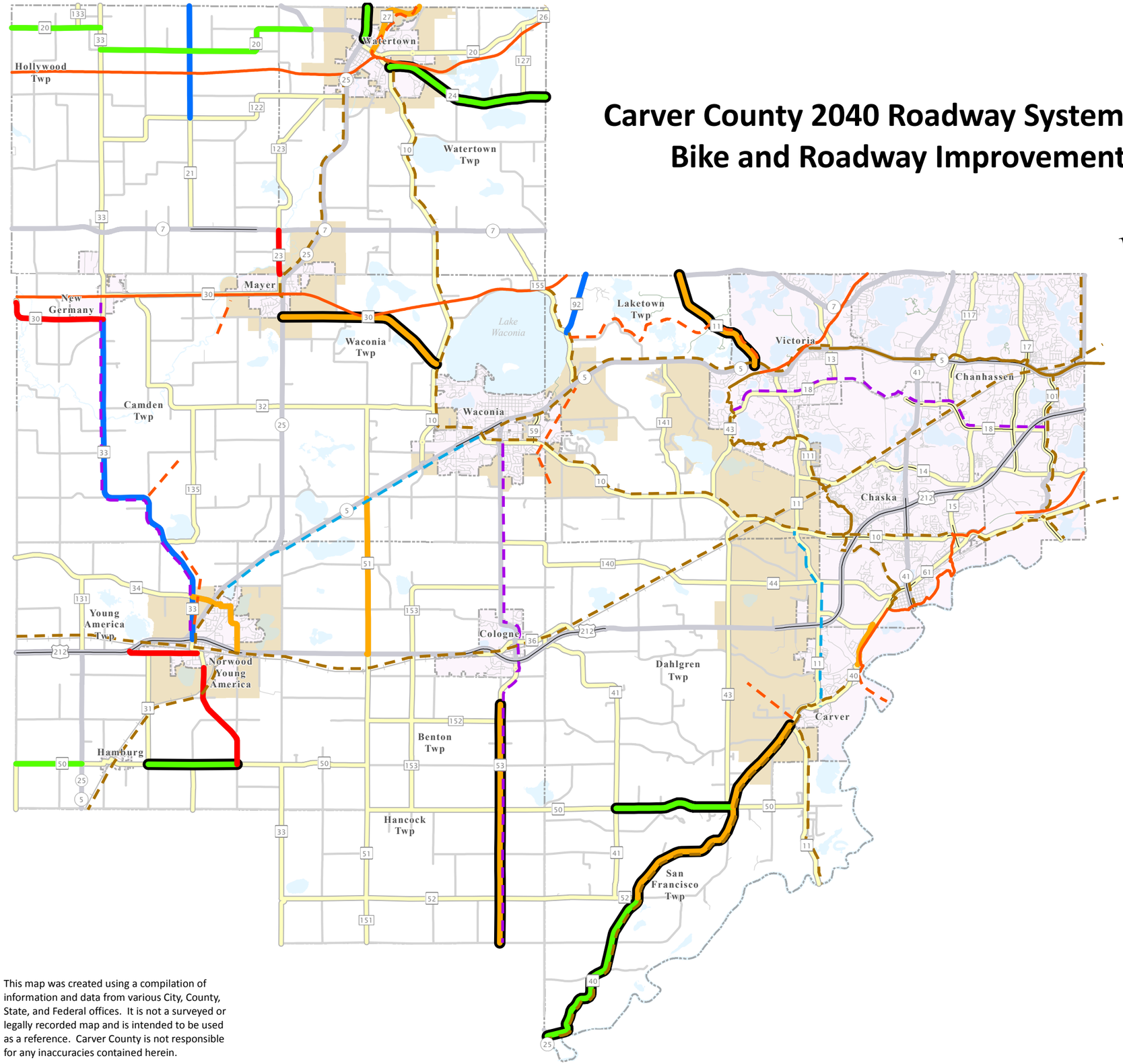
- Existing City
- City/Township Boundary

0 1 2 4 Miles

Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200
Created: 4/27/2018

Carver County 2040 Roadway Systems Plan
Bike and Roadway Improvements

DRAFT



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Bike and Roadway Improvements

Figure 4.27

Legend

Trails

- Existing Destination Trail
- Existing Linking Trail
- Existing Local Trails
- Future Destination Trail
- Future Linking Trail
- Future Local Trail
- Proposed Regional Linking Trail

Major Rehab

- 2018-2023
- 2024-2028
- 2029-2033
- 2034-2037
- Shoulder Widening

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary
- City Growth Areas 2040

0 1 2 4 Miles

Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200

Created: 4/27/2018

4.6. Freight

4.6.A. Introduction

In conjunction with other freight planning efforts of the Metropolitan Council and MnDOT, the Freight System Plan helps document and plan for freight and freight-related conditions, activities, and programs in Carver County. The Freight System Plan focuses on the movement of goods and services within and through the County. The freight transportation system is closely related to the land uses, geography and economies of the county and its surroundings. Carver County contains a unique mix of rural and agriculture areas combined with more urbanized clusters of towns and cities. As noted in multiple planning and policy documents, a safe, efficient, high-capacity freight transportation system is essential to the economic well-being of these communities, the region, and state. The County's rural and urban highways comprise a key component of the County's and the Twin Cities metropolitan area's regional freight transportation system, along with rail and intermodal facilities, river port barge terminals, and air cargo facilities. This section provides information and tools to understand and invest in the County's freight system and strengthen the County's ability to advocate for essential freight issues with key planning and funding organizations like the Metropolitan Council, MnDOT, and other agencies.

The Freight System Plan documents existing conditions and future system needs for freight–related elements. This section addresses the Principal and A-Minor Arterial highway network, existing railways and truck freight facilities, important economic freight generator nodes such as industrial parks and large shopping areas, and provides information on the roadway network volumes of heavy commercial average annual daily traffic (HCAADT). Roadway system issues for freight-related goods movement are also identified.

4.6.B. Freight and Railway Goals

COUNTY GOAL TR-12

Support rail use along the current Twin Cities Western Rail Line Corridor and reduce rail impacts on the highway system and surrounding land uses.

COUNTY GOAL TR-13

Develop a roadway network that supports heavy commercial vehicles and removes bottlenecks to freight to reduce truck impacts on the highway system.

4.6.C. Freight and Railway Strategies

COUNTY STRATEGY TR-28

Support rail to haul large goods to reduce costs for local businesses and suppliers.

COUNTY STRATEGY TR-29

Establish a roadway network that adequately carries nine and ten ton axle loads.

COUNTY STRATEGY TR-30

Actively pursue funding for US 212, TH 5, and TH 41 to improve the efficiency of freight movement and safety.

COUNTY STRATEGY TR-31

Address the need to improve safety at roadway and railroad crossings.

4.6.D. Freight and Railway Performance Measures

- Percentage of reduction in carbon emissions as a result of increased rail use.
- Percent of miles of the County Roadway System designated as a ten-ton route.
- Percent of at-grade rail crossing with signalized mast arms and gates.
- Number of County Roads with deficient rail crossings.

4.6.E. Existing Freight System

A major component of Carver County's freight system lies in its roadway network. Although no interstates are located in Carver County, key freight corridors within Carver County include US Highway 212 (US 212), Trunk Highway 41 (TH 41), Trunk Highway 7 (TH 7), Trunk Highway 5 (TH 5), TH 25, and long-running county highways such as CSAH 33. US 212 is a limited access roadway that provides for uninterrupted traffic flows with a relatively high level of service and is the highest priority freight corridor in Carver County. These corridors were also identified in the Metropolitan Council's Regional Truck Highway Corridor Study, which was completed in 2017. The purpose of the study was to identify and prioritize the most significant regional truck highway corridors in the Metropolitan area. The quantitative analysis, supplemented by qualitative input, considered four main factors: average annual truck volume, truck percentage of total traffic, proximity to identified freight clusters, and proximity to regional freight terminals. The result of the study was the identification of three prioritized truck corridor tiers. Six corridors were identified and prioritized within Carver County. See Figure 4.28 for Truck Corridor Tiers in Carver County.

- Tier 1 Corridor: US 212
- Tier 2 Corridors: TH 5 from CR 13 to eastern County border; CR 18 from TH 41 to TH 101
- Tier 3 Corridors: TH 7; TH 41; TH 5 from CSAH 10 to CR 13; CR 61 from CR 11 to TH 41; CSAH 10 from TH 5 to CR 59

The County State Aid Highway (CSAH) System also plays a key role in the county's freight system. CSAH routes connect to heavy freight corridors and provide first and last mile connections to local customers and businesses. Businesses in the agricultural and manufacturing sectors, located in more rural parts of the county, rely heavily on the CSAH system to support and maintain their operations. CSAH routes that connect to or are parallel with US and State Trunk Highways, and that connect to industrial and commercial centers, most significantly support the transportation of freight within Carver County. One of the more significant CSAH routes includes CSAH 33 which connects TH 7, TH 5, TH 25, and US 212 and provides access to freight centers in Norwood Young America and Waconia. It is also important to recognize CSAH 10, which connects TH 7, TH 5, and US 212 and provides access to freight generators in Waconia and Chaska.

The freight network is also comprised of rail. The rail network in Carver County includes an active line that runs east-west across the county operated by Twin Cities and Western (TCWR). A spur extends off the TCWR line through the southwestern portion of the county and is operated by Minnesota Prairie Line Railroad (MPLI), a subsidiary of TCWR. These lines intercept with all "Class I" railroads serving the Minneapolis-St. Paul area, providing connections to the entire North American rail network. These lines provide important regional and local connections, most notably to downtown Minneapolis and intercepts at industrial centers in Norwood Young America, Cologne, and Chanhassen. Figure 4.28: Existing Carver County Freight Transportation presents this system.

There are no barge facilities or intermodal freight terminals within Carver County, however, truck freight connects east via US 212 and TH 41 to TH 169 and the Ports of Savage. See Figure 4.28: Existing Carver County Freight Transportation for locations of freight facilities and freight generators.

Carver County 2040 Roadway Systems Plan
Existing Carver County Freight Transportation

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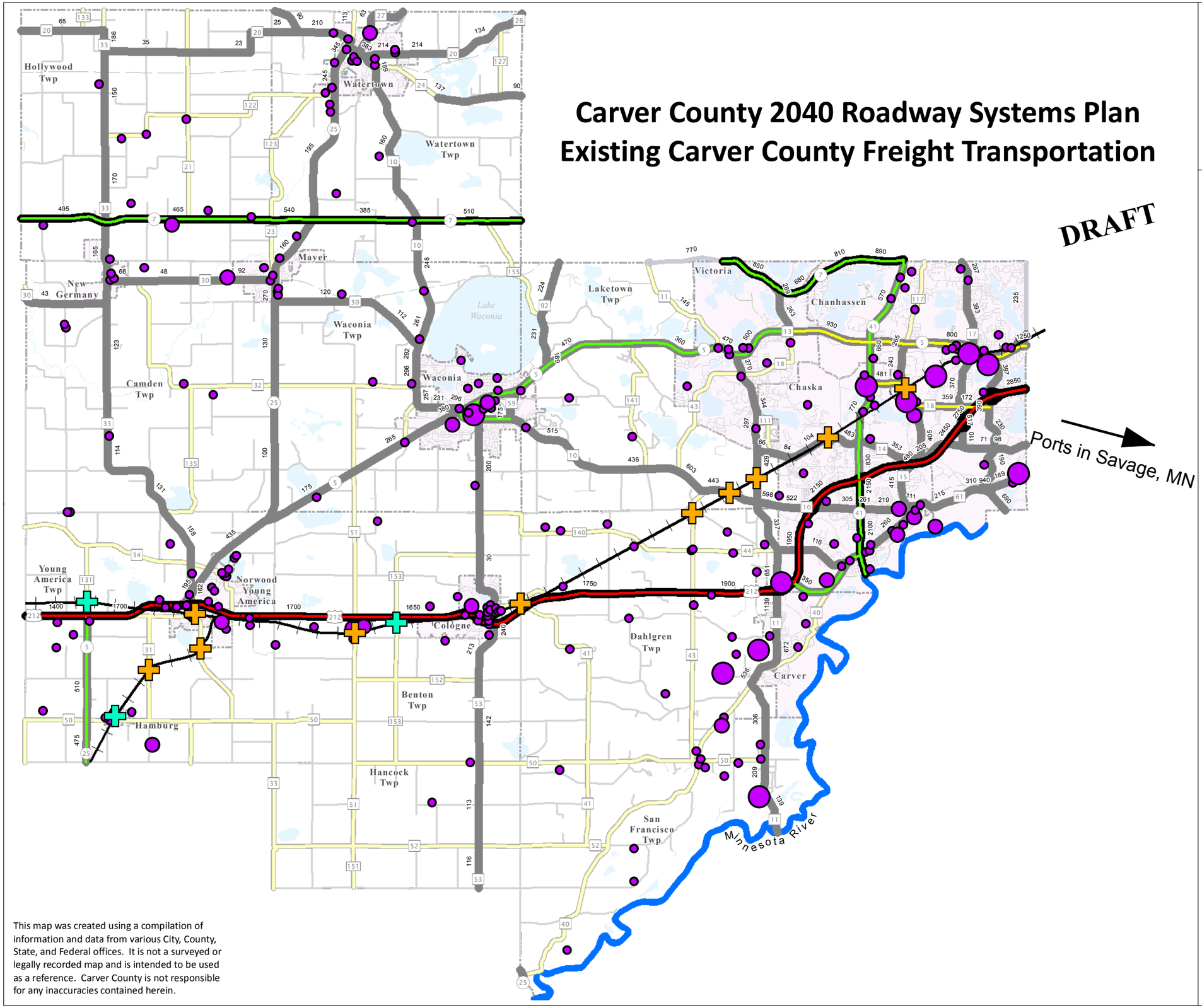

This map was created using a compilation of information and data from various City, County, State, and Federal offices. It is not a surveyed or legally recorded map and is intended to be used as a reference. Carver County is not responsible for any inaccuracies contained herein.

Existing Carver County Freight Transportation

Figure 4.28

Traffic Information — Traffic Volumes ### - 2016 HCAADT

Legend

Truck Corridor Tiers

- Tier 1
- Tier 2
- Tier 3

Functional Class

- Principal Arterial
- A Minor

Other Corridors

- Active Rail
- Minnesota River

Railroad Crossings

Control Type

- Controlled
- Uncontrolled

Freight Generators

- 0 - 15 Acres
- 15 - 30 Acres
- 30+ Acres

Freight Generators was created using the 2016 Generalized Land Use from Met Council with 'Mixed Use Industrial', 'Industrial and Utility', and 'Extractive' shown.

0 1 2 4 Miles

Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200

Created: 4/27/2018

4.6.F. Freight Generators

Freight clusters in Carver County are identified in the Metropolitan Council's Regional Truck Highway Corridor Study in Figure ES-2: Map of Freight Clusters in the Twin Cities Area. This figure is a heat map showing four freight-related sectors based on the North American Industry Standard (NAICS) codes. This data source identifies regional freight clusters in the eastern portion of the County in Chanhassen and Chaska with additional clusters located in Waconia and Benton Township. Economic centers in the County include land uses located in proximity to US 212, TH 5, and TH 41 in Chaska and Chanhassen. These highway corridors are significant to the county's freight network. This area contains freight intensive clusters that generate a large amount of truck, rail, or intermodal activity. Freight intensive clusters primarily consists of manufacturing, wholesale trade, transportation and warehousing establishments, office complexes, and agriculture facilities. The statewide US 212 corridor is also a freight intensive cluster with over 65 major freight generators located along its length from I-94 in Minneapolis west to the border with South Dakota. These businesses represent a variety of industries from meat production, chemical products, and agricultural machinery to sugar production, food processing, and other consumer products. Many of these businesses use US 212, traversing the length of Carver County, as their primary route to transport goods to market in the Twin Cities.

4.6.G. Heavy Commercial Vehicle Volumes

Existing (2016) heavy commercial annual average daily traffic (HCAADT) volumes are depicted in Figure 4.29. High volume corridors include US 212, TH 41, TH 5, and the area surrounding the TH 7/TH 25 intersection. Segments of these roadways are estimated to carry up to 900 trucks per day on the smaller trunk highways and up to 2,850 trucks per day on US 212. On portions of US 212, heavy commercial vehicles represent up to 14% of total daily traffic based on 2016 data. As the principle freight corridor in Carver County, and with population and business growth predicted to increase, US 212 is forecasted to experience higher heavy commercial vehicle volumes by year 2040.

4.6.H. Safety and Capacity Issues

Industrial areas in Carver County are located within access to the county and metropolitan highway system. US 212, TH 5 and TH 41 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 smaller towns.

It is important that commercial vehicle traffic from industrial, warehouse, and commercial land uses be adequately considered. Increased freight traffic can be accommodated through the following measures:

- Locating freight-intensive land uses in areas that are close to the metropolitan highway system and with ample access to minor arterials;
- Utilizing acceptable design standards on arterials, ensuring adequate turning radius, pavement depth, and space for commercial vehicles; and
- Providing adequate signage and markings along roadways to minimize commercial vehicle traffic through residential neighborhoods.

4.6.H. Safety and Capacity Issues– Continued

Truck travel reliability and freight mobility concerns exist within the county's freight network. Poor truck travel time reliability and concerns for safety generally coincide with routes that contain several intersections and bottlenecks. US 212 is the most important freight corridor in Carver County; it provides a highway freight connection for over 22,000 square miles of Southwest Minnesota to the Twin Cities metropolitan area where access via the Interstate Highway System does not exist. Even though the significance of this connection is high, several bottlenecks and intersections of concern exist on US 212 within Carver County that pose reliability, accessibility, and safety challenges to freight transportation. This specifically occurs in two segments between Norwood Young America and Chaska. The bottlenecks are located where segments of four-lane expressway become a two-lane rural undivided highway. Corridor studies were completed to assess these bottlenecks and the impact they pose to travel time reliability and roadway safety in Carver County. Analysis shows that these bottlenecks contribute to a 17 percent increase in heavy commercial vehicle operational costs and negatively affect upwards of 65 heavy commercial freight generators located adjacent or in proximity of the US 212 corridor.

4.6.I. Improvement Projects

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

- US 212: Upgrade to a four-lane expressway from Cologne to Carver (unfunded priority project).
- US 212: Upgrade to a four-lane expressway from Norwood Young America to Cologne (unfunded priority project).
- US 212: Reconstruction of CSAH 140 and the construction of a new interchange at US 212 (2017 – 2022 CIP)
- TH 41: Expand from a two-lane roadway to a four-lane roadway from US 212 to TH 7:
  - ◊ US 212 to CSAH 14 (2017 – 2022 CIP)
  - ◊ CSAH 14 to TH 5 (unfunded priority project)
- TH 101: Reconstruction of TH 101 (turnback) on the Minnesota River Bluff between CSAH 61 and CSAH 14 (2017 – 2022 CIP)
- CSAH 10: Reconstruction of CSAH 10 east of CSAH 11 and west of West Creek Lane (2017 – 2022 CIP)

Significant studies and planning efforts were conducted to understand and demonstrate the importance of the US 212 corridor. The expansion and relief of bottlenecks along the corridor is of the highest priority for Carver County. Currently, county staff are involved in the process of applying for local, state, and federal funding to support and complete the project involving bottlenecks along US 212. Once completed, the relief of the bottlenecks will improve travel time reliability, traffic safety, and will increase the efficient transport of goods from the county to the Twin Cities and beyond. These improvements will save local businesses, dependent on US 212 for freight transportation, thousands of dollars per year in losses due to congestion and crashes.

In addition to these regionally significant freight improvements, there are county roadway improvement needs to better facilitate the movement of goods and services throughout the county. Physical conditions of the county roadway system constrain the overall freight transportation system. These include key but dated intersections, spring load restrictions to 7 or 9 ton roadways, bridge load restrictions, and insufficient height or width clearances for heavy commercial vehicles. Figure 4.29: Existing Freight Physical Conditions shows locations of these freight related restrictions.

Carver County 2040 Roadway Systems Plan
Existing Freight Physical Conditions

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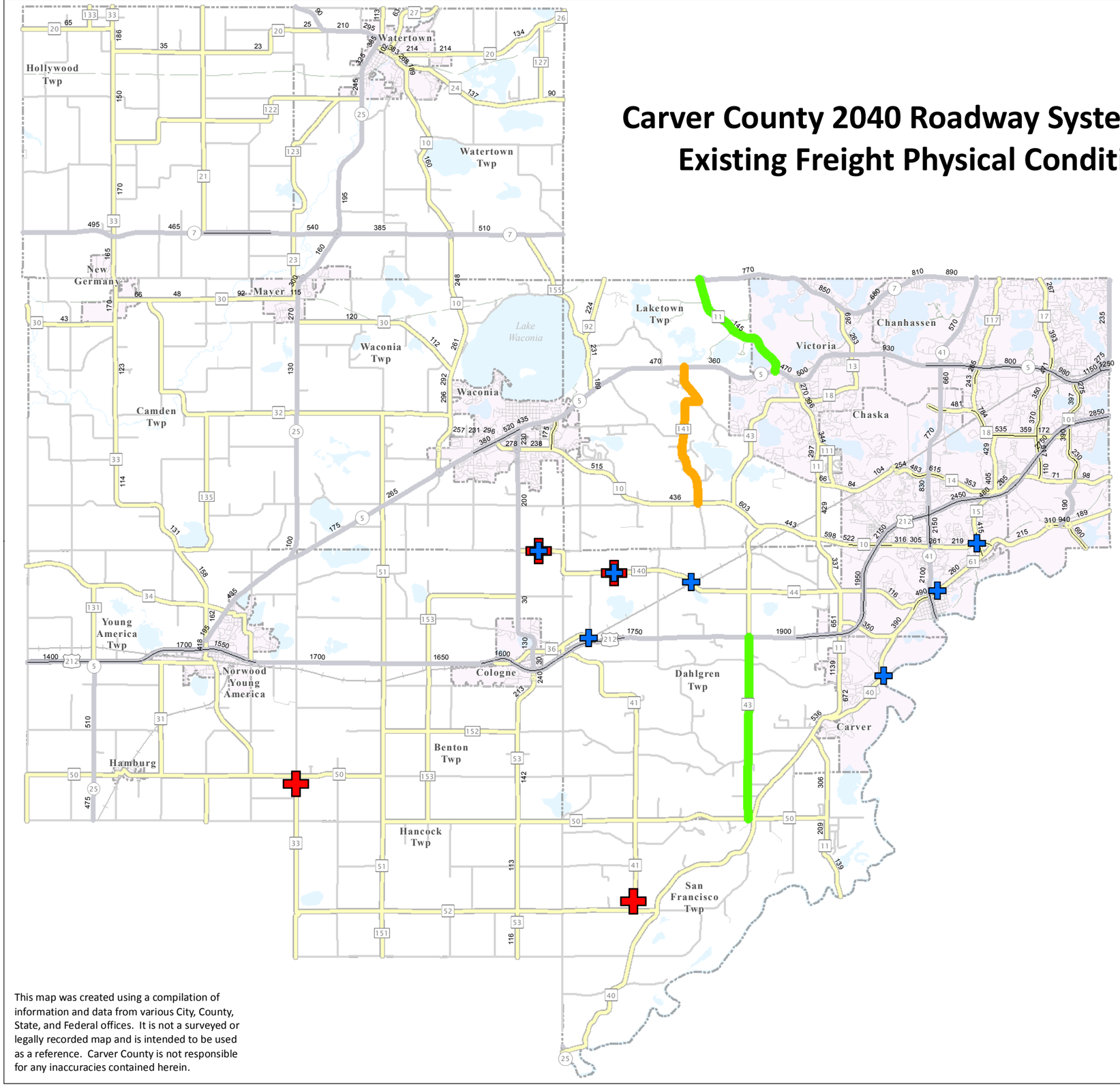

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Existing Freight Physical Conditions

Figure 4.29

Traffic Information — Traffic Volumes ### - 2016 HCAADT

Legend

Spring Load Restrictions

- 9 Ton Road
- 7 Ton Road

All Other County Roads Are 10 Ton

- Insufficient Height or Width

Bridge Restrictions

- Load Restrictions

Existing Roadway Network

- 2 Lane County Road
- 4 Lane County Road
- 2 Lane Trunk Highway
- 4 Lane Trunk Highway

City/Township Boundary

- Existing City
- City/Township Boundary

0 1 2 4 Miles

CARVER COUNTY
Public Works Division
11360 Hwy 212, Suite 1
Cologne, MN 55322
(952) 466-5200

Created: 4/27/2018

4.6.J. 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 products of their choosing on-demand has and will continue to increase freight traffic on major and local roadways. Due to its location on the outskirts of the Minneapolis-St. Paul metropolitan area, Carver County is primarily rural and agricultural in nature. With population expected to increase dramatically by 2040, cities such as Chaska and Chanhassen, closer to the Twin Cities, may 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 Carver County.

4.6.K. Implementation

Funding resources are necessary to support the implementation of these freight improvement projects. Federal and state funding will be pursued to supplement County resources. Funding opportunities include programs such as the Metropolitan Council's regional solicitation for federal Surface Transportation Program Block Grants and MnDOT's Minnesota Highway Freight Program and Highway Safety Improvement Program solicitations for federal funding. County and State roadway facilities serving regional and statewide freight needs will be analyzed and brought forward for funding consideration. Important freight considerations for analysis include HCAADT volumes, safety issues, proximity to industrial use clusters, reliability and delay, and regional significance based on the evaluation from the Regional Truck Highway Corridor Study.

4.7. AVIATION

4.7.A. Existing Conditions

An airport is an area of land or water that is used for the landing and takeoff of an aircraft, and includes any buildings and facilities associated. Carver County does not have any municipal airports or commercial airfields. There are several personal use landing strips that are used exclusively by the owner and/or friends or neighbors. "Molnau Airpark" in Laketown Township is a private field providing hanger space and the use of the field to persons determined by the owner. There are also several publicly owned airports in relatively close proximity to Carver County. The eastern portions of the County, including Chanhassen and Chaska, are close to Flying Cloud Airport in Eden Prairie; there are public airfields in Winsted and Glencoe directly west of the County; and a public airport in Buffalo to the north. There is currently no airport related planning being conducted in the County.

4.7.B. Aviation Strategies

COUNTY STRATEGY TR-32 AIRSPACE PROTECTION

The County will incorporate applicable Minnesota Department of Transportation (MnDOT) Rules concerning seaplane operation and obstructions to air navigation into the official controls of the County.

COUNTY STRATEGY TR-33 AIRPORTS

Any sponsor will notify the Federal Aviation Administration and MnDOT at least 20 days in advance, as defined under the code of federal regulations CFR—Part 77, if any construction or alteration is proposed that would exceed a height of 200 feet above ground level at the site, or any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100:1 from the nearest point of the nearest runway of a public airport.

COUNTY STRATEGY TR-34 SEAPLANE LAKES

The operation and use of seaplanes within the County will be prohibited on all public waters except for those described in Minnesota Rules 8800.2800. In Carver County, lakes with allowed seaplane operation include: Goose Lake, Hazeltine Lake, Lake Minnewashta, Lake Patterson, Lake Riley, Lake Waconia, Lundsten Lake, Mud Lake, Oak Lake, Parley Lake, Pierson Lake, and Tiger Lake.

COUNTY STRATEGY TR-35 PRIVATE AIRFIELDS

Personal use landing areas, as defined in MnDOT Aeronautics regulations will be considered an appropriate use under certain conditions in the unincorporated areas of the County. Regulation of personal use landing areas will be provided by County land use controls in conjunction with the licensing procedures of MnDOT.